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Option N proposed for fuel mix consultation

Importing more nuclear power through dedicated transmission model

Hong Kong, 5 June 2014 – In response to the Government's public consultation on future fuel mix, Hong Kong Nuclear Society (HKNS) proposes a new Option N to increase nuclear energy import from a specified generation source through dedicated transmission lines. This option will provide Hong Kong with an electricity supply that is more reliable, cost competitive and environmentally friendly with greater control.

The Government's consultation document put forth two future fuel mix options - Option 1 is to purchase more electricity from the Mainland power grid while Option 2 uses more natural gas for local generation. Although in neither option did the Government explicitly propose expanding the share of nuclear energy, it is by logical deduction that the electricity purchased from China Southern Power Grid (CSG) under Option 1 will be at least partly generated by nuclear, as hydro and wind resources local to Guangdong are limited.

While HKNS supports using more nuclear energy, we view that purchasing electricity from the CSG grid does not provide the desirable level of reliability, environmental performance and cost efficiency for Hong Kong. As an alternative, HKNS suggests to modify Option 1 so that the 30% electricity import will come from a designated nuclear power plant via dedicated transmission lines, mirroring the current arrangement made with Daya Bay Nuclear Power Station (Daya Bay). Under the Daya Bay transmission model, we have the ability to disconnect from the Guangdong power grid in an emergency grid outage situation whilst ensuring that the output from the station is safely transmitted to customers in Hong Kong.

With the gap between Hong Kong and CSG-supplied areas in terms of reliability, HKNS is deeply concerned about how the grid-to-grid interconnection under Option 1 can maintain the current reliability in Hong Kong in the event of blackouts or network problems at CSG – an issue that has been left unaddressed in the consultation document.

In the view of concern that the cost of nuclear power from third generation technology will rise significantly, HKNS has undertaken an analysis of the future price of nuclear electricity in China to provide a cost reference for Option N. Our analysis shows that 10 years from now the on-grid price of third generation nuclear electricity will stand below HKD 0.60 per kWh. Coupled with an estimated inter-provincial electricity transmission cost of HKD 0.25 per kWh, we project the price of delivering nuclear electricity to Hong Kong to be HKD 0.85 per kWh in 2024. This is compared to HKD 0.80 per kWh that CEM is currently paying to import electricity from CSG. In other words, it will take 10 years for the price of Option N to catch up with today's level of grid purchase by CEM.

CSG is a power network operator rather than an electricity producer. Should Hong Kong just purchase electricity from the CSG grid, we will have no means of knowing which plant

supplies to Hong Kong and its consequential environmental footprint or the final price payable by Hong Kong customers, since the Mainland authorities will amend fuel costs, on-grid pricing, transmission charges and other costs from time to time. We will also be unable to monitor the plant's operation and safety performance.

On the contrary, nuclear energy produces minimal amount of lifecycle greenhouse gas and emissions. Importing electricity from a specified nuclear power plant will give us certainty that the impact on the environment will be minimal whether from a local or regional perspective and the stability of a long-term contract for clean base load power for many years. In view of the Government's carbon intensity reduction target of 50-60% by 2020 relative to 2005 level, we need to increase the shares of non-fossil fuels in our electricity generation mix. This remains a challenging task. Nuclear energy produces minimal emissions hence we believe Option N is a viable option to meet the emission performance requirement within the timeframe.

We believe there are benefits in having Hong Kong's involvement in the nuclear power plant that supplies to the territory including access to information and a monitoring channel. The establishment of an enhanced public notification mechanism on non-emergency Licensing Operational Events at Daya Bay in 2011 amply demonstrated such advantages.

If we were to increase nuclear import to Hong Kong, it should be arranged in a way that gives us the highest reliability and safety assurance with Hong Kong's participation. HKNS believes Option N should be amongst the choices when determining Hong Kong's future fuel mix and urge the Environment Bureau to actively consider its merits to enable the formulation of a truly informed decision.

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For enquiries, please contact:

Dr. Luk Bing-lam, Chairman, Hong Kong Nuclear Society

Mobile: 6857-4759

Email: luk_bl@hotmail.com