DBEDT
STATE OF HAWAII

INTERISLAND CABLE – FREQUENTLY ASKED QUESTIONS

What is the Interisland Cable Project?

The Interisland Cable Project (a.k.a., the "Oahu-Maui Interisland Transmission System" or "Grid Tie") is an investigation by the Hawaii Public Utilities Commission (PUC) into the viability of connecting the electricity grids of Maui and Oahu with a 200 MW High Voltage Direct Current (HVDC) cable. The type of system being proposed is a two-way grid tie, meaning a direct tie of the electrical grid systems of Oahu and Maui that allows electricity to flow in both directions.

Why would an Oahu-Maui Interisland Grid Tie be in the public interest?

The Oahu-Maui Interisland Grid Tie is in the public interest because of the considerable economic, environmental and public policy benefits that it would bring to Hawaii and its residents. Connecting the electric grids of Oahu and Maui is a key enabling strategy of Hawaii's clean energy transformation because it will allow the system to incorporate the maximum renewable energy penetration in the most economically-viable, equitable and sustainable way. The benefits of the grid tie include, but are not limited to:

<u>Economic</u>

- Reduced electricity rates of up to 0.6-cents per kilowatt hour
- Net savings to ratepayers of up to $423 million over a 30-year period (2020-2050)
- Lower and more uniform electricity prices for Maui and Oahu
- Lower fuel costs and less exposure to price volatility
- Increased capacity factors for wind generation
- Greater utilization of lower cost generation resources
- Reduced curtailment of intermittent renewable energy
- Reduced environmental compliance costs
- Lower operating (i.e., "spinning") reserve requirements

<u>Environmental</u>

- An additional $128 million over a 30-year period (2020-2050) of economic benefit through "social carbon cost" savings
- Lower nitrogen oxides ("NOx"), sulfur oxides ("SOx"), particulate matter ("PM"), and carbon dioxide ("CO2") emissions
- Higher penetration of renewable energy generation
- Increased flexibility in siting new renewable generation

<u>Public Policy</u>

- Alignment with the Abercrombie Administration's energy transformation principles of "Connecting the islands through integrated, modernized grids" and "Balancing technical, economic, environmental, and cultural considerations"
- Helps the State meet its Renewable Portfolio Standard ("RPS") requirements and the objectives of the Hawai'i Clean Energy Initiative ("HCEI"), *i.e.*, 40% renewable energy by 2030
- Reduced dependence on fossil fuels
- A model to consider potentially connecting with Hawaii Island in the future
- More electric reliability benefits

How is the Oahu-Maui Grid Tie different from the Big Wind Project?

The proposed Oahu-Maui Interisland Transmission System is a grid tie of the electric systems of Oahu and Maui. The Big Wind Project was a one-way generation tie linking dedicated renewable generation projects on the islands of Lanai and Molokai to Oahu. In balancing technical, economic, environmental, and cultural considerations, DBEDT and the State Energy Office determined that a grid tie system is the most cost effective and inclusive solution for meeting Hawaii's energy policy goals. Such a two-way grid tie allows Oahu and Maui to benefit through the sharing of resources to meet demand with the highest penetration of most efficient and low-cost renewable energy.

Why is the Interisland Cable important to Hawaii?

Interconnecting the islands' electric grids will provide a net savings to ratepayers by allowing the systems to be operated in much more efficient and reliable manner and allow for a greater deployment and utilization of renewable energy resources. As envisioned, it will be a key contributor to reaching, and potentially exceeding, the State's aggressive target of 40% renewable energy by 2030.

Does the Cable reduce the need for Oahu to generate its own renewable energy or become more energy efficient?

To meet the State's aggressive clean energy goals, Oahu will still have to develop significant renewable generating capacity and become more energy efficient across the board. The entire State needs to participate together in building a green economy.

How much will the cable cost? Who is going to pay for it?

DBEDT estimates the cable will cost approximately $626 million. Private developers and investors will pay the upfront costs, and bear the risk of planning, permitting and building the cable. After the cable has been declared "used and useful," and the cable operator has been granted a Certificate of Public Convenience and Necessity ("CPCN") by the PUC, ratepayers will gradually pay back the developers over the predetermined usable life (e.g. 50 years) of the cable. The tariff would be regulated and approved by the PUC with prior input from the Consumer Advocate and other organizations from the business, environmental and local communities. This cable development process has been designed to get the best deal for ratepayers, and to attract the most qualified developers by allowing them to make a reasonable risk-adjusted return.

What is the capacity of the Cable and how is that determined?

The proposed capacity of the Cable is 200 MW, which means that it can transmit up to 200 MW of power in either direction at any given time.

The capacity for a grid-tie cable is sized to match or exceed the largest single contingency (or potential loss of power) on the electric grid that it serves. In the Oahu and Maui case, that means the 180 MW AES power plant.

What is the typical size of a cable?

For illustration purposes, this is a picture of a High Voltage Direct Current (HVDC) transmission cable design showing its approximate size. As you can see, the HVDC cable is only a few inches in diameter.

Would the undersea transmission cables harm marine life?

The US Bureau of Ocean Energy Management, Regulation and Enforcement ("BOEMRE") completed a two-year study on the effect of electromagnetic frequencies on marine species from undersea power cables. While the issue will continue to be studied extensively, this study did not find conclusive evidence of substantial harm to marine life. While many marine mammals are sensitive to geomagnetic fields and use them for navigation, it has been observed that electromagnetic fields caused by HVDC power transmission cables, such as the envisioned Oahu-Maui Grid Tie Project, have minimal effects. (See "Effects of EMFs from Undersea Power Cables on Elasmobranchs and Other Marine Species," BOEMRE, May 2011.) Moreover, based on the experiences with HVDC cables elsewhere, the impacts of installation are brief and minimal. Laying the cable might cause some disturbance of the ocean floor initially, but within days, the area returns to normal. Many of the areas that have undersea transmission cables have thriving fishing industries and strong environmental and conservation laws.

Regardless of the prior positive experiences with HVDC cables in the past, understanding and minimizing the potential impacts will be critical during the environmental review, design and installation of the cable. In addition to performing an EIS, or Environmental Impact Statement, any cable developer will be responsible and required to comply with all pertinent State, Federal and County laws, and to obtain permits from all oversight agencies.