Ref: Response to Request for Review "China Guangdong Shenzhen Qianwan LNG generation project"

With the Reference Number 1915

Dear Members of the CDM Executive Board,

We refer to the requests for review raised by three Board members concerning DNV's request for registration of project activity 1915 "China Guangdong Shenzhen Qianwan LNG generation project" and would like to provide the below initial response to the issues raised in the requests.

I hope this meet your requirements.

Yours faithfully

General Manager

Shenzhen Guangqian Electric Power Co., Ltd.

Issue1. The determination of the project activity start date requires further substantiation, in particular it should be demonstrated that no contracts for equipment or fuel supply as well as a power purchase agreement (PPA) were entered into prior to 14 December 2004.

PP Respond:

August 2002	Meeting Minutes	Carbon Credit Conference[1] held in Zhuhai City, participants included World Bank and Yudean Group etc. Project investors first time know CDM project.
February 2003	Minute of Yudean and Zhuhai Electric Power Company	Shenzhen Qianwan LNG Project (SQLP) started CDM investigation, paid attention to the influence on project economic potential if CDM applicable[2].
March 2003	Equipment contract	Yudean Group signed the main equipment contract[3] as the investor of SQLP. The contract clearly stated that **the purchase would be executed on the condition of obtaining the approval from NDRC, upon SQLP notice of contract validity[4] equipment supplier provides the Performance Guarantee**
July 2003	FSR	Guangdong Electric Power Design Institute (GEDI) finished the FSR of SQLP.
November 2003	CDM Case Study on LNG	"Case Study of Clean Development Mechanism Project of Zhuhai Power Plant Project Phase II" was finished.
February 2004	SQLP authorized GEDI to reassess the project	Owing to the increasing natural gas price etc, SQLP authorized GEDI to reassess the project Financial Assessment (FA) based on the FSR compiled in July 2003.
April 30th, 2004	LNG Sales and Purchase Contract	Yudean Group, as the project

1 Minute of Carbon Credit Conference held in Zhuhai.
2 Minute of Yudean Group and Zhuhai Electric Power Company held in February 2003.
3 Contract for Gas Turbine Combined Cycle Power Generation Project Qianwan LNG Power Plant (Contract No. 03JP01GTA10IXC0007)
4 Notice issued by SQLP dated Aug 11, 2004.

		investor, signed the LNG Sales and Purchase Contract of SQLP. **The contract contained the effective condition of obtaining the official approval from NDRC and the project participant confirms in written to the contract counterparty on validity of the contract.**
May 2004	FA published, in which CDM was seriously considered.	GEDI finished the FA for SQLP. In the FA, SQLP considered CDM revenues and the increasing natural gas price etc. After calculated by GEDI, the IRR of total investment is 5.55 percent without CDM revenues, while 9.26 percent with CDM revenues.
May 28th, 2004	Directorate Decision	The shareholders of SQLP started to take part in CDM project.
May 31 th,2004	FSR,Financial Assessment(FA) and applying documents submitted to NDRC	After project owner submitted FSR and FA etc, SQLP received confirm letter [5] issued by Guangdong provincial Development and Reform Commission.
July 13th, 2004	NDRC Approval letter	SQLP was approved by NDRC.
December 14th, 2004	Construction Permit	SQLP obtained the Construction Permit
May 2005	Minute	SQLP knew that India natural gas project applying CDM has been approved by India government and started to validation[6].
October 2005	Notice	SQLP build up CDM work group[7]
May 19th 2006	Methodology approval	Methodology AM0029 was approved by EB.
June 2006	Directorate Decision	Owing to the methodology AM0029 approved by EB, SQLP started to apply CDM project[8].

5 Confirm letter issued by Guangdong provincial Development and Reform Commission.

6 SQLP's Minute date May 2005.

7 Notice of SQLP building up CDM work group.

8 SQLP'Directorate Decision date June 3, 2006.

July 19, 2006	CDM consulting agreement	CDM consulting agreement with Tsinghua University[9] was signed to speed up the development process.
September 16,2006	PDD public on UNFCCC website	The Version 01 PDD of the proposed project was public on UNFCCC website[10].
October 2006	PPA	SQLP signed Power Purchasing Agreement (PPA) with Guangdong Power Grid Company.
June 26 2008	EPRA	EPRA of proposed project was signed by SQLP and Mitsui[11].

Above is SQLP performance time table. According to the following reasons and EB's latest guidance on the definition of start date, the project start date should be changed to August 18th, 2004, which was the earliest date of main equipment contract, LNG Sales and Purchase Contract and PPA came into force. Therefore, the project start is redefined as August 18th, 2004.

The main equipment contract signed in March 2003 as well as LNG Sales and Purchase Contract signed in April 2004, which were attached with effective conditions. In other words, the contracts are the intent only, when SQLP meet with effective conditions prescribed in above contracts, the contracts start to enter into force.

A. Article 23 in main equipment contract states that the effective condition as: (1) the project obtains the official approval from NDRC, (2) upon SQLP notice of contract validity equipment supplier provides the Performance Guarantee. The main equipment contract shall not be valid or come into force until all two conditions were met with above requirements. Although, SQLP got the approval letter issued by NDRC on July 13th, 2004. Performance Guarantee from supplier was issued on August 18th, 2004[12] based on receipt of SQLP notice of contract validity. According to the terms of main equipment contract, the advance payment should be paid by project owner to supplier after the

9 CDM consulting agreement with Tsinghua University date July 19,2006
10 http://cdm.unfccc.int/Projects/Validation/index.html
11 EPRA signed by SQLP and Mitsui dated June 26, 2008.
12 Performance Guarantee from supplier was issued on August 18th, 2004

effectiveness of contract[13]. Therefore, according to the main equipment contract, the actual legal effective date of the contract shall be on August 18th, 2004.

B. Article 2.2.1 in LNG Sales and Purchase Contract states that the effective condition[14] is: (1) the project obtains the official approval from NDRC. And （2）the project participant confirms in written to the contract counterparty on validity of the contract. The SQLP got the approval letter of NDRC on July 13th, 2004. The SQLP confirmation letter was issued on September 29th, 2004[15]. The counterparty (Dapeng LNG company) confirmation letter was issued on June 27th, 2005[16] based on receipt of SQLP confirmation letter. Therefore, according to the LNG Sales and Purchase Contract, the legal effective date of the contact is much later than August 18th, 2004 (the above mentioned main equipment contract effective date).

C. The PPA of SQLP was signed on October 2006 between SQLP and Guangdong Power Grid Company.

1）Prescribing the effective conditions in the contract is the right endued by Chinese law.

Article 45 in the Contract Law of P. R. China (approved in the second meeting of the 9th National People's Congress which held in March 15, 1999) stipulates conditional effectiveness as: *The parties may prescribe the validation of a contract be subject to certain conditions. A contract with collateral conditions on its entry into effect shall become effective upon the fulfillment of the conditions. A contract with collateral conditions on its dissolution shall lose its validity upon the fulfillment of the conditions.* And from the law firm's legal opinions[17], the prescription of conditional effectiveness in the main equipment contract and LNG Sales and Purchase Contract are

13 Advance payment invoice issued by supplier on August 23rd,2004
14 Page 10, LNG Sales and Purchase Contract of 30 April 2004
15 Confirmation letter was issued by SQPL on September 29th, 2004
16 Confirmation letter was issued by counterparty of contract on June 27th, 2005
17 Legal Opinions from law firm

conformed to the Contract Law of P. R. China. Mentioned contracts would be actually effective upon the satisfaction of prescribed conditions

2）It is common practice in China to set up the effective conditions in the contracts. We can see from attached case links, not only the main equipment contracts, LNG Sales and Purchase Contract in power industry, but also in industries of finance, insurance[18], real estate[19], manufacture[20] etc., contract effectiveness upon satisfaction of agreed conditions is a common practice in commercial contracts. The explanation from Supreme Court of P. R. China clarified that the contract effectiveness can be subject to conditions. Contracts with conditions would become effective until all the prescribed conditions are satisfied.

3） According to Chinese statutes and regulations, the effectiveness of equipment, fuel purchasing contracts should be subject to project FSR. Moreover, no construction or actual investment is permitted before the official approval[21].

4）Constrained by the regulations of national power industry administration department, the signed equipment, fuel purchasing contracts are only the intent without legal effectiveness before the governmental approval[22].

5） According to the Directorate Decision dated May 28, 2004, the shareholders have actively seeking potential revenue from participating in CDM. On May 31st, 2004 the project participant submitted to Guangdong provincial Development and Reform Commission the project document together with its FSR and FA applying for government approval.

The project owner had provided DOE with equipment contract, Performance

18 http://www.people.com.cn/GB/paper66/12243/1101925.html
19 http://www.riel.whu.edu.cn/show.asp?ID=2742
20 http://www.lawbase.com.cn/lawcase/lawbase_@2599.htm
21 http://www.law110.com/law/jiwei/16044.htm
22 http://www.cec.org.cn/news/showc.asp?ID=11937

Guarantee of supplier, LNG Sales and Purchase Contract, PPA and other relative regulations as well as legal documents.

Issue2. Further clarification is required on how the DOE has validated: (i) the suitability of the input values to the investment analysis as per the guidance of EB 38 paragraph 54, in particular gas price, plant load factor and investment cost, etc, and (ii) that the tariff it is unlikely to increase by 6.5%.

PP Respond:

The Project is located in Guangdong Province. The Feasibility Study Report (FSR) of the project was completed by Guangdong Electric Power Design Institute (GEPI)[23] in July 2003, which is a qualified third party independent organization. The FSR was approved by the National Development and Reform Commission of 13 July 2004.

According to guidance of EB 38 paragraph 54, data from approved FSR is credible and can be applied to investment analysis. In fact, most data applied to investment analysis are sourced from the FSR compiled in July 2003 except for the assumptions of Gas Price, Supply Gas Volume and Annual Electricity Generation, which were calculated by GEDI based on LNG sales and purchase contract and the calculation model in FSR complied in July 2003.

1. The input data of Gas Price

Owing to the continuous rising price of crude oil and raw materials in early 2004[24], the value ,1.55 Yuan/m^3 (including tax) used in the PDD, was calculated by GEDI based on LNG sales and purchase contract and the calculation model in FSR complied in July 2003. The gas price value was adopted in Financial Assessment (FA) complied by GEDI in May 2004, which was much higher than 1.442 Yuan/m^3 in FSR (including tax). At present, the gas price of proposed project is increasing to 1.5961 Yuan/m^3 (including tax) [25], higher than 1.55 Yuan/m^3 (including tax). Therefore, 1.55 Yuan/m^3

23 http://www.gedi.com.cn/index.asp

24 http://okokok.com.cn/Htmls/GenCharts/080215/7037.html

25 Refer to the Notice of the Price of Natural Gas from Guangdong Dapeng Company issued by Bureau of

of gas price adopted in the analysis of investment is conservative and credible.

2. The input data of Supply gas volume

Supply gas volume was calculated by GEDI based on LNG sales and purchase contract and the calculation model in FSR complied in July 2003. The value was adopted in Financial Assessment (FA) complied by GEDI in May 2004.

3. The input data of Annual Electricity Generation

Annual electricity generation was calculated with the formula of annual supply gas volume divided by unit gas consumption. Supply gas volume was sourced from LNG Sales and Purchase Contract and 0.1797m^3/KWh of unit power generation gas consumption was taken from the FSR. The calculated value was adopted in Financial Assessment (FA) complied by GEDI in May 2004. Moreover, according to the PPA, the annual electricity generation of the project is strictly restricted both by the government annual power generation plan of Guangdong Province and LNG Sales and Purchase Contract.

4. The input data of Load Factor

PLF was calculated according to the formula as follows:

Load factor = Annual Electricity Generation/install capacity/8760

Thereof, the annual Electricity generation of the project was 3,700,000 MWh that was calculated by GEDI based on LNG sales and purchase contract and the calculation model in FSR complied in July 2003 and the total installed capacity was 1,083.09MW that was sourced from FSR. The figure 8,760 was taken from ACM0002 methodology. According to the calculation of the formula, PLF is approximately 39%. On the other hand, since the Project was designed for peak-load, PLF should be low. The following table is the statistics of PLF of the projects succeeding in registration for CDM. Compared with the projects listed in the table, PLF of the Project is similar with them

Commodity Price of Guangdong Province [Yuejia 2007 Doc No.190].

as well.

Project	Capacity	Generation	PLF	Website
	MW	GWh		
Sulige Natural Gas Based Generation Project	350	1225	0.399543379	http://cdm.unfccc.int/UserManagement/FileStorage/WPAOXVLDNXVGNXHDBGV8TXJVT18SH8
Henan Zhengzhou Grid Connected Natural Gas Combined Cycle Power Plant	780	2598	0.380224798	http://cdm.unfccc.int/UserManagement/FileStorage/9K6OR9FROC8WJE6IXZNKM5GOHY65HI
Zhejiang Provincial Energy Group Zhenhai Natural Gas Power Generation Co., Ltd.'s NG Power Generation Project	740	2525.25	0.389554795	http://cdm.unfccc.int/UserManagement/FileStorage/MEWBXZ0AK4T9H7TITJNHP3CMZ3IQNG
Yuyao Electricity Generation Project using Natural Gas	780	2730	0.399543379	http://cdm.unfccc.int/UserManagement/FileStorage/5HKK4F2FS7F3X0BIURTATC65FCF80R
Beijing No.3 Thermal Power Plant Gas-Steam Combined Cycle Project Using Natural Gas	400	1400	0.399543379	http://cdm.unfccc.int/UserManagement/FileStorage/SIOWKZOD4ZU3KRFR98KLYSNF144LAL

5. The input data of Total investment

Investment in fixed assets was taken from the FSR and the figure was 3690.55 million RMB. It's well-known that the amount of purchasing equipments account for the majority of the investment in fixed assets. Owing to the price rising of raw materials[26], total investment is increasing to 3985.79 million RMB[27] in the completion of settlement for the propose project, which is about 8% higher than the value used in FSR. Therefore 3690.55 million RMB of total investment adopted in PDD is conservative and credible.

6. The input data of O&M

O&M expenditure was taken from the FSR and was composed of fuel cost, materials cost, maintenance cost and personal cost etc. Owing to the continuous rising price of crude oil and raw materials in early 2004[28], fuel transportation costs also rising accordingly, the fuel cost is main part in O&M expenditure. It can conclude that the fuel cost cannot decrease. On the other hand, QLGP is one of the first LNG CCGT power plants in CSPG; currently CCGT units' maintenance is supported by foreign manufacturers. These years the raw material price is increasing[29], such as spare parts etc, which will increase the units' O&M costs in the future. Moreover, a Richter 8.0 earthquake occurred in Sichuan Province on May 12, 2008. Dongfang Steam Turbine Works, as one of the main equipment suppliers for this project, was heavily damaged by this tremendous natural disaster. And it will cause parts supply more difficultly and parts price rise. Furthermore, the O&M cost determination is related to the Consumer Price Index (CPI). It can be found that the CPI was keeping increasing in China from

26 http://www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20050228_402231854.htm
http://www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20060227_402307796.htm

27 Evidence from completion of settlement and audit report issued by Guangzhou Zhiheng Construction cost of the Advisory Co., Ltd.for Qianwan Project.

28 http://okokok.com.cn/Htmls/GenCharts/080215/7037.html

29 http://www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20050228_402231854.htm
http://www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20060227_402307796.htm

year 2004 to 2007[30] and the accumulated CPI increase is as much as 12.51%. Only in year 2008 itself the CPI in China increased 7% from January to September[31]. So it can be indicated that the O&M cost also has been keeping increasing from 2004 to 2007 and the average personal salary also has been going up from year 2004 to year 2006[32]. Thus, the O&M cost will not decrease so much to make the project IRR above benchmark. So the analysis is reasonable and conservative.

7. The input data of Tariff

a) In China, the policy of electricity tariff was strictly controlled by the government. The electricity tariff will not be significantly changed without regulation by the government. In order to ensure the stability of the price for the whole country, the central government has very strict control for the basic price such as the tariff. It is hard for electricity generation enterprises to make investment decision by expecting that the electricity tariff will be increased. The adjustment of electricity tariff needs to be negotiated by several government departments or even needs to be approved by the CPC Central Committee, which could not be forecasted or controlled by any specific electricity generation enterprise. So it is not possible for power generation project to forecast the change of electricity tariff and apply such change for financial analysis of projects when making project implementation decision. Only fixed electricity tariff derived from relevant electricity guiding price can be adopted, and this is the common practice in China for all projects development The proposed project's actual tariff in the PPA is 0.495Yuan/Kwh (including VAT), which is still applied till present.[33].

b) According to the *Notification of Electric Power Tariff Reform by the Office of national council* issued on 09/07/2003, the related policies for the tariff in China are as follows:

30 http://www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20080228_402464933.htm

31 http://www.stats.gov.cn/tjsj/jdsj/t20081030_402513659.htm

32 http://www.stats.gov.cn/tjsj/ndsj/2007/indexch.htm

33 Electricity invoice of propose project

Term 33: the tariff was leaded, taken charge of and managed and controlled by the main government departments for the price in the state. As for the very important tariff decision, the opinions from the electric supervision departments and electric power industry committee etc should be fully considered. The supervision departments can give the suggestions on tariff to the government according to the market situation.

Term 34: the management way for the tariff and the capacity tariff and the tariff for the transmission should be decided and issued by the Price Authority under the State Council.

Term 35: The price authority and the electric supervision departments should supervise and check the price implementation situation.

c). According to the announcement of Guangdong Power Grid Company， during the course from Year 1999 to Year 2003, the average electricity tariff (excluding VAT) of Guangdong Province power plants were 0.3497 RMB/KWh, 0.3439 RMB/KWh, 0.3421RMB/Kwh, 0.3404 RMB/KWh and 0.3389 RMB/kWh respectively[34]. It demonstrates clearly that the bus-bar tariff was debating every year.
As the above analysis, the tariff abatement was not only a fact but also a trend. Therefore, it was impossible for Project Owner to expect or forecast a higher tariff at the time when they made their investment decision.

Furthermore, according to the project's approval issued by NDRC, the project must take part in the on-grid price bidding. In the meanwhile, when the project took part in the on-grid price bidding, the tariff must be agreed with the power grid company and project owner by price bidding. As a matter of fact, the PPA of the project signed with Guangdong Power Grid Company, the actual tariff is 0.495 RMB/kWh (including VAT), **which have been being fixed during the past 3 years operation.** We can

[34] "Certificate of the Average Electricity Tariff from Year 1999 to Year 2003 in Guangdong Province" issued by Guangdong Power Grid Company in November.2008.

conclude that the tariff is unlikely to increase by 6.5%. Though it is 3.12% higher than the expected tariff in FSR,[35] the IRR is thus increased to 6.72%, still below 8%, which does not impact the project additionality.

Furthermore, in the PDD 0.1797m^3/KWh[36] is applied as gas consumption for power generation. However, as per the monitoring and calculation by Electric Power Research Institute of Guangdong Power Grid Company, the actual power generation gas consumption of proposed project is 0.1934 m^3/KWh in year 2007 and 0.1921m^3/KWh[37] in 2008(from Jan 2008 to Oct 2008) which is 7.6% and 6.9% higher than the value in PDD respectively. While according to the public statistic information, the actual power generation gas consumption of 9F Grade CCGT is averagely 0.197m^3/KWh[38], which demonstrates the propose project's actual gas consumption is within normal range. Thus, base on actual situation, even if we apply the more conservative values of 0.1921 m^3/KWh as an average gas consumption, the propose project's IRR would drop to as low as 2.75%.

As per the analysis above, we can conclude that the tariff is unlikely to increase by 6.5%.Thus even though the tariff is 0.495 RMB/kWh (including VAT), which is 3.12% higher than the expected tariff in FSR, it will not impact the project additionality.

Issue3.Further clarification is required on how the DOE has validated the common practice analysis, in particular, selection of the similar project activities.

PP Respond:

The common practice analysis part of PDD covered similar LNG projects existed in CSPG, including Huizhou LNG project[39]、Zhujiang LNG project[40] and Shenzhen Dongbu LNG project[41]. As you know, NG and LNG projects must be approved by

35 "Power Purchase Agreement" signed in Oct.2006.
36 http://tech.bjx.com.cn/html/20080122/106169.shtml
37 Evidence for power generation gas consumption of proposed project issued by Electric Power Research Institute of Guangdong Power Grid Corporation
38 http://tech.bjx.com.cn/html/20080122/106169.shtml
39 http://cdm.unfccc.int/Projects/Validation/DB/P49RV1HC5MY7O2929WR1OUOFZ0GWZ8/view.html
40 http://cdm.unfccc.int/Projects/Validation/DB/R5IB6G5JP53QHAVRAHKECF2JSXA1XT/view.html
41 http://cdm.unfccc.int/Projects/Validation/DB/V4H4XWMUFERHN2EBKNR3A5IQ9JIW07/view.html

government. When we compiled the PDD of proposed project, only the above projects were found in public available website, such as NDRC[42], Guangdong Provincial Development and Reform Commission[43] and China Electric Power Yearbook. At present, all the other projects were under CDM developing. According to "Tool for the demonstration and assessment of additionality (Version 04)", only Huizhou LNG project、Guangzhou Zhujiang LNG project, Shenzhen Dongbu LNG project should be considered for the common practice analysis. Therefore, it is reasonable for selection of the similar project activities in the common practice analysis part of PDD, and the proposed project activity is additional. In last two years, two new-built NG projects in CSPG started construction and could be found in NDRC and Guangdong Provincial Development and Reform Commission's website, and these project are also under CDM developing[44]. Therefore even if we add the two new-built projects in the common practice analysis part of PDD, the proposed project activity is still additional.

4. The DOE shall confirm how applicability of the methodology has been validated, in particular that the implementation of the project will not limit natural gas based power capacity additions in the region.

PP Respond:

1) The Meth Panel clarification AM _CLA_0091, acknowledged by the EB during its 41st meeting, regarding the applicability of the AM0029 stated that *"**notwithstanding** where the natural gas is imported from, this applicability condition is to be implemented by demonstrating, through monitoring, that the full demand of natural gas by the project activity is dedicatedly met with imported gas, and where dedicated imports is not the case, the monitoring should show that satisfying the project activity's demand for natural gas will not lead to a shortages in supplies of the gas to other projects within the country."*

As specified in the PDD and further clarified in the validation report, the LNG used

[42] http://www.sdpc.gov.cn

[43] http://www.gddpc.gov.cn/

[44] http://cdm.unfccc.int/Projects/Validation/DB/WN0RNX1NYQJ20C7RB3XGGGS6WMO8AK/view.html
http://cdm.unfccc.int/Projects/Validation/DB/MFTYH8KY7UWPRYN9Y2N3PEORG21UTE/view.html

by the proposed project will be totally imported from Australia's Northwest Shelf gas development project, i.e. the full demand of natural gas by the project activity will be dedicatedly met with imported gas which conforms to one of the situations indicated in the above clarification, **so the project is applicable to the AM0029 in accordance with the Meth Panel clarification AM_CLA_0091.** By this Meth Panel definition the project will not and cannot constrain future natural gas capacity additions.

In addition, the propose project is the construction and operation of a new LNG grid-connected electricity generation plant and no other fuel can be used. Therefore, the Project meets the applicability requirement of the methodology AM0029.

Moreover, electricity generated by the project will be supplied to China Southern Power Grid (CSPG). With reference to Notification on Determining Baseline Emission Factor of China's Grid issued by China's DNA on 09/08/2007[45], the geographical/physical boundaries of CSPG can be clearly identified and information pertaining to the grid and used to estimate baseline emissions is publicly available. Therefore, the project meets the applicability requirement of methodology AM0029.

2) LNG used by the Project is supplied by Guangdong Dapeng LNG Company which gas is sourced from Australia. According to the signed take-or-pay long-term contract (hereafter called "ToP"), Guangdong Dapeng LNG Company will annually import 3.7 million tons of LNG from Australia's Northwest Shelf gas development project over the next 25 years[46]. Guangdong Dapeng LNG Company has also signed take-or-pay (ToP) long-term contracts (25 years) with all of its demand consumers with quantified fuel supply obligation[47]. Of all the consumers, LNG consumed by the Project Owner accounts for about 13.7% of the total LNG supply. Such long-term contract along the LNG chain ensures that there is no supply constraint because all the LNG demands

[45] http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=1889

46 http://www.cnooc.com.cn/zhyww/xwygg/2007_6_29/244684.shtml

[47] http://www.dplng.com/cn/project/project_01.aspx

have been contracted.

3）In addition, according to the Plan of Guangdong Province Natural Gas Supply in "11th Five-Year Plan" and the long-term goal of Demand to Year 2020[48] issued by Guangdong Provincial Development and Reform Commission, it was found that the supply of natural gas in Guangdong province from 2010 to 2020 will keep increasing, therefore the implementation of the project will not limit natural gas based power capacity additions in the region.

We can therefore safely conclude that the natural gas consumption of the proposed project is dedicatedly met with imported gas, and will not constrain future natural gas capacity additions.

5. The DOE is requested to confirm how it has validated the economic comparison of baseline alternatives, in particular the varying assumptions on the operational hours, efficiency and load factor.

PP Respond:

1) According to the Methodology AM0029, the baseline alternatives should include all possible realistic and credible alternatives that provide outputs or services comparable with the proposed project, these alternatives need not consist solely of power plants of the same capacity, load factor and operational characteristics (i.e. several smaller plant, or the share of a larger plant may be a reasonable alternative to the project activity).however they should deliver similar services(e.g. peak vs. base load power). Therefore, within the grid boundary any alternative which can supply comparable output or services, i.e., peak load and power amount, can be identified as the baseline scenario. **It is understood that the selection of the baseline scenario will not be influenced by the alternatives with varying operational hours,**

[48] Plan of Guangdong Province Natural Gas Supply in "11th Five-Year Plan" and the long-term goal of Demand to Year 2020[48] issued by Guangdong Provincial Development and Reform Commission.

efficiencies and load factors.

2) In the PDD, after having excluded the alternatives not providing peak load, or not in compliance with all applicable legal and regulatory requirements, five alternatives (the proposed project without CDM; 600 MW Super Critical Plant; 600 MW Sub Critical Plant; 300 MW Sub Critical Plant and 180MW Oil fired CCGT) were identified to further conduct investment analysis, since these five alternatives can provide the comparable service for the grid. The levelised cost has been used as financial indicator to identify the economically most attractive baseline scenario alternative. And the 600 MW Sub Critical Plant with lowest levelised cost has been finally identified as the baseline scenario.

3) **Moreover all the input value for levelised cost of these five alternatives can be substantiated as follows:** the main parameters used to calculate the levelised cost of the project are mainly sourced from Design reference cost index for thermal power transmit electricity and transformer electricity projects (2004), 2005 April, China Electrical Power Press. The power generation coal consumption of 600MW Coal-fired sub-critical sourced from Operation date of 600MW units national competition in 2006[49] and the power generation coal consumption of 180MW Oil fired CCGT sourced from Notice of electricity price of oil-fire power plants floating with price of fuel oil[50]. The power generation fuel cost of 300MW coal-fired sub-critical、600MW coal-fired sub-critical and 600MW coal-fired supercritical sourced from National Economic Operation Analysis of Coal Enterprises of from Jan To May, 2004.[51] The power generation fuel cost of 180MW Oil fired CCGT sourced from Notice of electricity price of oil-fire power plants floating with price of fuel oil[52]. The power generation fuel cost of proposed project without CDM calculated by Guangdong

[49] Operation date of 600MW units national competition in 2006.
[50] "Notice of electricity price of oil-fire power plants floating with price of fuel oil" issued by Guangdong Province Price Supervision Bureau on July. 2003.
[51] http://www.chinacoal.gov.cn/jingjiyunxing/node_4623.htm
[52] "Notice of electricity price of oil-fire power plants floating with price of fuel oil" issued by Guangdong Province Price Supervision Bureau on July. 2003.

Electric Power Design Institute based on LNG sales and purchase contract[53]. Based on the listed parameters, the same results can be obtained as required by the methodology AM0029.

4) In levelised cost analysis, the Project Participant has considered the varying assumptions on the operational hours and load factor already. A fluctuating of -10%~+10% on load factor has been demonstrated in the spreadsheet of Levised Cost. Because the Load factor=operation hour /8760, so the sensitive analysis on operational hours would thus result the same.

Regarding the efficiency, it's calculated as following formula, which is sourced from the Energy Statistic website of China Government[54]:

Efficiency=3600/fuel consumption/29308

According to the above formula, the fuel consumption is the only variable in determine the efficiency. Thus, the sensitive analysis of fuel consumption can represent the variation of efficiency. Therefore, please refer to the following table on Fuel Consumption with fluctuating range of ±10%.

Fuel	Levelised Cost	Fuel Consumption	
	RMB/kWh	10%	-10%
300 MW Subcritical	0.2427	0.2489	0.2365
600 MW Supercritical	0.2195	0.2253	0.2138
600 MW Subcritical	0.2173	0.2233	0.2113
CCGT with fuel oil	0.6366	0.6838	0.5893
CCGT with LNG	0.4324	0.4605	0.4043

According to the sensitive analysis of fuel consumption above, 600 MW Subcritical coal-fired power plant is still the most attractive baseline scenario alternative.

[53] Financial Assessment (FA) by Guangdong Electric Power Design Institute in May 2004

[54] http://xmecc.smexm.gov.cn/2007-12/20071227102507.htm

The fluctuating range of ±10% on load factor, fuel costs and fuel consumption (as well as efficiency) is a common practice in levelised cost sensitive analysis. And it would be difficult to predict a further expended fluctuating range beyond ±10%. Nevertheless , to be conservative, even if the we conduct the levelised cost analysis on the load factor (operational hours), the fuel cost and fuel consumption with fluctuating range as much as ±50%, 600 MW sub critical power plant would still remain to be the lowest. The specific sensitive analysis demonstrates as below:

Fuel	**Levelised Cost**	**Load Factor**									
	RMB/kWh	50%	40%	30%	20%	10%	-10%	-20%	-30%	-40%	-50%
300 MW Subcritical	0.2427	0.1887	0.1964	0.2053	0.2157	0.2280	0.2607	0.2832	0.3122	0.3508	0.4048
600 MW Supercritical	0.2195	0.1709	0.1778	0.1859	0.1952	0.2063	0.2358	0.2560	0.2821	0.3168	0.3655
600 MW Subcritical	0.2173	0.1702	0.1769	0.1847	0.1938	0.2045	0.2330	0.2526	0.2778	0.3114	0.3585
CCGT with fuel oil	0.6366	0.5932	0.5994	0.6066	0.6149	0.6248	0.6510	0.6691	0.6923	0.7233	0.7667
CCGT with LNG	0.4324	0.3890	0.3952	0.4024	0.4107	0.4206	0.4469	0.4649	0.4882	0.5191	0.5625

Fuel	**Levelised Cost**	**Fuel Cost**									
	RMB/kWh	50%	40%	30%	20%	10%	-10%	-20%	-30%	-40%	-50%
300 MW Subcritical	0.2427	0.2735	0.2674	0.2612	0.255	0.2489	0.2365	0.2304	0.2242	0.2181	0.2119
600 MW Supercritical	0.2195	0.2483	0.2426	0.2368	0.2311	0.2253	0.2138	0.208	0.2023	0.1965	0.1907
600 MW Subcritical	0.2173	0.2473	0.2413	0.2353	0.2293	0.2233	0.2113	0.2053	0.1993	0.1932	0.1872
CCGT with fuel oil	0.6366	0.8728	0.8256	0.7783	0.7311	0.6838	0.5893	0.5421	0.4948	0.4476	0.4003
CCGT with LNG	0.4324	0.5731	0.5449	0.5168	0.4887	0.4605	0.4043	0.3761	0.348	0.3199	0.2917

Fuel	Levelised Cost	Fuel Consumption									
	RMB/kWh	−50%	−40%	−30%	−20%	−10%	10%	20%	30%	40%	50%
300 MW Subcritical	0.2427	0.2119	0.2181	0.2242	0.2304	0.2489	0.2365	0.255	0.2612	0.2674	0.2735
600 MW Supercritical	0.2195	0.1907	0.1965	0.2023	0.208	0.2253	0.2138	0.2311	0.2368	0.2426	0.2483
600 MW Subcritical	0.2173	0.1872	0.1932	0.1993	0.2053	0.2233	0.2113	0.2293	0.2353	0.2413	0.2473
CCGT with fuel oil	0.6366	0.4003	0.4476	0.4948	0.5421	0.6838	0.5893	0.7311	0.7783	0.8256	0.8728
CCGT with LNG	0.4324	0.2917	0.3199	0.348	0.3761	0.4605	0.4043	0.4887	0.5168	0.5449	0.5731

Based on the above analysis, it can be clearly concluded that the varying assumption on the operational hours, efficiency and load factor will not influence the result of the baseline scenario identification. It is reasonable that the 600 MW Sub Critical Plant with lowest levelised cost has been finally identified as the baseline scenario.

With the above clarification, explanation and additional information, we wish that the concerns raised by CDM EB have been fully and adequately addressed, and we sincerely hope that the CDM EB would approve this project for registration.

Note: In case you have any further question or request during review process, please don't hesitate to contact us by phone call or Email to person listed below.

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