STATUS AND PERSPECTIVE ON THE BIG WIND/CABLE PROJECT

Prepared for:

The Department of Business, Economic Development, and Tourism and the Department of Accounting and General Services

State of Hawaii

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FORWARD

The purpose of this white paper is to (i) summarize Navigant Consulting, Inc.'s ("Navigant") conclusions on the Big Wind Project (the "Project" or "Big Wind Project")[1] to date; (ii) provide Navigant's perspective on the major issues stakeholders face in completing the cable portion of the Project, and (iii) outline actions and activities needed to achieve a successful Project. Navigant has been retained by Hawai'i's Department of Accounting and General Services ("DAGS") and Department of Business, Economic Development and Tourism ("DBEDT") to provide technical, financial, and strategic advice on the Project and to manage and coordinate the procurement process for the cable portion of the Project.

This document contains professional judgment and sets forth several policy recommendations for consideration by decision makers based on Navigant's review of the work of several organizations, discussions it has had with stakeholders on the Project over the past 5 months, and its experience with several other undersea cable projects.[2]

This white paper is not intended to be a definitive document on the Project, contains opinion, and should be used in conjunction with other key stakeholders' opinions, perspectives, and reports including the National Renewable Energy Laboratory ("NREL") January 25, 2011 "Summary of Big Wind/Cable Project Status and Perspective" along with NREL's February 2011 Oahu Wind Integration and Transmission Study reports.

[1] The Big Wind Project has four major components:
1. 200 MW wind project on Lāna'i;
2. 200 MW wind project on Moloka'i;
3. 400 MW undersea cable system connecting the wind farms to O'ahu; and
4. Generation and transmission upgrades on O'ahu.

[2] Navigant's experience with submarine cable projects and other relevant projects is summarized in Appendix 15.

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EXECUTIVE SUMMARY

Navigant has reached the following conclusions based on its review of the work of others, its work completed to date, and its experience:

With Respect to the Entire Big Wind Project

- Based on technical analyses, capital cost estimates, proposed wind energy prices and projected avoided oil costs, the Project is technically and economically feasible.
- Over its projected life, the Project is cost effective compared to burning low sulfur fuel oil in Hawaiian Electric Company, Inc.'s ("HECO's") power plants based on current oil fuel forecasts.
- The Project breaks even at a $108/barrel price of oil as described herein.
- In its first year of commercial operation, if oil prices and customer usage remains as they were in March, 2011 and if HECO would burn low sulfur oil to meet customer demands, the Project would result in an increase in residential ratepayers rates of $3.58/month.
- The Project would be a substantial hedge against volatile oil prices, to withstand the impact on oil prices caused by recent unrest in the Middle East.
- It is more cost effective for HECO to meet its customer demands and its Renewable Portfolio Standard ("RPS") requirement established by Hawai'i law, with the Project rather than by burning biofuels immediately and throughout the twenty year study period.
- Based on a review performed by the National Renewable Energy Laboratory ("NREL") the Project offers a near term cost-effective way to provide a significant quantity of electricity to help meet Hawai'i's RPS statutory requirements.
- Federal assistance in the form of loan guaranties and other possible assistance may be available for each component of the Project. Such assistance, which is not included in the economic analyses in this white paper, would further improve the Project's economics.
- The greatest Project risk appears to be "project-on-project risk" that some components of the Project will be completed before others or that one or more component will not be completed at all. As described in this white paper, this risk can be substantially mitigated through coordinated project development, strict penalty provisions for non-performance, insurance products, and encouragement of or requirement for a consortium arrangement among the developers.

- The Project can be a showcase with international implications given its integration of 400 MW of intermittent generation into a utility system with a peak load of only about 1200 MW.

With Respect to the Cable Portion of the Big Wind Project ("Cable Project")

Project Business Structure

- The Cable Project should be developed by a private developer (not the State of Hawai'i ("State") or HECO) selected through a competitive procurement process as neither the State nor HECO are well positioned to accept project development risk.
- The preferred business structure for the Cable Project is that it be developed, owned, and maintained by a cable developer, referred to herein as the "Certified Cable Company" or "CCC".
- Under the preferred business structure, HECO would have the option to purchase the Cable Project 10 years following its commercial operation at a price set forth in the resulting contractual arrangements. If HECO exercised such an option, it would seek rate recovery of its purchase price through a Hawai'i Public Utility Commission ("PUC") order.
- Navigant has worked closely with key stakeholders, including HECO, DBEDT, and DAGS, to develop legislation that would authorize the PUC (i) to approve the creation of a transmission utility and (ii) to approve rate recovery by the transmission utility for approved and prudent costs for the cable. The bill provides that the CCC would become a transmission utility entitled to rate recovery from HECO's (O'ahu) electric ratepayers for its prudent investment in the Cable Project pursuant to a PUC order. This will provide the legal authority and rate recovery framework for the above business structure. The enactment of such authorizing legislation is a necessary pre-condition for further material progress on the Project.
- In addition to transmitting wind energy to O'ahu, the Cable Project includes "headroom" (meaning available transmission capacity when "Big Wind" generators are not fully using the transmission capacity of the cable) that could accommodate additional renewable energy produced on Lāna'i, Moloka'i, and/or Maui as well as room for fiber optics that could vastly improve communications among the islands. Although this headroom is expected to provide economic benefits for the Project, such benefits have not been included in the analyses in this white paper.

Cable Project Definition

- Navigant has worked closely with key stakeholders, including HECO, DBEDT, DAGS, NREL, and the University of Hawai'i's School of Ocean and Earth Science and Technology ("SOEST") to develop a technically and economically feasible route

("Navigant Route") for the Cable Project and general locations for the required converter stations. This route will require in-depth environmental review, and will be studied as one possible alternative of the ongoing Hawai'i Interisland Renewable Energy Program programmatic environmental impact statement.

- The Navigant Route configuration requires only two rather than three converter station sites thereby saving about $100 million in project costs and eliminating the need to build costly infrastructure on Lāna'i to support construction of a converter station there.
- Navigant has worked closely with key stakeholders, including HECO, DBEDT, DAGS, and NREL, to identify converter station sites and specific cable landing sites on Moloka'i and O'ahu for the cable and routes from the shore to converter station sites.

The following critical issues remain to permit the pre-development process to continue:

Will there be a Wind Farm on Moloka'i?

A decision must be made with respect to whether there will be a wind farm on Moloka'i. Site control appears to be the primary stumbling block and we are aware of many efforts to push this issue to resolution. The now past PUC deadline of March 18, 2011 for executing a term sheet for the wind farms requires an urgent decision on this issue. Without it, uncertainty (and perhaps litigation) about that basic building block of the project will certainly cause delay. The failure to reach a decision further delays the definition of the Project itself. Without that definition, the ability to identify all the relevant private sector players, through the issuance of a competitive request for proposals ("RFP") to select the cable developer is impossible.

Will there be a Public Policy Foundation for the Cable Project?

Traditional financial support is not available to compensate a cable developer for its successful development of the Cable Project due to HECO's credit situation and accounting treatment of transmission capacity contracts. Therefore, legislation must be enacted to provide the cable developer with assurance of a predictable and secure revenue stream for the Cable Project. The bill introduced in the 2011 session of the Hawai'i legislature, including amendments to deal with the Consumer Advocate's concerns over rate design, has strong stakeholder support to be the vehicle for that assurance. Combined with a Moloka'i wind farm decision, and the other progress made on physical and technical project definition, enactment of this legislation will permit a competitive RFP process to be initiated and completed thereby defining the final critical project participants. Nothing in the proposed legislation is intended nor should it have the effect of pre-empting the normal permitting and Environmental Impact Study process. Once established as law, it will provide a framework to select the developer of the Cable Project and give the Project an opportunity to move from a predevelopment stage to full development with substantial sums put at risk by the private sector companies involved and, in turn removing that financial obligation from the State. Mere passage of this proposed legislation will not vest any

rights in any person or entity. No one will be entitled to the benefit of the legislation without passing through the crucible of the entire normal Hawai'i permitting and environmental review process, the RFP, and the PUC approval process that satisfies the parties representing Hawai'i and the ratepayers, that the project is worthy of moving forward and is in compliance with all aspects of Hawai'i law. That said, this proposed legislation that provides a mechanism for assurance of payment for the Cable Project is a necessary starting point in the overall process leading to Project completion.

What Should Hawai'i's Role be in the Project?

We understand Hawai'i's interest is to facilitate development of projects to achieve Hawai'i's clean energy and energy independence mandates embodied in existing state law. Based on economic studies conducted by others, the Project offers Hawai'i an opportunity to achieve a large portion of this mandate at a lower cost than other options available and serve as a model project for other states to follow. For example, NREL compared the capital costs of the Big Wind Project to various categories of utility scale solar projects (concentrated solar, tracking photovoltaic and fixed photovoltaic) and determined that the projected prices would be at least 45 percent higher than the wind price. However as with most large, complex projects, there are risks that must be identified and managed to protect Hawai'i's ratepayers. As such, we advise active State participation in the design, conduct and selection portions of the Project's development process to assure that critical State interests are protected, including, but not limited to demanding provisions in any selection that protect ratepayer interests against project-on-project risk.[3] Once that task is complete the State's role should be more limited to its regulatory and permitting function. Project leadership and risk can then pass to the three (or four) private parties: HECO (O'ahu Upgrades), wind farm(s) developers, and cable developer, who will then be required to coordinate their development, permitting, and financing processes utilizing a joint development model that will be proposed as part of the RFP process and approved during the selection process with State participation. State development funding should be focused on the implementation of these project goals. Post selection, the State will be reimbursed for its subsequently incurred costs by the cable developers through normal permitting protocols.

Although much has been accomplished to date to preliminarily define the business structure, the Cable Project configuration (including potential cable routing and converter station siting, subject to environmental review), and financial structure, much still remains to be accomplished before an RFP to select a cable developer can be issued, proposals can be evaluated, a cable developer selected, and the relevant contracts/tariffs negotiated and signed or filed.

[3] Project-on-project risk refers to the risk that all elements of the Project will not be completed and operational at the same time. Since the Project potentially contains four elements (i.e., two wind farms, an undersea cable, and O'ahu electric transmission upgrades) each with potentially different developers/owners, this risk is higher than in most other projects.

I. BACKGROUND AND OVERVIEW OF PROJECT

A. Background of the Project

1. History

In September 2007, under authority from the PUC, HECO held an RFP for renewable energy projects for O‘ahu. From that RFP process, two non-conforming bids[4] were submitted, each for a greenfield 400 MW wind farm, one to be developed by First Wind Hawai’i, LLC (“First Wind”) on Moloka‘i, and one to be developed by Castle & Cooke Resorts, LLC (“C&C”) on Lāna‘i. Both proposals included an undersea cable for delivery of the wind energy to O‘ahu. In addition, HECO would make certain upgrades to its generation and transmission system on O‘ahu in order to accept 400 MW of intermittent wind power. Together, the two wind projects, undersea cable, and O‘ahu upgrades came to be known as the “Big Wind Project.”

On October 20, 2008, an Energy Agreement was signed by the Governor, DBEDT, the Consumer Advocate, and HECO and witnessed by the United States Department of Energy (“DOE”) and others. In the agreement, the State accepted primary responsibility and agreed to serve as lead, while coordinating with developers, contractors, and/or HECO as the circumstances merit, on all matters related to the siting and permitting of the undersea cable system. These responsibilities included, but were not limited to, conducting or having contractors and advisors conduct the appropriate engineering and design of the undersea cable systems, acquisition of all necessary off-shore and on-shore land rights, permits and approvals (including the Environmental Impact Statement), and construction, operation and maintenance of the undersea cable systems. In the Energy Agreement, the undersea cable system was to be considered State owned infrastructure unless alternatives were discovered as part of the Implementation Studies and agreed to by relevant affected parties. The State also has retained the option to bring in a third-party independent transmission company to fund and build the Cable Project.

In December of 2008, HECO, Castle & Cooke and First Wind met to create a consensus structure for the Big Wind Project which provided that First Wind and C&C would each have the opportunity to develop a 200 MW wind farm on Moloka‘i and Lāna‘i, respectively. However, if

[4] A PUC order approving the First Wind and Castle & Cooke non-conforming proposals was issued on November 18, 2010.

one or the other was unable to complete the transaction, the opportunity for the successful developer to install all 400 MW would then need to be considered along with other options[5].

Since January, 2009, additional work to evaluate the feasibility of the Big Wind Project has been completed under the auspices of a committee of experts called the Technical Review Committee ("TRC"), SOEST, DOE, NREL, HECO and others. This work was supported by the DOE, the State, and other funders, and was intended to answer at least two critical questions regarding the feasibility of the project.

1. Could 400 MW of intermittent energy be reliably absorbed into the O'ahu electric grid and if so, would the cost of required upgrades to accommodate such an injection of power be reasonable? The answer to this question, found in the TRC's final report and in other studies and reports commissioned by HECO, was a resounding "yes."
2. Was there a technically and financially feasible cable route over which to transmit the power? The answer to this question was also "yes."

2. State Seeks "Subject Matter Expert" to Advance Cable Project

Having determined that the Project was technically feasible, DBEDT and DAGS issued a RFP seeking proposals to serve as the State's "Subject Matter Expert" who would be responsible for (i) coordinating and finalizing development of design parameters for the Cable Project, (ii) developing and issuing an RFP to select contractor(s) to develop the Cable Project and the relevant contract(s), (iii) assisting the State in selecting a cable developer, and (iv) providing overview project management for all matters that involve planning, design, construction, installation, and/or operational support for the Cable Project.

3. The State Contracts with Navigant as Subject Matter Expert

Navigant was one of several entities that submitted proposals and interviewed to serve as Subject Matter Expert. Navigant submitted its proposal in June 2010, was interviewed on July 14, and was selected on July 26. Notice to proceed under the contract was given on September 3, 2010 after substantial negotiations. The contract covered (i) coordinating and finalizing development of design parameters for the Cable Project. If additional funds are made available, Navigant may perform contract items ii, iii and iv referenced above.

4. Navigant's Early Analysis

The Navigant team's background in the development of a number of large scale wind projects as well as high voltage direct current ("HVDC") submarine cable projects from inception through commercial operations gave it the ability to understand the critical issues at play in the Cable Project. Consequently, the Navigant team quickly began to focus on the following apparent

[5] Another potential option would be to rebid the remaining generating capacity.

issues arising in the original bids from First Wind and C&C, and the potential State ownership of the cable:

a. While proposing comprehensive packages of wind farm and cable systems in their initial proposals to HECO, neither wind farm developer had any experience in the development of undersea cables. The studies upon which the cable portion for these "comprehensive" proposals was based were, at best early stage, desk top evaluations and surveys. Upon further study, certain cable routes were apparently problematic.

   Navigant's experience has taught it that the Cable Project is extraordinarily complex and requires experience, skill, patience and sufficient resources to deal with the unknown. Traditionally, financing of undersea cables has involved a small universe of specialized equity investors and lenders, and a different suite of risks and revenue streams than found in a wind farm selling energy.

b. The anticipated role of the State as cable developer and owner was constrained by the $600 million or more of capital cost of the Cable Project, and the State's understandable reluctance to shoulder the risks and costs of ownership. In addition, the State's laws on public procurements added complexity, risks and uncertainty to the Project.

c. The apparent unwillingness or inability of HECO, the incumbent utility, to develop and finance such a large infrastructure project was in contrast to the Navigant team's experience where utilities typically are both able and very interested in developing large infrastructure projects and adding them to their rate base. The Navigant team attributed this reluctance to the large size of the Cable Project's capital requirements relative to HECO's current rate base and the slow and uncertain rate treatment HECO has received from the PUC.

d. Finally, the problem of "project-on-project" risk – that is, the risk that the wind farms, Cable Project, and HECO system upgrades would not be completed more or less simultaneously – would need to be addressed and mitigated.

As Navigant began its due diligence review of all the studies, agreements, and reports that were produced during the several years of work on the Big Wind Project, it became apparent that in order to meet its mandate of defining and pursuing a "project" and not a "concept," Navigant would need to define the fundamental elements of the Cable Project which include overall project structure, project configuration, and financing structure all supported by the public policy changes needed to effectuate the Cable Project. Once these elements were preliminarily determined, subject to final determination in the environmental review process, there would be a strong basis for a competitive RFP process.

The Navigant team participated in meetings in Hawai'i in October, November, and January. The team met with stakeholders in and out of government, including officials in DBEDT, DAGS, the Departments of the Attorney General, Budget and Finance ("B&F"), and Transportation

(regarding harbor facilities), the PUC, the Consumer Advocate, Senate and House Energy Chairs in the Legislature, SOEST, senior attorneys at Kobayashi Sugita and Goda (DBEDT's outside counsel on the Project), HECO (including senior management, finance, operations and planning), C&C, First Wind, DOE, NREL, and AECOM, the consultant handling the Programmatic Environmental Impact Statement for the Big Wind Project. Navigant also met with various people of influence in Hawai'i's energy community. The team also made site evaluation visits to Marine Corps Base Hawai'i (a potential cable landing site), and the islands of Lāna'i and Moloka'i.

Outside of Hawai'i, the Navigant team has met or has spoken with several experienced cable developers, HVDC equipment manufacturers, bankers, insurers, and other professionals with an interest in the Project. A listing of the parties along with notes from several meetings is included in Appendix 1.

The Navigant team has tried to be good listeners with the objective of obtaining input relevant to proposing a Cable Project that is consistent with Hawai'i's values, appetite for risk, and other factors.

Most importantly, the objective is to propose a project that (i) can be properly permitted through Hawai'i's environmental review process; (ii) can be successfully developed within the realities of place, of the many stakeholders, and of the market place; and (iii) provides real economic value to Hawai'i and its ratepayers.

B. Elements of the Big Wind Project

For the purposes of this study, the Big Wind Project includes:

- The "Wind Projects" consisting of either two 200 MW wind farms (one on Lāna'i and one on Moloka'i) or one 400 MW wind farm on Lāna'i or Moloka'i if one of the projects is not pursued,
- The Cable Project consisting of high voltage submarine cables interconnecting the wind farms with the HECO transmission system on O'ahu, and
- Transmission and generation upgrades to accommodate the integration of the wind energy into the HECO O'ahu electrical grid ("O'ahu Upgrades").

A technical description of the Big Wind Project is set forth in Appendix 2.

C. Cable Project Construction

Navigant anticipates that the construction period for the Cable Project will take between 30-36 months. At some point during the period of PUC proceedings under the new legislation for a

Certificate of Public Convenience and Necessity ("CPCN") and the filing of the Project Tariff, the cable developer will execute an agreement with an engineering, procurement and construction ("EPC") contractor that will be responsible for the design and construction of the Cable Project. The EPC contract will include a detailed construction schedule with specific milestones, such as (i) the notice to proceed for purchasing materials and booking manufacturing capability and (ii) the factory acceptance testing of the cables. The cable developer will be required to make progress payments to the EPC contractor based on the timely completion of the specific milestones. Failure to complete a milestone on schedule would result in a delayed payment. The Cable Project will be the pacing element, with the wind farms and the O'ahu upgrades constructed well within the Cable Project construction window.

The EPC contractor shall be responsible for overall control of all construction activities associated with the Cable Project. Those activities include performing and completing all engineering, procurement and construction associated with the Cable Project. They also include furnishing all equipment, materials, supplies, labor, general management and management support, physical and human resources, coordination, project management and any other services necessary to achieve commercial operation of the Cable Project. A proposed schedule showing the major milestones and other key details leading to the commercial operation of the Cable Project in 2016 is set forth in Appendix 3.

It should be noted that the schedule in Appendix 3 does not include provision for delays caused by litigation. Legal challenges to the permit and EIS aspects of one or more of the projects could delay commercial operation of the Big Wind Project for two to three years. It is very clear that neither the cable developer, the wind farm developers or HECO would be willing to begin mobilization or order any equipment until they are satisfied that each component of the Big Wind project is fully permitted and those permits are consistent with the responses to the RFP and are non-appealable.

D. Project Structures

Navigant has identified and considered four project structures summarized below and more fully in Appendix 4 which define the development, ownership, financing, and payment for the Cable Project. From these basic project structures, there are numerous variations that can be used to address specific issues with the basic structure. As discussed above, all of these basic structures provide for a developer to permit, finance, construct, and commission the Cable Project. The differences are in the roles of other parties, including HECO and the State, and the structure of the financial relationship between them. The four proposed project structures are:

1. Cable development through a long term Firm Transmission Capacity Purchase Agreement ("FTCPA") between the cable developer and HECO with HECO paying a monthly payment for the project's availability. This arrangement is similar to Power Purchase Agreements ("PPA") that HECO uses to purchase power from generation

projects built by others (e.g., the proposed PPA with First Wind and C&C) that are approved by the PUC except that because of the nature of the Cable Project, the FTCPA would require fixed payments rather than volumetric charges ("Contract Option");

2. Cable development through a purchase Build Own Transfer Agreement ("BOT") between the cable developer and HECO in which the cable developer develops the Cable Project and HECO purchases it upon its commissioning at a defined price in the BOT. HECO would then put the prudently incurred costs of the Cable Project into its rate base and HECO's ratepayers would pay for the project similar to the way they pay for the rest of HECO's infrastructure ("BOT Option");
3. Cable development through an FTCPA similar to the Contract Option discussed above, except the State is the cable developer's counterparty rather than HECO. In this option, the State's required monthly fixed payment for the project's availability would be obtained through a surcharge on HECO's O'ahu electric customers bills ("State Option"); and
4. Cable development through establishment by the cable developer of a special purpose regulated transmission utility (the Certified Cable Company that would rate base the asset that it constructs with an option for HECO to acquire the project after ten years of operation. HECO's ratepayers would pay for the project similar to the way they pay for the rest of HECO's infrastructure, but such payments would be made to the CCC for the first 10 years and then to HECO thereafter ("CCC Option").

Each of these options had been utilized around the country in developing cable projects connecting distant power resources to load. Each is discussed further below.

II. STATE OWNERSHIP/PAYMENT FOR THE CABLE PROJECT

A. State Ownership

As discussed above, it had initially been the intent of the State to own the Cable Project although other ownership formats were noted in the Energy Agreement. Such an arrangement would entail the State entering into an EPC contract with a cable manufacturer/installer. The State, through DAGS, would treat this project as a public works project subject to normal State procurement regulations and policies. The State, through its taxpayers, would pay the full capital cost of the Cable Project and be responsible for its operation and repair. DAGS presumably would be the project manager overseeing the activities of the EPC contractor and the State would be responsible for securing the financing for the cable on the State's credit.

While this approach would put the State in full control of the development and construction of the Cable Project, there are numerous reasons as to why such an arrangement is not in the State's interest. Notwithstanding that the State, through DAGS, has managed innumerable construction projects, the DAGS staff has never managed the construction of a utility project, particularly one as large and complex as the Cable Project. It should be noted that there are only a handful of developers that have the expertise to manage such a project. Moreover, as the Cable Project could potentially cost in the range of $650-750 million, financing such a project would strain the State's borrowing authority. In addition, it is clear that the State is not in a position to assume the development, construction and operating risk that would be associated with such a project. Based on the foregoing as well as the availability of other ownership options described below, we understand that the State has determined it is not interested in owning and developing the cable directly.[6]

B. Who Pays for the Cable: Taxpayers or Ratepayers?

A basic question that has been raised is whether or not this project should be financed by all the taxpayers of Hawai'i, the electric ratepayers of O'ahu, or some combination thereof. Solutions

[6] Another State ownership approach involves potential legislation creating a State Energy Authority that would own the transmission project. The Authority would not be supported in any fashion by State general obligation bonds, but would be authorized to issue revenue bonds secured by a revenue stream associated with a HECO cable surcharge approved by the PUC. While the Authority would likely have the ability to issue tax exempt bonds to finance the Project, the debt service coverage requirement would likely be quite high as this would be the Authority's only project and it would not have any other revenue sources. In addition, the Authority would need to hire an experienced staff which would add substantial costs to the Project.

that include State issuance of bonds, State ownership, State loan guaranties, or the State acting as a contracting party, all involve, to one degree or another, responsibility by all the taxpayers of Hawai'i and have a general fund impact on the State.

After extensive conversations with DBEDT, B&F and DAGS officials, including political appointees in the prior and current administrations, as well as senior career State officials, the clear guidance we were given was to utilize the private sector to the greatest extent possible to take the development and financing risk for the Cable Project. We wholeheartedly agree with this approach. All of the potential project structures considered follow that guidance and provide that HECO's O'ahu ratepayers will pay for the Cable Project. No further consideration has been given to State guaranties or State issued full faith and credit backed bonds.

III. DETERMINING PROJECT STRUCTURE

A. Principles to Guide Selection of Desired Structure

As indicated above, there are four basic structures that Navigant recommends be considered for the development, ownership, financing, and payment for the Cable Project. Aspects that apply to all options is that the Cable Project would be developed by a cable developer selected through a competitive procurement process and that HECO ratepayers, who will realize the benefits of the Project, will ultimately pay for it after it achieves commercial operation. Accordingly, HECO will be responsible for collecting such payments from the ratepayers under all options either directly on its own behalf or as agent for the State or the CCC.

As decisions are made about the Big Wind Project in general and the basic structure of the Cable Project in particular, there are important principles that need to be considered and evaluated:

- Balancing lowest costs with risk tolerance for the State, HECO and HECO's ratepayers;
- Reasonable assurance of cost recovery by cable developer;
- Reasonable assurance that the selected structure will not result in unreasonable delays or additional costs for cable and wind developers;
- Reasonable assurance that the selected structure will not result in unreasonable delays or additional costs for ratepayers;
- Ability to finance the Cable Project given the structure;
- Acceptance by the State;
- Acceptance by PUC;
- Acceptance by HECO;
- Acceptance by other major stakeholders;
- Determine degree of advantage of partial State ownership or control;
- Open and transparent process; and
- Federal interest and past involvement.

B. Major Items Impacting Selection of Structure

1. Accounting Treatment Issue

The Contract Option has been discussed at length with HECO. HECO's primary concern with this option involves onerous financial accounting requirements during the period that HECO would pay the cable developer for cable development and transmission service (typically, 20 years or longer). Specifically, as HECO would purchase the full cable capacity from the outset and would pay a firm price not associated with cable usage, the contract would likely be treated as a capitalized lease and therefore the full stream of capacity payments would be treated as debt on HECO's balance sheet. Since there would not be any owned asset or rate based treatment for recovery to offset that liability for many years, this would have a significant adverse financial impact on HECO and would severely limit HECO's ability to issue new debt. For these reasons, HECO has determined that the Contract Option is not acceptable.

2. Impact of HECO Credit Downgrade

Since a HVDC cable can be a utility asset, the most obvious owner is HECO. If HECO were to own the Cable Project, it would become part of HECO's rate base that would be depreciated over an average service life approved by the PUC and on which HECO would earn a PUC authorized return.

As HECO acknowledges that it does not have any experience in developing and constructing such projects, a BOT arrangement could be considered. Under the BOT approach, a cable developer would be responsible for permitting, developing, financing and constructing the project. The cable developer assumes all development and construction risk. Upon the commercial operation date of the project, title would transfer to HECO which would pay the cable developer an agreed upon amount set forth in the BOT Agreement. HECO could operate the cable or could contract with the cable developer to operate it.

Incorporating the cable project in HECO's rate base upon commercial operation pursuant to the BOT arrangement would be expected to have the lowest impact on retail rates because the cost recovery would be amortized over the longest period and the PUC regulated return would likely be much lower than that required by a cable developer.

In spite of its obvious merits, this approach is currently not feasible. On November 16, 2010, Standard & Poor's announced that it was downgrading HECO's credit rating to BBB-, which is one step better than "junk bond" quality. Because a private cable developer's creditworthiness is generally one or two steps below the utility to which it sells power, the credit downgrade materially limits the structural options available for the Cable Project. This situation is exacerbated by the large capital cost of the Project. HECO's current rate base ranges from $600-700 million. Attempting to add a $700 million asset to the HECO rate base would present

significant financing difficulties. HECO would need to raise substantial new equity and debt. Thus, today HECO could not make a binding commitment to fund that purchase price and therefore it could not reasonably enter into a BOT agreement that any cable developer counterparty could rely upon in securing its own construction financing. As such, pursuing the BOT approach at this time does not have merit.

Similarly, HECO's downgrade also makes the Contract Option unfinancable.

Navigant believes that a credit impaired utility is a significant obstacle to the State in a number of ways, including the State's ability to meet the 40% RPS standard established by law. A financially weak HECO will not be able to enter into the broad range of PPAs that will be necessary to guaranty a diverse renewable portfolio.

C. The State Option

Given that both the Contract Option and BOT Option are not viable given the HECO downgrade and accounting treatment issue discussed above, the options remaining for consideration are the State Option and CCC Option.

The State Option is potentially workable as the credit rating of the State would replace that of HECO and the associated Cable Project risk would be assumed by taxpayers. Under this approach, the State and the cable developer would be the parties to the FTCPA. The State would essentially provide the transmission service under which the wind energy would be delivered to HECO and make the monthly capacity payments to the cable developer. HECO's role would be limited to being the collection agent for the State. Legislative authorization would be needed to enable PUC approval for a cable surcharge to be included in HECO retail rates for cable cost recovery.

While this approach would avoid the capitalized lease issue, it would place some long term risks on the State as counterparty. As previously discussed, this arrangement entails a long term financial obligation which the State does not appear to be willing to assume. Further, the relatively high payment obligations under the FTCPA could limit the State's ability to finance other large and important capital infrastructure projects. Finally, this approach would put the State in a business with which it is not familiar and in which it does not have expertise.

D. Recommended Basic Structure – CCC Option

For the reasons set forth in detail below, the most viable approach to develop the Cable Project--and to provide HECO with a path back to economic health -- is the "Certified Cable Company" or "CCC" Option.

Pursuant to this option, the cable developer (with or without HECO and/or the State as small minority limited partners in a joint venture arrangement[7]) would obtain cost recovery derived directly from a PUC rate order. This arrangement would ideally include ownership of the cable transferring to HECO at a later date (e.g., 10 years after commercial operation of the Cable Project) when its credit situation would presumably have improved. The CCC Option has been reviewed with the State, HECO, several other stakeholders and several potential project developers, and appears to have support from all of them.

Under the CCC Option, the cable developer entity (including its investors) would be the sole owners of the Cable Project. Rather than an FTCPA arrangement as in the Contract Option or State Option, the cost for the Cable Project would be secured by a PUC rate order with terms and conditions of service set forth in a transmission tariff filed by the cable developer and approved by the PUC. Such tariff would provide the same protections for HECO's ratepayers as those generally incorporated in an FTCPA, including protection against cost overruns, guaranties on cable availability, liquidated damages for non compliance, insurance requirements, and the ability to terminate payments under the tariff for extended non-compliance or extended force majeure circumstances. New legislation would be required for the cable developer to be recognized as a transmission public utility.

This option avoids the capitalized lease issue and HECO credit downgrading issues discussed above. It also allows for HECO to participate in the Cable Project in various ways, most significantly, by way of an option to purchase the cable after its tenth year of commercial operation.

After lengthy discussions, it is clear that HECO understands its financial limitations and agrees that the CCC Option represents the best approach to moving forward with the Cable Project, and it is lending its support to the legislation now pending in the Hawai'i State Legislature.

It should be noted that the CCC Option is modeled in part on the Trans Bay cable in California. Trans Bay is a 55 mile 400 MW Voltage Source Converter HVDC cable project interconnecting San Francisco with the City of Pittsburgh, California. Like the CCC, Trans Bay recovers its costs through a regulatory approved tariff rather than an FTCPA. In recognition of the significant risks assumed by Trans Bay, the regulator ("Federal Energy Regulatory Commission" or "FERC") allowed an equity return of 13.5 percent, which is higher than FERC typically allows for regulated utilities. For the Cable Project to be successfully financed, it will be necessary for the PUC to afford the CCC similar treatment.

[7] HECO had initially expressed an interest in participating in the Joint Venture as a limited partner with a very small percentage, or perhaps such investment would be in exchange for an option to acquire the cable at a future date at a price certain. More recently, HECO indicated that it has reconsidered participating in a Joint Venture.

E. Legislation to Effectuate Structure

The legislation to effectuate the structure discussed above requires a new part be added to Chapter 269 of Hawai'i Revised Statutes that creates a new kind of public utility to be known as a Certified Cable Company as described above. A CCC will be created pursuant to a PUC approved RFP with the limited function to plan, permit, license, finance, construct and operate a high voltage cable transmission system (AC and DC) between and among islands for the purpose of the interconnection of two or more electric utility systems or helping such system to meet applicable RPS standards (HRS § 269-92). The bills pending during the 2011 session of the Legislature are H.B. No. 1176 and S.B. No. 367, and are attached as Appendix 5 in their current forms.

Assuming the new law is enacted, HECO will petition the PUC for a competitive bidding order for new transmission under a competitive bidding framework. If the PUC grants the order, HECO and DBEDT will draft the RFP and submit it to the PUC for review. The next step is for the PUC to approve the form and content of the RFP with any noted changes, and then order HECO to conduct the RFP. We anticipate that DBEDT will be part of the selection committee for the RFP that will select the eventual CCC.

The proposed CCC would be certified as such upon the submission of and approval by the PUC of a request for a CPCN for the proposed high voltage electric transmission cable system. The PUC would consider and approve rate making principles for the cable as a part of the CPCN process.

Further the CCC would file a tariff setting forth the specific terms of service and the conditions for operation of the Cable Project, all of which would be consistent with the requirements of the RFP, including the technical specifications, the interconnection requirements of HECO, and joint operating instructions setting forth in detail the operational protocols for the cable system.

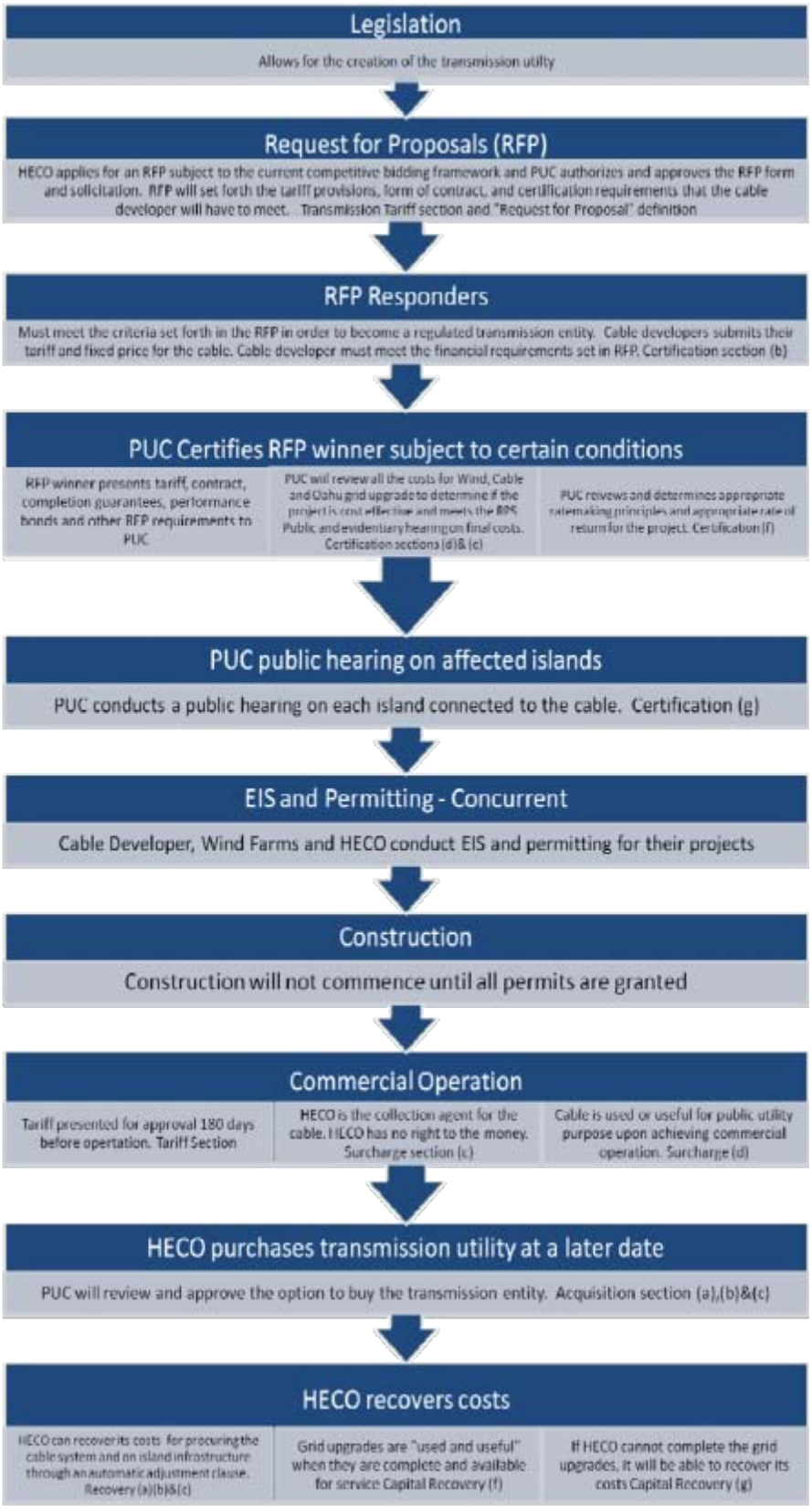
Finally, with respect to cost recovery by the CCC, all prudently incurred expenses would be recovered through a PUC approved surcharge. This surcharge would take into account the complexity and risks of the Cable Project. HECO, which would receive power over the Cable Project for delivery to its customers, would enter into an agency relationship with the CCC to collect the PUC approved rate from its customers and to transmit such funds to the CCC.

Once the Cable Project is fully commissioned and available for commercial operation, it would be deemed by the PUC "used or useful" for public utility purposes, subject to PUC approval.

A new section of the Hawai'i statutes will also provide for rate making principles, including a temporary surcharge followed by inclusion in a future case should the assets of the CCC be acquired at some future time by a traditional electric utility.

Because current law specifically excludes transmission of renewable energy from the definition of "public utility", the PUC does not presently have explicit authority to require and supervise a competitive RFP process for a transmission asset. The new section of Chapter 269 proposed in the legislation would establish that authority.

The process anticipated under the proposed revisions to Chapter 269 may be visualized as follows:


Legislation
Allows for the creation of the transmission utility
Request for Proposals (RFP)
HECO applies for an RFP subject to the current competitive bidding framework and PUC authorizes and approves the RFP form and solicitation. RFP will set forth the tariff provisions, form of contract, and certification requirements that the cable developer will have to meet. Transmission Tariff section and "Request for Proposal" definition
RFP Responders
Must meet the criteria set forth in the RFP in order to become a regulated transmission entity. Cable developers submits their tariff and fixed price for the cable. Cable developer must meet the financial requirements set in RFP. Certification section (b)
PUC Certifies RFP winner subject to certain conditions
RFP winner presents tariff, contract, completion guarantees, performance bonds and other RFP requirements to PUC
PUC will review all the costs for Wind, Cable and Oahu grid upgrade to determine if the project is cost effective and meets the RPS. Public and evidentiary hearing on final costs. Certification sections (d)& (e)
PUC reviews and determines appropriate ratemaking principles and appropriate rate of return for the project. Certification (f)
PUC public hearing on affected islands
PUC conducts a public hearing on each island connected to the cable. Certification (g)
EIS and Permitting - Concurrent
Cable Developer, Wind Farms and HECO conduct EIS and permitting for their projects
Construction
Construction will not commence until all permits are granted
Commercial Operation
Tariff presented for approval 180 days before operation. Tariff Section
HECO is the collection agent for the cable. HECO has no right to the money. Surcharge section (c)
Cable is used or useful for public utility purpose upon achieving commercial operation. Surcharge (d)
HECO purchases transmission utility at a later date
PUC will review and approve the option to buy the transmission entity. Acquisition section (a),(b)&(c)
HECO recovers costs
HECO can recover its costs for procuring the cable system and on island infrastructure through an automatic adjustment clause. Recovery (a)(b)&(c)
Grid upgrades are "used and useful" when they are complete and available for service Capital Recovery (f)
If HECO cannot complete the grid upgrades, it will be able to recover its costs Capital Recovery (g)

IV. NAVIGANT'S RECOMMENDED CONFIGURATION OF THE CABLE PROJECT – NAVIGANT ROUTE

In addition to the cable, the Cable Project includes converter stations where alternating current (AC) from the wind farms is converted to direct current for transmission through the cable, and back to AC once the cable reaches O'ahu. Converter stations are large, fragile and expensive (about $100 million each).

The cable route and converter station configuration ("Navigant Route") discussed below appear to be the least expensive and technically feasible, and will likely result in a permittable and insurable project. We believe the cable can be routed to avoid problematic sub-sea areas and will benefit from a lower price by reducing the number of anticipated converter station sites from three (as originally conceptualized) to two. We have identified suitable areas for converter stations on Moloka'i and O'ahu that appear to have sufficient existing transportation infrastructure and that avoid major additional infrastructure expense. Of course the above preliminary views are subject to the extensive environmental review process involving the Project.

Prior to Navigant's being retained, the apparent preferred cable landing site in O'ahu had been Honolulu Harbor with interconnection to the HECO transmission system at the nearby Iwilei substation. However, upon the discovery by SOEST of a large debris field just south of the entrance to Honolulu Harbor, this potential landing site became more challenging. One possible solution entailed laying the cable near the south shore of O'ahu to avoid the ordinance. However, because of concerns about rock slides and the cable bending radius necessary for the turn into the harbor, this approach was not pursued. Navigant reviewed this issue in its meetings with cable developers. Most of the developers indicated resolving this issue would not be economically feasible and would be uninsurable. One developer suggested directional drilling under the debris field, but acknowledged that securing required insurance would be a serious problem. In addition to the debris, anchor strikes represent a threat to the Cable Project. The Army Corps of Engineers generally prohibits buried cables along the length of a marked channel, while occasionally permitting a 90 degree crossing of a channel. SOEST showed numerous instances of anchoring along the channel leading into Honolulu Harbor. While the cable would be buried, it would still be at high risk of an anchor strike. This violates a primary underwriting standard for cable insurance. Finally, there are plans to construct a cooling water outfall pipe in Honolulu Harbor that could impact the Cable Project.

For the reasons described above, Navigant recommends against a cable landing site in Honolulu Harbor. After substantial investigation and discussions with HECO and SOEST, Navigant has concluded that the preferred cable landing site in O‘ahu should be at Marine Corps Base Hawaii in Kāne‘ohe. The cable would interconnect with HECO’s Ko‘olau Substation about three miles from the landing site. While a final converter station site has not been identified, Navigant recommends that a quarry and an existing industrial site along H3 be further investigated.

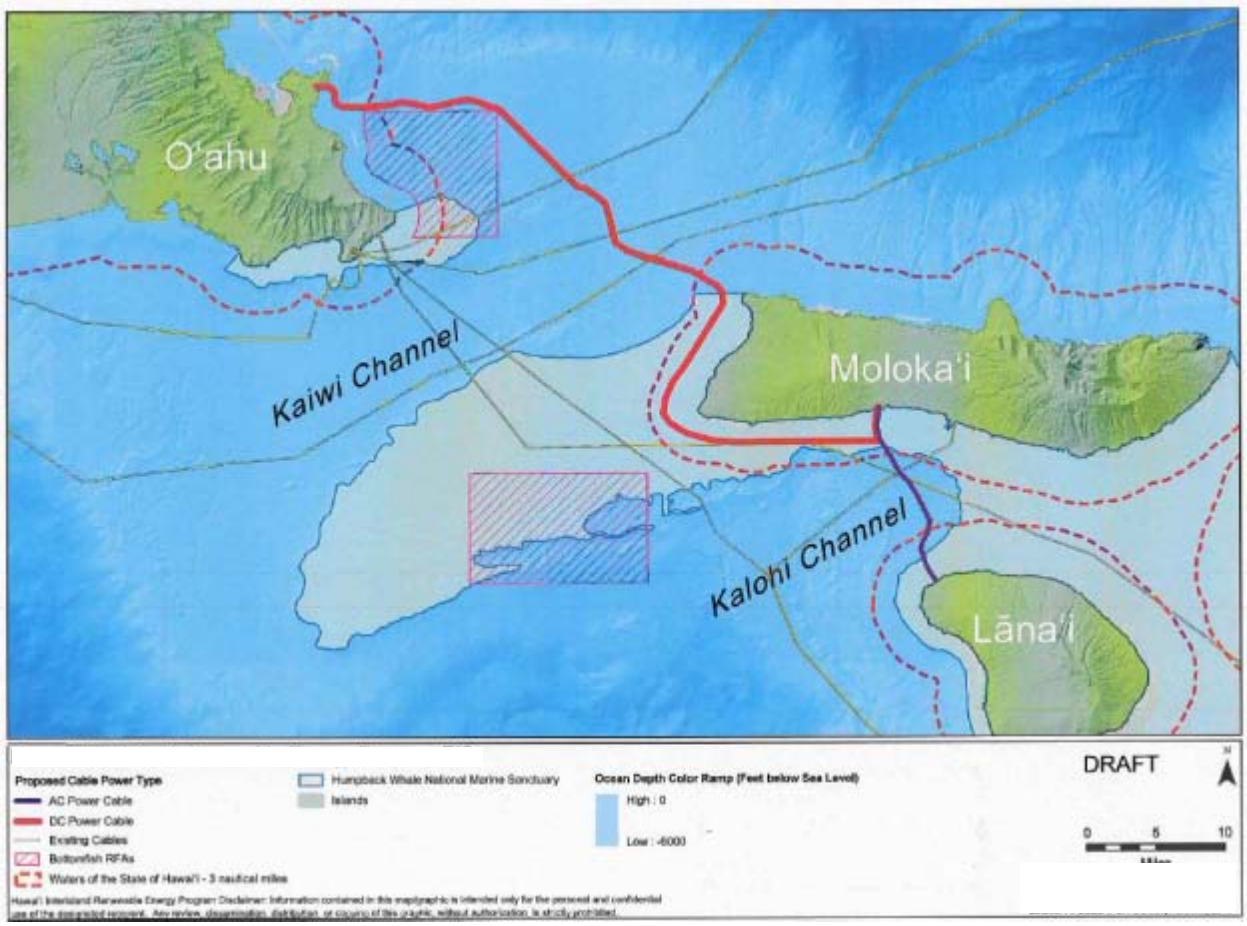
The map below shows the Navigant Route[8] for the submarine cable that would have both DC and AC components. The DC component connects Moloka‘i with O‘ahu (about 70 miles) and entails a technology that accommodates the use of solid insulation cables. The maximum single contingency that the HECO system can tolerate without its grid becoming unstable and potentially experiencing major outages is 200 MW. Accordingly, the cables would be arranged in a manner that recognizes this limitation – essentially, two separate, but co-located, 200 MW systems rather than a single 400 MW system.

It should be noted that the cable project will need to employ Voltage Source Converter (“VSC”) technology. There are two very distinct types of HVDC technology in the world today, Conventional HVDC and VSC HVDC. VSC technology is generally less expensive than Conventional HVDC. In addition, VSC is smaller and quieter. Conventional HVDC consumes much reactive power which would require the installation of large compensation banks, while VSC HVDC can be a source or sink of reactive power. As such, a VSC cable project can provide reliability benefits to a system even when it is not transmitting energy. Purely from a technical perspective, the Cable Project must use VSC technology because of the radial nature of the wind farms, i.e., the wind farms are directly connected to the Cable Project and are not proposed to be connected to the distribution systems on Lāna‘i and Moloka‘i.

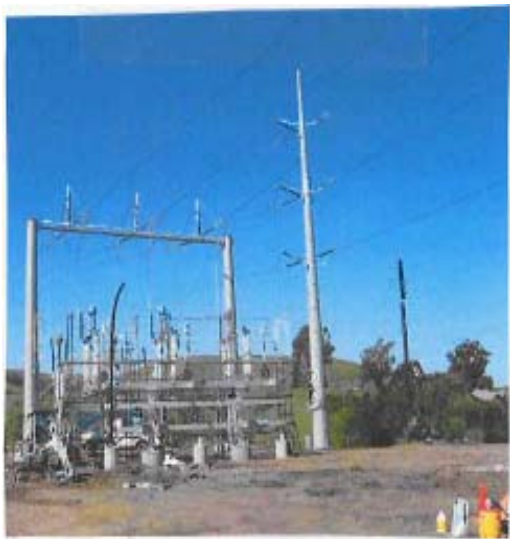
VSC HVDC is a proven technology and there are numerous VSC HVDC projects in operation throughout the world.

With respect to the electrical configuration of the converter stations, two configurations appear workable to meet technical and contingency requirements as shown in Appendix D. Proposers in the RFP will be required to select one of these options and to justify that choice in terms of cost, reliability and compliance with technical specifications. While both configurations would support HECO’s maximum single contingency, Navigant considers the first configuration to be preferable as discussed in Appendix 2. Also, in recognition of that contingency, each converter station would essentially house two separate 200 MW converter apparatus on both Moloka‘i and O‘ahu within the same footprint, rather than a single 400 MW converter apparatus. The wind farm on Moloka‘i would interconnect with one of the converter apparatus on that island; the Lāna‘i wind farm would connect to the other Molokai sited converter apparatus.

[8] The cable route recommended herein is subject to the ultimate findings resulting from the Programmatic EIS.



The AC component would entail a nine mile submarine cable between Molokaʻi and Lānaʻi. Using an AC cable between Lānaʻi and Molokaʻi eliminates the need for a converter station on Lānaʻi. The point of interconnection for the Lana'i Wind Project with the Cable Project would be the Transition Station to be installed on Lānaʻi by the cable developer. The Transition Station will include pipe type cable terminations to potheads, ground switches, surge arrestors, bus work, removable disconnecting links, alarms, fencing and other equipment. The developer of the Lānaʻi Wind Project would be responsible for installing the 138 KV cable or overhead line interconnecting its substation with the Transition Station. A picture of a typical Transition Station is shown to the right.



When Navigant was first engaged, it was assumed there would be a separate converter station on Lāna‘i. Our analysis is that such a converter station would require extensive infrastructure build out on Lāna‘i that would unnecessarily and unreasonably add to overall project cost. This is because of the severe lack of adequate infrastructure (e.g., roads and piers) on Lāna‘i. Installing the heavy and sensitive converter station equipment (particularly the four single phase transformers that weigh about 100 tons each) would present substantial and unnecessary economic and technical challenges. Pictures of a VSC HVDC converter station are shown below. In addition the allocation of incremental infrastructure costs on Lāna‘i, if a converter station were to be located there, would unnecessarily increase Project cost and involve the parties in a complex cost allocation negotiation. With the configuration proposed by Navigant, all expenses on Lāna‘i would be allocated to the wind farm except for the small Transition Station described above. The AC cable allows the converter station designated for the Lāna‘i wind farm to be installed on Moloka‘i where the road and harbor infrastructure is much more robust and accommodating.

VSC HVDC Converter Station (background) and Transformers (foreground)

The estimated capital cost of the Cable Project associated with Navigant's recommended configuration is $655,120,000. A breakdown of that estimate is shown in Appendix 6. The potential financial structures for each option and the related Cable Project annual revenue requirements are set forth in Appendix 7.[9]

As noted, one significant issue that is holding up implementation is that First Wind has been unable to secure site control for its wind farm proposal from Molokaʻi Ranch, the land owner. First Wind was unable to meet the March 18, 2011 deadline set by the PUC for the submission of PPA term sheets, but has requested an extension from the PUC. First Wind's request is currently pending. In contrast, C&C has already submitted a preliminary document to HECO which could serve as the foundation of a term sheet. It provides indicative pricing information which is useful in projecting overall Project cost impacts on ratepayers. A copy of this preliminary document is set forth in Appendix 8.

If the Molokaʻi site control issue is not resolved very soon, then the decision must be made whether to proceed with a 400 MW wind farm with C&C on Lānaʻi or to take some other action.

[9] It should be noted that Navigant's recommended configuration for the Cable Project is not identical to any of those reviewed by the TRC. It most closely compares to Scenario 1 of Stage 2 in the OWITS Phase 2 Report. Two 200 MW HVDC cables (40 miles) between Ilio Point and Ko'olau and a 40 mile 230 KV AC single circuit between Lana'i and Ilio Point were considered. Navigant believes that its proposed configuration would be less expensive and easier to install. By using a much shorter AC route (nine miles vs. 40 miles) with less resistance, Navigant's recommendation would use a 138 KV line rather than the higher cost 230 KV cable. In addition, Navigant's recommended location for the converter site on Moloka'i would minimize the amount of directional drilling required and is readily accessible by road from Kaunakakai Harbor.

V. FEDERAL GUARANTIES AND FEDERAL GRANT FUNDS

It is quite clear to the Navigant team that there is an opportunity to seek and secure federal loan guaranties through the DOE 1703 program. The U.S. Department of Energy has provided a great deal of technical and analytical support for pre-development Cable Project efforts. The advantages of a federal loan guaranty would be to reduce the interest costs and thereby have the potential to reduce ratepayer impacts. The loan guaranties come with an initial and annual guaranty fee that must be paid to the federal government by the recipient of the debt. Any unguaranteed portion of any Project debt as well as all equity required will be at the project developer's risk.

It appears that the window will open soon for Part I applications for the 1703 program and that all the components of the Big Wind project could separately or together qualify for federal loan guaranties, except for such Project components as might be owned by the State. This is yet another of the reasons why the private developer model is preferred and Navigant is not recommending that the State own any Cable Project components.

The DOE 1703 program authorizes loan guarantees for projects that "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." It is the view of Navigant and others involved in the project (including DOE staff) that the Big Wind Project would qualify for a DOE Loan Guarantee under Section 1703. The DOE periodically announces solicitations in which it accepts applications for loan guarantees. In connection with such solicitations, the DOE establishes open window periods, during which Parts I and II applications are due by specified dates. Part I applications require payment of 25 percent of the non-refundable application fee and a letter of commitment from the applicant. Part II requires payment of the balance of the non-refundable application fee along with the applicant's technical information, business and financial plans and proposed organizational structure and staffing. Navigant believes that an approvable Part I application for the cable Project can be prepared and submitted within the anticipated submission deadlines based generally on existing information. A Loan Guarantee Application Form is shown in Appendix 9.

There do not appear to be any DOE capital cost grant programs that are available for the Project although DOE does continue to provide support for project evaluation and pre-development. Any funds from the Defense Department or other federal agencies that may be made available

would certainly have additional beneficial impact on overall ratepayer costs, but the availability and pursuit of such funds are beyond Navigant's scope of work.

VI. RISK MITIGATION STRATEGIES FOR THE CABLE PROJECT

The following discussion describes particular risk mitigation strategies for the cable development as it proceeds through financing, construction and operations phases.

A. Procurement

Procurement of the Cable Project would be pursued through a RFP process, regardless of the structural option selected. However, the structural option ultimately selected will significantly impact the content of the RFP. As such, Navigant believes the RFP cannot be issued until the basic structure has been selected. It is noteworthy that for all the options, the RFP issued would require that the cable developer be responsible for all risks (permitting, litigation, development, construction (including cost overruns) at least through Project commissioning (i.e., the commercial operation date). Only in the case of the State Option would the procurement be a State responsibility pursued under the Hawai‘i procurement code.

The RFP itself would contain risk allocation requirements to protect the ratepayers and HECO to the extent possible under each of the structural options. Under the CCC Option, the proposed tariff would provide HECO's ratepayers the protections set forth in the RFP response and would be similar protections as those contained in an FTCPA. Additional protection to ratepayers may be provided by the PUC through the tariff approval process.

B. Permitting

In each of the four structural options, obtaining permits required for constructing and operating the Cable Project, and meeting such permit requirements would be the responsibility of the cable developer as would the practical obligation to defend such permits (along with the permitting agency) in the face of legal challenges. That is, HECO's ratepayers, the State and HECO would not be exposed if the cable developer fails to obtain required permits.

It should be noted that the State has substantial permitting authority under HRS Chapter 201N. Pursuant to this statute, DBEDT is the energy resources coordinator and would be responsible for identifying all State and county permits necessary for the Project and compiling a permitting plan. The cable developer would be required to apply for the permits identified in the permitting plan. Under the law, if a permitting agency fails to act on a cable developer's application within 18 months, the energy resources coordinator may deem the permit approved.

C. Community Benefits for Lāna‘i and Moloka‘i

Community benefits packages are an important aspect of the Big Wind Project. The RFP will require the cable developer to provide a complete description of its proposed community benefits package to be delivered to the residents of Lāna‘i and Moloka‘i, including plans for using local labor and materials. Among other things, the package should include a plan for integrating each island’s community needs. The package should also include local economic development opportunities.

A very significant component for the community benefits packages for Lanai and Molokai could be an electric rate equalization (with O‘ahu) arrangement. Ratepayers on Lana’i and Moloka‘i currently pay in the order of 40¢/kWh, which is well in excess of the rates paid by HECO customers. By blending the costs to serve on Lāna‘i and Moloka‘i with those for O‘ahu, Lāna‘i/Moloka‘i ratepayers would realize major savings each month while the impact on O‘ahu electricity users would be negligible.

D. Community Support

The RFP will require the cable developer to provide a full description of the cable developer’s plan to secure community support for the Cable Project; and, once selected, the cable developer will work with the wind farm developers, HECO, and DBEDT in developing and implementing strategies for coordinated efforts. The RFP will require the cable developer to provide a detailed description of its planned approach to manage the potential impact of the Cable Project on impacted communities and interested parties. The plan should include community outreach activities as well as plans for educating affected communities about the Cable Project and securing community input.

E. Site Control (Moloka‘i)

As previously discussed, Navigant recommends the Cable Project interconnect wind farms on Lāna‘i and Moloka‘i with the O‘ahu transmission system using two 200 MW HVDC cables between Moloka‘i and O‘ahu and an AC cable between Lāna‘i and Moloka‘i, although the final configuration will be determined in the environmental review process. If First Wind is not successful at securing site control for its proposed wind farm on Moloka‘i, the C&C project on Lāna‘i may have the opportunity to increase to 400 MW. In such an event, the capacity of the AC cable connecting the Lāna‘i wind farm to the converter station on Moloka‘i would need to be increased. It is anticipated that the 200 MW wind farm on Lāna‘i would require one 138 kV cable to interconnect with the converter station on Moloka‘i. If the wind farm on Lāna‘i is increased to 400 MW, a second 138 kV cable would need to be added or the AC cable would need to be upgraded to 230 kV to accommodate the increased power flow. These modifications would result in increased costs to the Project. Since the disposition of the First Wind site control

issue is expected to be resolved before the RFP is issued, the project description in the RFP will be drafted appropriately to address the final outcome.

F. Financing

The Cable Project would not be able to secure financing without an assurance of cost recovery. Even assuming that credit support from other entities such as a federal guaranty is included in the transaction, the developer's equity and unguaranteed debt would still be at risk.

Under the CCC Option, a PUC approved rate order and tariff would be issued providing for payment to a special purpose transmission utility. The CCC would be a new entity without any of the credit, operational and regulatory overhangs that accompany a loan to HECO. This is clearly the safest type of investment for equity and debt for the Cable Project. Under this option, during the first 10 years after the Cable Project achieves commercial operation, HECO would only serve as a pass-through entity for funds. The proposed legislation provides that HECO will have no interest in these funds. Lock boxes, trusts, and other similar devices have been used in other situations like this one to assure that the revenue stream reaches the intended party. Based on our experience and recent conversations with bankers in this field, this arrangement should be sufficient to support an investment grade financing the Project at a competitive rate. In order for the Cable Project to close financing, a PUC order approving the tariff will be required in advance. In addition, it will be imperative that the equity return authorized by the PUC to the cable developer be sufficient to recognize the risk it assumes. Such required return would need to be higher than the level typically approved by the PUC for HECO capital projects in light of the substantial risk undertaken by the cable developer.

G. Development

Development essentially entails all aspects of the Project from initiation to completion of construction and commissioning for commercial operation. Among other things, development includes permitting, licensing, financing, engineering, design, equipment procurement, community outreach and construction. These are exclusively developer responsibilities. While the State or HECO may support the cable developer in some of these activities, they are ultimately all developer obligations. The developer will be contractually bound to meet these obligations on a prescribed schedule, subject to appropriate contractual remedies, including liquidated damages, for failure to timely perform. As such, the contractual arrangements would restrict the developer from passing on development risks (including cost overruns) to HECO ratepayers, the State or HECO.

H. Construction

Construction of the Cable Project is also the cable developer's responsibility. The RFP will require the cable developer to submit a detailed construction plan from commencement of

construction to testing and commissioning of the Project. The construction plan along with a detailed schedule will be included in the CCC tariff filing. The tariff will specify certain construction thresholds that the cable developer will be required to meet or be subject to penalties. Among other things, the construction plan will provide a detailed equipment procurement schedule, arrangements for meeting storage and lay down requirements, an organizational chart and details concerning the cable laying vessel to be employed. The developer can be expected to back such requirements with mirror image provisions in its EPC contract supported by meaningful security. The applicable contracts will be developed to insulate the State, HECO and ratepayers from construction risk. The cable developer will protect itself from construction risk through insurance and security requirements in its EPC contract and those arrangements will be required to be disclosed. Based on Navigant's past experience, we expect that insurance will be provided by a syndicate at Lloyds or by competing sophisticated U.S. market participants. With respect to security requirements, the cable developer will make certain that the security in the EPC contract at least mirrors the cable developer's security obligations in its arrangements with its counterparty.

I. Project on Project Risk (Coordinated Delivery and Completion)

In February 2010, HECO convened a Request for Information ("RFI") meeting of experts and interested parties to discuss the Big Wind Project. The differences of opinion on how to proceed varied widely. Some participants proposed that the State should just build the cable and trust that the wind developers will come. Others said that the Project's components could only be done by one entity to integrate the risks. Some of the questions were: How can the cable developer be sure that the wind farm will be there when they are ready to transmit power? How can both the cable and wind farm be sure that the O'ahu system upgrades will be there when they are needed to allow the injection of the power? Most simply put: How can we avoid a cable to nowhere?

Navigant's recommendations to mitigate these risks are:

1. The development process should be coordinated so that no project component is actually financed or begins construction until all the project components are fully permitted, financed, and ready to begin construction, with all permits in hand and all litigation resolved. The PUC would have authority under the proposed legislation to impose these requirements.
2. No project component will actually begin construction until all components have financial commitments of debt and equity and are ready to begin construction. The contracts for each component will have contractually guaranteed completion dates with substantial liquidated damages, guaranteed by solvent affiliated companies, for late completion. Letters of Credit and/or completion bonds will be provided. These guaranteed completion dates will be backstopped by adequately secured contractual commitments from the developers' EPC contractors.

3. The RFP for the selection of a cable developer will have requirements that the risks of delay will not be borne by ratepayers and that sufficient security for performance, including liquidated damages, letters of credit and completion bonds as well as business interruption insurance to deal with long term force majeure events, will all be in place.
4. Finally, the RFP will encourage participants to enter into consortium or other arrangements to divide such risks among them as a way to assure that such risks do not fall on the State, HECO or the ratepayers.

In the end, the relationship between the developer and the ratepayers of O'ahu will be based on a regulatory compact and not by contract. The RFP will be supervised and approved by the PUC and the tariff will include terms and conditions of service that protect ratepayers, as well as setting rates. The ratepayer's protection will be first based on the competitive nature of the RFP, but ultimately on the approval of the tariff proposed by the cable developer as part of its PUC-issued Certificate of Public Convenience and Necessity as a new and limited purpose transmission utility (the CCC).

Project-on-project risk is not unique to the Big Wind Project. A variation of this type of risk became apparent in Texas when wind generation being installed began exceeding the capability of the transmission system to deliver the generation capacity to load. This issue led to the statutory establishment of Competitive Renewable Energy Zones[10] ("CREZ") in Texas.

The Texas legislature recognized that it takes many more years to permit and construct a transmission project than it does for a wind project. The goal was to ensure that sufficient transmission was installed in time and cost effectively to support the wind development and prevent bottlenecks. To accomplish this goal, the Texas Public Utilities Commission under authority from the legislature allowed transmission projects to be competitively bid which resulted in five new transmission developers participating in the process.

CREZ projects are designed to transmit energy generated by renewable energy sources (primarily wind) from remote parts of Texas to the more heavily populated areas. To date there are 125 CREZ projects that have been awarded to 11 different transmission developers. The estimated capital cost is $5.4 billion with final completion targeted for 2013. To put this in perspective vis a vis the Big Wind Project, the costs for the CREZ transmission projects would be socialized across all ratepayers regardless of whether the Texas wind farms are delayed or fail to perform.

[10] Navigant has played an active role in the Texas CREZ process, starting with the initial determination of the CREZ areas through the rulemaking and policy development phases. Among other things, Navigant represented certain market entrants constructing portions of the CREZ and made formal presentations before the Texas PUC and the Electric Reliability Council of Texas. Currently, Navigant is assisting one of the new transmission providers establish its regulatory utility accounting and reporting structure.

J. Technology

As previously indicated, the HVDC portion of the Cable Project will use VSC technology since Conventional HVDC technology could not readily be integrated with the wind projects. VSC is a proven commercial technology that is reliably providing service all over the globe. VSC technology has been used in the 330 MW Cross Sound Cable Project which is a 24 mile cable interconnecting the Long Island Power Authority ("LIPA") in New York with United Illuminating in Connecticut. LIPA uses this cable to transmit renewable hydro energy from New England and Canada. The cable is extremely reliable and has demonstrated a very high availability. Other examples of projects using the VSC technology include the Trans Bay project in California, the MurrayLink in Australia, Eastlink connecting Estonia and Finland and the Eagle Pass back-to-back converters that stabilize voltage between the United States and Mexico.

In addition to being both a proven and right technology for the Big Wind Project, the contractual arrangements and insurance products (e.g., business interruption insurance) under which service would be provided for all four structural options would protect the ratepayers from risks associated with technical issues.

K. Delay

Project delay can be caused by numerous factors including failure to secure site control, equipment not being delivered on time, force majeure events, community opposition, and litigation. Unless the delay is caused by HECO, the State or a force majeure event, the cable developer would be responsible for the timely resolution of any project delays. The CCC tariff filing will subject the cable developer to penalties and possible termination in connection with delays for which it is responsible.

L. Litigation

In addition to causing delays as described in Section K above, extended litigation could be initiated on a wide range of issues that may substantially add to the cost of the Cable Project. Unless the litigation is initiated by the State or HECO, the tariff will make clear that the cable developer will shoulder most litigation risks and that the cable developer would be barred from increasing prices in the event that the results of litigation caused the cable developer's costs to increase except in limited defined circumstances when the cable developer would be allowed to increase its costs based on a defined index.

M. Cost Overruns

When the cable developer receives an approved tariff consistent with the RFP response, and a rate order is issued, the arrangement will have firm pricing (which will include a reasonable contingency) that will not be subject to modification absent extraordinary circumstances.

Through this mechanism, we anticipate a high bar to a developer receiving recovery of cost overruns beyond the previously approved contingency. In the event that the cable developer experiences cost overruns that impact the economics of the Cable Project, the developer would be barred from increasing the prices in its RFP response – that is, the cable developer must absorb the increased costs. Typically, the developer protects itself from such cost overruns through its EPC contract, contingencies, and insurance products.

The lenders to the developer would generally have step in rights to complete the Cable Project should the developer fail, and would have the benefit of performance and payment bonds. Even so, we would anticipate that the cable developer would not receive any payments until the Cable Project was completed and commissioned. Then, subject to the narrow exception above, payments would be at the agreed price. Unlike utilities generally, developers of submarine cables work in a substantially fixed price world.

N. Regulatory/Legislative (Used or Useful)

In the regulated utility regime, projects typically are not included in the utility rate base until they are considered "used or useful". Regulated utilities file rate increase requests to have completed large capital projects included in rate base in anticipation of meeting "used or useful" status. While new projects may be underused when placed in service[11], they must provide some value to ratepayers to be considered used and useful.

Pursuant to pending legislation associated with the Cable Project, when the cable is complete, tested and available to transmit power, it is deemed to be "used or useful" subject to the PUC's determination and approval.

O. Operations

While HECO will be responsible for scheduling the wind energy over the cable regardless of the cable ownership structure, operation and maintenance of the Cable Project will be the responsibility of the CCC, except for the BOT Option in which it would be a HECO responsibility. It will be necessary for the cable developer, HECO and the wind developers to prepare and sign Common Operating Instructions ("COI"). The COI sets forth in detail each party's responsibilities with respect to cable operations. While the CCC would operate the Cable Project, HECO and the wind developers would need to coordinate the operation of their facilities with the operation of the Cable Project. The COI sets forth the rules for accomplishing such coordination. The COI indicates the parties' responsibilities with respect to ownership, maintenance and operation. Among other things, the COI includes the maximum loads

[11] Large capital utility projects are often referred to as "lumpy", i.e., they are typically larger than needed when installed, but it is assumed that they will be required to meet future load growth or to meet legal requirements (e.g., RPS requirements).

permissible on each party's system. It also describes the special protection systems and the parties to be notified in the event of emergency work. The COI would be executed by all parties and filed with the PUC as part of the Tariff and can only be modified with the concurrence of all parties. It is also possible that HECO could be hired by the CCC to provide operation and maintenance services for the cable. It may be advantageous for HECO to do so after a period of training during the early years of cable operations.

Under the CCC Option, HECO would be the operator after it obtains ownership, which is anticipated to occur 10 years after the Cable Project begins commercial operations.

VII. COST EFFECTIVENESS AND RATE IMPLICATIONS OF THE BIG WIND PROJECT

A. Cost Effectiveness of the Big Wind Project Compared to HECO Burning Oil

Assuming the CCC Option is selected and based on currently available cost information, the Big Wind Project is cost competitive compared to HECO's alternative of burning low sulfur fuel oil in its existed fossil-fired generators at an oil price of about $108/barrel.[12] Note that HECO's currently pays about $101/barrel for fuel oil. The $108/barrel break-even price is predicated on 400 MW of wind energy at 42.25% capacity factor (1,480,440 MWH/yr.) at the levelized Castle & Cooke energy price (13¢/kWh) plus (i) the levelized cable unit price for the CCC Option (5.6¢/kWh) and (ii) the levelized unit price of the O'ahu upgrades (1.1¢/kWh) for a total Big Wind energy cost of $291,647,000. This cost would be offset by the avoided cost of the displaced oil. Using an energy conversion rate of 0.597 MWh/ barrel of oil, results in a break-even oil price of $117.61. As HECO has advised that it pays the West Texas Intermediate ("WTI") price plus $10 per barrel for residual oil, this results in a WTI price of $107.61 as shown below:

Wind

Wind Capacity – 400 MW
Wind Capacity Factor[13] – 42.25%
Annual Wind Energy – 1,480,440 MWh
Wind Energy Price - 13¢/kWh
Cable Price – 5.60¢/kWh
O'ahu Upgrade Price – 1.10¢/kWh
Total Delivered Wind Energy Cost (first year) - $291,647,000

[12] The oil price quoted is West Texas Intermediate ("WTI"). HECO informs Navigant that it pays WTI plus $10/barrel for its fuel oil.

[13] Net capacity factors (Lanai – 46.20% and Molokai – 38.30%) adjusted for cable line losses (5.0%) and wind curtailments. As a sensitivity, Navigant also computed economic impacts with line losses increased to 8.0%.

Displaced Oil

Energy Conversion Rate - 0.597 MWh/bbl. of oil
Volume of oil replaced by Wind – 2,479,799 bbls. (1,480,440 ÷ 0.597)
Break-Even Residual Oil Price - $117.61/bbl.
Less adder- $10.00/bbl.
Break-Even WTI Price - $107.61/bbl.

In addition to the foregoing, as sensitivities, Navigant was requested to estimate the break-even price of oil in the event that (i) actual wind generation was 20 percent lower than projected; (ii) actual wind generation was 50 percent lower than projected; and (iii) a 100 MW of battery backup system was installed. Based on the methodology described above, the estimated break-even WTI prices for the Base Case and the sensitivities for all options are shown in Table 1:

Table 1.

	Break Even Price in WTI Prices		
	Contract Option	BOT Option	CCC Option
Based on Levelized Costs in 2011$	$/Bbl	$/Bbl	$/Bbl
Base Case	$ 125.48	$ 106.70	$ 107.61
Wind Production 80% of Base Case	$ 139.95	$ 116.47	$ 117.61
Wind Production 50% of Base Case	$ 183.35	$ 145.78	$ 147.61
Base Case with Battery System	$ 128.94	$ 110.16	$ 111.07

The calculations supporting the table above are shown in Appendix 10.

B. Cost Effectiveness of the Big Wind Project Compared to HECO Burning Biofuels

While the Big Wind Project might appear to not be cost effective if fossil fuel prices decrease, this is not the case. The Big Wind Project, or a renewable energy alternative, is necessary for HECO to meet its obligations under the RPS set by Hawai'i law. Thus, if it appears that the Big Wind Project is not progressing, HECO has stated that it will go to its "Plan B" to avoid penalties under the RPS law. Plan B entails using biofuels at HECO's existing generators. As biofuels are substantially more expensive than fossil fuel, the Big Wind Project is ultimately the economic choice regardless of the cost of fossil fuel.

The January 2011 Monthly Energy Trends (MET), released by the Hawai'i Department of Business, Economic Development & Tourism on February 3, 2011, reports that the average price of diesel fuel consumed in September to generate electricity was $94.58/bbl. The additional cost of biodiesel, in $/bbl, ranges from $25.20 to $42.00 per barrel. This would price September 2010 biodiesel at $119.78 to $136.58 per barrel. During the same month, the average cost of fuel oil consumed was $87.89/bbl. The cost spread between biodiesel and fuel oil ranges between

$31.89 to $48.69 per barrel. This "premium" for biofuels would reduce the break even price in WTI prices shown in Table 1 by $31.89 to $48.69 per barrel. The calculated break even price as shown in the above section A of $107.61/bbl would then range from $58.92 to $75.72, after making a simplifying assumption that the energy conversion rate of 0.597 MWh/bbl remains constant as shown in Table 2

Table 2.

Biodiesel Comparision	**Break Even Price in WTI Prices**		
	Contract Option	BOT Option	CCC Option
Based on Levelized Costs in 2011$	$/Bbl	$/Bbl	$/Bbl
Base Case	$76.79 - $93.59	$58.01 - $74.81	$58.92 - $75.72
Wind Production 80% of Base Case	$91.26 - $108.06	$67.78 - $84.58	$68.92 - $85.72
Wind Production 50% of Base Case	$134.66 - $151.46	$97.09 - $113.89	$98.92 - $115.72
Base Case with Battery	$80.25 - $97.05	$61.47 - $78.27	$62.38 - $79.18

C. Ratepayer Impacts

The Big Wind Project will displace energy generated from fossil fuel on a kilowatt-hour for kilowatt-hour basis. The price of the wind energy would be fixed which would be a perfect hedge against the high volatility associated with fossil fuel prices. The impact that the fossil fuel displacement will have on ultimate retail electric rates is directly related to the cost of a barrel of oil. If oil prices increase at the rates projected by the Federal Energy Information Administration ("EIA"), the Big Wind Project would be cost effective from its date of first commercial operation and would provide major economic benefits for ratepayers for the life of the Project. Of course, in the event EIA's projections are wrong and oil prices remain stable or decrease, the Project would have upward pressure on current retail rates although such upward pressure would be even greater with the burning of biofuels to meet RPS requirements as discussed above.

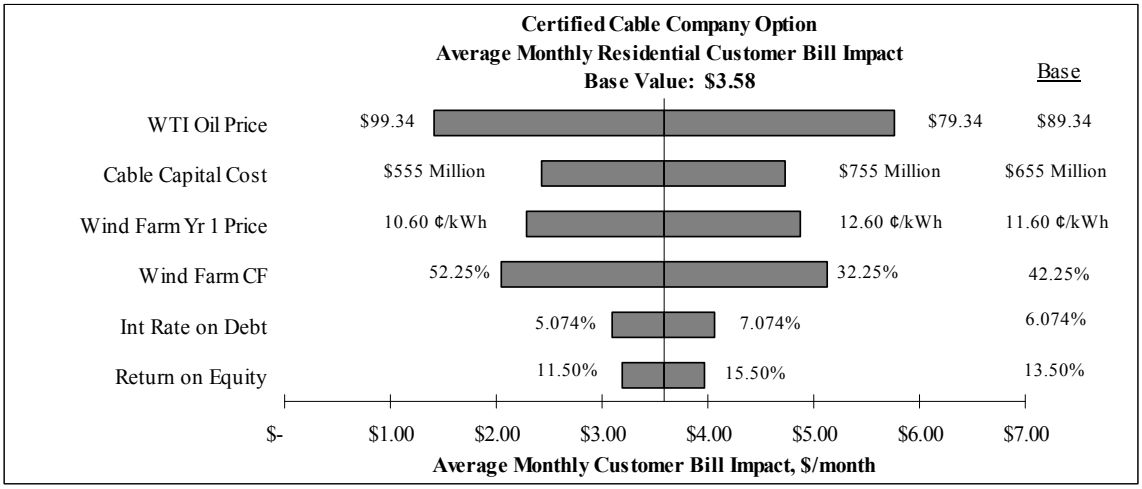
Table 3 below shows the Big Wind Project's projected monthly increases to ratepayers by service classification assuming HECO's current price of oil ($101/bbl.), current ratepayer usage and current rates.

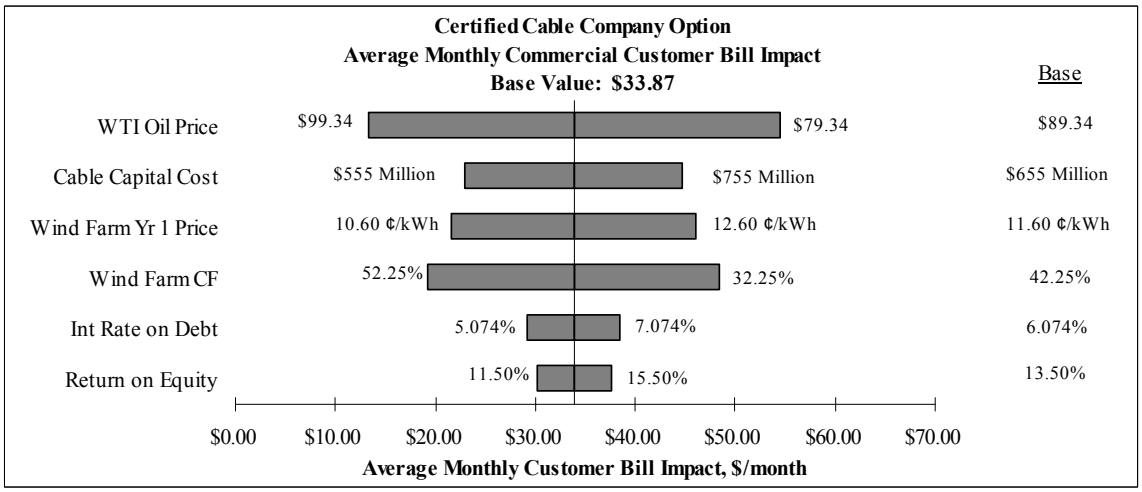
Table 3

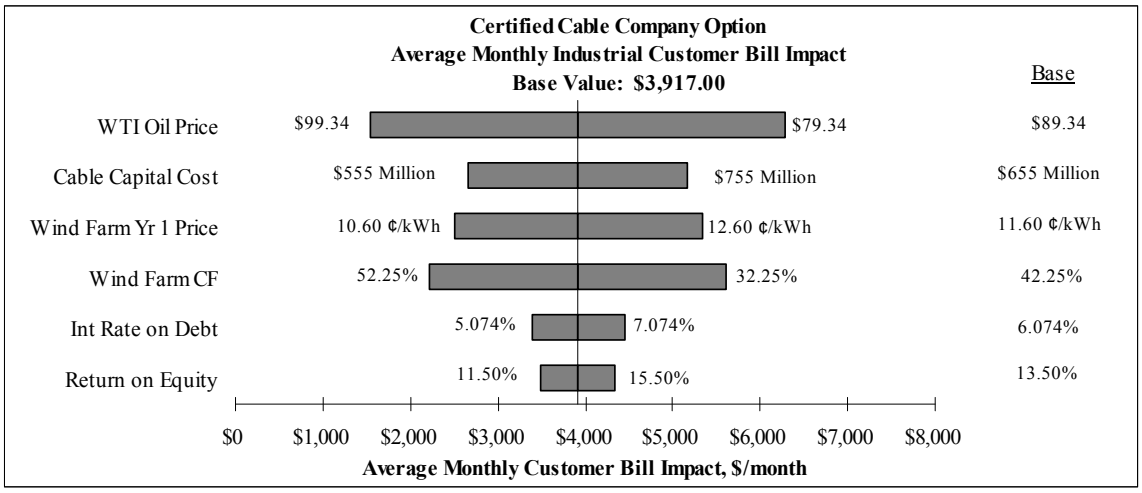
STRUCTURAL OPTION	MONTHLY BILL IMPACTS		
	Residential	Commercial	Industrial
Contract	$4.42	$41.78	$4,832
BOT	$3.28	$30.96	$3,580
CCC	$3.58	$33.87	$3,917

There are numerous variables that could affect the projected ratepayer impacts shown in Table 3. Such variables include oil prices, the ultimate capital cost of the Cable Project and the final

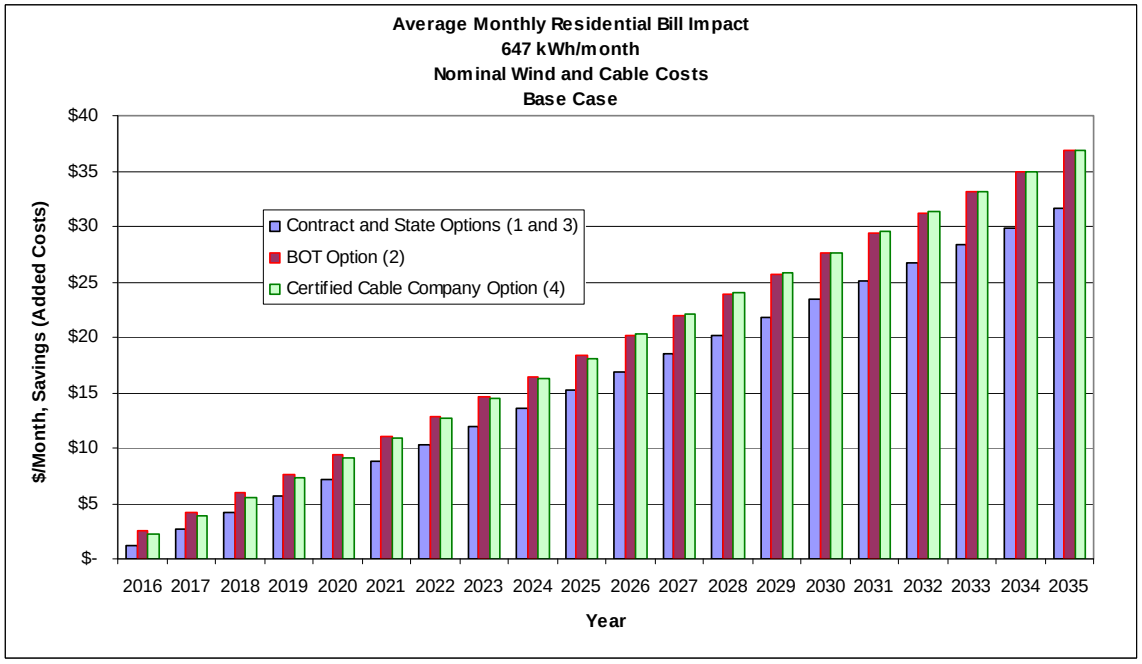
energy price from the wind projects, among other things. Following are "sensitivity" analyses for the CCC structural option showing the impacts that these factors could have on the ultimate ratepayer costs by service classification.



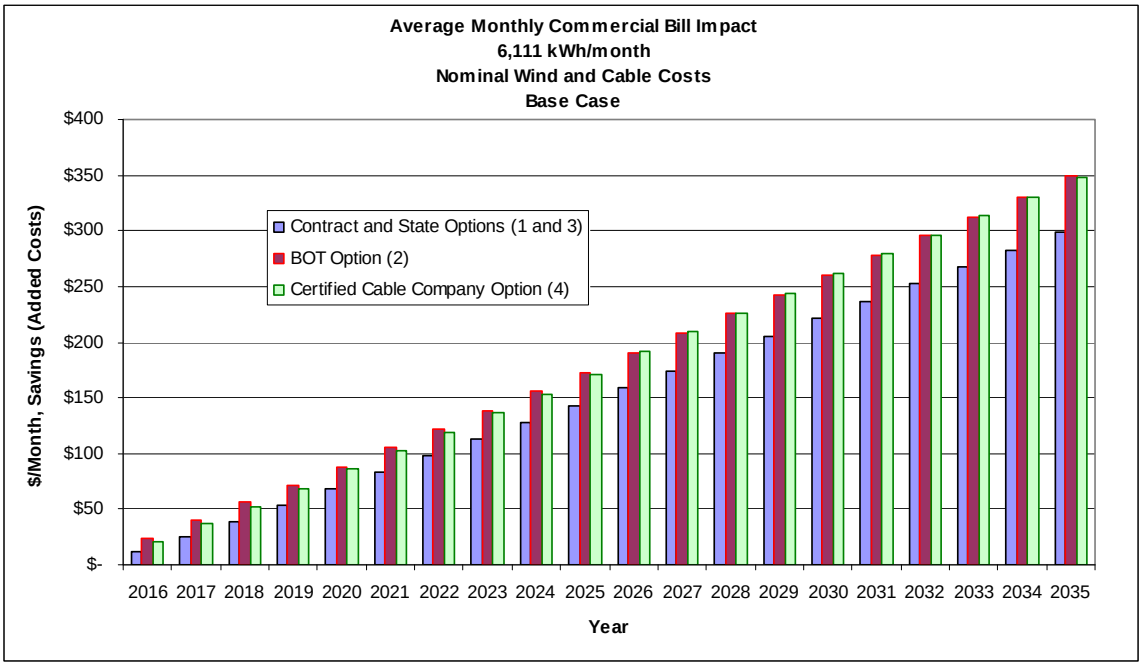


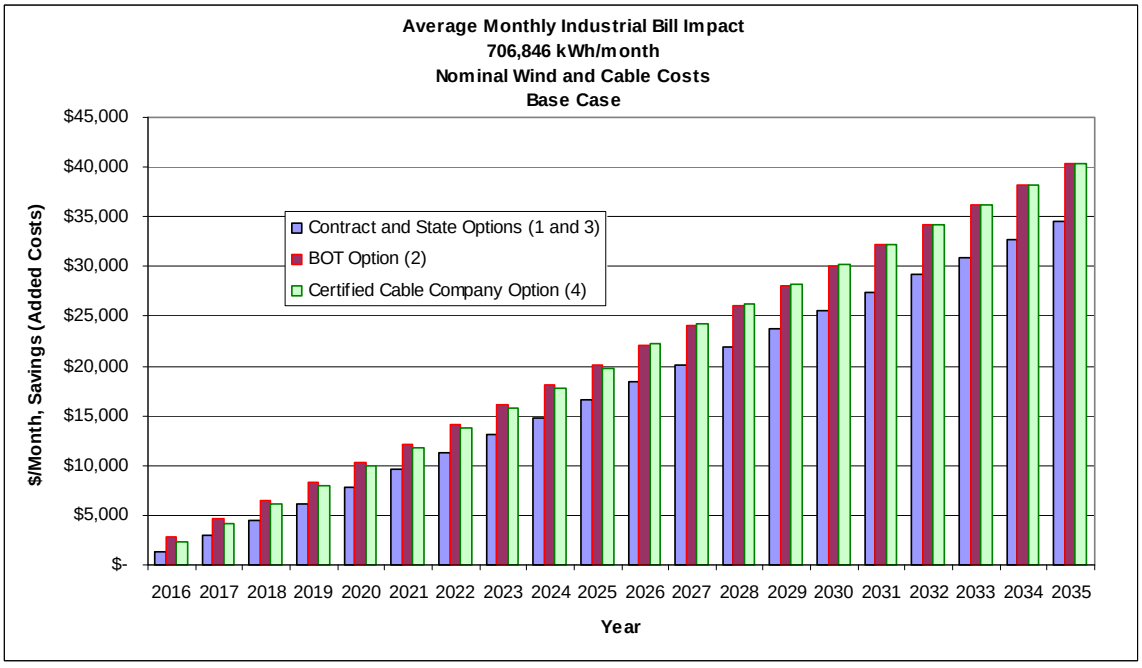


While comparing the projected wind costs to current oil costs is a noteworthy data point, in Navigant's opinion it should not drive the decision on whether to pursue the Project. Rather, from the perspective of evaluating the economics of the Project, it is more appropriate to compare the wind costs to the estimated costs of oil during the period in which the Project would be providing service. Based on the current EIA oil cost forecast for the period 2016 through 2035 (the expected term of the Big Wind Project PPAs), the Big Wind Project (Base Case) would provide savings to all ratepayer service classifications for all options[14] for the entire 20 year period on a nominal cost basis as shown in the graphs below.



[14] Except first year for Contract Option (HECO and State) , when costs are levelized.





While the foregoing graphs show the expected average ratepayer impacts associated with the Base Case for the Big Wind Project on a nominal basis, such impacts have also been computed on a levelized basis as set forth in Appendix 11. In addition, to the Base case, as noted above, Navigant was requested to estimate the ratepayer impacts in the event that (i) the Wind Project

only generated 80 percent of the expected output; (ii) the Wind Project only generated 50 percent of the expected output; and (iii) a 100 MW battery backup system[15] was installed by the Wind Project. The projected ratepayer impacts associated with such sensitivities, both on nominal and levelized bases are shown in Appendix 12. No additional generation capacity for transmission over the cable is modeled.

In addition to the foregoing sensitivities, Navigant was requested to prepare matrices showing the impacts by retail customer service classification associated with varying the cable capital costs, the Big Wind capacity factors and the interest rates. These matrices, which are predicated on first year estimated results, are set forth in Appendix 13. The matrix on page 13-1 shows as "Status Quo" the fuel cost reflected in average monthly customer bills (based on a HECO oil cost of $99.34 per barrel) and how that cost component would change with wind displacing oil fired generation and (i) cable capital costs ranging from $555 million to $755 million; (ii) Big Wind capacity factors ranging from 32.25% to 52.25%; and (iii) interest rates ranging from 5.0% to 7.0%. The matrix on page 13-2 shows on a gross cost basis (i.e., not including the estimated savings associated with fossil fuel costs displaced by the wind generation) the projected impact on average customer monthly bills attributable to the allocated costs of the Big Wind Project with cable capital costs, Big Wind capacity factors and interest rates all varying as described above. Finally, the matrix on page 13-3 shows the projected net impacts (i.e., with avoided oil costs incorporated) on average monthly customer bills associated with varying the cable capital costs, Big Wind capacity factors and interest rates. It should be noted that the foregoing sensitivities assumed that the unit prices of the O'ahu Upgrades and the wind energy are constant.

D. Risk Allocations

In reviewing the structural options, an analysis of the risks to which the affected parties (State, HECO, cable developer, wind farm developers and HECO ratepayers) would be exposed is essential. A Risk/Responsibility matrix has been prepared and is set forth in Appendix 14. As shown in the Risk/Responsibility matrix, most of the financial risks associated with the listed items are assumed by the developers (cable and wind). That is to be expected since managing risks is a primary responsibility of developers for which they are compensated in their project pricing. However, during the contract negotiation/tariff approval processes, developers have a proclivity to attempt to push as much risk as possible on the counterparty, which ultimately would be passed through to the ratepayer. To that end, it is imperative that HECO and the State ensure that the ultimate contracts or tariff in the case of the cable, have substantial ratepayer protections in the form of developer security, liquidated damage provisions, insurance and termination rights as described below.

[15] In the event that the O'ahu upgrades do not function as planned, a battery backup system could compensate in part for such a circumstance.

- Security – Both the wind and cable developers should be required to post sufficient security to ensure that they meet all schedule and performance obligations under their respective contracts. Customary security devices include letters of credit, parent guaranties of corporate subsidiary obligations, bonds, and certain insurance products.
- Liquidated Damages – The contracts/tariff should require the party that fails to perform to pay liquidated damages in cash in addition to providing the security described above.
- Insurance – The parties should be required to maintain sufficient levels of both Completion Insurance and Business Interruption Insurance.
- Termination Rights – If a condition reaches a point in which the full amount of the posted security has been exhausted in connection with a performance failure, the harmed party should have the right to terminate the contract/or rate recovery mechanism with no payment due to the other party.

To mitigate the risk to the State, HECO and the ratepayers, Navigant recommends that the RFP for the Cable Project be structured in a manner that strongly encourages bidders to form a consortium with the wind developer(s). Specifically, in the list of preferences, the RFP could include a preference for proposals in which the bidder makes an arrangement with the wind developer(s) to shield the State, HECO and the ratepayers from major project risks with members of the consortium jointly and severally liable.

VIII. IMPLEMENTATION OF THE RECOMMENDED STRUCTURE

Implementing the recommended structure will require the participation of the State administration (including DBEDT and the Consumer Advocate), the Legislature, the PUC, HECO, and other major stakeholders. Navigant believes that the solution it proposes – the CCC Option - represents the most feasible and economic means of complying with the Hawai‘i renewable energy mandate. The alternative is what HECO has made very clear is its default position: generating with biofuels. While energy from the Big Wind Project is expected to be competitive with oil fired generation as shown in Section V above, biofuel is projected to be substantially more expensive than low sulfur fuel oil.

After the legislation is enacted, current plans entail HECO issuing the RFP with State support and participation. As the State will have substantial interests, it should have an ongoing role in the Cable Project. Navigant recommends that DBEDT and DAGS representatives stay actively involved with HECO in drafting the RFP as well as participating on the Selection Committee charged with evaluating proposals received in response to the RFP. HECO will be required by law to seek PUC approval to issue the RFP.

The Navigant team will be available to assist the State and HECO in this process as needed. Among other things, Navigant has developed a multi-phase evaluation process used in several other cable procurements that ensures comprehensive due diligence in evaluating proposals. The RFP should include a provision requiring that the winning bidder reimburse State (and HECO) consultant expenses in connection with both management of the RFP process and the environmental review work. Such reimbursement requirement should also apply to prior consulting expenses incurred by the State in connection with the Cable Project.

Once the cable developer has been selected, the roles of the State and HECO will not end. To the contrary, the State and HECO will need to become more involved in the Cable Project, particularly HECO since it will rely on the Cable Project to serve its customers’ needs and will ultimately be the owner of the project. The PUC will be responsible for reviewing and approving the CPCN and Tariff filings made by the CCC. Once the permits have been issued and construction begins, the State and HECO will need to implement a very strong project management effort. Again, financial support from the selected developer will be needed to ensure a strong project management representation by the State and HECO.

IX. CONCLUSIONS & RECOMMENDATIONS

Navigant's primary mandate was to give concrete definition to the Cable Project. This involved identifying the appropriate corporate structure, the physical/electrical configuration, the financing arrangements, the coordination with the Wind and HECO Upgrade Projects, defining the roles of the major parties (cable developer, State, HECO and wind developers), and detailing the potential impacts on ratepayers and the ultimate commercial arrangements. The report addresses all of those items and reaches the following preliminary, major conclusions and recommendations.

A. Conclusions

- The Cable Project in conjunction with the other components of the Big Wind Project is technically and economically feasible.
- Based on current oil price projections and other information currently available, the Big Wind Project will produce savings for retail ratepayers beginning with its date of first commercial operation and continuously thereafter.
- The Big Wind project would be a substantial hedge against volatile oil prices such as the volatility we are now seeing in the oil markets resulting primarily from political activities in Africa and the Middle East.
- Federal loan guarantees are available and would provide a substantial economic benefit to the Big Wind Project.
- The Big Wind Project is the most cost effective approach to meeting Hawaii's RPS requirements.
- Because the Big Wind Project entails four sub-projects, there is an issue of project-on-project risk, but that risk can be mitigated and managed to protect Hawai'i ratepayers.
- A Firm Transmission Capacity Purchase Agreement ("FTCPA") between HECO and a cable developer would not be an effective means of developing the cable Project because of capitalized lease accounting issues and HECO's recent credit downgrade.
- The State does not appear to be in a position to own the Cable Project or to enter into a FTCPA with a cable developer.
- Primarily because of a recent credit downgrade, HECO does not have the financial resources to enter into a Build Own Transfer agreement with a cable developer.

B. Recommendations

- Site control for a Molokaʻi wind farm must be resolved without delay so that the Cable Project can be refined and implemented in a timely fashion.
- The Cable project should be developed, permitted, financed, constructed, owned and operated by a Certified Cable Company ("CCC").
- On the tenth anniversary of commercial operation, HECO should have the option to purchase the Cable Project from the CCC at an agreed price.
- Legislation providing for the CCC to be a special purpose regulated utility and for the Cable Project to be deemed used and useful upon commercial operation is necessary for the Cable Project to proceed.
- The PUC should afford the CCC rate base treatment for all prudently incurred costs of the Cable Project consistent with its bid in a competitive procurement and should permit the cable developer a return on equity commensurate with the risk assumed.
- A Request for Proposals for a Cable Project should be issued by HECO, with State support, in the second quarter of 2011.
- The State should be an active participant in the RFP evaluation process which would include representation on the Selection Committee.
- To deal with the project-on-project risk, the procurement process for the Cable Project should strongly encourage the cable developer to enter into consortium arrangements that shield both the State and HECO from major project risks.
- Before any major capital costs are incurred for equipment by the cable developer, the wind developers and HECO, all components of the Big Wind Project should have secured non-appealable permits.
- The basic Cable Project configuration should include an AC cable between Lānaʻi and Molokaʻi capable of transmitting 200 MW, two separate VSC HVDC cables between Molokaʻi and Oʻahu, with converter stations on Oʻahu and Molokaʻi.
- Because of infrastructure issues on Lānaʻi and to improve project economics, the converter facilities for both the Lānaʻi and Molokaʻi Wind Projects should be located on the same site on Molokaʻi.
- Because of numerous issues concerning laying a cable in Honolulu Harbor, the Oʻahu landing site for the Cable project should be the Marine Corps Base Hawaiʻi in Kāneʻohe.

Appendix 1. Meetings with Cable Developers

Hawai'i Inter-Island Cable Project

Navigant Team Meetings with Cable Developers and Other Related Professionals

1. Hawaiian Infrastructure Partners (Neptune and Hudson Transmission) 12/1/10 (Conference Call)
2. Pattern Energy (Trans Bay) 12/2/10 (Navigant NYC Office)
3. Boundless Energy (JDF Cable Project) 12/2/10 (Navigant NYC Office)
4. Castle & Cooke 12/15/10 (Conference Call)
5. Brookfield Power (Cross Sound Cable Project) 1/5/11 (Navigant NYC Office)
6. Siemens 1/6/11 (Conference Call) 1/10/11 (Honolulu)
7. First Wind 1/13/11 (Honolulu)
8. ABB 2/9/11 (Navigant NYC Office)

COMMENTS FROM POTENTIAL CABLE DEVELOPERS[16]
December 2010

1. The rating for the cable developer's debt if HECO is the counterparty will be a minimum of one and perhaps two notches below HECO's BBB- rating.
2. HECO's BBB- credit rating presents a real challenge for financing both the two wind parks and the cable without substantial state/federal support and/or intervention. It is also a challenge to any other part of the renewable portfolio enterprise that DBEDT is leading that might involve HECO and its credit.
3. Participation by HECO will require some kind of backstopping by the state either by putting up credit support or legislative action (or both) to provide assurance of payment ("lock box" or similar type arrangement).
4. There is a strong preference in any kind of BOT Option that HECO have an option to purchase the cable at a defined point in time (out 5 to 10 years or more) rather than purchase upon COD. Otherwise, the cost may be prohibitive to Hawai'i ratepayers.
5. The proposed route with two HVDC converter station sites and an AC line between Lāna'i and Moloka'i made sense to several developers. One developer believes that it has a better preferred route that it considers to be confidential. Navigant stated that the RFP will set forth a preferred route that all proposers will need to include in their proposals. Proposers may then submit alternative proposals with different routes if they choose.
6. The AC line between Lāna'i and Moloka'i made sense to all of the potential cable developers.

[16] This represents notes from meetings between Navigant Consulting and its subconsultants, and potential cable developers..

7. Some of the developers believe that a three party agreement (two wind farms and one cable developer) to resolve project-on-project risk is problematic. It will be difficult enough to get two parties to agree on such risk sharing.
8. Some developers believe that the best way to resolve the project-on-project risk is to have one entity develop the entire project (i.e., 400 MW of wind and the cable). Several are willing to do the entire project.
9. Several developers say they have already done substantial due diligence and could respond to our RFP immediately.
10. The State and HECO should explore further the possibility of DOD financial assistance if there is something in the project for the military (energy security and green power).
11. Several developers opined that the RFP should discuss possible future projects connecting O‘ahu, Maui and the Big Island as the military is most interested in using geothermal energy from the Big Island at its bases. Navigant told the developers that this was beyond the scope of its planned RFP.
12. Navigant made it clear that proposers should avoid including items in their proposals that were outside of the scope and framework of the cable project.
13. Several developers opined that a Honolulu Harbor landing may be both technically and economically feasible as you could directionally drill under the problem areas. They admitted though that obtaining insurance for this alternative could be problematic.
14. Several developers initial comments are that a Honolulu Harbor landing is probably not economically feasible and would be uninsurable.
15. It is recognized by all of the potential cable developers that a VSC HVDC system will be required. One developer noted that the Trans Bay project, which achieved commercial operations November 23, 2010 (about nine months late), was Siemens first VSC facility and two others (Bormans 2 and Helwin 1) are currently under development with CODs projected for 2013. HECO and the State are going to need a standard and a process for technology providers to assure that proposed technology is really "commercial."
16. Converter station site for Siemens HVDC+ system at 400 MW needs to be a minimum of four acres with an additional two acres lay down area. The four converter station single phase transformers are the largest pieces of equipment at about 100 tons each. Siemens shipped them to the Trans Bay project two transformers per barge and each was off-loaded separately and transported at night via truck trailer to its pad where it was set in place. All other pieces of equipment are in 2.5 to 3 ton crates.
17. All of the potential cable developers agreed to give Navigant their further thoughts on:
    a. Structure
    b. Addressing project-on-project risk
    c. Potential cable route into Honolulu Harbor after reviewing redacted SOEST reports
    d. Other issues of interest to them.

Appendix 2. Technical Description of Big Wind Project

The Big Wind Project includes four major sub-projects, specifically (i) two 200 MW wind farms, one each on the islands of Lānaʻi and Molokaʻi (the "Wind Projects"), (ii) high voltage submarine cables (AC and DC) interconnecting the Wind Projects with the HECO transmission system on Oʻahu (the "Cable Project") and (iii) major upgrades to the HECO generating facilities and changes to operating practices to integrate energy from the Wind Projects into the HECO System (the "Upgrade Project")[17]. Following are technical descriptions of these sub-projects.

The Wind Projects

As previously indicated, the Lānaʻi Wind Project and the Molokaʻi Wind Project are each planned to be about 200 MW. Castle & Cooke will be developing the Lānaʻi project while First Wind is expected to develop the project on Molokaʻi (subject to First Wind achieving site control). The full output of the two projects would be sold to HECO pursuant to long-term PPAs between HECO and the two developers.

As the Wind Projects are in the early stages of development, engineering and design have not been completed. Because of ongoing advances in wind turbine technology, both developers are holding off on choosing a generator vendor until they have individually determined which manufacturer and model best meets their needs for efficiency and reliability. A recent technological development in the wind turbine arena is the turbine without a gear box. As the gear box has historically been the most vulnerable component of a wind turbine, these new models are expected to be more reliable than their predecessors.

While constructing the Wind Projects on both islands will be formidable, Lānaʻi represents a particular challenge. There are very limited paved roads on Lānaʻi and many of the dirt roads, particularly in the area in which the Wind Project will be located, are barely passable, even in a four wheel drive vehicle. Major infrastructure improvements will be needed on Lānaʻi before construction of the Wind Project can begin. Depending on the size of the turbine ultimately selected by the developer, each project will require between 50 and 67 wind turbines. The blades on these turbines are about 45 meters which will require that the roads used for transport have substantial turning radii.

[17] It is recognized that all components of the Big Wind Project are subject to the Programmatic Environmental Impact Statement ("PEIS") and the subsequent Tiered EIS. To the extent applicable, the matters reviewed in this appendix are subject to the outcomes of these processes, as appropriate.

The Wind Projects will be constructed in "strings", i.e., circuits with a specified number of wind generators connected to each string. The strings would all be attached at a single collection point which is typically the Wind Project substation. A transformer at the substation will increase the voltage of the Wind Projects' generation (most likely to 138 kV for a 200 MW Wind Project). A 138 kV overhead line or buried cable will be installed by the wind developer to interconnect the Wind Project substation to the Cable Project's Point of Receipt ("POR"). For the Lānaʻi Wind Project, the POR will be a transition station on the north shore of the island. For the Molokaʻi Wind Project, the POR will be at the Cable Project converter station on that island.

The Cable Project

The Cable Project will include a submarine cable that will include both HVDC and AC portions. The HVDC portion, which will employ VSC technology, will entail 400 MW of cables (two 200 MW Monopole Systems or one 400 MW Bipolar System as described below) between Molokaʻi and Oʻahu (about 70 miles), with two adjacent converter stations each on Molokaʻi and on Oʻahu. The AC portion will be a cable capable of transmitting 200 MW (most likely a 138 kV cable) between Lānaʻi and Molokaʻi (about nine miles). Because the connection between Lānaʻi and Molokaʻi will be AC, there would be no requirement for a converter station on Lānaʻi. Installing the converter stations associated with both the Lānaʻi and Molokaʻi Wind Projects at a single site on Molokaʻi will provide substantial savings from the perspective of capital costs and operation and maintenance expenses.

The Wind Project on Lānaʻi will interconnect with one of the co-located 200 MW converter stations on Molokaʻi via the AC submarine cable. The point of interconnection (and demarcation) will be the transition station on the North Shore of Lānaʻi. Castle & Cooke will be responsible for installing the 138 kV transmission line (or buried cable) between its Wind Project substation and the transition station on the north shore of Lānaʻi. The AC submarine cable between the Lānaʻi transition station and the converter station on Molokaʻi will be the responsibility of the cable developer as part of the Cable Project. The landing site for the AC cable on the south shore of Molokaʻi will be through or under an existing break in the coral. The cable would continue for about one mile to the converter station site. Substantial directional drilling will be required to bring the cable from the transition station on Lānaʻi into the waters of the Kalohi Channel. Minimal directional drilling may be required on Molokaʻi.

As indicated above, installing the converter station for the Lānaʻi Wind Project on Molokaʻi will provide substantial cost savings. Converter stations include very sensitive and heavy (single phase transformers weigh almost 100 tons each) equipment. Because of the inability of the Kamalapau Harbor to off-load heavy equipment and the virtual non-existence of roads on Lānaʻi to handle such heavy equipment, very substantial infrastructure costs would need to be incurred to install a converter station on Lānaʻi. The pier at Kaunakakai Harbor, which has one hardened section and is adding another to accept heavy loads, along with the paved road system on Molokai can readily accommodate the delivery and transportation of converter station equipment

with minimal infrastructure upgrade costs. In addition to the Lānaʻi infrastructure issues, there are also capital and operating cost savings associated with locating the converter stations for the Lānaʻi and Molokaʻi Wind Projects at the same site.

The Wind Project on Molokaʻi will interconnect with the other 200 MW converter station[18] on Molokaʻi with the point of interconnection (and demarcation) being at a switching station on the AC side of the converter station transformer. The Molokaʻi wind developer will be responsible for installing the 138 kV line (or cable) interconnecting its substation with the switching station.

Siting the converter stations for the Lānaʻi and Molokaʻi Wind Projects at the same location and bussing the wind farms together should minimize operating and maintenance costs since operating personnel would only need to be sent to one island and there would not be a need for redundant spare parts, particularly a second spare single phase transformer. This arrangement should also provide optimum operating flexibility. For example, if the Molokaʻi Wind Project and the Lānaʻi Wind Project converter station are out of service at the same time, energy from the Lānaʻi Wind Project could be routed through the Molokaʻi Wind Project converter station.

The 70 mile HVDC cable will exit the converter stations to the Kalohi Channel. It will head west along the Molokaʻi southern shore and then north along the Molokaʻi western shore, always staying in the State waters of the Humpback Whale National Marine Sanctuary. At Ilio Point, the cable will head westerly across the Kaiwi Channel to Oʻahu with the cable landing site at Marine Corps Base Hawaii. The cable will traverse the Marine Base to Federal Highway H3 which it will follow for about three miles to a converter station site (two adjacent 200 MW converters) in the vicinity of the HECO Koʻolau substation. HECO will install three 138 kV cables between the Koʻolau substation and the converter stations. The point of interconnection (and demarcation) will be the AC side of the converter station transformers.

While the transfer capacity of the cable system will be 400 MW, the single contingency limitation of the HECO system is 200 MW. An instantaneous loss of 400 MW of capacity would not be acceptable to HECO as it could make the system unstable. As such, no component of the HVDC cable system can exceed the 200 MW limit. This is why the converter stations on Oʻahu are two adjacent 200 MW facilities rather that a single 400 MW station. With respect to the electrical configuration of the cable system, there are two configurations that can meet that limitation – monopole and bipole. One line diagrams of these arrangements are shown in at the end of this appendix. The first one line diagram shows two separate monopole systems. If one system is faulted, power transfer on the other system would not be affected. The second one line diagram shows a 400 MW bipolar system employing three cables. Under this arrangement, up to

[18] While one converter station on Moloka'i is designated for the Moloka'i Wind Project and the other is designated for the Lana'i Wind Project, it should be noted that for reliability purposes and to balance the load, the two Wind Projects would be bussed together on Moloka'i on the AC side of the converter stations as shown in the one line diagrams at the end of this appendix.

200 MW power is transferred on each of two of the cables at equal, but opposite voltage levels. The third cable is a return path. If any one of the cables faults, the system would continue to have the capability to transfer 200 MW.

While both configurations are feasible and meet HECO's requirements, Navigant recommends the two separate monopole systems. Notwithstanding that this system requires four cables rather than three, the cables used in the bipolar system would be heavier and need to be separated which would require three installation campaigns rather than the two associated with the monopole system. As such, there is probably very little cost difference between the two approaches. In addition, there are potential operating issues with the bipolar arrangement. This arrangement may have higher losses if there is unequal dispatch between the two poles due to current differential in the neutral cable. In addition, if the neutral cable is out of service, to maintain 200 MW of transfer capability, both poles would need to be equally loaded which may be difficult. Finally, the bipolar arrangement requires complicated control and protection systems and extra switching equipment.

Upgrade Project

Integrating 400 MW of intermittent power into a system such as HECO's with a 1,200 MW peak load had generally been considered not feasible. The general rule of thumb for most control areas had been that intermittent supplies should not comprise more than ten percent of the control area's generating resources. However, because of Hawai'i's dependence on fossil fuel and its superior wind regime, the TRC set out to raise the bar on the acceptable level of wind penetration on the HECO system. Based on highly technical studies performed by the TRC, it appears that with the recommended upgrades to the O'ahu generating fleet and changes in operating practices, the HECO system should be capable of reliably absorbing 400 MW of wind generation from the Wind Projects.

In developing the Upgrade Project, the major challenges included: (i) avoiding wind energy curtailments at high penetrations, (ii) operating thermal units more often at minimum power, (iii) responding to a trip of a 200 MW submarine cable and (iv) thermal generators responding to sudden drops, rises and swings in wind generation. To deal with these challenges, the TRC developed strategies to improve wind generation forecasting, refine reserve requirements, reduce the minimum power requirements of thermal units and increase the thermal unit ramp rates, among other things.

The TRC determined that reducing the minimum power requirements of seven HECO baseload units would reduce the wind curtailment probabilities from ten percent to three percent. The TRC also determined that unit commitment should be performed well in advance and should reflect the wind energy forecast. Integrating energy from the Wind Projects required improved system operations, heat rates and reliability. For certain generators, it would be necessary to increase the automatic generation control ramp rates by three times. In particular, improving the ramp rates

significantly improves the ability of the HECO system to counteract wind generation changes as compared to today's ramp rates.

The TRC's results include recommendations for the Wind Projects, HECO Operations, HECO regulation (i.e., load following), forecasting and monitoring and thermal unit modifications, all with an estimated capital cost ranging from $150 million to $200 million. With respect to the Wind Projects, the TRC recommended that they be required to provide inertial response to improve performance during events that cause large under-frequencies. The Wind Projects should also be required to respond to curtailment requests in less than ten minutes.

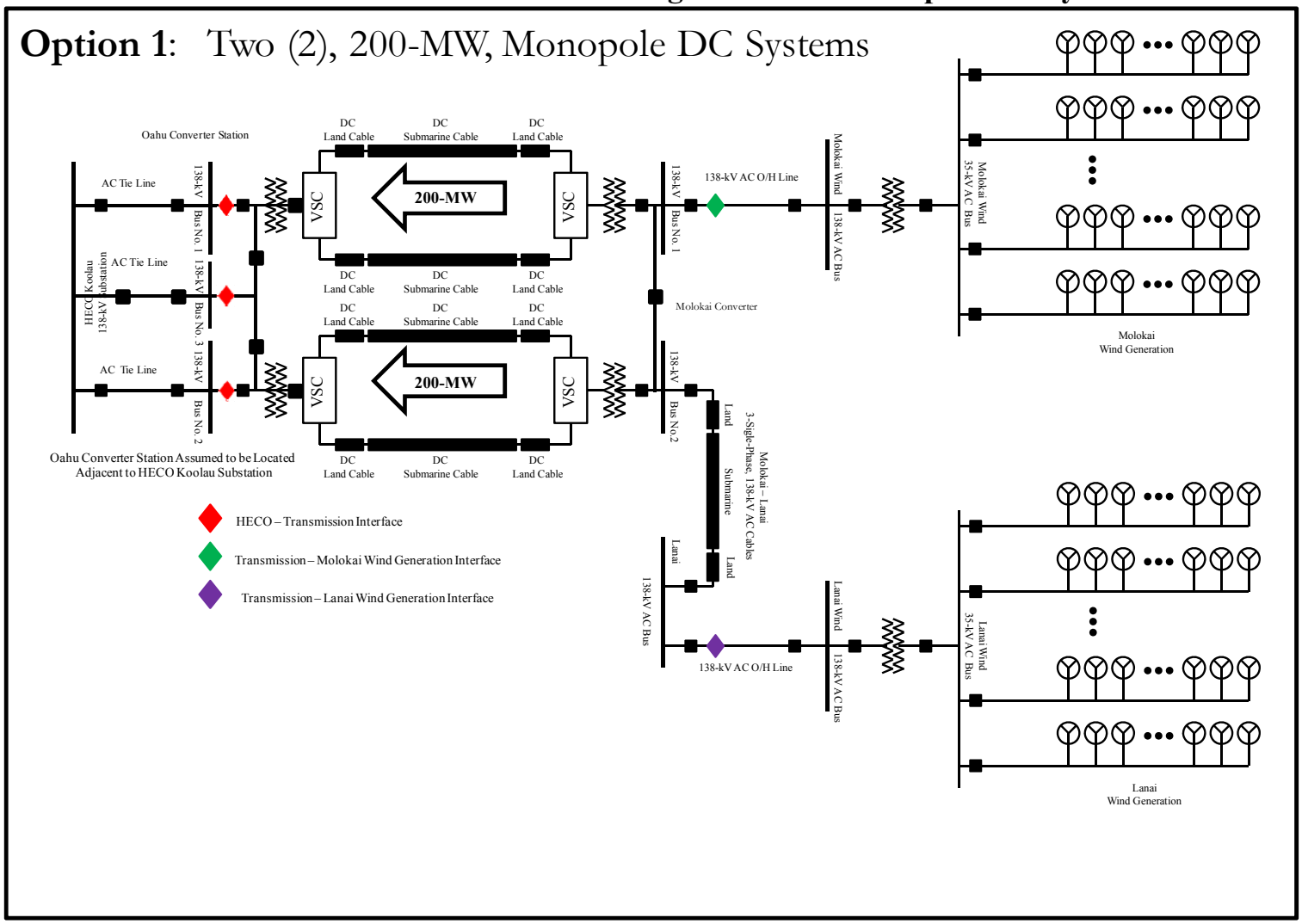
In connection with HECO Operations, a wind power forecast should be implemented as part of unit commitment. This should result in a reduced variable cost of system operations with a more optimal commitment of cycling units. Also related to HECO Operations, the wind variability should be measured and recorded by output power for different plants to reduce the reliance on expensive quick-start units.

To reduce the cost of operating the system through the commitment of cycling units, the regulation requirement should be redistributed to other resources such as load control and quick-start units. In addition, the regulation requirement should be based on wind power variability and loss of load criteria. This should result in reduced wind curtailment during light loads.

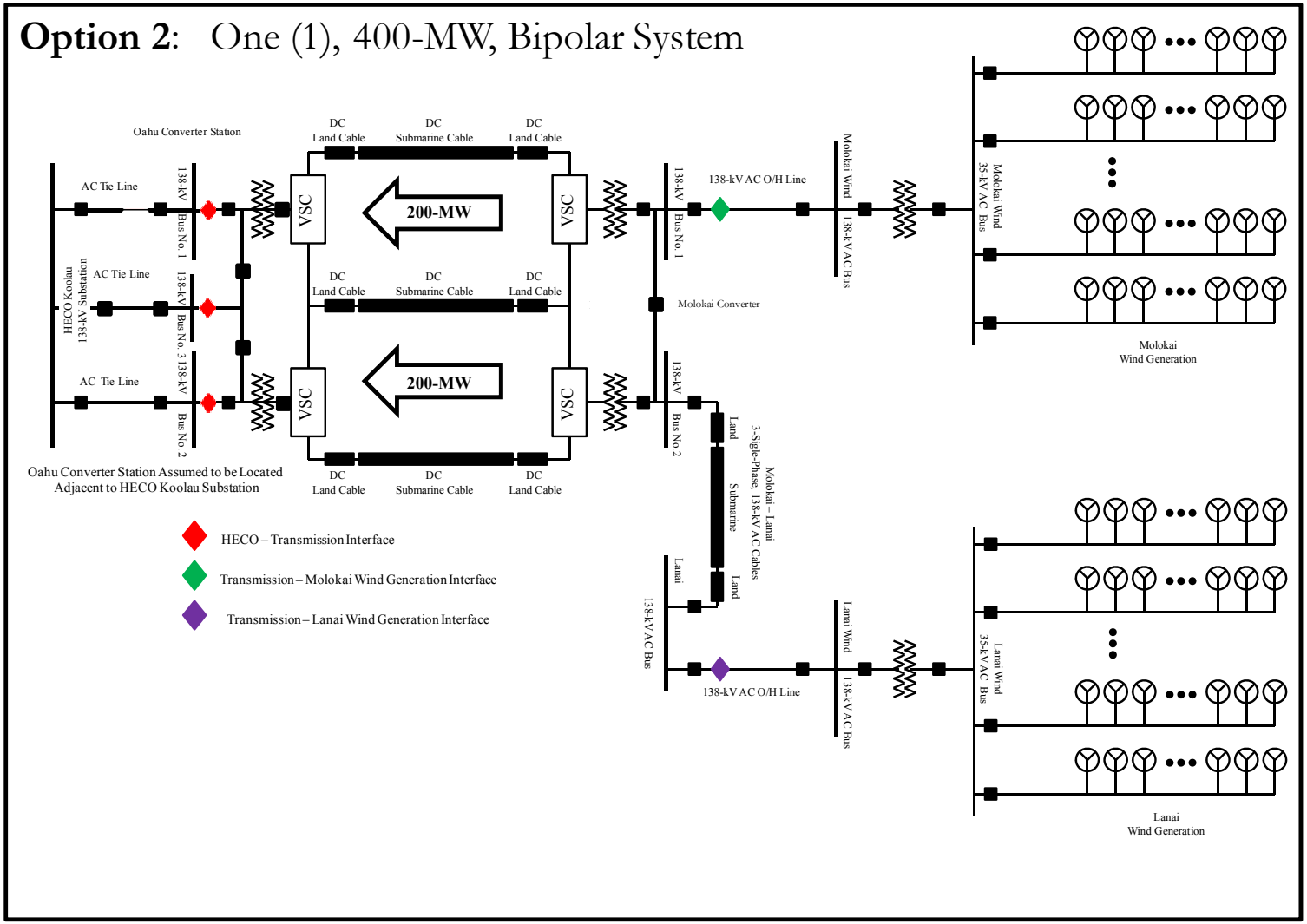
With respect to forecasting and monitoring, the TRC recommended that the wind power forecast be discounted to account for unavailable turbines so that sufficient thermal generators can be committed. Also, during severe weather, thermal generators should be committed to address increased wind generation variability.

Substantial modifications were recommended for the HECO thermal units. Such modifications included reducing minimum power points to maintain adequate regulation, which would accommodate more wind energy at light loads thereby reducing overall variable costs. Improvements to thermal unit ramp rates were also recommended. Such improved ramp rates would compensate for the largest wind generation reduction in a ten minute period and the largest load increase in a ten minute period.

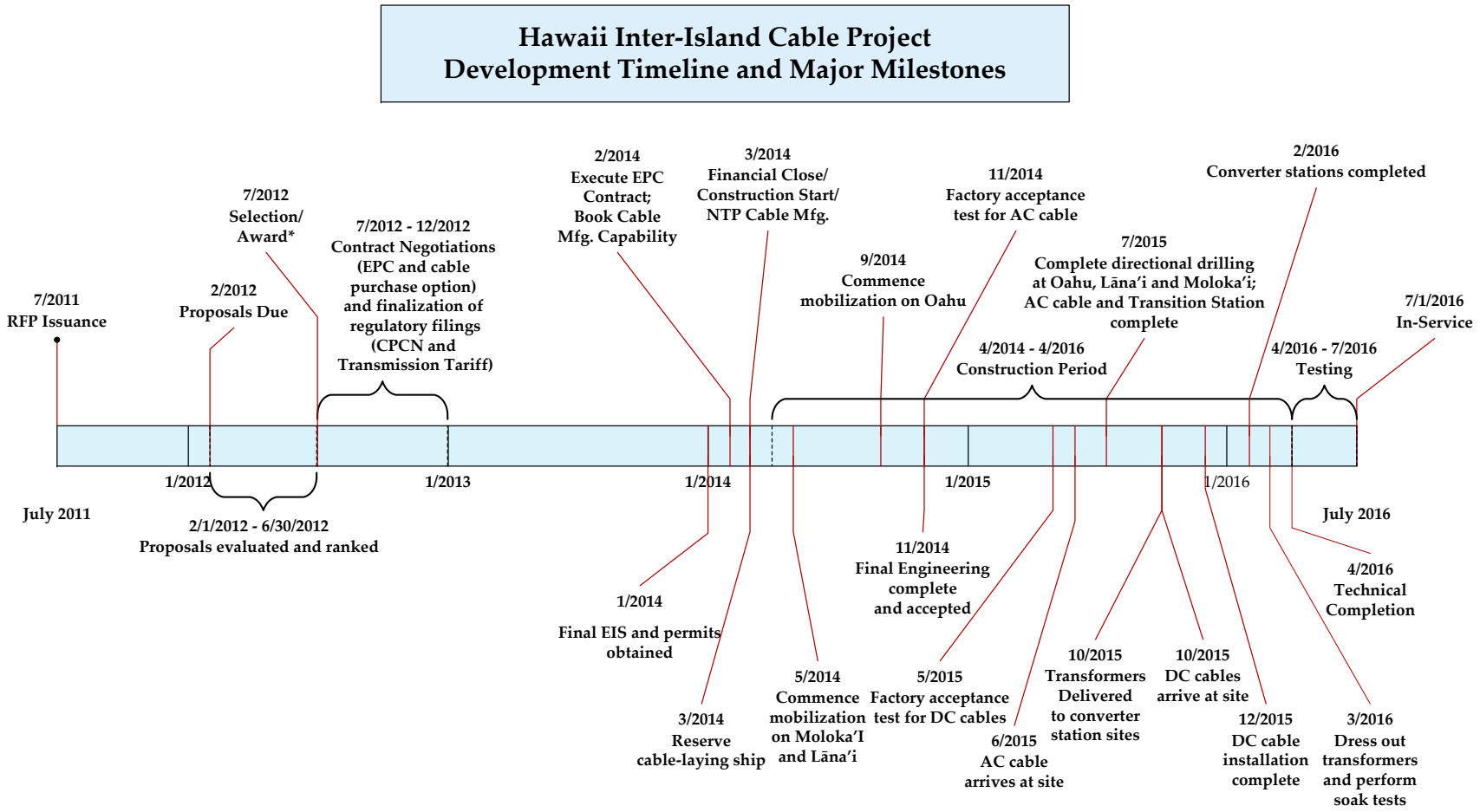
Schedule 1 – Potential Electrical Configuration: 2x Monopole DC Systems



Schedule 2 – Potential Electrical Configuration: Single Bipolar System



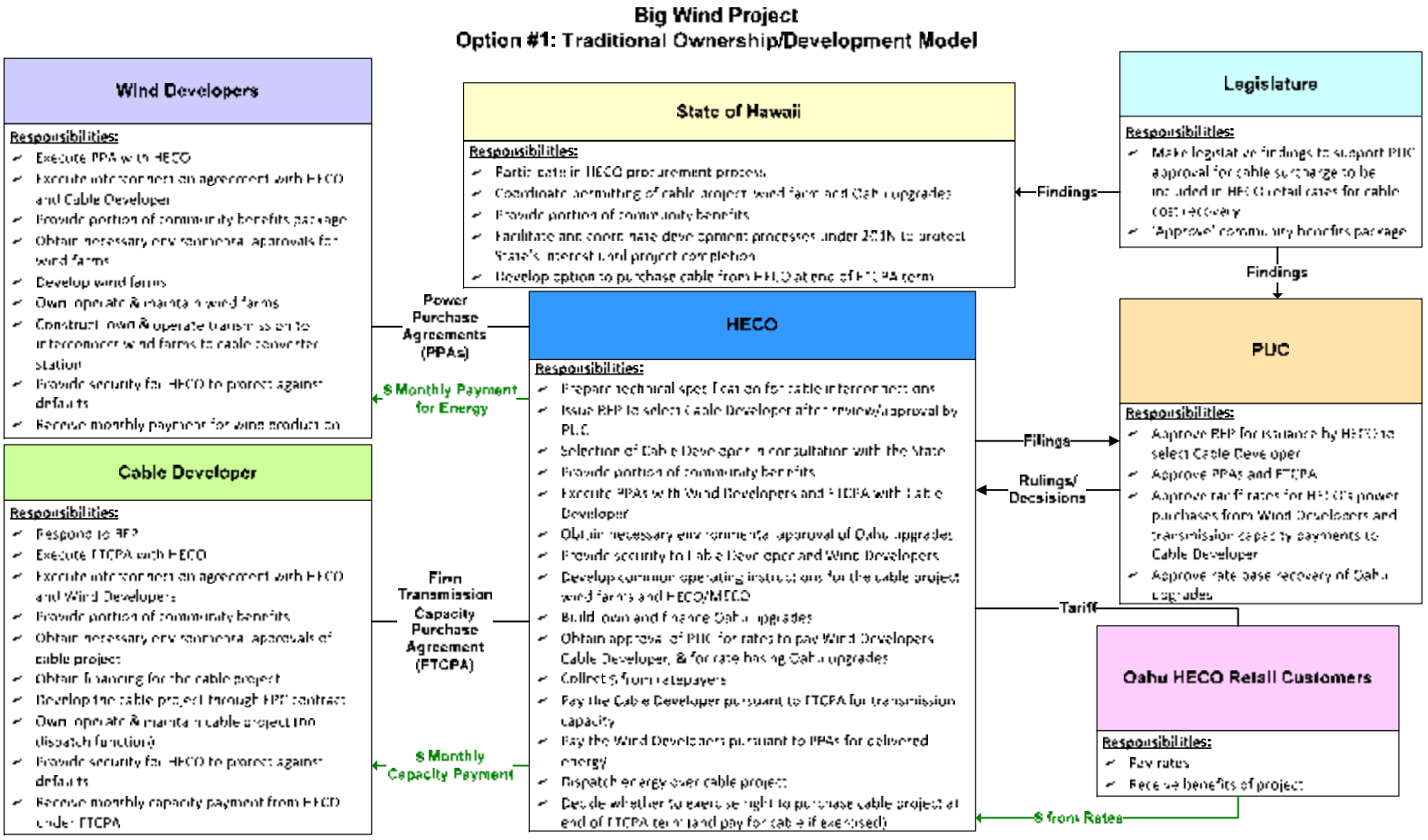
Appendix 3. Schedule of Major Milestones



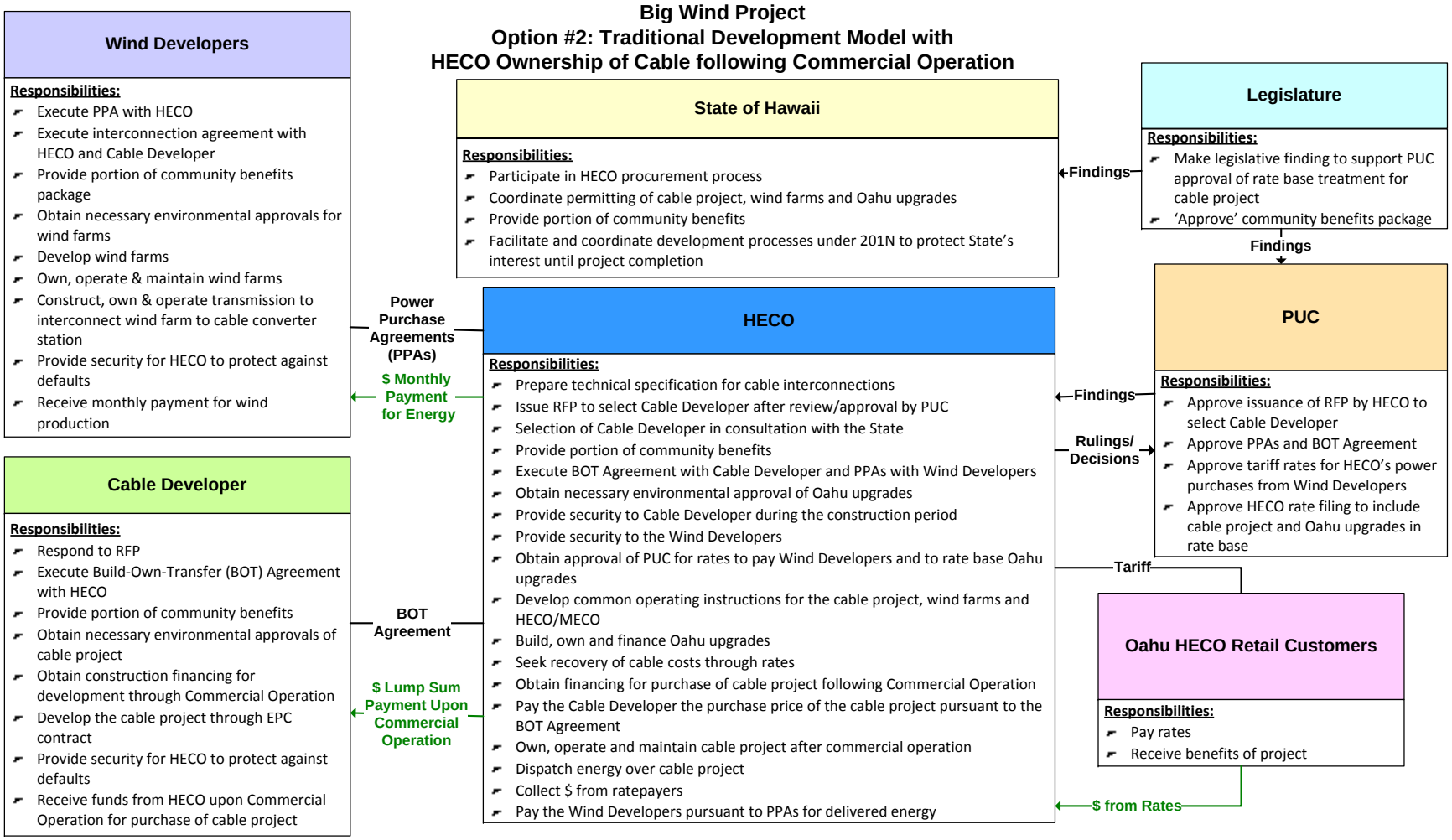
*Upon Selection, Cable Developer will be required to commence permitting and participation in the EIS process. Some developers may commence permitting process before selection in an attempt to improve their scoring in the RFP evaluation.

Appendix 4. Project Structures

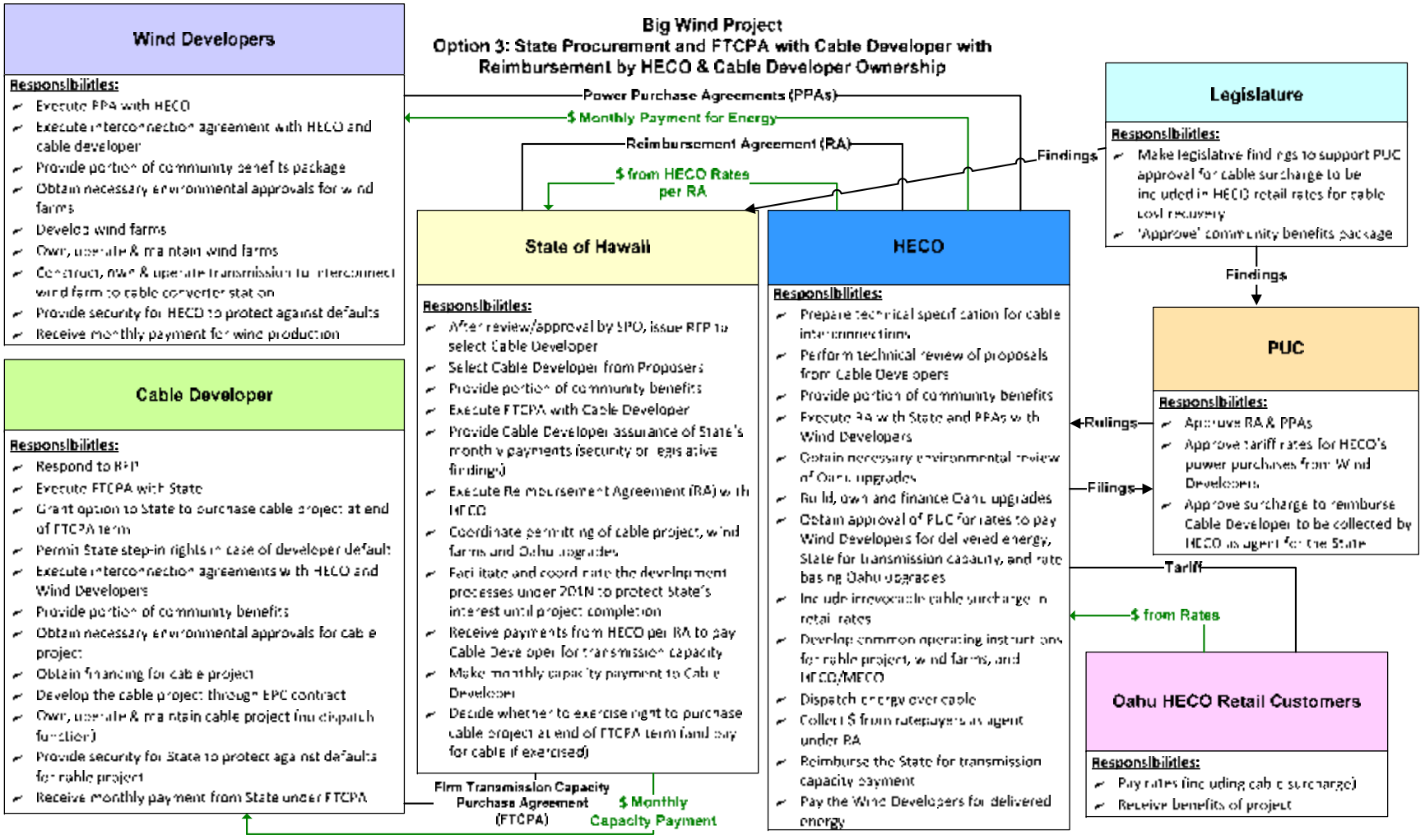
Schedule 1



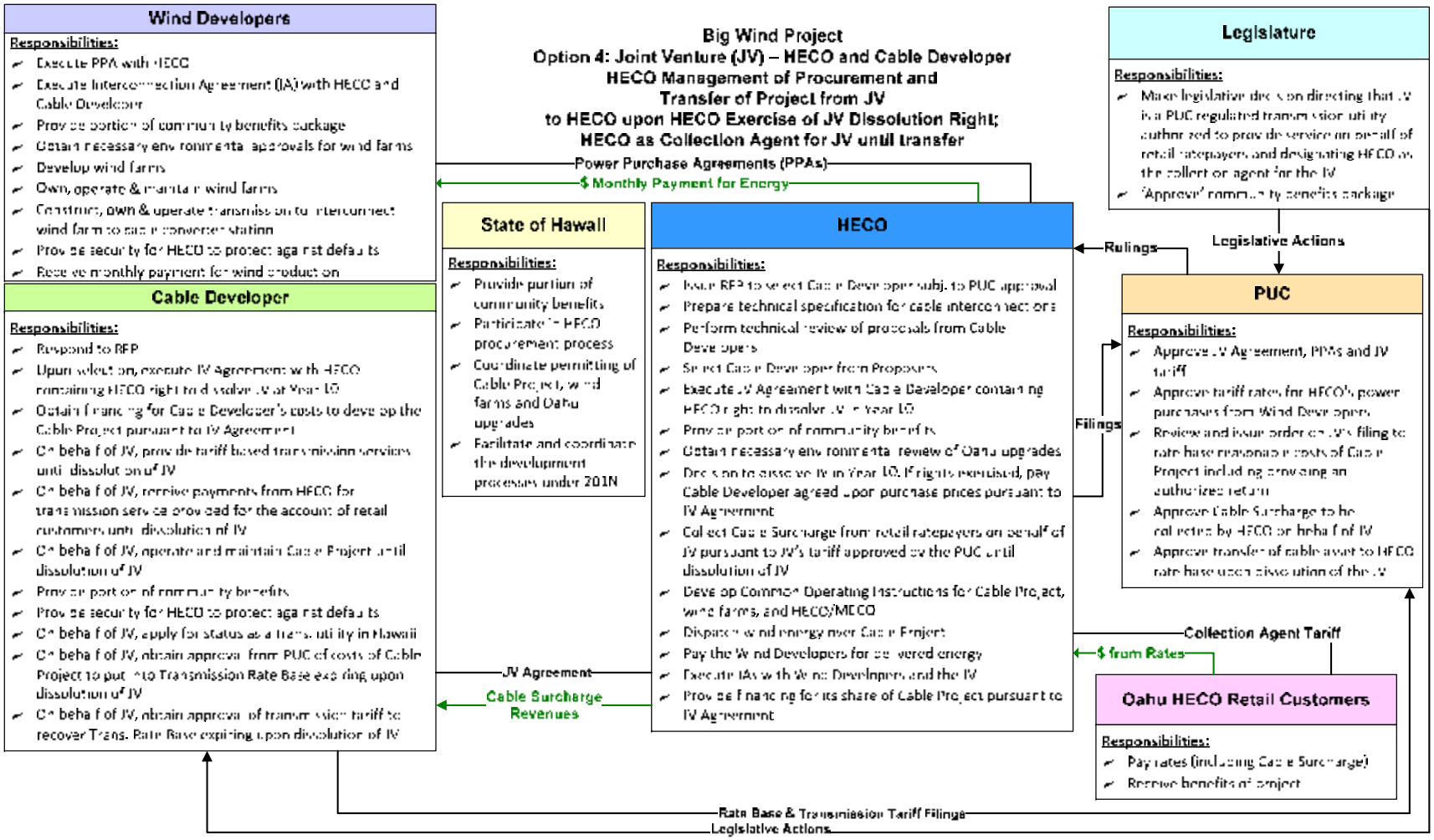
Schedule 2


Big Wind Project
Option #2: Traditional Development Model with
HECO Ownership of Cable following Commercial Operation
Wind Developers
Responsibilities:
Execute PPA with HECO
Execute interconnection agreement with HECO and Cable Developer
Provide portion of community benefits package
Obtain necessary environmental approvals for wind farms
Develop wind farms
Own, operate & maintain wind farms
Construct, own & operate transmission to interconnect wind farm to cable converter station
Provide security for HECO to protect against defaults
Receive monthly payment for wind production
Cable Developer
Responsibilities:
Respond to RFP
Execute Build-Own-Transfer (BOT) Agreement with HECO
Provide portion of community benefits
Obtain necessary environmental approvals of cable project
Obtain construction financing for development through Commercial Operation
Develop the cable project through EPC contract
Provide security for HECO to protect against defaults
Receive funds from HECO upon Commercial Operation for purchase of cable project
State of Hawaii
Responsibilities:
Participate in HECO procurement process
Coordinate permitting of cable project, wind farms and Oahu upgrades
Provide portion of community benefits
Facilitate and coordinate development processes under 201N to protect State's interest until project completion
Legislature
Responsibilities:
Make legislative finding to support PUC approval of rate base treatment for cable project
'Approve' community benefits package
Findings
Findings
PUC
Responsibilities:
Approve issuance of RFP by HECO to select Cable Developer
Approve PPAs and BOT Agreement
Approve tariff rates for HECO's power purchases from Wind Developers
Approve HECO rate filing to include cable project and Oahu upgrades in rate base
Findings
Rulings/ Decisions
Power Purchase Agreements (PPAs)
$ Monthly Payment for Energy
BOT Agreement
$ Lump Sum Payment Upon Commercial Operation
HECO
Responsibilities:
Prepare technical specification for cable interconnections
Issue RFP to select Cable Developer after review/approval by PUC
Selection of Cable Developer in consultation with the State
Provide portion of community benefits
Execute BOT Agreement with Cable Developer and PPAs with Wind Developers
Obtain necessary environmental approval of Oahu upgrades
Provide security to Cable Developer during the construction period
Provide security to the Wind Developers
Obtain approval of PUC for rates to pay Wind Developers and to rate base Oahu upgrades
Develop common operating instructions for the cable project, wind farms and HECO/MECO
Build, own and finance Oahu upgrades
Seek recovery of cable costs through rates
Obtain financing for purchase of cable project following Commercial Operation
Pay the Cable Developer the purchase price of the cable project pursuant to the BOT Agreement
Own, operate and maintain cable project after commercial operation
Dispatch energy over cable project
Collect $ from ratepayers
Pay the Wind Developers pursuant to PPAs for delivered energy
Tariff
Oahu HECO Retail Customers
Responsibilities:
Pay rates
Receive benefits of project
$ from Rates

Schedule 3


Big Wind Project
Option 3: State Procurement and FTCPA with Cable Developer with Reimbursement by HECO & Cable Developer Ownership
Wind Developers
Responsibilities:
Execute PPA with HECO
Execute interconnection agreement with HECO and cable developer
Provide portion of community benefits package
Obtain necessary environmental approvals for wind farms
Develop wind farms
Own, operate & maintain wind farms
Construct, own & operate transmission to interconnect wind farm to cable converter station
Provide security for HECO to protect against defaults
Receive monthly payment for wind production
Cable Developer
Responsibilities:
Respond to RFP
Execute FTCPA with State
Grant option to State to purchase cable project at end of FTCPA term
Permit State step-in rights in case of developer default
Execute interconnection agreements with HECO and Wind Developers
Provide portion of community benefits
Obtain necessary environmental approvals for cable project
Obtain financing for cable project
Develop the cable project through EPC contract
Own, operate & maintain cable project (incl dispatch function)
Provide security for State to protect against defaults for cable project
Receive monthly payment from State under FTCPA
Power Purchase Agreements (PPAs)
$ Monthly Payment for Energy
Reimbursement Agreement (RA)
$ from HECO Rates per RA
Firm Transmission Capacity Purchase Agreement (FTCPA)
$ Monthly Capacity Payment
State of Hawaii
Responsibilities:
After review/approval by SPO, issue RFP to select Cable Developer
Select Cable Developer from Proposers
Provide portion of community benefits
Execute FTCPA with Cable Developer
Provide Cable Developer assurance of State's monthly payments (security or legislative finding)
Execute Reimbursement Agreement (RA) with HECO
Coordinate permitting of cable project, wind farms and Oahu upgrades
Facilitate and coordinate the development processes under PUN to protect State's interest until project completion
Receive payments from HECO per RA to pay Cable Developer for transmission capacity
Make monthly capacity payment to Cable Developer
Decide whether to exercise right to purchase cable project at end of FTCPA term (and pay for cable if exercised)
HECO
Responsibilities:
Prepare technical specification for cable interconnections
Perform technical review of proposals from Cable Developers
Provide portion of community benefits
Execute RA with State and PPAs with Wind Developers
Obtain necessary environmental review of Oahu upgrades
Build, own and finance Oahu upgrades
Obtain approval of PUC for rates to pay Wind Developers for delivered energy, State for transmission capacity, and rate basing Oahu upgrades
Include irrevocable cable surcharge in retail rates
Develop common operating instructions for cable project, wind farms, and HECO/MECO
Dispatch energy over cable
Collect $ from ratepayers as agent under RA
Reimburse the State for transmission capacity payment
Pay the Wind Developers for delivered energy
Legislature
Responsibilities:
Make legislative findings to support PUC approval for cable surcharge to be included in HECO retail rates for cable cost recovery
'Approve' community benefits package
Findings
Findings
PUC
Responsibilities:
Approve RA & PPAs
Approve tariff rates for HECO's power purchases from Wind Developers
Approve surcharge to reimburse Cable Developer to be collected by HECO as agent for the State
Rulings
Filings
Tariff
$ from Rates
Oahu HECO Retail Customers
Responsibilities:
Pay rates (including cable surcharge)
Receive benefits of project

Schedule 4


Big Wind Project
Option 4: Joint Venture (JV) – HECO and Cable Developer
HECO Management of Procurement and
Transfer of Project from JV
to HECO upon HECO Exercise of JV Dissolution Right;
HECO as Collection Agent for JV until Transfer
Wind Developers
Responsibilities:
Execute PPA with HECO
Execute Interconnection Agreement (IA) with HECO and Cable Developer
Provide portion of community benefits package
Obtain necessary environmental approvals for wind farms
Develop wind farms
Own, operate & maintain wind farms
Construct, own & operate transmission to interconnect wind farm to cable converter station
Provide security for HECO to protect against defaults
Receive monthly payment for wind production
Cable Developer
Responsibilities:
Respond to RFP
Upon selection, execute JV Agreement with HECO containing HECO right to dissolve JV at Year 10
Obtain financing for Cable Developer's costs to develop the Cable Project pursuant to JV Agreement
On behalf of JV, provide tariff based transmission services until dissolution of JV
On behalf of JV, receive payments from HECO for transmission service provided for the account of retail customers until dissolution of JV
On behalf of JV, operate and maintain Cable Project until dissolution of JV
Provide portion of community benefits
Provide security for HECO to protect against defaults
On behalf of JV, apply for status as a transmission utility in Hawaii
On behalf of JV, obtain approval from PUC of costs of Cable Project to put into Transmission Rate Base existing upon dissolution of JV
On behalf of JV, obtain approval of transmission tariff to recover Trans. Rate Base existing upon dissolution of JV
Power Purchase Agreements (PPAs)
$ Monthly Payment for Energy
State of Hawaii
Responsibilities:
Provide portion of community benefits
Participate in HECO procurement process
Coordinate permitting of Cable Project, wind farms and Oahu upgrades
Facilitate and coordinate the development processes under 201N
HECO
Responsibilities:
Issue RFP to select Cable Developer subj. to PUC approval
Prepare technical specification for cable interconnections
Perform technical review of proposals from Cable Developers
Select Cable Developer from Proposers
Execute JV Agreement with Cable Developer containing HECO right to dissolve JV at Year 10
Provide portion of community benefits
Obtain necessary environmental review of Oahu upgrades
Decision to exercise JV in Year 10. If rights exercised, pay Cable Developer agreed upon purchase prices pursuant to JV Agreement
Collect Cable Surcharge from retail ratepayers on behalf of JV pursuant to JV's tariff approved by the PUC until dissolution of JV
Develop Common Operating Instructions for Cable Project, wind farms, and HECO/MECO
Dispatch wind energy over Cable Project
Pay the Wind Developers for delivered energy
Execute IAs with Wind Developers and the JV
Provide financing for its share of Cable Project pursuant to JV Agreement
JV Agreement
Cable Surcharge Revenues
Legislature
Responsibilities:
Make legislative decision directing that JV is a PUC regulated transmission utility authorized to provide service on behalf of retail ratepayers and designating HECO as the collection agent for the JV
'Approve' community benefits package
Rulings
Legislative Actions
PUC
Responsibilities:
Approve JV Agreement, PPAs and JV tariff
Approve tariff rates for HECO's power purchases from Wind Developers
Review and issue orders on JV's filing to rate base reasonable costs of Cable Project including providing an authorized return
Approve Cable Surcharge to be collected by HECO on behalf of JV
Approve transfer of cable asset to HECO rate base upon dissolution of the JV
Filings
Collection Agent Tariff
$ from Rates
Oahu HECO Retail Customers
Responsibilities:
Pay rates (including Cable Surcharge)
Receive benefits of project
Rate Base & Transmission Tariff Filings
Legislative Actions

Appendix 5. Proposed Legislation

HOUSE OF REPRESENTATIVES
TWENTY-SIXTH LEGISLATURE, 2011
STATE OF HAWAII

H.B. NO. 1176 H.D. 2

A BILL FOR AN ACT

RELATING TO RENEWABLE ENERGY TRANSMISSION CABLE.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that one of the key elements to the implementation of Hawaii's energy policy is the desire for fixed-price indigenous renewable resources to hedge against rising oil prices. For the State to meet its clean energy objectives, hundreds of megawatts of fixed price renewable energy must be developed in the near term.

For the past several years the State of Hawaii, with the support and assistance of the federal government and Hawaiian Electric Company, has been exploring the technical, engineering, economic, and financial feasibility of an interisland undersea electrical transmission cable system that would be capable of transmitting wind generated electric energy from Maui county to Oahu to meet the State's renewable portfolio standard. The results of these extensive analyses have concluded that an undersea cable system is technically feasible, cost-effective and financially viable to serve the public's interest and benefit.

Act 155, Session Law Hawaii 2009, codified as section 269-92, Hawaii Revised Statutes, increased the 2020 renewable portfolio standard mandatory target from twenty per cent to twenty-five per cent, and added a new forty per cent requirement for the year 2030, making it one of the most aggressive renewable portfolio standards in the nation.

In addition, prior to January 1, 2015, only fifty per cent of a utility's renewable portfolio standard needs to be met by electrical generation using renewable energy as the source. However, after January 1, 2015, an electric utility company's entire renewable portfolio standard will be required to be met by renewable energy generation.

To achieve these renewable portfolio standard targets, electric utility companies need to move forward with a no regrets strategy using technologies that are:

(1) Mature and commercially available;

(2) Capable of being developed within a near-term horizon;

(3) Available on a large scale; and

(4) Used to generate electricity to be delivered to Hawaii's load centers.

At this time only technologies that use solar and wind resources fit this criteria.

Economic analyses have shown that harnessing wind resources has proven to be a relatively cost-effective means for helping to meet Hawaii's energy policy objectives. The cost of the energy delivered to the load center is expected to be at-or-below the cost of other commercially available large scale renewable resources in the near-term and at-or-below the cost of petroleum-based generation in the longer-term.

Wind resources, while limited on Oahu, is abundant on the neighbor islands of Lanai and Molokai. Lanai or Molokai wind projects totaling four hundred megawatts of capacity have the potential to produce energy in the range of one thousand five hundred gigawatt hours of electricity annually given the expected capacity factors for large scale wind farms on these islands. For the aforementioned reasons, to contribute to attaining renewable portfolio standard goals, strategies to link Oahu's demand to abundant on-island wind and solar resources as well as fixed-price wind from the neighbor islands of Molokai and Lanai are being pursued.

The legislature further finds that electrical services on the islands of Oahu, Maui, Molokai, Lanai, and Hawaii are provided by affiliated, franchised electric utility

companies, however, none of the electric utility systems on these islands are electrically interconnected to the electric utility system on any other island.

Interconnecting undersea high-voltage transmission cables to an electric utility system will require the electric utility company to install on-island transmission infrastructure. Given the cost of the on-island transmission infrastructure, the need to have the on-island infrastructure available when the undersea high-voltage transmission cables commence commercial operations, and the potential acquisition cost of the undersea high-voltage transmission cables, it may be beneficial to allow an electric utility company to acquire the undersea high-voltage transmission cables at the commencement of commercial operations, or at some point in time after the commencement of commercial operations.

The legislature further finds that specific cost recovery provisions should be added to the public utility law as an option to address the capital cost of developing the high-voltage electric transmission cable to minimize the electric utility companies' existing rate bases and that the electric utility's credit quality, which is essential to the development of non-electric utility renewable energy projects in Hawaii, may be negatively impacted unless these recovery provisions are clearly permissible in the public utility law.

Therefore, the legislature finds that it may be in the public's interest that undersea transmission cables are installed by a non-utility investor that assumes financial responsibility for the project until it can achieve commercial availability such as those in New York, California, and other places around the world. Accordingly, the purpose of this Act is to establish the regulatory structure under which inter-island undersea transmission cables could be developed, financed, and constructed on commercially reasonable terms.

Lastly, the legislature finds that the development of large-scale renewable energy projects will impact the communities on which the projects are located, and that at least some of the environmental review processes conducted as part of the permitting process for the projects will occur after the public utilities commission would need to act on a

cable certification application. To foster communication with the affected communities and the commission, the legislature finds it necessary to incorporate a requirement that the public utilities commission hold a public hearing on each island connected by the high-voltage electric transmission cable system for the purposes of obtaining comments and input from interested parties.

SECTION 2. Chapter 269, Hawaii Revised Statutes, is amended by adding a new part to be appropriately designated and to read as follows:

"PART . INTERISLAND TRANSMISSION SYSTEM

§269-A Definitions. As used in this part:

"Cable acquisition cost" means the electric utility's costs, including reasonable transaction costs, to acquire a high-voltage electric transmission cable system pursuant to a turnkey cable contract or a cable purchase contract.

"Cable company" means any person, company, corporation, or entity who is selected through a request for proposals, or other process approved by the commission, to be a certified cable company applicant.

"Cable purchase contract" means a contract to purchase a high-voltage electric transmission cable system at or after it achieves commercial operations.

"Cable surcharge" means the surcharge approved by the commission pursuant to section 269-D.

"Certified cable company" means any person or persons, company, corporation or entity who own or control a high-voltage electric transmission cable system; provided that the person or persons, company, corporation or entity receives a certificate of public convenience and necessity from the commission pursuant to section 269-B.

"Commercial operations" means the period after the high-voltage electric transmission cable system:

(1) Passes acceptance tests approved by the commission, as determined by a qualified independent engineer approved by the commission; and

(2) Meets such other criteria as the commission determines as reasonable.

If the primary source or sources of the renewable electricity that will be transmitted to an electric utility company or companies using the high-voltage electric transmission cable system will be provided pursuant to a power purchase agreement or agreements between that electric utility company or companies and an owner or owners of a new renewable generation facility or facilities, the commission shall consider and may include criteria that address whether and to what extent the intended source of renewable energy is available to be transmitted, in determining the commercial operations date of the high voltage electric transmission cable system.

"Commercial operations date" means the date upon which the high-voltage electric transmission cable system begins commercial operations.

"Commission" means the public utilities commission established pursuant to section 269-2.

"Cost" means all capital investments, including rate of return, any applicable taxes, and all expenses, including capacity payments and operation and maintenance expenses, related to or resulting from the planning, licensing, permitting, designing, development, construction, or operation of a high-voltage electric transmission cable system.

"Cost effective" means the same as defined in section 269-91.

"Development period" means the period of time after the certified transmission entity has been granted a certificate of public convenience and necessity, but before commercial operations.

"Electric utility company" means a public utility as defined under section 269-1, for the production, conveyance, transmission, delivery, or furnishing of electric power.

"Electric utility system" means the electric system owned and operated by an electric utility company, including any non-utility owned facilities that are interconnected to the system, consisting of power plants, transmission and distribution lines, and related equipment for the production and delivery of electric power to the public.

"Energy Resources Coordinator" shall be as defined in section 196-3.

"Expected commercial operations date" means the date reasonably determined by the certified cable company for the high-voltage electric transmission cable system to commence commercial operations.

"High-voltage electric transmission cable system" means a one hundred twenty kilovolt or greater electric transmission alternating current (AC) or direct current (DC) transmission cables constructed undersea, including connected transmission cable or cables or lines installed on land, connecting the electric utility systems on two or more islands or allowing for the transmission of power from one or more renewable generation facilities to the electric utility system located on another island, AC substations, or AC/DC converter stations, fiber optic communication cables, and other appurtenant facilities.

"On-island transmission infrastructure" means the modifications and additions to the existing alternating current (AC) transmission grid on an island and other electric utility system modifications needed to reliably interconnect a high-voltage electric transmission cable system to an electric utility system, and to reliably accept power generated from large-scale renewable generation facilities transmitted via the high-voltage electric transmission cable system interconnecting two or more islands' electric utility systems.

"Power purchase agreement" means an agreement between an electric utility company and the developer of a renewable generation facility to sell the power generated by the facility to the electric utility company.

"Predevelopment period" means the period of time before the certified transmission entity has been granted a certificate of public convenience and necessity.

"Project-on-project financing risk" refers to mutually dependent projects, whose risk of completion, and therefore, financing, is dependent on each other, as in the case of a high-voltage electric transmission cable system intended to connect a renewable generation facility to the electric utility system, for example, where the uncertainty as to whether the renewable generation facility can be financed or built results in increased risk

for the high-voltage electric transmission cable project because it is not viable without a source of energy to transmit, and vice versa.

"Renewable electricity" means electrical energy generated using renewable energy as the source.

"Renewable energy" has the same meaning as in section 269-91.

"Renewable generation facility" means a facility generating electrical energy using renewable energy as the primary source.

"Renewable portfolio standard" has the same meaning as in section 269-91.

"Request For proposals" means the request for proposals developed jointly by the electric company or companies and the State energy resources coordinator or its designee, issued pursuant to a competitive bidding process authorized by the commission to select a certified cable company and conducted by the electric utility company or companies to which the capacity of a high-voltage electric transmission cable system will be made available. The State energy resources coordinator shall be a member of the selection committee that will review and evaluate the proposals.

"Turnkey cable contract" means a contract entered into pursuant to a Request For Proposal, under which a cable company designs, builds, and transfers a high-voltage electric transmission cable system to an electric utility company upon commencement of commercial operations.

§269-B Certification. (a) Prior to installing a high-voltage electric transmission cable system, a cable company shall be certified by the commission as a public utility pursuant to section 269-7.5. A certified cable company applicant shall be selected through a Request For Proposals process, or other process, approved by the commission.

(b) Notwithstanding any provision of section 269-7.5 to the contrary:

(1) In any application for a certificate of public convenience and necessity for a high-voltage electric transmission cable system, the commission shall approve, disapprove, or approve subject to conditions and issue a final order within

one hundred eighty days after the application is filed; provided that the commission may extend the timeline as necessary;

(2) In determining whether the applicant is financially fit, the commission may allow for the use of commercially reasonable non-recourse project financing for the high-voltage electric transmission cable system;

(3) In determining whether the proposed transmission capacity service is, or will be, required by the present or future public convenience and necessity, the commission shall determine whether the high-voltage electric transmission cable system would be a cost effective means of:

(A) Interconnecting two or more electric utility systems; or

(B) Helping one or more electric utility companies meet the applicable renewable portfolio standard; or

(C) Achieving other considerations as the commission may deem appropriate.

(4) If the primary source or sources of the renewable electricity that will be transmitted to an electric utility company or companies using the high-voltage electric transmission cable system will be provided pursuant to a power purchase agreement or agreements between an electric utility company or companies and an owner or owners of a new renewable generation facility or facilities, the commission shall take into consideration, among other factors:

(A) The status of the power purchase agreement or agreements;

(B) The extent to which the project-on-project financing risk of the high-voltage electric transmission cable system and the associated renewable generation facilities is materially reduced through agreements between the cable company and the owner or owners of the renewable generation facilities holding the power purchase agreement or agreements, or through common ownership arrangements; and

(C) The extent to which the cable company assumes financial responsibility for the high-voltage electric transmission cable system until both the cable system and the new generation facility or facilities have achieved commercial operations;

(5) In the certification process, the commission shall review and determine ratemaking principles appropriate, and applicable to the high-voltage electric transmission cable system during commercial operations. The ratemaking principles will be used in determining the certified cable company's revenue requirement used to determine its transmission capacity charges, and may be used to fix the capital investment costs for the high-voltage electric transmission cable system upon which the certified cable company will be allowed to earn an authorized rate of return, and the operating costs that may be included in the certified cable company's revenue requirement;

(6) In determining the authorized rate of return for the certified cable company, the commission may consider the risks assumed by a certified cable company during the predevelopment, development, and commercial operations periods related to, or resulting from, the development, financing, construction, and operation of the high-voltage electric transmission cable system, including other factors deemed relevant and appropriate by the commission such as the terms and conditions of the transmission tariff as may be approved by the commission; and

(7) Prior to approving the application for certification, the commission shall hold a public hearing on each island connected by the high-voltage electric transmission cable system to obtain comments and input from the affected communities about the high-voltage electric transmission cable system.

§269-C Transmission tariff. The commission shall, by order, approve, disapprove, or approve subject to conditions, the tariff of the certified cable company. Thereafter, the certified cable company shall make the capacity of its high-voltage electric transmission

cable system available to the electric utility company or companies. The tariff shall be consistent with the tariff provisions resulting from the Request For Proposal. The tariff shall specify the terms and conditions under which the certified cable company will be entitled to receive revenues collected through the cable surcharge. The certified cable company may submit its proposed tariff for approval prior to the expected commercial operations date, and the commission shall take final action on the proposed tariff within one hundred twenty days after submittal of the proposed tariff with any supporting documentation as may be required by the commission; provided the commission may extend the timeline as necessary.

§269-D Surcharge. (a) The commission shall establish a cable surcharge to allow recovery of the high-voltage electric transmission cable system costs designated for recovery according to the ratemaking principles determined by the commission pursuant to section 269-B.

(b) Pursuant to the tariff described in section 269-C, the commission shall designate by order, the electric utility company or companies, to which the capacity of the high-voltage electric transmission cable system is made available as the agent of the certified cable company to collect the surcharge approved by the commission. The electric utility company or companies collecting the cable surcharge for the benefit of the certified cable company shall have no right, title, or interest in such moneys. The commission shall approve the fee to be collected by the electric utility company or companies through the same cable surcharge for acting as the collection agent for the certified cable company.

(c) Notwithstanding any requirements to the contrary or any other provision in this chapter, a high-voltage electric transmission cable system shall be deemed "used or useful for public utility purposes" upon commencing commercial operations, subject to the commission's determination and approval.

§269-E Electric utility company acquisition of cable system. (a) The commission may approve an electric utility company's acquisition of a high-voltage

electric transmission cable system pursuant to a commission-approved turnkey cable contract or a cable purchase contract.

(b) In the case of a turnkey cable contract, the commission shall review and approve, disapprove, or approve subject to conditions, the contract upon application filed by the electric utility company.

(c) In the case of a cable purchase contract, the commission shall review and approve, disapprove, or approve subject to conditions, the option to purchase in the same proceeding in which the commission also reviews and approves an application for a certificate of public convenience and necessity for a cable company providing the option to purchase, or a power purchase agreement containing the option to purchase. The commission shall review and approve, disapprove, or approve subject to conditions, the cable purchase contract resulting from exercise of the option to purchase upon an application filed by the electric utility company proposing to acquire the high-voltage electric transmission cable system.

§269-F Recovery of electric utility company capital costs. (a) An electric utility company shall be entitled to recover the company's revenue requirement approved by the commission resulting from the costs that the company prudently incurs in acquiring a high-voltage electric transmission cable system throughout the commercial operations period after the high voltage electric transmission cable system is acquired; provided that the acquisition is approved by the commission.

(b) An electric utility company shall be entitled to recover, through an automatic adjustment clause, the company's revenue requirement resulting from the capital costs that the company prudently incurs for on-island transmission infrastructure; provided that the commission has approved the electric utility company's commitment of capital expenditure costs for the project.

(c) To provide for timely recovery of the revenue requirement, the commission shall establish a separate automatic adjustment clause, as defined in section 269-16, or modify an existing automatic adjustment clause. The use of the automatic adjustment

clause to recover the revenue requirement shall be allowed to continue until the revenue requirement is incorporated in rates in an electric utility company's rate case.

(d) The electric utility company's revenue requirement includes:

(1) The commission approved rate of return, as set in the electric utility company's last rate case, on the electric utility company's net investment in the high-voltage electric transmission cable system from the acquisition date of the high-voltage electric transmission cable system, and in the on-island transmission infrastructure from the date the on-island transmission infrastructure is completed and available for service;

(2) Depreciation; and

(3) Revenue taxes and other relevant costs as approved by the commission.

(e) The electric utility company's net investment includes the cable acquisition cost in the case of the high-voltage electric transmission cable system and the costs of planning, permitting, and constructing the on-island transmission infrastructure, including an allowance for funds used during construction when the utility finances the planning, permitting, and construction costs, less accumulated depreciation and associated unamortized deferred income taxes.

(f) The on-island transmission infrastructure will need to be available for service before the commercial operations date for the high-voltage electric transmission cable system. Notwithstanding any other provision in chapter 269, at the time the commission approves the electric utility company’s commitment of capital expenditure costs for the project, the commission may either allow the electric utility company to recover its approved revenue requirement resulting from the capital costs that it prudently incurs for on-island infrastructure at the time that the infrastructure is available for service, or may allow such company to continue to accrue an allowance for funds used during construction on such prudently incurred capital costs until the commercial operations date for the high-voltage electric transmission system.

(g) If the electric utility company elects not to complete the on-island transmission infrastructure, and the commission approves this election, or if the electric

utility company is precluded from completing construction of the on-island transmission infrastructure, the electric utility company shall be allowed to recover all costs determined by the commission to have been prudently incurred during the predevelopment and development periods. The electric utility company shall recover these costs through the cable surcharge mechanism over a period equal to the period during which the costs were incurred or five years, whichever is greater."

SECTION 3. Chapter 239, Hawaii Revised Statutes, is amended by adding a new section to be appropriately designated and to read as follows:

"**§239- Surcharge amounts exempt.** Amounts received in the form of a cable surcharge by an electric utility company acting on behalf of a certified cable company under section 269-D shall not be gross income for the electric utility company for purposes of this chapter. Any amounts retained by the electric utility company for collection or other costs shall not be included in this exemption."

SECTION 4. Chapter 240, Hawaii Revised Statutes, is amended by adding a new section to be appropriately designated and to read as follows:

"**§240- Surcharge amounts exempt.** Amounts received in the form of a cable surcharge by an electric utility company acting on behalf of an affected certified cable company under section 269-D shall not be counted as gross receipts for the electric utility company for purposes of this chapter. Any amounts retained by the electric utility company for collection or other costs shall not be included in this exemption."

SECTION 5. Section 235-7, Hawaii Revised Statutes, is amended by amending subsection (a) to read as follows:

"(a) There shall be excluded from gross income, adjusted gross income, and taxable income:

(1) Income not subject to taxation by the State under the Constitution and laws of the United States;

(2) Rights, benefits, and other income exempted from taxation by section 88-91, having to do with the state retirement system, and the rights, benefits, and

other income, comparable to the rights, benefits, and other income exempted by section 88-91, under any other public retirement system;

(3) Any compensation received in the form of a pension for past services;

(4) Compensation paid to a patient affected with Hansen's disease employed by the State or the United States in any hospital, settlement, or place for the treatment of Hansen's disease;

(5) Except as otherwise expressly provided, payments made by the United States or this State, under an act of Congress or a law of this State, which by express provision or administrative regulation or interpretation are exempt from both the normal and surtaxes of the United States, even though not so exempted by the Internal Revenue Code itself;

(6) Any income expressly exempted or excluded from the measure of the tax imposed by this chapter by any other law of the State, it being the intent of this chapter not to repeal or supersede any express exemption or exclusion;

(7) Income received by each member of the reserve components of the Army, Navy, Air Force, Marine Corps, or Coast Guard of the United States of America, and the Hawaii national guard as compensation for performance of duty, equivalent to pay received for forty-eight drills (equivalent of twelve weekends) and fifteen days of annual duty, at an:

(A) E-1 pay grade after eight years of service; provided that this subparagraph shall apply to taxable years beginning after December 31, 2004;

(B) E-2 pay grade after eight years of service; provided that this subparagraph shall apply to taxable years beginning after December 31, 2005;

(C) E-3 pay grade after eight years of service; provided that this subparagraph shall apply to taxable years beginning after December 31, 2006;

(D) E-4 pay grade after eight years of service; provided that this subparagraph shall apply to taxable years beginning after December 31, 2007; and

(E) E-5 pay grade after eight years of service; provided that this subparagraph shall apply to taxable years beginning after December 31, 2008;

(8) Income derived from the operation of ships or aircraft if the income is exempt under the Internal Revenue Code pursuant to the provisions of an income tax treaty or agreement entered into by and between the United States and a foreign country; provided that the tax laws of the local governments of that country reciprocally exempt from the application of all of their net income taxes, the income derived from the operation of ships or aircraft that are documented or registered under the laws of the United States;

(9) The value of legal services provided by a prepaid legal service plan to a taxpayer, the taxpayer's spouse, and the taxpayer's dependents;

(10) Amounts paid, directly or indirectly, by a prepaid legal service plan to a taxpayer as payment or reimbursement for the provision of legal services to the taxpayer, the taxpayer's spouse, and the taxpayer's dependents;

(11) Contributions by an employer to a prepaid legal service plan for compensation (through insurance or otherwise) to the employer's employees for the costs of legal services incurred by the employer's employees, their spouses, and their dependents;

(12) Amounts received in the form of a monthly surcharge by a utility acting on behalf of an affected utility under section 269-16.3 shall not be gross income, adjusted gross income, or taxable income for the acting utility under this chapter. Any amounts retained by the acting utility for collection or other costs shall not be included in this exemption; [~~and~~]

(13) One hundred per cent of the gain realized by a fee simple owner from the sale of a leased fee interest in units within a condominium project, cooperative project, or planned unit development to the association of owners under chapter 514A or 514B, or the residential cooperative corporation of the leasehold units.

For purposes of this paragraph:

"Condominium project" and "cooperative project" shall have the same meanings as provided under section 514C-1;

"Fee simple owner" shall have the same meaning as provided under section 516-1; provided that it shall include legal and equitable owners;

"Legal and equitable owner", and "leased fee interest" shall have the same meanings as provided under section 516-1; and

[~~"Condominium project" and "cooperative project" shall have the same meanings as provided under section 514C-1.~~]

(14) Amounts received in the form of a monthly cable surcharge by an electric utility company acting on behalf of a certified cable company under section 269-D shall not be counted as gross income, adjusted gross income, or taxable income for the electric utility company under this chapter. Any amounts retained by the electric utility company for collection or other costs shall not be included in this exemption."

SECTION 6. Section 269-30, Hawaii Revised Statutes, is amended to read as follows:

"**§269-30 Finances; public utility fee.** (a) Sections 607-5 to 607-9 shall apply to the public utilities commission and each commissioner, as well as to the supreme and circuit courts, and all costs and fees paid or collected pursuant to this section shall be deposited with the director of finance to the credit of the public utilities commission special fund established under section 269-33.

(b) There also shall be paid to the public utilities commission in each of the months of July and December of each year, by each public utility subject to investigation by the public utilities commission, a fee equal to one-fourth of one per cent of the gross income from the public utility's business during the preceding year, or the sum of $30, whichever is greater. This fee shall be deposited with the director of finance to the credit of the public utilities commission special fund.

(c) Each public utility paying a fee under subsection (b) may impose a surcharge to recover the amount paid above one-eighth of one per cent of gross income. The surcharge imposed shall not be subject to the notice, hearing, and approval requirements of this chapter; provided that the surcharge may be imposed by the utility only after thirty

days' notice to the public utilities commission. Unless ordered by the public utilities commission, the surcharge shall be imposed only until the conclusion of the public utility's next rate case; provided that the surcharge shall be subject to refund with interest at the public utility's authorized rate of return on rate base if the utility collects more money from the surcharge than actually paid due to the increase in the fee to one-fourth of one per cent.

(d) Notwithstanding any provision of this chapter to the contrary, the public utilities commission may, upon the filing of a petition by a public utility, credit a public utility for amounts paid under subsection (b) toward amounts the public utility owes in one call center fees under section 269E-6(f).

(e) Amounts received in the form of a cable surcharge by an electric utility company acting on behalf of a certified cable company under section 269-D shall not be counted as gross income for the electric utility company for purposes of this section. Any amounts retained by the electric utility company for collection or other costs shall not be included in this exemption."

SECTION 7. In codifying the new sections added by section 2 of this Act, the revisor of statutes shall substitute appropriate section numbers for the letters used in designating the new sections in this Act.

SECTION 8. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 9. This Act shall take effect on July 1, 2011.

Report Title:
Renewable Energy; Transmission Cable

Description:
Establishes the regulatory structure under which inter-island undersea energy transmission cables could be commercially developed, financed, and constructed. Effective July 1, 2011. (HB1176 HD2)

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.

THE SENATE
TWENTY-SIXTH LEGISLATURE, 2011
STATE OF HAWAII

S.B. NO. 367 S.D. 2

A BILL FOR AN ACT

RELATING TO ENERGY.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that attaining independence from reliance on fossil fuels is a long-standing objective of the State. Hawaii is the state most dependent on petroleum for its energy needs. Reducing our dependence on oil and its consequent price volatility is critical in attaining energy security.

Hawaii has an abundance of natural, renewable energy resources from wind, solar, ocean and wave, geothermal, and bio-based fuels. Hawaii's clean energy policy mandates and strongly promotes the use of these renewable energy resources.

Act 155, Session Laws of Hawaii 2009, increased the 2020 renewable portfolio standard for electric utility companies from twenty per cent to twenty-five per cent, and added a new forty per cent requirement for the year 2030. Act 155 also included the mandate that by January 1, 2015, one hundred per cent of a utility's renewable portfolio standard needs to be met by electrical generation using renewable energy as the source. These requirements are codified in section 269-92, Hawaii Revised Statutes.

One of the key elements of Hawaii's energy policy concerns the desire for reasonable fixed price indigenous renewable resources. Reasonable fixed price indigenous renewable resources are the best hedge against rising oil prices that could return to the $147 per barrel level experienced in 2008. In order for the State to meet its clean energy objectives, hundreds of megawatts of reasonable fixed price renewable

energy must be developed in the near term. The legislature recognizes that no single resource can provide the "silver bullet" solution as a hedge against oil price volatility.

In order to achieve the State's aggressive renewable portfolio standard goals, electric utility companies need to target technologies that are commercially available, are capable of being developed within a near term horizon, are available on a large scale, and can be used to generate electricity that can be delivered to Hawaii's load centers.

Electrical services on the islands of Oahu, Maui, Molokai, Lanai, and Hawaii are provided by affiliated, franchised electric utility companies. None of the electric utility systems on these islands are currently electrically interconnected to the electric utility system on any other island.

Oahu has the largest demand for electricity and the largest concentration of the population base. A variety of renewable energy resources that are limited on Oahu are abundant on the neighbor islands. To contribute to attaining renewable portfolio standard goals, strategies to link Oahu's demand to abundant reasonable fixed price resources from the neighbor islands are being pursued. For example, technical implementation and routing studies have been conducted that show that it is technically feasible to connect renewable energy generation facilities in Maui county to the Oahu load using undersea high-voltage transmission cables.

The islands of Maui and Hawaii currently have significant as-available renewable resource penetration levels, based on projects that are currently in service or that have power purchase contracts. At the same time, they have significant potential for additional renewable resources. There are plans to consider the use of high-voltage undersea transmission cables to link the electric utility systems on these islands to the electric utility system on Oahu.

Economic analyses have shown that harnessing the wind resources for the islands appears to be a relatively cost-effective means for helping to meet Hawaii's energy policy objectives. The cost of the energy delivered to the load center is expected to be at or below the cost of other commercially available large scale renewable resources in the near-term, and at or below the cost of petroleum based generation in the longer-term.

The capital costs of constructing renewable energy generation projects and developing the high-voltage electric transmission cable systems are substantial in relationship to the electric utility companies' existing rate bases, however, and it is expected that renewable energy generation projects and transmission cable projects will be installed by non-utility investors that assume financial responsibility for the projects until they achieve commercial operations.

Non-utility investors in a cable project would be selected through a competitive bidding process authorized, reviewed, and approved by the public utilities commission and developed, with input and assistance from the State energy resources coordinator, by the electric utility that would use the cable. The process would be conducted by the electric utility that would use the cable and the public utilities commission would determine whether a selected cable company would be certified. The use of this process allows for the certified cable company, rather than utility rate payers, to assume risks associated with obtaining permits for the cable project and the costs incurred to construct the cable, and to earn a return on investment commensurate with the assumption of these risks. The renewable energy generation project developers would also bear development period risks, such as permitting and construction, for their projects, since the prices for energy from their projects will be fixed in their power purchase agreements with the electric utility, which are also reviewed and approved by the public utilities commission.

The legislature also finds that the development of large-scale renewable energy projects has the potential to impact the communities where the projects are located, and that at least some of the environmental review processes conducted as part of the permitting process for the projects would occur after the public utilities commission would need to act on a cable certification application. In order to foster communication with the affected communities and the commission, the legislature has incorporated within this Act a requirement that the commission hold a public hearing on each island proposed to be connected by the high-voltage electric transmission cable system for the purposes of obtaining comments and input from interested parties.

In order to connect undersea high-voltage transmission cables to an electric utility system, the electric utility company will need to install on-island transmission infrastructure. In addition, because of the fixed costs of renewable energy projects relative to the variable costs of fossil fuel generation, it is expected that electric utility ratepayers would benefit if the electric utility company acquires the undersea high-voltage transmission cables at or after the commencement of commercial operations. Given the cost of the on-island transmission infrastructure, the need to have the on-island infrastructure available when the undersea high-voltage transmission cables commence commercial operations, and the potential acquisition cost of the undersea high-voltage transmission cables, the electric utility's credit quality, which is essential to the development of renewable energy resources in Hawaii, may be negatively impacted unless specified cost recovery provisions are added to the public utilities law.

The purpose of this Act is to establish the regulatory structure under which interisland undersea transmission cables can be developed, financed, and constructed on commercially reasonable terms, such as those upon which successful cable projects have been undertaken in New York, California, and around the world.

SECTION 2. Chapter 269, Hawaii Revised Statutes, is amended by adding a new part to be appropriately designated and to read as follows:

"**PART . INTERISLAND TRANSMISSION SYSTEM**

§269-A Definitions. As used in this part:

"Cable acquisition cost" means the electric utility's costs, including reasonable transaction costs, to acquire a high-voltage electric transmission cable system pursuant to a turnkey cable contract or a cable purchase contract.

"Cable company" means any person or persons, company, corporation, or entity who is selected through a request for proposal, or other process approved by the commission, to be a certified cable company applicant.

"Cable purchase contract" means a contract to purchase a high-voltage electric transmission cable system at or after it achieves commercial operations.

"Cable surcharge" means the surcharge approved by the commission pursuant to section 269-D.

"Certified cable company" means any person or persons, company, corporation, or entity who owns or controls a high-voltage electric transmission cable system and who is selected through a request for proposal issued by the commission to install the high-voltage electric transmission cable system; provided that the person, persons, company, corporation, or entity receives a certificate of public convenience and necessity from the commission pursuant to section 269-B.

"Commercial operations" means the period after the high-voltage electric transmission cable system:

(1) Passes acceptance tests approved by the commission, as determined by a qualified independent engineer approved by the commission; and

(2) Meets other criteria the commission determines to be reasonable.

If the primary source or sources of the renewable electricity that will be transmitted to an electric utility company or companies using the high-voltage electric transmission cable system will be provided pursuant to a power purchase agreement or agreements between that electric utility company or companies and an owner or owners of a new renewable energy generation facility or facilities, the commission shall consider and may include criteria that address whether and to what extent the intended source of renewable energy is available to be transmitted in determining the commercial operations date of the high voltage electric transmission cable system.

"Commercial operations date" means the date upon which the high-voltage electric transmission cable system begins commercial operations, as determined by the commission.

"Commission" means the public utilities commission.

"Cost" means all capital investments, including rate of return; any applicable taxes; and all expenses, including capacity payments, operation and maintenance expenses, related to or resulting from the planning, licensing, permitting, designing,

development, construction, or operation of a high-voltage electric transmission cable system.

"Cost effective" has the same meaning as in section 269-91.

"Development period" means the period of time after the certified transmission entity has been granted a certificate of public convenience and necessity, but before commercial operations.

"Electric utility company" means a public utility as defined under section 269-1, for the production, conveyance, transmission, delivery, or furnishing of electric power.

"Electric utility system" means the electric system owned and operated by an electric utility company, including any non-utility owned facilities that are interconnected to the system, consisting of power plants, transmission and distribution lines, and related equipment for the production and delivery of electric power to the public.

"Energy resources coordinator" or "coordinator" means the director of business, economic development, and tourism.

"Expected commercial operations date" means the date reasonably determined by the certified cable company for the high-voltage electric transmission cable system to commence commercial operations.

"High-voltage electric transmission cable system" means one hundred and twenty kilovolts or greater of alternating current (AC) or direct current (DC) transmission cables constructed undersea, including connected transmission cables or lines installed on land that connect the electric utility systems on two or more islands or allow for the transmission of power from one or more renewable energy generation facilities to the electric utility system located on another island of the State; AC substation or AC/DC converter station; fiber optic communication cables; and other appurtenant facilities.

"On-island transmission infrastructure" means the modifications and additions to the existing alternating current transmission grid on an island and other electric utility system modifications needed to reliably connect a high-voltage electric transmission cable system to an electric utility system, and to reliably accept power generated from large scale renewable energy generation facilities and transmitted via the high-voltage

electric transmission cable system connecting two or more islands of the State's electric utility systems.

"Power purchase agreement" means an agreement between an electric utility company and the developer of a renewable energy generation facility to sell the power generated by the facility to the electric utility company.

"Predevelopment period" means the period of time before the certified transmission entity has been granted a certificate of public convenience and necessity.

"Project-on-project financing risk" means the risk involved when mutually dependent projects, whose risk of completion, and therefore, financing, are dependent on each other, such as in the case of a high-voltage electric transmission cable system intended to connect a renewable energy generation facility to an electric utility system where the uncertainty as to whether the renewable energy generation facility can be financed or built results in increased risk for the high-voltage electric transmission cable project because it is not viable without a source of energy to transmit, and vice versa.

"Renewable electricity" means electrical energy generated using renewable energy as the source.

"Renewable energy" has the same meaning as in section 269-91.

"Renewable energy generation facility" means a facility generating electrical energy using renewable energy as the primary source.

"Renewable portfolio standard" has the same meaning as that provided in section 269-91.

"Request for proposal" means a request for proposal developed jointly by an electric company or companies and the energy resources coordinator or its designee issued pursuant to a competitive bidding process authorized by the commission to select a certified cable company and conducted by the electric utility company or companies to which the capacity of a high-voltage electric transmission cable system will be made available. The energy resources coordinator shall be a member of the selection committee that will review and evaluate the proposals.

"Turnkey cable contract" means a contract entered into pursuant to a request for proposal under which a cable company designs, builds, and transfers a high-voltage electric transmission cable system to an electric utility company upon commencement of commercial operations.

§269-B Certification. (a) Prior to installing a high-voltage electric transmission cable system, a cable company shall be selected through a request for proposal, or other process approved by the commission, then certified by the commission pursuant to section 269-7.5.

(b) Notwithstanding any provisions in section 269-7.5 to the contrary:

(1) The commission shall approve, disapprove, or approve subject to certain conditions, an application for a certificate of public convenience and necessity for a high-voltage electric transmission cable system, and shall issue a final order within one hundred eighty days after the application is filed; provided that the commission may extend the timeline as necessary;

(2) In determining whether the cable company is financially fit, the commission may allow for the use of commercially reasonable non-recourse project financing for the high-voltage electric transmission cable system;

(3) In determining whether the proposed transmission capacity service is or will be required by the present or future public convenience and necessity, the commission shall determine whether the high-voltage electric transmission cable system would be a cost-effective means of:

(A) Interconnecting two or more electric utility systems;

(B) Helping one or more electric utility companies meet the applicable renewable portfolio standard; or

(C) Achieving other considerations the commission may deem appropriate;

(4) If the primary source or sources of the renewable electricity that will be transmitted to an electric utility company or companies using the high-voltage electric transmission cable system will be provided pursuant to a power purchase agreement or agreements between the electric utility

company or companies and an owner or owners of a new renewable energy generation facility or facilities, in reviewing and approving the application for certification the commission shall, among other factors, take into consideration:

(A) The status of the power purchase agreement or agreements;

(B) The extent to which the project-on-project financing risk of the high-voltage electric transmission cable system and the associated renewable energy generation facilities is materially reduced through agreements between the cable company and the owner or owners of the renewable energy generation facilities holding the power purchase agreement or agreements, or through common ownership arrangements; and

(C) The extent to which the cable company assumes financial responsibility for the high-voltage electric transmission cable system until both the cable system and the new generation facility or facilities have achieved commercial operations;

(5) In the certification process the commission shall review and determine ratemaking principles appropriate and applicable to the high-voltage electric transmission cable system during commercial operations. The ratemaking principles shall be used in determining the certified cable company's revenue requirement that is used to determine its transmission capacity charges, and may be used to fix the capital investment costs for the high-voltage electric transmission cable system upon which the certified cable company will be allowed to earn an authorized rate of return and the operating costs that may be included in the certified cable company's revenue requirement;

(6) In determining the authorized rate of return that will apply to a certified cable company, the commission may consider the risks assumed by the certified cable company during the predevelopment, development, and commercial

operations periods related to or resulting from the development, financing, construction, and operation of the high-voltage electric transmission cable system, including other factors deemed relevant and appropriate by the commission such as the terms and conditions of the transmission tariff as may be approved by the commission; and

(7) Prior to approving the application for certification, the commission shall hold a public hearing on each island to be connected by the high-voltage electric transmission cable system to obtain comments and input from the affected communities about the high-voltage electric transmission cable system.

§269-C Transmission tariff. The commission shall, by order, approve, disapprove, or approve subject to certain conditions, the tariff of the certified cable company pursuant to which the certified cable company shall make the capacity of its high-voltage electric transmission cable system available to the electric utility company or companies. The tariff shall be consistent with the tariff provisions provided in the request for proposals. The tariff shall specify the terms and conditions under which the certified cable company will be entitled to receive revenues collected through the cable surcharge. The certified cable company may submit its proposed tariff for approval prior to the expected commercial operations date, and the commission shall take final action on the proposed tariff within one hundred and twenty days after submittal of the proposed tariff with supporting documentation as may be required by the commission; provided that the commission may extend the timeline as necessary.

§269-D Surcharge. (a) The commission shall establish a cable surcharge to allow recovery of the high-voltage electric transmission cable system costs designated for recovery according to the ratemaking principles pursuant to section 269-B.

(b) Pursuant to the tariff described in section 269-C, the commission shall, by order, designate the electric utility company or companies to which the capacity of the high-voltage electric transmission cable system shall be made available as the agent of the certified cable company in order to collect the cable surcharge approved by the

commission. The electric utility company or companies collecting the cable surcharge for the benefit of the certified cable utility shall have no right, title, or interest in the moneys. The commission shall approve a fee, to be collected by the electric utility company or companies concurrently with the cable surcharge, for acting as the collection agent for the certified cable company.

(c) Notwithstanding any requirements to the contrary, a high-voltage electric transmission cable system may be deemed "used or useful for public utility purposes" upon commencing commercial operations, subject to the commission's determination and approval.

§269-E Electric utility company acquisition of cable system. (a) The commission may approve an electric utility's acquisition of a high-voltage electric transmission cable system pursuant to a commission approved turnkey cable contract or cable purchase contract.

(b) In the case of a turnkey cable contract, the commission shall review and approve, disapprove, or approve subject to certain conditions, the contract upon application filed by the electric utility company.

(c) In the case of a cable purchase contract, the commission shall review and approve, disapprove, or approve subject to certain conditions, the option to purchase in the same proceeding in which it reviews and approves a certificate of public convenience and necessity for a cable company providing the option to purchase or a power purchase agreement containing the option to purchase, and shall review and approve, disapprove, or approve subject to certain conditions, the cable purchase contract resulting from exercise of the option to purchase upon application filed by the electric utility company proposing to acquire the high-voltage electric transmission cable system.

§269-F Recovery of electric utility company costs. (a) An electric utility company shall be entitled to recover its revenue requirement, as approved by the commission, resulting from the costs that it prudently incurs in acquiring a high-voltage electric transmission cable system throughout the commercial operations period after it is acquired; provided that the acquisition is approved by the commission.

(b) An electric utility company shall be entitled to recover, through an automatic rate adjustment clause, its revenue requirement resulting from the capital costs that it prudently incurs for on-island transmission infrastructure, provided the commission has approved the utility's commitment of capital expenditure costs for the project.

(c) In order to provide for timely recovery of the revenue requirement, the commission shall establish a separate automatic rate adjustment clause for that purpose, or modify an existing automatic rate adjustment clause. The use of the automatic rate adjustment clause to recover the revenue requirement shall be allowed to continue until the revenue requirement is incorporated in rates in an electric utility company's rate case.

(d) The electric utility company's revenue requirement includes:

(1) The commission-approved rate of return as set in the electric utility company's last rate case on the utility's net investment in the high-voltage electric transmission cable system from the acquisition date of the high-voltage electric transmission cable system, and in the on-island transmission infrastructure from the date the on-island transmission infrastructure is completed and available for service;

(2) Depreciation; and

(3) Revenue taxes and other relevant costs as approved by the commission.

(e) The electric utility company's net investment includes the cable acquisition cost in the case of the high-voltage electric transmission cable system and the costs of planning, permitting, and constructing the on-island transmission infrastructure, including an allowance for funds used during construction where the utility finances the planning, permitting, and construction costs, less accumulated depreciation and associated unamortized deferred income taxes.

(f) The on-island transmission infrastructure shall be available for service before the commercial operations date of the high-voltage electric transmission cable system. Notwithstanding any other provision in chapter 269 to the contrary, at the time the commission approves the electric utility company's commitment of capital expenditure costs for the project, the commission may either:

(1) Allow the electric utility company to recover its approved revenue requirement resulting from the capital costs that it prudently incurs for on-island infrastructure at the time that the infrastructure is available for service; or

(2) Allow the company to continue to accrue an allowance for funds used during construction on such prudently incurred capital costs until the commercial operations date for the high-voltage electric transmission system.

(g) If the electric utility company elects not to complete the on-island transmission infrastructure, and the commission approves such election, or is precluded from completing construction of the on-island transmission infrastructure, the electric utility shall be allowed to recover all costs determined by the commission to have been prudently incurred by the electric utility company during the predevelopment and development periods. The electric utility company shall recover these costs through the cable surcharge over a period equal to the period during which the costs were incurred or five years, whichever is greater."

SECTION 3. Chapter 239, Hawaii Revised Statutes, is amended by adding a new section to be appropriately designated and to read as follows:

"**§239- Surcharge amounts exempt.** Amounts received in the form of a cable surcharge by an electric utility company acting on behalf of a certified cable company under section 269-D shall not be counted as gross income of that electric utility company for purposes of this chapter; provided that any amounts retained by that electric utility company for collection or other costs shall not be included in this exemption."

SECTION 4. Chapter 240, Hawaii Revised Statutes, is amended by adding a new section to be appropriately designated and to read as follows:

"**§240- Surcharge amounts exempt.** Amounts received in the form of a cable surcharge by an electric utility company acting on behalf of an affected certified cable company under section 269-D shall not be counted as gross receipts for that electric utility company for purposes of this chapter; provided that any amounts retained by that

electric utility company for collection or other costs shall not be included in this exemption."

SECTION 5. Section 235-7, Hawaii Revised Statutes, is amended by amending subsection (a) to read as follows:

"(a) There shall be excluded from gross income, adjusted gross income, and taxable income:

(1) Income not subject to taxation by the State under the Constitution and laws of the United States;

(2) Rights, benefits, and other income exempted from taxation by section 88-91, having to do with the state retirement system, and the rights, benefits, and other income, comparable to the rights, benefits, and other income exempted by section 88-91, under any other public retirement system;

(3) Any compensation received in the form of a pension for past services;

(4) Compensation paid to a patient affected with Hansen's disease employed by the State or the United States in any hospital, settlement, or place for the treatment of Hansen's disease;

(5) Except as otherwise expressly provided, payments made by the United States or this State, under an act of Congress or a law of this State, which by express provision or administrative regulation or interpretation are exempt from both the normal and surtaxes of the United States, even though not so exempted by the Internal Revenue Code itself;

(6) Any income expressly exempted or excluded from the measure of the tax imposed by this chapter by any other law of the State, it being the intent of this chapter not to repeal or supersede any express exemption or exclusion;

(7) Income received by each member of the reserve components of the Army, Navy, Air Force, Marine Corps, or Coast Guard of the United States of America, and the Hawaii national guard as compensation for performance

of duty, equivalent to pay received for forty-eight drills (equivalent of twelve weekends) and fifteen days of annual duty, at an:

(A) E-1 pay grade after eight years of service; provided that this subparagraph shall apply to taxable years beginning after December 31, 2004;

(B) E-2 pay grade after eight years of service; provided that this subparagraph shall apply to taxable years beginning after December 31, 2005

(C) E-3 pay grade after eight years of service; provided that this subparagraph shall apply to taxable years beginning after December 31, 2006;

(D) E-4 pay grade after eight years of service; provided that this subparagraph shall apply to taxable years beginning after December 31, 2007; and

(E) E-5 pay grade after eight years of service; provided that this subparagraph shall apply to taxable years beginning after December 31, 2008;

(8) Income derived from the operation of ships or aircraft if the income is exempt under the Internal Revenue Code pursuant to the provisions of an income tax treaty or agreement entered into by and between the United States and a foreign country; provided that the tax laws of the local governments of that country reciprocally exempt from the application of all of their net income taxes, the income derived from the operation of ships or aircraft that are documented or registered under the laws of the United States;

(9) The value of legal services provided by a prepaid legal service plan to a taxpayer, the taxpayer's spouse, and the taxpayer's dependents;

(10) Amounts paid, directly or indirectly, by a prepaid legal service plan to a taxpayer as payment or reimbursement for the provision of legal services to the taxpayer, the taxpayer's spouse, and the taxpayer's dependents;

(11) Contributions by an employer to a prepaid legal service plan for compensation (through insurance or otherwise) to the employer's employees for the costs of legal services incurred by the employer's employees, their spouses, and their dependents;

(12) Amounts received in the form of a monthly surcharge by a utility acting on behalf of an affected utility under section 269-16.3 shall not be gross income, adjusted gross income, or taxable income for the acting utility under this chapter. Any amounts retained by the acting utility for collection or other costs shall not be included in this exemption; [~~and~~]

(13) One hundred per cent of the gain realized by a fee simple owner from the sale of a leased fee interest in units within a condominium project, cooperative project, or planned unit development to the association of owners under chapter 514A or 514B, or the residential cooperative corporation of the leasehold units.

For purposes of this paragraph:

"Condominium project" and "cooperative project" shall have the same meanings as provided under section 514C-1;

"Fee simple owner" shall have the same meaning as provided under section 516-1; provided that it shall include legal and equitable owners; and

"Legal and equitable owner", and "leased fee interest" shall have the same meanings as provided under section 516-1; and

[~~"Condominium project" and "cooperative project" shall have the same meanings as provided under section 514C-1.~~]

(14) Amounts received in the form of a monthly cable surcharge by an electric utility company acting on behalf of a certified cable company under section 269-D shall not be counted as gross income, adjusted gross income, or taxable income for that electric utility company under this chapter; provided that any amounts retained by that electric utility

company for collection or other costs shall not be included in this exemption."

SECTION 6. Section 269-30, Hawaii Revised Statutes, is amended by adding subsection (e) to read as follows:

"(e) Amounts received in the form of a cable surcharge by an electric utility company acting on behalf of a certified cable company under section 269-D shall not be counted as gross income for that electric utility company for purposes of this section; provided that any amounts retained by that electric utility company for collection or other costs shall not be included in this exemption."

SECTION 7. In codifying the new sections added by section 2 of this Act, the revisor of statutes shall substitute appropriate section numbers for the letters used in designating the new sections in this Act.

SECTION 8. Statutory material to be repealed is bracketed and stricken. New statutory material is underscored.

SECTION 9. This Act shall take effect on July 1, 2011.

Report Title:
Energy; Interisland High Voltage Electric Transmission Cable System; Public Utilities Commission; Tax Exemptions

Description:
Establishes a regulatory structure for the installation and implementation of an interisland high voltage electric transmission cable system and for the construction of on-island transmission infrastructure. Allows for the utility company to collect surcharges from its ratepayers to recover the costs of the cable installation on behalf of the cable company. Exempts the surcharges from being counted as gross income, adjusted gross income, or taxable income for tax purposes. Provides for the eventual acquisition of the cable system by the utility company from the cable company. Allows the utility company to recover the costs of acquiring the cable system and developing the on island infrastructure through an automatic rate adjustment clause and then through its rates. Allows the utility to recover the reasonable costs, as determined by the public utilities commission, of predevelopment and development in the event that the system is not completed. (SD2)

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.

Appendix 6. Estimated Capital Cost for Cable Project

Line No.	Cost Component	Estimated Costs (2011 $ millions)
1	Permitting & Environmental	4.0
2	Community Benefits	
3	--Moloka‘i	2.0
4	--Lāna‘i	2.0
5	--O‘ahu	2.0
6	Project Mobilization	4.0
7	Land Costs--Sites & Easements	
8	--Moloka‘i (10 acres)	1.0
9	--Lāna‘i (5 acres)	1.0
10	--O‘ahu (10 acres)	2.0
11	Converter Stations	
12	--Moloka‘i	100.0
13	--O‘ahu	100.0
14	Transition Substations	
15	--Moloka‘i	2.0
16	--Lāna‘i	2.0
17	Cable Costs	
18	--Moloka‘i land cable (5 miles)	9.0
19	--Lāna‘i land cable (2 miles)	3.6
20	--Lāna‘i to Moloka‘i AC Cable (9 miles)	32.4
21	--Moloka‘i to Ko’olau DC Cables (70 miles)	168.0
22	--O‘ahu land cable (3 miles)	9.0
23	Interconnection Costs	
24	--Moloka‘i	5.0
25	--Lāna‘i	5.0
26	--O‘ahu	10.0
27	Infrastructure Costs	
28	--Moloka‘i	10.0
29	--Lāna‘i	5.0
30	--O‘ahu	6.0
31	Spare Parts	21.1
32	Project Management Fee	4.0
33	Project Development Fee	25.0
34	Interest During Construction	57.6
35	Legal Costs	10.0
36	Insurance	1.0
37	Financing Costs	5.0
38	Contingencies	42.2
39	Indirect Costs	4.2
	Total Costs	655.1

Appendix 7. Financial Structures and Revenue Requirements

Financial Structures

The financial structures associated with the Cable Project are directly related to the project ownership arrangements as reviewed in Section II.C. Those arrangements involve ownership by the cable developer, HECO or a CCC. Each of those entities will have a capital structure comprised of debt and equity. For purposes of the analyses, it was assumed that the capital structure for each would have an 80/20 debt/equity ratio. While the capitalization ratios may be the same, the interest rates and equity requirements vary for each arrangement as shown in the following table.

Table 1. Capital Recovery Assumptions

	CONTRACT OPTION	BOT OPTION	CCC OPTION
Debt Cost (%)	7.22	6.36	6.07
Credit Rating	BB+	BBB-	A
Equity Return (%)	20.00	11.50	13.50
Overall ROR (%)	9.78	7.39	7.56
Cost Recovery (yrs)	20	30	30

The first ownership structure option, the Contract Option, entailed a long term FTCPA between the cable developer and HECO. This arrangement would be project financed by the cable developer. As previously discussed, because of the HECO downgrade, any borrowings by the cable developer would typically be rated in the junk category, which would make the financing challenging at best. However, in the event of a PUC Order approving a cable surcharge, it is likely that the cable developer's financing would be deemed creditworthy and, as such, the cable developer would have access to institutional lenders. The debt cost in the table is predicated on a BB+ rating. It should be noted that as the Contract Option and the State Options are similar from a capital recovery perspective, the State Option is not discussed in this section.

The second structural option is the BOT Option, an arrangement under which the cable developer would finance the project during construction and transfer the asset to HECO upon commercial operation. The debt cost shown on the table currently would apply to a BBB- utility.

In the fourth structural option, the Certified Cable Company Option, the cable developer would own the project for at least the ten years following commercial operation. The

6.07% debt cost shown in the table is predicated on the CCC being considered an A rated utility.

Cable Revenue Requirement

Based on the foregoing and the estimated capital cost of the project of $655,120,000, annual revenue requirements have been developed for each structural option. Clearly, the revenue requirement for the Cable Project will have a significant effect on the ultimate impact of the Big Wind Project on HECO retail rates. To that end, it is recommended that the evaluation also be performed using high and low cable costs as sensitivities. Following are the projected annual revenue requirements for the cable project that are projected to be recovered from HECO ratepayers pursuant to the cost recovery arrangements described for each structural option.

Table 2. Revenue Requirements

STRUCTURAL OPTION	First Year Rev Req ($ million)	Years 1 – 10 Rev Req ($ million)	Years 11 – 20 Rev Req ($ million)	Years 21 – 30 Rev Req ($ million)
Contract Option	108.6	1,105.0	1,157.0	
BOT Option	95.5	884.8	735.7	586.5
CCC Option	99.1	912.8	726.0	600.8

Appendix 8. Preliminary Document to Term Sheet – Castle & Cooke

LETTER AGREEMENT DATED JANUARY 3, 2011
by and between
HAWAIIAN ELECTRIC COMPANY, INC. and
CASTLE & COOKE HAWAII
Regarding
LANAI WIND FARM ENERGY PRICING AND COMMUNITY BENEFITS

VIA E-MAIL AND US MAIL

Mr. Harry Saunders
President
Castle & Cooke Hawaii

Dear Mr. Saunders:

This Letter Agreement documents the mutual understanding and commitments of Castle & Cooke Hawaii ("C&C Hawaii") and Hawaiian Electric Company, Inc. ("Hawaiian Electric") (collectively, the "Parties") of energy pricing and community benefits related to C&C's proposed development of either 200 MW or 400 MW of as-available wind power on the island of Lāna'i, and sale of energy from the wind farm to Hawaiian Electric. As you are aware, on November 18, 2010, the PUC approved a waiver from the Competitive Bidding Framework provided that (a) a fully executed term sheet is filed within four months of the PUC order; and (b) documentation of the fairness of the price negotiated between Hawaiian Electric and C&C Hawaii are included in any application for approval of a PPA. Although our companies are actively negotiating the provisions of a full term sheet to be filed in accordance with the PUC order in the March 2011 timeframe, documentation of our current understanding and commitments on energy pricing and community benefits is critical to guide further discussions of the project by our companies and other stakeholders and decision makers.

This Letter Agreement arises out of C&C Hawaii's proposal on September 25, 2008 (the "C&C Hawaii Proposal") made in response to Hawaiian Electric's Final Request for Proposals for Non-Firm Renewable Energy Projects, Island of O'ahu, June 2008 (the "RE RFP"), and the Agreement dated December 31, 2008, by and between C&C Hawaii and Hawaiian Electric (the "Bifurcation Agreement"). In response to its RE RFP, Company received proposals for large wind farms on the islands of Lāna'i and Moloka'i (the "Inter-Island Wind Projects"), with the power to be transmitted via undersea cable to O'ahu. The proposals were submitted by C&C Hawaii, for Lāna'i, and First Wind Hawaii, for Moloka'i. C&C Hawaii submitted proposals for 200 MW and 400 MW of as-available wind power generated on the Island of Lāna'i, delivered to a converter station on the Island of Lāna'i, and transmitted to O'ahu via undersea cable.

In the Bifurcation Agreement, C&C Hawaii and First Wind Hawaii each agreed to develop up to a 200 MW wind plant on each of the two islands. Under the Bifurcation Agreement, if one of the developers fails, the other would get most of the total project. Ultimately, the final size of each respective wind farm agreed to in a power purchase agreement

("PPA") with Hawaiian Electric will reflect all relevant considerations, such as technical and operational factors evaluated and determined in O'ahu wind integration studies and the respective energy pricing for each project, among others.

Hawaiian Electric and C&C Hawaii agree to conduct negotiations in furtherance of a potential term sheet and PPA, with the understanding that, among other things: (1) the price paid by Hawaiian Electric customers for C&C Hawaii's wind energy is to be on a fixed, per MWh basis not linked to the price of fossil fuel, is to be just and reasonable to electric customers, and is to be determined as more fully described in Attachment A to this Letter Agreement; (2) Hawaiian Electric and C&C Hawaii will provide the community benefits described in Attachment B as an integral part of the development of the wind farm; (3) the proposed wind facility will adhere to Hawaiian Electric's performance standards and will not adversely impact the Hawaiian Electric electrical system; and (3) any PPA entered into between Hawaiian Electric and C&C Hawaii will be subject to PUC approval. This Letter Agreement primarily documents our current understanding concerning energy pricing and community benefits. Final agreement on these and other provisions concerning technical performance requirements, project development milestones, integration with the development of undersea cable and O'ahu transmission infrastructure, and other matters are to be further negotiated and documented in the term sheet and PPA.

This Letter Agreement and its attachments shall be non-confidential, and either party may disclose its contents or provide copies to other parties at their discretion.

Please indicate your acceptance of this Letter Agreement by your signature below and on the attachments.

HAWAIIAN ELECTRIC COMPANY, INC.

By: _____

Name: Robert A. Alm
Its: Executive Vice President

CASTLE & COOKE HAWAII

By: _____

Name: Harry Saunders
Its: President

ATTACHMENT A

PRICING FOR ENERGY

1. Pricing Sheets: Hawaiian Electric and C&C Hawaii agree that the energy pricing in the September 25, 2008 C&C Hawaii Proposal (the "2008 Castle & Cooke Pricing") in response to Hawaiian Electric RE RFP shall be used as the basis for negotiations for a term sheet in accordance with the PUC's Order dated November 18, 2010. This approach will allow the term sheet negotiations to proceed in a manner consistent with the documents and protocols established in the RE RFP docket and the Bifurcation Petition. The 2008 Castle & Cooke Pricing for wind energy on Lāna'i, not including interconnection, integration or undersea transmission costs, is as follows:

Wind Farm Size	Year 2012 Energy Price, $/MWH	Annual Escalation
200 MW	116.00	1%
400 MW	99.00	1%

2. The Parties acknowledge that certain key assumptions used by C&C Hawaii in developing the 2008 Castle & Cooke Pricing are undergoing further review to reflect current and future conditions prior to signing a term sheet. Key pricing factors include, but are not limited to: (1) wind production capacity factor, (2) availability of federal and state tax incentives, grants, and loan guarantees, (3) wind turbine capital costs, (4) financing costs, and (5) site development and installation costs. Changes in these key pricing factors may justify higher or lower energy pricing.

3. The Parties agree that the total price of wind energy produced on Lāna'i and delivered to O'ahu electric customers must be reasonable and clearly cost competitive with other renewable energy options in order for the Interisland Wind project to be feasible. In furtherance of this, and in anticipation of costs of transmission that will be incurred on O'ahu and for the undersea cable between O'ahu and Lāna'i, the Parties agree that pricing for wind energy delivered to a point of interconnection at a converter station on the island of Lāna'i should be at or about $130/MWH on a levelized basis over the term of the PPA for a 200 MW wind farm, and $110/MWH for a 400 MW wind farm.

4. C&C Hawaii acknowledged and agreed in the Bifurcation Agreement that, in recent proceedings to approve PPAs that were not subject to competitive bidding, the PUC has required detailed information concerning project financials and economics in order to support a finding that PPA pricing is just, reasonable and in the ratepayers' interest. C&C Hawaii understands and acknowledges that it will be required to provide any such information to Hawaiian Electric that may be required or requested to support negotiation and execution of a term sheet and PPA, and PUC approval of the PPA, including information pertaining to the key pricing factors listed in paragraph 2.

ATTACHMENT B

COMMUNITY BENEFITS

:

Hawaii's economic security and stability are extremely vulnerable to and threatened by our over dependence on imported oil. Inevitable, uncompetitive and uncontrollable oil prices and sources require new alternate energy sources to insure the sustainability of our economy, our state, our future. With nearly 90 percent of our primary energy for electricity and transportation derived from imported oil, the State of Hawaii is the most oil-dependent state in the nation. This high dependency on oil has left Hawaii's economy, security and its businesses and residents vulnerable to continuously rising costs of electricity and transportation.

Renewable Energy continues to be at the forefront of goals for the State. Recently enacted law (HRS Section 269-92) mandates that electric utilities must generate 10% of their electricity from renewable energy sources by 2010, 15% by 2015, 25% by 2020 and 40% by 2030. Agreements involving the State of Hawaii, the U.S. Department of Energy and Hawaiian Electric Company (HECO) establish goals of 70% renewable energy by 2030.

Transformative change in Hawaii's renewable energy generation is necessary to achieve Hawaii's ambitious renewable energy goals. This will require substantial leadership, investment, commitment and cooperative efforts through government/utility/private sector partnerships and communities involving large-scale renewable energy projects.

The Interisland Cable and Lāna'i Wind Farm project can bring significant benefits to the State of Hawaii in reducing our use of and dependence on imported oil and helping the State reach its goal of 40% clean energy use by 2030. For O'ahu, it will help fix the cost of energy for at least two decades, buffering consumers throughout the State from some of the fluctuations and increases in oil prices. On Lāna'i, the project will be developed over thousands of acres with potential impacts to cultural and recreational resources, plants and wildlife, and the general community. Inasmuch as the electrical energy generated will be transported to O'ahu via submarine cable, the direct beneficiaries of the energy generated on Lāna'i will accrue to O'ahu's HECO ratepayers. While Lāna'i will receive some benefits, a program providing for community benefits directed to the Lāna'i community is warranted.

Since 2007 and in conjunction with the proposed Lāna'i Wind Farm, C&C Hawaii has initiated and participated in ongoing community outreach and listening sessions.

This outreach has included over 12 formal and informal townhall meetings and informational booths at the annual Pineapple Festival in addition to meetings with the Lāna'i Mąkani Group and other interest groups on Lāna'i. To further reach out to the community. direct mail newsletters and monthly information/stories have been printed in both the local newspapers as well as articles in the Maui News and the Honolulu Star Advertiser and its predecessors, the Honolulu Advertiser and the Honolulu Star-Bulletin. Over 30 small group briefings have been conducted with over 300 on-Island employees of Castle & Cooke Resorts and Four Seasons.

In addition to these company-sponsored sessions, feedback has also been provided by organizations such as the Carpenters Union, the Local ILWU that represents over 600 workers and working families on Lāna'i, Lāna'ians for Sensible Growth (LSG), Friends of Lāna'i (FOL), Hawaiian Electric, and the renewable energy group of Department of Business, Economic Development and Tourism (DBEDT), and other community leaders.

This ongoing dialogue has surfaced both support and opposition as well as raised many areas of concern and question that will be further refined during the Environmental Impact Statement (EIS) process. That EIS will cover the interisland marine cable and the Lāna'i Wind Farm and as the final project and schedule are defined. That being acknowledged, there are a number of recurring themes that have been raised that can be addressed in many ways. Community benefits are dependent upon approval, construction and implementation of the Lāna'i Wind Farm, interisland cable and interconnection facilities, and the details and feasibility of certain items could be impacted by schedule/timing of the project and other factors such as prohibitions, requirements or conditions imposed in permitting or by law. The following community benefits derive from ideas and concerns raised by the Lāna'i community.

As part of the power purchase agreement with Hawaiian Electric, C&C Hawaii commits to the following:

1. Establish a Lanai Wind Community Benefits Fund from a portion of the gross revenue (1%) generated from the Lāna'i Wind Farm project. Funds would be deposited annually and directed to address the objective of improving the quality of life for the residents of Lāna'i in the following areas: economic diversification and job creation; medical and social/health services; education, training and recreation; and cultural and natural resource preservation over the life of the PPA. A minimum of $100,000 annually would be dedicated to the Lāna'i Cultural and Heritage Center. Other entities related to the overall wind and cable project will also be allowed to contribute to this fund. The fund would be administered by a community foundation experienced in investing and administering funds such as the Hawai'i Community Foundation and advised by a committee of a cross section of Lāna'i residents who would determine the uses of funds for Lāna'i community needs and programs.

2. Continuing Lāna'i Economy. C&C Hawaii will maintain or directly support an employment level on the island of Lanai that is no less than C&C Hawaii employment levels today. C&C Hawaii may include in these employment levels the employees of any company to which it outsources or sells any of its current or future activities. C&C Hawaii may also include in these levels any new employment that comes as a result of

the activities provided for in these community givebacks such as a biofuel development operation. C&C Hawaii may also count any new employment from businesses created from the sale or use of any other C&C Hawaii lands on Lāna'i.

3. Hunting. C&C Hawaii will continue resident access to hunting resources while maintaining and protecting wind turbine facilities. If it is required to limit access to hunting within the project area, C&C Hawaii will, before imposing any limits, make available comparable acreage for resident subsistence hunting to be no less than what is currently available. In addition to the protection of the resident's subsistence hunting, C&C Hawaii will also ensure the continuation on commercial non-residential programs with comparable hunting acreage. All of this is subject to the State or community programs and decisions to limit the impact that wildlife has on the environment, and to use of lands for agricultural or ranching purposes.

4. Access to Fishing. C&C Hawaii will continue to provide full access to the coastal fishing areas in the Ka'a region. In addition, C&C Hawaii will support actions initiated by the residents for a Community-Based Subsistence Fishing Area in the waters surrounding Lāna'i.

5. Encourage Property Ownership. C&C Hawaii will provide current residential, agricultural and commercial lessees the opportunity to purchase, at fair market value, commercial and residential land or properties.

6. Continue to promote and protect the current rural character under the current Business Country Town (BCT) ordinance subject to legal, health and safety requirements.

7. C&C Hawaii will, as a priority, require its contractors to hire qualified Lāna'i residents first, during the construction phase as well as the operation and maintenance of the Wind Farm. In addition, C&C Hawaii will require that its contractors ensure that workers comply with all laws and community standards for appropriate interaction with the Lāna'i community.

   C&C Hawaii will have a zero tolerance policy for contractors or their employees on harm committed to Lāna'i residents, and intends to work with the community to create rules of conduct for employees on island.

8. C&C Hawaii commits to the removal of the wind farm structures at time of decommissioning.

9. C&C Hawaii commits to requiring its contractors to adhere to the protocols, management and staffing to address the archaeological and cultural impacts and mitigation called for in the EIS and by State law. Staffing for the monitoring of these activities shall consist of Lāna'i residents unless it is not feasible.

10. C&C Hawaii commits to aggressively seek proposals from third parties to create a viable bio-fuel crop on Lāna'i. To facilitate this program, 5,000 acres will be reserved for such

a program for the life of the wind farm, subject to utilization for other diversified agriculture in the absence of viable bio-fuel crops.

11. Watershed Preservation. C&C Hawaii commits to aggressively pursue with the support of the State of Hawaii, the continuation and acceleration of the maintenance and management of the Lāna'i Hale watershed area. To that end, C&C Hawaii will commit up to $250,000 a year to the Lāna'i Hale watershed preservation during the life of the PPA.

12. Lāna'i Water and Resources. For as long as C&C Hawaii owns the Lāna'i water system during the terms of the PPA, C&C Hawaii will commit to contributing at least $500,000 a year to capital improvements to the water system. If C&C Hawaii sells the system, this obligation will be assumed by the buyer.

    To foster growth in diversified agriculture, the current reserve for agricultural use will be increased above the current allocation by 250,000 gallons a day.

13. C&C Hawaii will actively support Hawaiian Electric's commitments to the people of Lāna'i.

ATTACHMENT C

Hawaiian Electric Commitments

The wind farm on Lana'i is a critical component of Hawaii's move away from its current dependence on oil. That dependence poses a very substantial risk to the economy of Hawaii and, at the same time, is a very great opportunity to improve the economic condition of Hawaii. One of the community's goals is to spend energy dollars in Hawaii rather than overseas.

Having said that, the wind farm on Lana'i will impose burdens on the people of Lana'i. Hawaiian Electric and Maui Electric are part of the Lana'i community and have a firm and clear understanding of the community's feeling about the wind farm and about what community needs in the area of energy.

As part of the wind farm project, Hawaiian Electric and Maui Electric make the following commitments to the people of Lana'i:

1. Hawaiian Electric will lower the electric rates for the Lana'i residents and businesses to equal those of Oahu when the wind farm's power is connected to Oahu. Based on current rates, the reduction would be approximately 35%. This result will be achieved most likely by transferring Lana'i from Maui Electric to Hawaiian Electric. All of this is subject to PUC approval.

2. Hawaiian Electric and Maui Electric commit to have Lana'i be 100% powered by renewable energy by the year 2020. This may include solar, wind, biomass and biofuel resources and will, to the greatest extent possible from on-Lana'i resources. All of these will be subject as required to approval by the PUC.

3. Hawaiian Electric and Maui Electric will make grid improvement, particularly on the Manele Circuit, to allow for greater levels of distributed renewable energy and especially PV on the affected circuits. The grid improvements will, as required, be subject to PUC approval.

4. Hawaiian Electric and Maui Electric will request that the PUC permit the utility to provide solar water heating to any owner who wishes it by using a "PAYS"-like program which provide for repayment through shared savings on the bill.

Hawaiian Electric Company, Inc. — Date: 1/4/11

5. Hawaiian Electric will contribute $50,000 a year for the life of the PPA to the Lana'i Community Fund at the Hawaii Community Foundation once the islands of Oahu and Lana'i are connected. At the Companies' sole discretion, the contribution could instead be made to the Fund being set up by Castle and Cooke. Recovery of this amount will not be sought from the PUC.

6. Hawaiian Electric and Maui Electric fund a community-based campaign like Ma Ka Hana Ka Ike to assist the residents of Lana'i to achieve the greatest possible levels of energy conservation and efficiency. Each company will contribute $15,000 a year for two years in order to complete the work with all homes on Lana'i. If further support over time is needed, it will be provided. Similarly, recovery of this amount will not be sought.

Hawaiian Electric Company, Inc. 1/4/11 Date

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Appendix 9. Sample DOE Loan Guarantee Application Form

DOE FORM NO: 540.2 FORM APPROVED EFFECTIVE DATE: 03/08
OMB NO. 1910-5134 EXPIRATION DATE: 03/11

U.S. Department of Energy Loan Guarantee Program for Projects that Employ Innovative Technologies

This form is for use by Applicants seeking a U.S. Department of Energy Loan Guarantee pursuant to Title XVII of the Energy Policy Act of 2005, Public Law 109-58 (22 USC 16511, et seq.) and is governed by 10 CFR Part 609. (Social Security numbers are requested for purposes of verifying whether the Applicant has any tax delinquent accounts with the IRS as required by OMB Policy Circular A-129.) After completing this form, please print two copies and send to the address below. It is highly recommended that all mail be sent via Express Mail. Full Applications should be uploaded using Fed Connect at www.fedconnect.net. For more information on the program, please visit our website at http://www.lgprogram.energy.gov.

Submit Completed Form to:
Director
U.S. DOE Loan Guarantee Program
1000 Independence Ave, SW
Washington, DC 20585-0121

If you need assistance or have any questions please contact the Loan Guarantee Program Office by email at lgprogram@hq.doe.gov

In reference to DOE Solicitation No. DE-FOA-0000140
Invitation No. (if applicable)

GENERAL INFORMATION

Organization Name ☐ Federal Tax ID or ☐ Social Security No.

Contact Last Name | **First Name** | **Position/Title**

Phone Number | **Fax Number**

Address

City | **State** | **9 Digit Zip Code**

Email | **DUNS Number** | **NAIC Number**

Project Location – City | **State** | **9 Digit Zip Code**

PROJECT SPONSORS (ASSET HOLDERS) WITH EQUITY OF 5 PERCENT OR MORE

Organization Name ☐ Federal Tax ID or ☐ Social Security No.

Contact Last Name | **First Name** | **Position/Title**

Phone Number | **Fax Number**

Address

City | **State** | **9 Digit Zip Code**

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DOE FORM NO. 540.2
OMB NO. 1910-5134

FORM APPROVED EFFECTIVE DATE: 03/08
EXPIRATION DATE: 03/11

Organization Name ☐ **Federal Tax ID** or ☐ **Social Security No.**

Contact Last Name	**First Name**	**Position/Title**

Phone Number	**Fax Number**

Address

City	**State**	**9 Digit Zip Code**

Organization Name ☐ **Federal Tax ID** or ☐ **Social Security No.**

Contact Last Name	**First Name**	**Position/Title**

Phone Number	**Fax Number**

Address

City	**State**	**9 Digit Zip Code**

Organization Name ☐ **Federal Tax ID** or ☐ **Social Security No.**

Contact Last Name	**First Name**	**Position/Title**

Phone Number	**Fax Number**

Address

City	**State**	**9 Digit Zip Code**

Organization Name ☐ **Federal Tax ID** or ☐ **Social Security No.**

Contact Last Name	**First Name**	**Position/Title**

Phone Number	**Fax Number**

Address

City	**State**	**9 Digit Zip Code**

66

DOE FORM NO.: 540.2 FORM APPROVED EFFECTIVE DATE: 03/08
OMB NO. 1910-5134 EXPIRATION DATE: 03/11

SUMMARY OF LOAN GUARANTEE REQUEST

Requested Period of Guarantee	yrs	Total Project Costs*	
Equity*		Proposed Guaranteed Amount*	
Debt*		Requested Loan Guarantee to Debt Instrument	%
Debt to Equity Ratio	:	Requested Loan Guarantee to Total Project Costs	%

* Please indicate dollars in millions

CATEGORY OF PROJECT

Category	Description	Check Box
1	Renewable Energy Systems	
2	Advanced Fossil Energy Technology (including coal gasification meeting the criteria in paragraph 1703 (d) of Title XVII	
3	Hydrogen fuel cell technology for residential, industrial or transportation Applications	
4	Advanced nuclear energy facilities	
5	Carbon capture and sequestration practices and technologies, including agricultural and forestry practices that store and sequester carbon	
6	Efficient electrical generation, transmission and distribution technologies	
7	Efficient end-use energy technologies	
8	Production facilities for fuel efficient vehicles including hybrid and advanced diesel vehicles	
9	Pollution control equipment	
10	Refineries, meaning facilities at which crude oil is refined into gasoline	

RESTRICTIONS ON DISCLOSURE AND USE OF INFORMATION

Title XVII of the Energy Policy Act of 2005 authorizes the collection of this information. The primary use of this information is by the Loan Guarantee Program Office of the Department of Energy in their review of applications for loan guarantees under Title XVII. Additional disclosures of this information may be made as required by law. Where the information provided is a social security number, the provision of the information is voluntary but failure to disclose may result in disapproval of the application.

All information collected will be handled in accordance with the Freedom of Information Act (5 U.S.C. 552) and all applicable laws.

Patentable ideas, trade secrets, proprietary, or confidential commercial or financial information, disclosure of which may harm the applicant, should be included in an Application only when such information is necessary to convey an understanding of the proposed project. The use and disclosure of such data may be restricted, provided the applicant specifically identifies and marks such data in accordance with the following provisions:

1. Applicant hereby discloses that (fill in the blank below in this Application Form with the specific Application Sections containing proprietary data):

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"Sections ___ of this Application contain data which have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes; provided that, if this applicant is issued a loan guarantee under Title XVII of the Energy Policy Act of 2005 as a result of or in connection with the submission of this Application, DOE shall have the right to use or disclose the data herein, other than such data that have been properly reasserted as being trade secret or proprietary in the loan guarantee agreement. This restriction does not limit the Government's right to use or disclose data obtained without restriction from any source, including the applicant."

2. Include the following legend on the first or cover page of each document or electronic file submitted that contains such data (be sure to specify the page numbers from such document or electronic file that contains the proprietary data):

"The data contained in pages _____ of this document or electronic file which hereby forms a part of the Application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes; provided that, if this applicant is issued a loan guarantee under Title XVII of the Energy Policy Act of 2005 as a result of or in connection with the submission of this Application, DOE shall have the right to use or disclose the data herein, other than such data that have been properly reasserted as being trade secret or proprietary in the loan guarantee agreement. This restriction does not limit the Government's right to use or disclose data obtained without restriction from any source, including the applicant."

3. Include the following legend on each page of a document or electronic file containing such data (a) as a header on the page or (b) to specifically identify and mark each line or paragraph on the page containing such data:

"The following contains proprietary information that (name of applicant) requests not be released to persons outside the Government, except for purposes of review and evaluation."

BURDEN DISCLOSURE STATEMENT

This data is being collected to support Applications for loan guarantees from the Department of Energy under Title XVII of the Energy Policy Act of 2005 (22 USC 16511, *et seq.*). The data you supply will be used for the review of business and credit risks relating to projects which qualify for loan guarantees under Title XVII.

Public reporting burden for this collection of information is estimated to average 10.36 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of the Chief Information Officer, Records Management Division, IM-23, U.S. Department of Energy, 1000 Independence Ave SW, Washington, DC, 20585-1290; and to the Office of Management and Budget, OIRA, Washington, DC 20503.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB control number.

Submission of this data is required to obtain a guarantee of the repayment of principal and interest on loans relating to projects that qualify for such guarantees under Title XVII of the Energy Policy Act of 2005 (22 USC 16511, *et seq.*).

CERTIFICATION

The undersigned certifies that the data and information submitted and the representations made in this Application and any attachments to this Application are true and correct, to the best of the Applicant's knowledge and belief after due diligence, and that the Applicant has not omitted any material facts.

The undersigned further certifies to having full authority to bind the Applicant.

Applicant (Organization Name)	
Name of Applicant's Authorized Officer ***(will fulfill on-line certification)***	Title
Signature of Authorized Officer	Date

Reset Form

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Appendix 10. Computation of Break-Even Prices

Assumed 2011$		Base Case			Wind Production 80% of Base Case		
		Contract Option	BOT Option	CCC Option	Contract Option	BOT Option	CCC Option
Castle Cooke							
Capacity	MW	200	200	200	200	200	200
Capacity Factor	%	42.25%	42.25%	42.25%	33.80%	33.80%	33.80%
Wind Production	MWh	740,220	740,220	740,220	592,176	592,176	592,176
Wind Energy Levelized Unit Cost	¢/kWh	13.00	13.00	13.00	13.00	13.00	13.00
Wind Energy Annual Rev. Req.	$000	$ 96,229	$ 96,229	$ 96,229	$ 76,983	$ 76,983	$ 76,983
First Wind							
Capacity	MW	200	200	200	200	200	200
Capacity Factor	%	42.25%	42.25%	42.25%	33.80%	33.80%	33.80%
Wind Production	MWh	740,220	740,220	740,220	592,176	592,176	592,176
Wind Energy Levelized Unit Cost	¢/kWh	13.00	13.00	13.00	13.00	13.00	13.00
Wind Energy Annual Rev. Req.	$000	$ 96,229	$ 96,229	$ 96,229	$ 76,983	$ 76,983	$ 76,983
Battery Levelized Unit Cost	¢/kWh						
Battery Annual Rev. Req.	$000						
Cable Levelized Unit Cost	¢/kWh	8.59	5.45	5.60			
Cable Annual Rev. Req.	$000	$ 127,219	$ 80,638	$ 82,905	$ 127,219	$ 80,638	$ 82,905
O'ahu Upgrades Levelized Unit Cost	¢/kWh	1.10	1.10	1.10			
O'ahu Upgrades Annual Rev. Req.	$000	$ 16,285	$ 16,285	$ 16,285	$ 16,285	$ 16,285	$ 16,285
Total Costs Associated with Delivering Wind to O'ahu	$000	$ 335,961	$ 289,380	$ 291,647	$ 297,469	$ 250,889	$ 253,155
Energy Conversion rate	MWh/Bbl oil	0.597	0.597	0.597	0.597	0.597	0.597
Amount Of Oil Replaced by Wind	Bbl						
Castle Cooke	Bbl	1,239,899	1,239,899	1,239,899	991,920	991,920	991,920
First Wind	Bbl	1,239,899	1,239,899	1,239,899	991,920	991,920	991,920
Total Oil Replaced by Wind	Bbl	2,479,799	2,479,799	2,479,799	1,983,839	1,983,839	1,983,839
Break Even Fuel Oil Price	**$/Bbl**	**$ 135.48**	**$ 116.70**	**$ 117.61**	**$ 149.95**	**$ 126.47**	**$ 127.61**
Less Adder	**$/Bbl**	10.00	10.00	10.00	10.00	10.00	10.00
WTI Price	**$/Bbl**	**$ 125.48**	**$ 106.70**	**$ 107.61**	**$ 139.95**	**$ 116.47**	**$ 117.61**

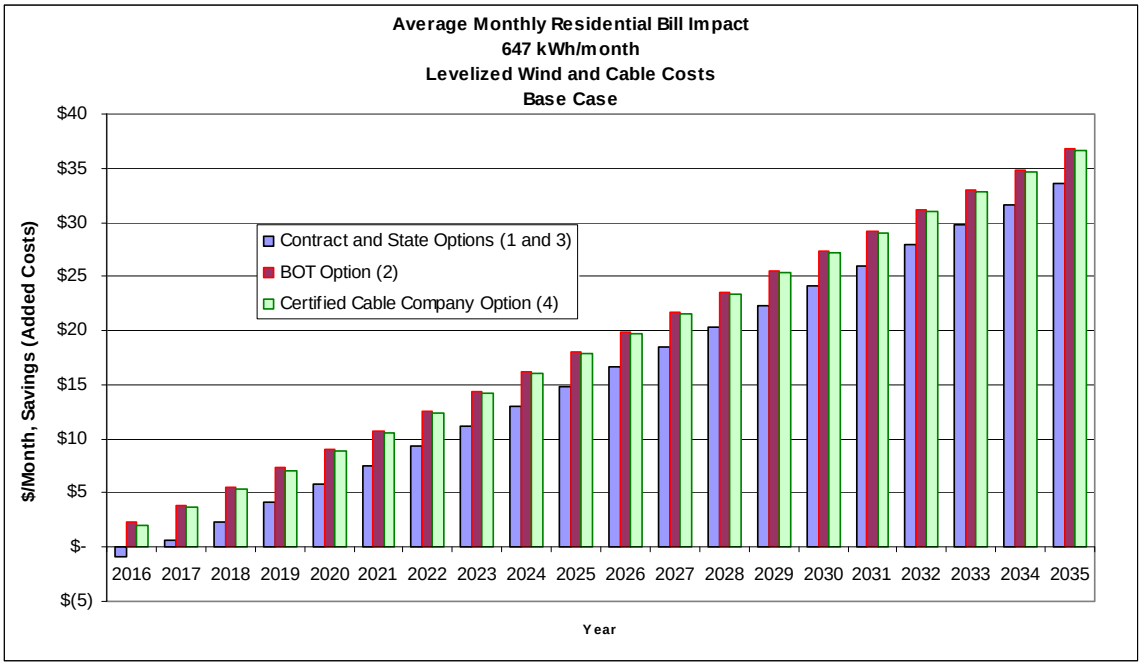
Assumed 2011$		Wind Production 50% of Base Case			Base Case with Battery		
		Contract Option	BOT Option	CCC Option	Contract Option	BOT Option	CCC Option
Castle Cooke							
Capacity	MW	200	200	200	200	200	200
Capacity Factor	%	21.13%	21.13%	21.13%	42.25%	42.25%	42.25%
Wind Production	MWh	370,110	370,110	370,110	740,220	740,220	740,220
Wind Energy Levelized Unit Cost	¢/kWh	13.00	13.00	13.00	13.00	13.00	13.00
Wind Energy Annual Rev. Req.	$000	$ 48,114	$ 48,114	$ 48,114	$ 96,229	$ 96,229	$ 96,229
First Wind							
Capacity	MW	200	200	200	200	200	200
Capacity Factor	%	21.13%	21.13%	21.13%	42.25%	42.25%	42.25%
Wind Production	MWh	370,110	370,110	370,110	740,220	740,220	740,220
Wind Energy Levelized Unit Cost	¢/kWh	13.00	13.00	13.00	13.00	13.00	13.00
Wind Energy Annual Rev. Req.	$000	$ 48,114	$ 48,114	$ 48,114	$ 96,229	$ 96,229	$ 96,229
Battery Levelized Unit Cost	¢/kWh				0.58	0.58	0.58
Battery Annual Rev. Req.	$000				$ 8,587	$ 8,587	$ 8,587
Cable Levelized Unit Cost	¢/kWh						
Cable Annual Rev. Req.	$000	$ 127,219	$ 80,638	$ 82,905	$ 127,219	$ 80,638	$ 82,905
O'ahu Upgrades Levelized Unit Cost	¢/kWh						
O'ahu Upgrades Annual Rev. Req.	$000	$ 16,285	$ 16,285	$ 16,285	$ 16,285	$ 16,285	$ 16,285
Total Costs Associated with Delivering Wind to O'ahu	$000	$ 239,732	$ 193,152	$ 195,418	$ 344,547	$ 297,967	$ 300,233
Energy Conversion rate	MWh/Bbl oil	0.597	0.597	0.597	0.597	0.597	0.597
Amount Of Oil Replaced by Wind	Bbl						
Castle Cooke	Bbl	619,950	619,950	619,950	1,239,899	1,239,899	1,239,899
First Wind	Bbl	619,950	619,950	619,950	1,239,899	1,239,899	1,239,899
Total Oil Replaced by Wind	Bbl	1,239,899	1,239,899	1,239,899	2,479,799	2,479,799	2,479,799
Break Even Fuel Oil Price	**$/Bbl**	**$ 193.35**	**$ 155.78**	**$ 157.61**	**$ 138.94**	**$ 120.16**	**$ 121.07**
Less Adder	**$/Bbl**	10.00	10.00	10.00	10.00	10.00	10.00
WTI Price	**$/Bbl**	**$ 183.35**	**$ 145.78**	**$ 147.61**	**$ 128.94**	**$ 110.16**	**$ 111.07**

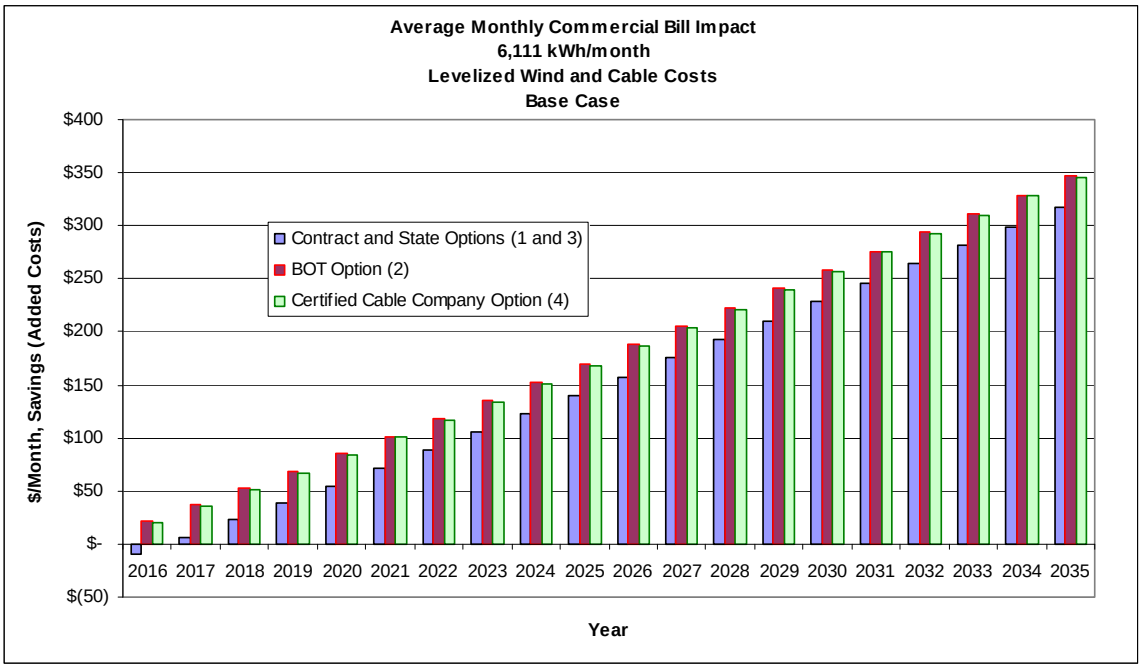
Appendix 11. Ratepayer Impacts – Base Case – Levelized

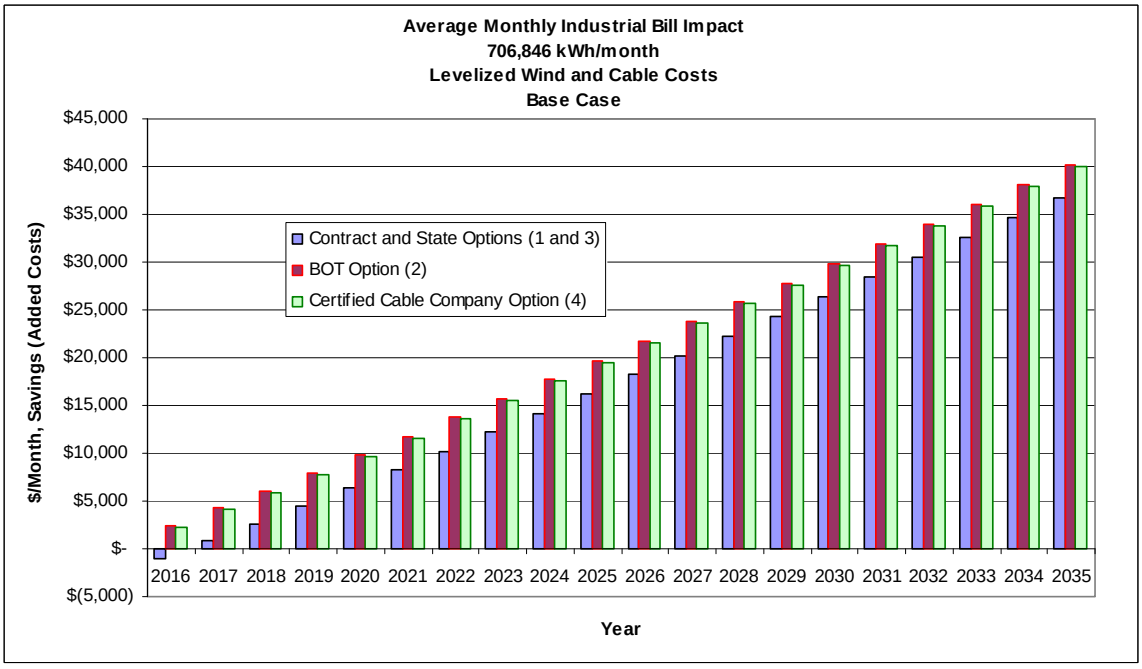
20 Year Base Case

These graphs present the average monthly customer bill impacts on Residential, Commercial and Industrial customers for the years 2016 – 2035. These bill impacts assume the Base Case wind energy production and cable and O'ahu upgrade cost recoveries. The price of WTI oil was based on EIA projections in 2009$ plus $10/Bbl to estimate Hawai'i fuel oil prices and then escalated to nominal $ using a 3% per annum rate.

.Levelized Wind and Cable Costs




Average Monthly Commercial Bill Impact
6,111 kWh/month
Levelized Wind and Cable Costs
Base Case
$400
$350
$300
$250
$200
$150
$100
$50
$-
$(50)
$/Month, Savings (Added Costs)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year

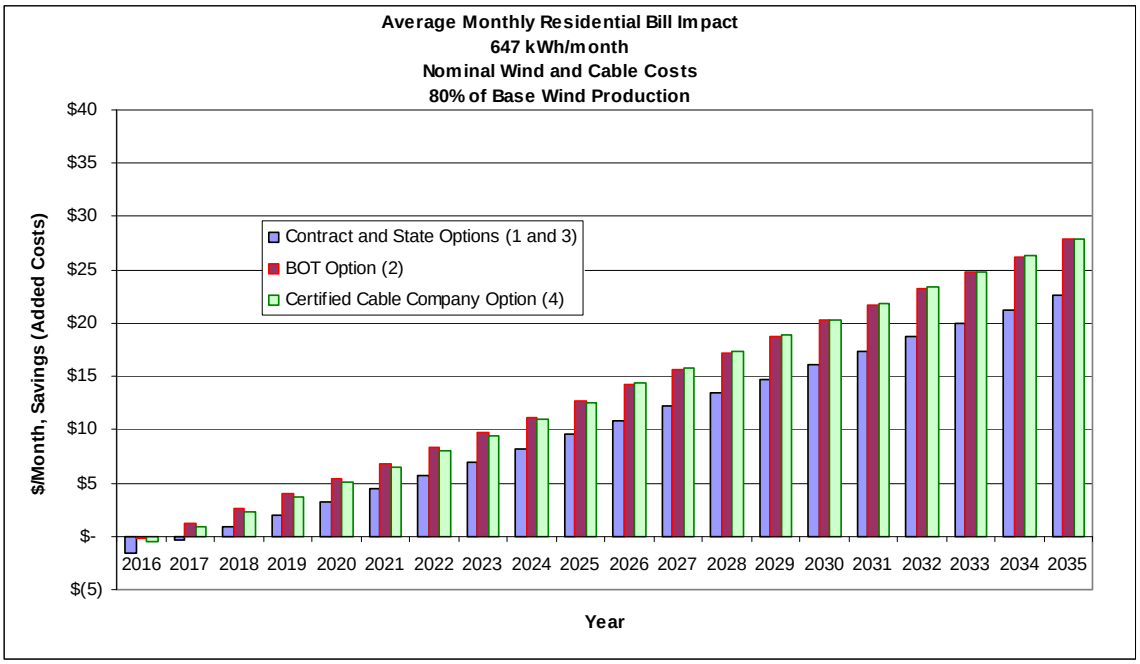

Average Monthly Industrial Bill Impact
706,846 kWh/month
Levelized Wind and Cable Costs
Base Case
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$-
$(5,000)
$/Month, Savings (Added Costs)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year

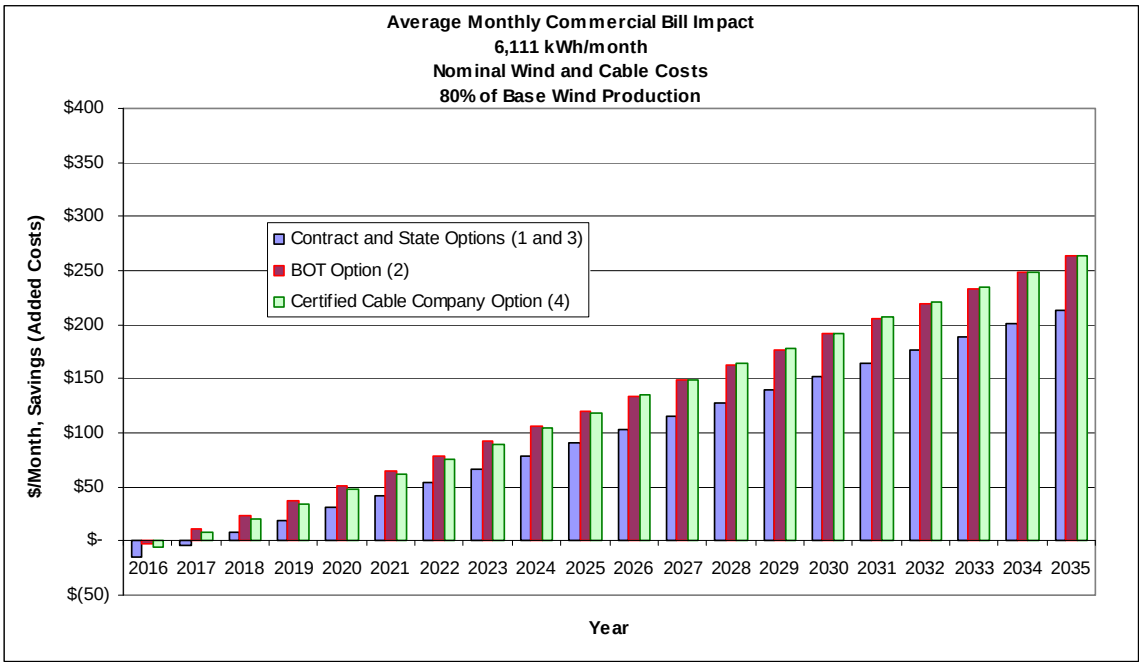
Appendix 12. Ratepayer Impacts – Sensitivities

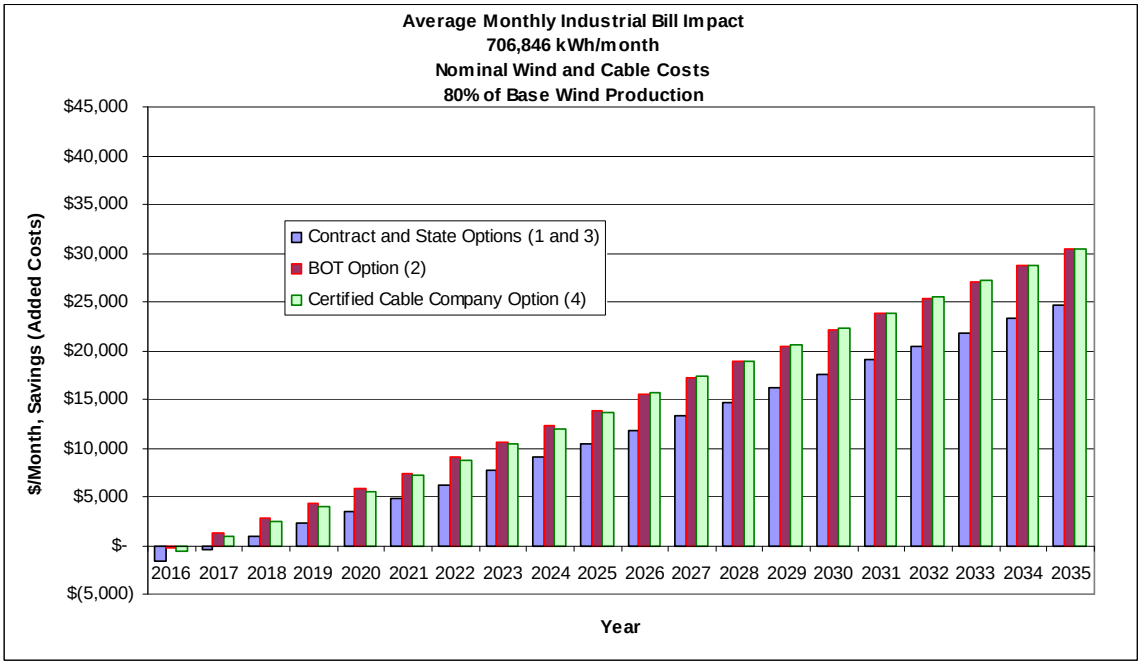
20 Year with 20% Reduction in Wind Base Case Production

This case represents a scenario in which the wind farms do not produce the energy at the levels assumed in the Base Case. In this scenario, the Base Case wind energy production is reduced by 20% for all 20 years. Since the production risk is assumed by the wind developer, the annual cost for wind would be 80% of the Base Case for each year. The recovery of the costs to install and operate the submarine cable and to upgrade the O'ahu system would remain at the Base Case levels.

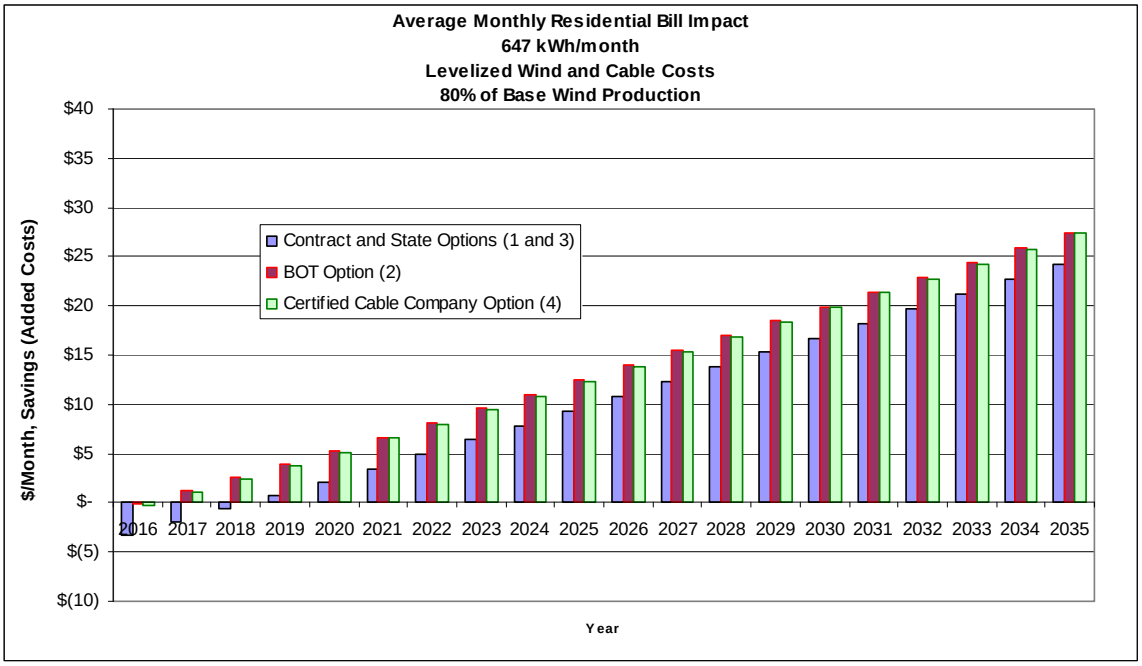
Nominal Wind and Cable Costs

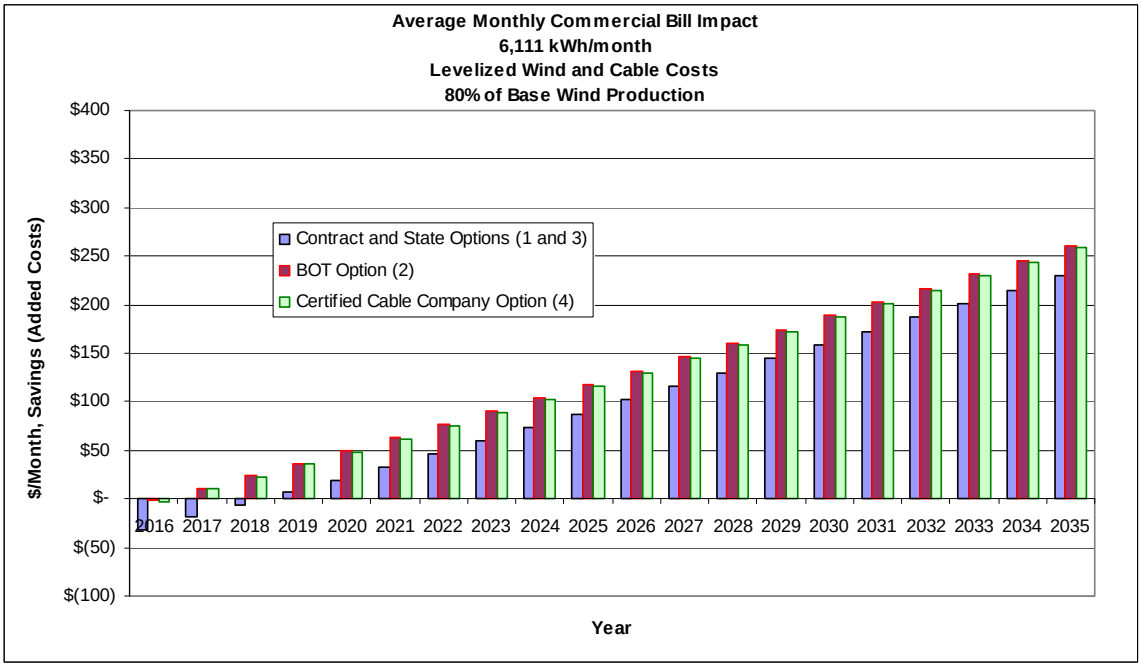


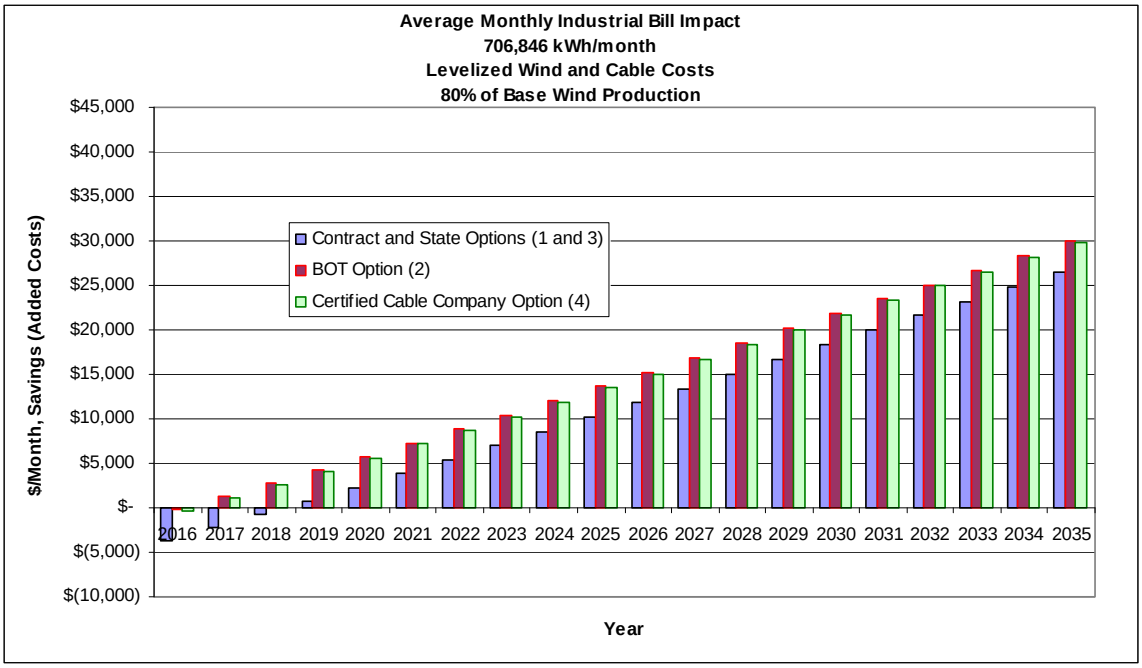

Average Monthly Commercial Bill Impact
6,111 kWh/month
Nominal Wind and Cable Costs
80% of Base Wind Production
$400
$350
$300
$250
$200
$150
$100
$50
$-
$(50)
$/Month, Savings (Added Costs)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year


Average Monthly Industrial Bill Impact
706,846 kWh/month
Nominal Wind and Cable Costs
80% of Base Wind Production
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$-
$(5,000)
$/Month, Savings (Added Costs)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year

Levelized Wind and Cable Costs



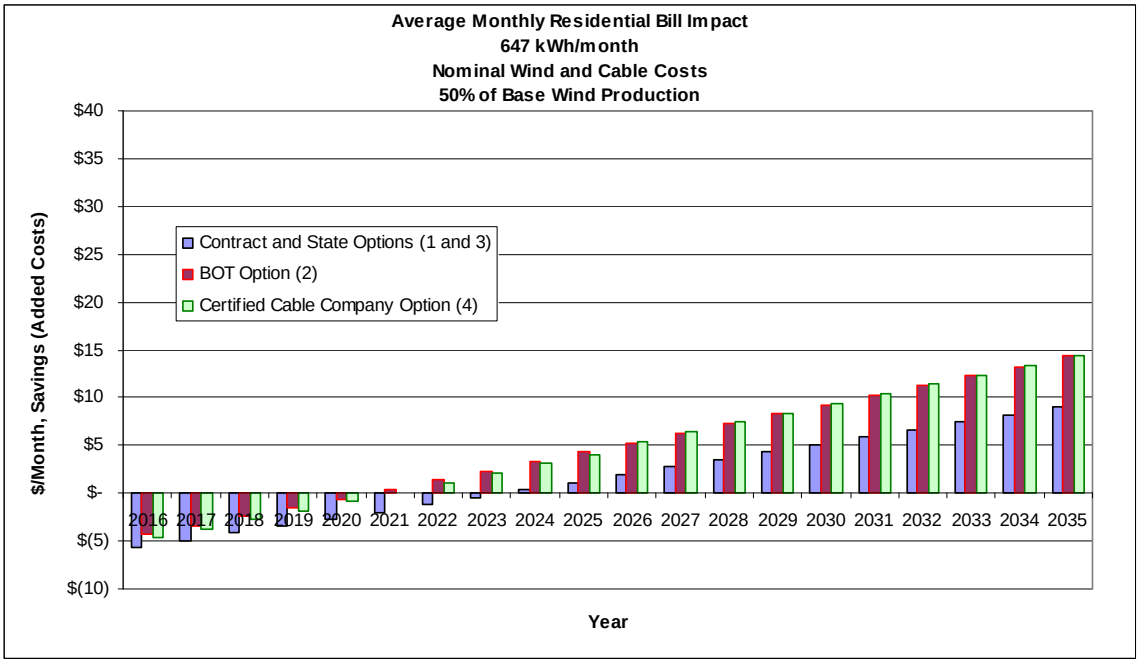


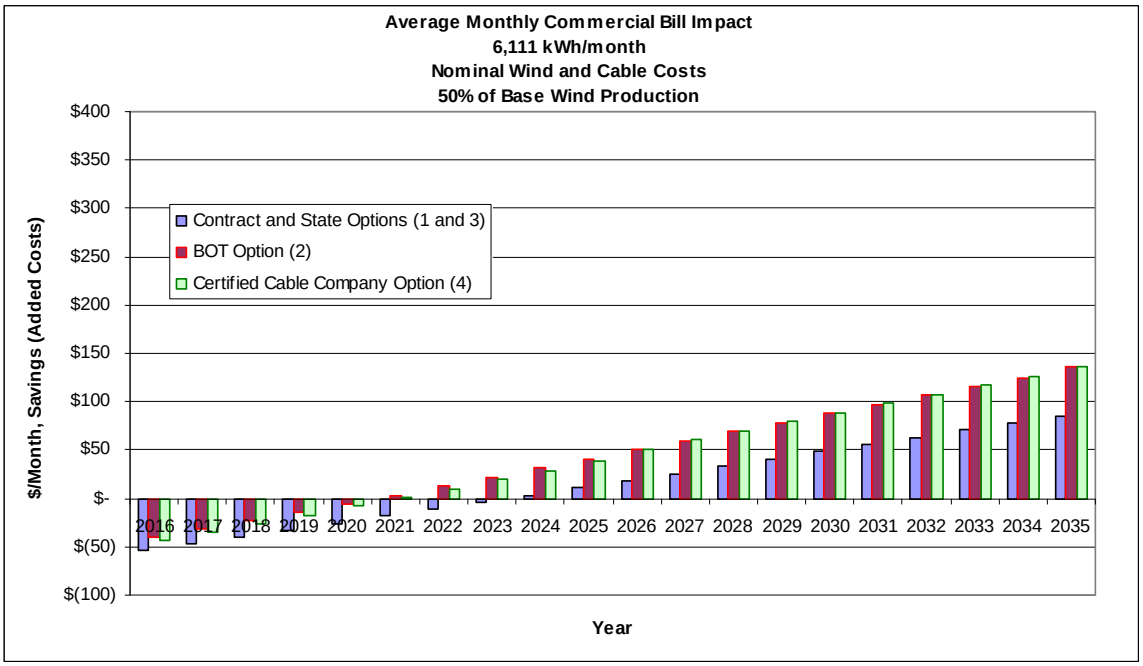

Average Monthly Industrial Bill Impact
706,846 kWh/month
Levelized Wind and Cable Costs
80% of Base Wind Production
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$-
$(5,000)
$(10,000)
$/Month, Savings (Added Costs)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year

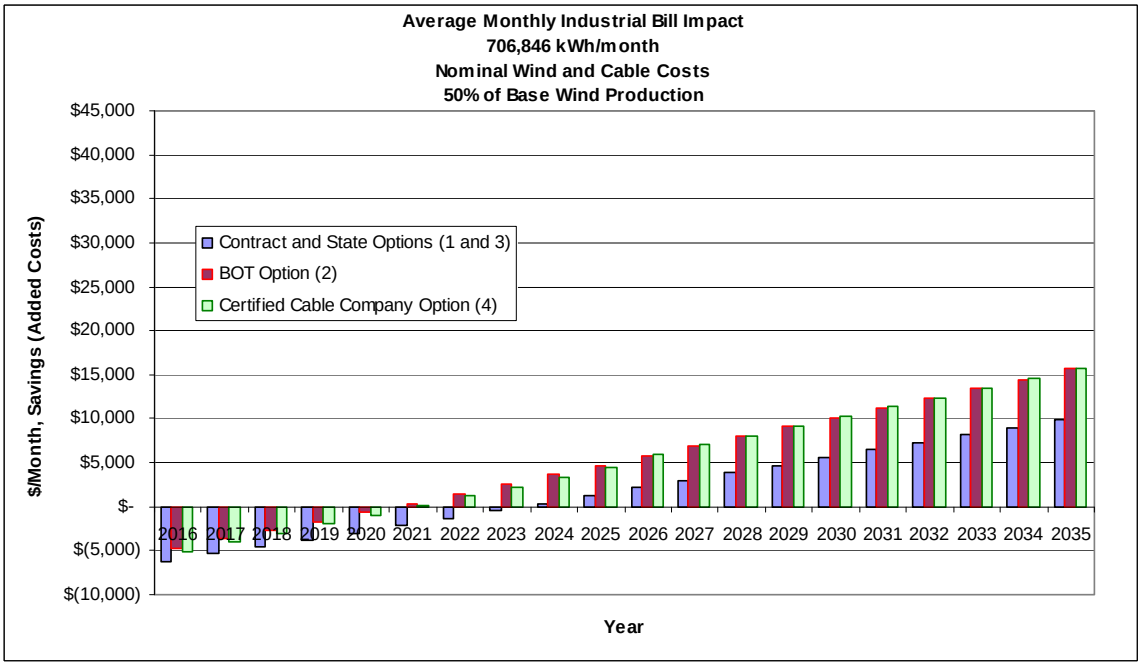
20 Year with 50% Reduction in Wind Base Case Production

This case represents a scenario in which the wind farms do not produce the energy at the levels assumed in the Base Case. In this scenario, the Base Case wind energy production is reduced by 50% for all 20 years. Since the production risk is assumed by the wind developer, the annual cost for wind would be 50% of the Base Case for each year. The recovery of the costs to install and operate the submarine cable and to upgrade the O'ahu system would remain at the Base Case levels.

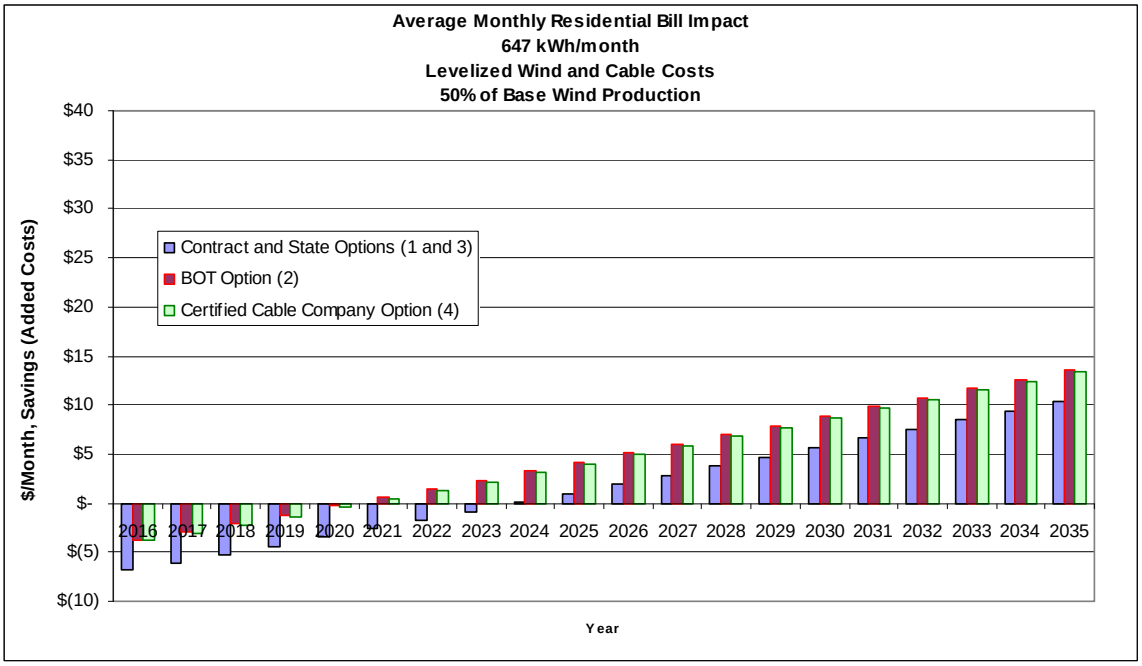
Nominal Wind and Cable Costs

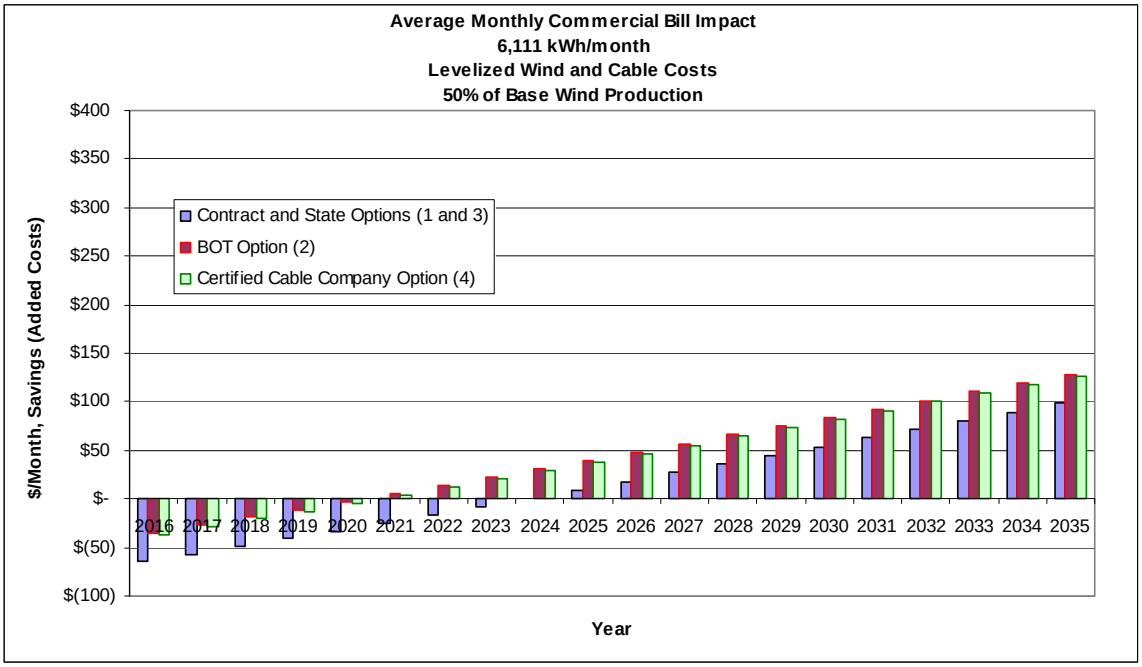


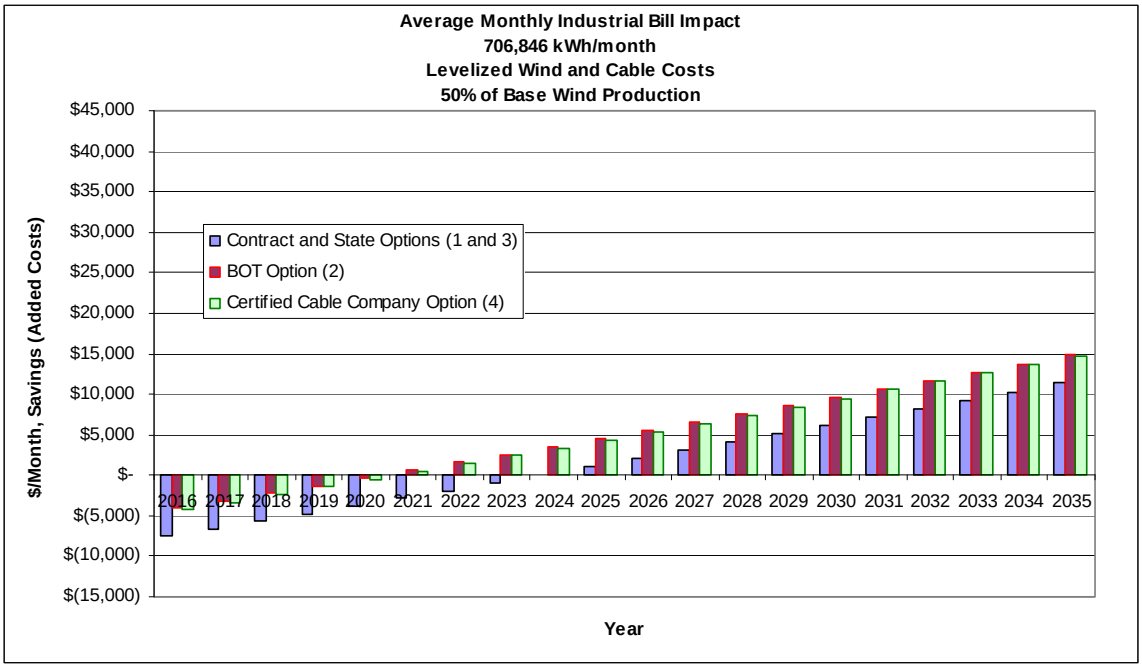

Average Monthly Commercial Bill Impact
6,111 kWh/month
Nominal Wind and Cable Costs
50% of Base Wind Production
$400
$350
$300
$250
$200
$150
$100
$50
$-
$(50)
$(100)
$/Month, Savings (Added Costs)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year


Average Monthly Industrial Bill Impact
706,846 kWh/month
Nominal Wind and Cable Costs
50% of Base Wind Production
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$-
$(5,000)
$(10,000)
$/Month, Savings (Added Costs)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year

Levelized Wind and Cable Costs



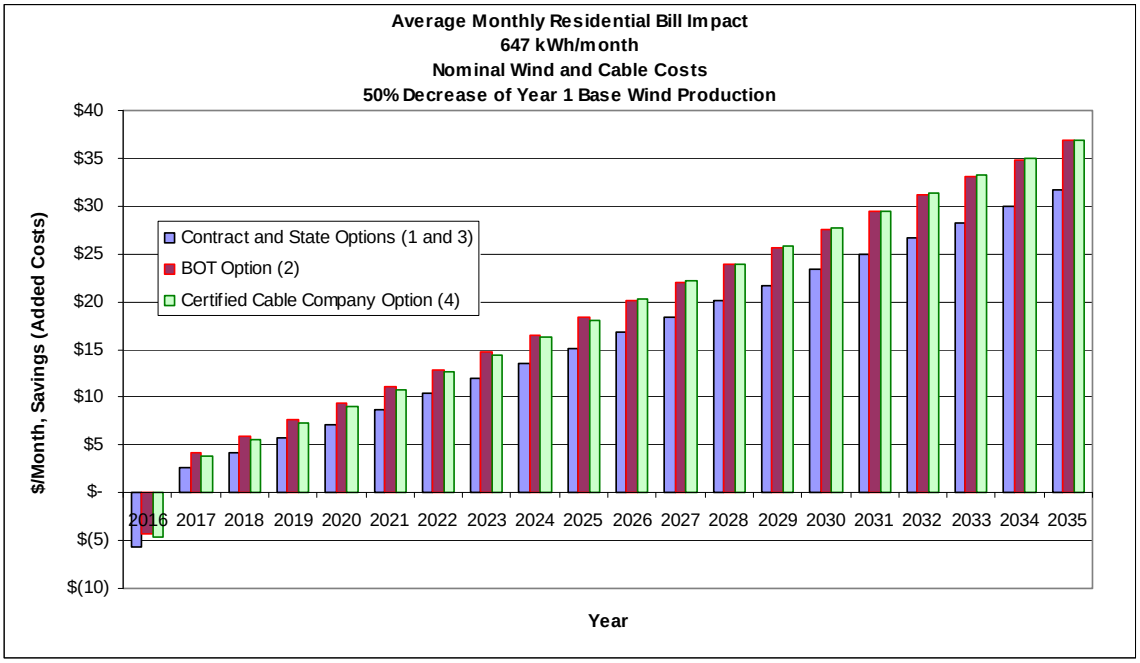


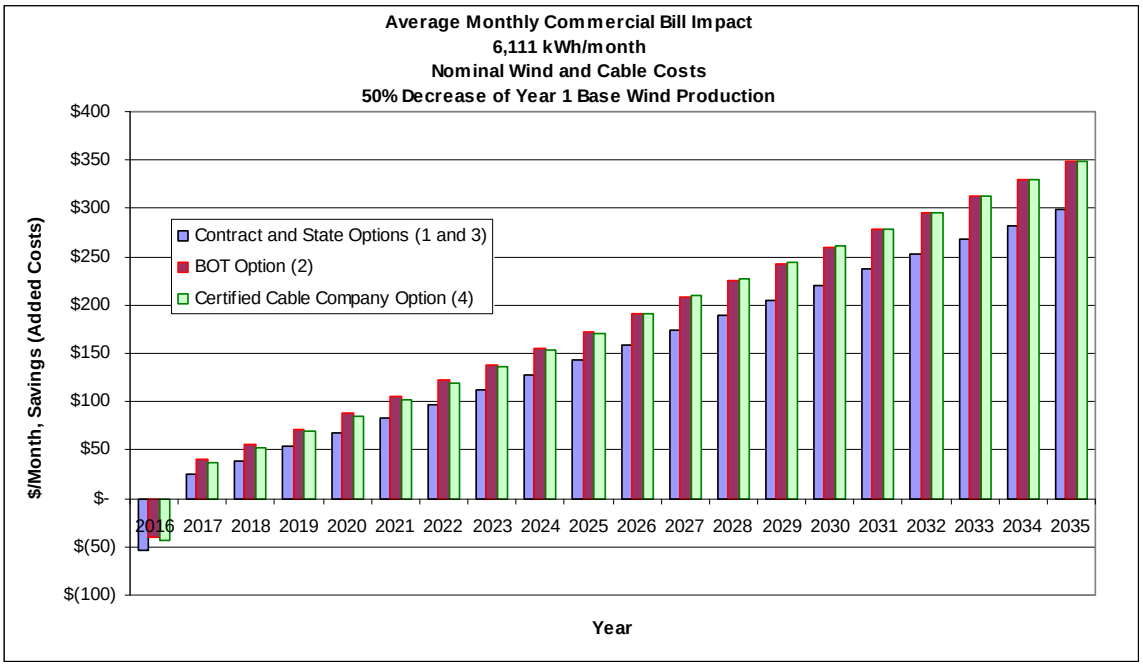

Average Monthly Industrial Bill Impact
706,846 kWh/month
Levelized Wind and Cable Costs
50% of Base Wind Production
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$-
$(5,000)
$(10,000)
$(15,000)
$/Month, Savings (Added Costs)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year

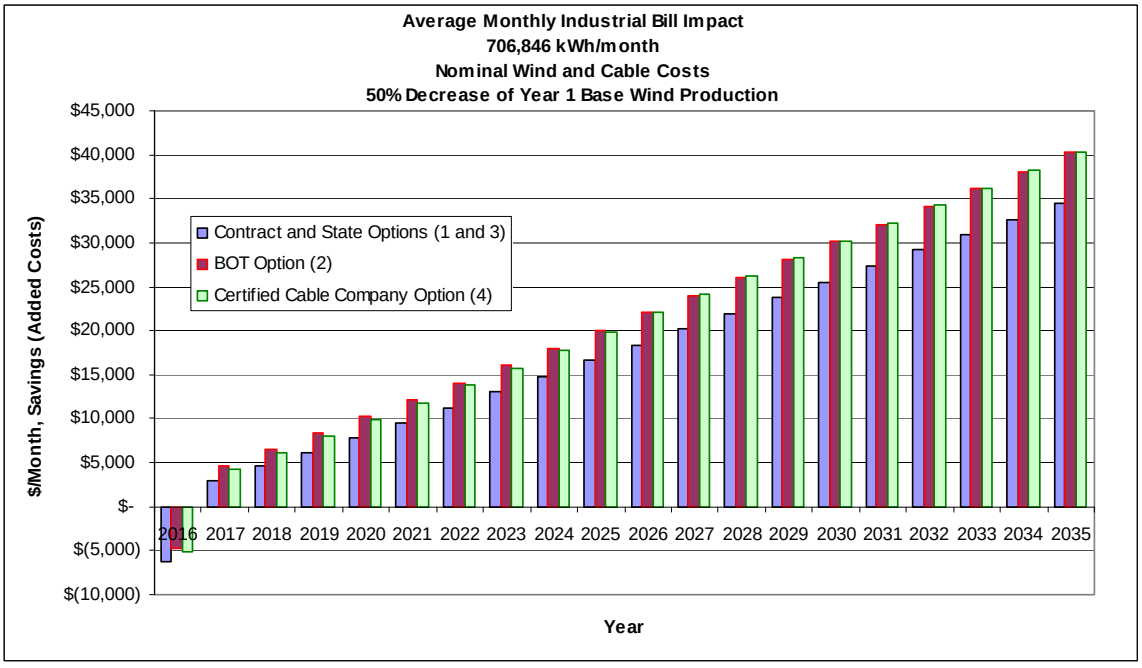
20 Year with 50% Reduction in Wind Base Case Production for Year 1 Only to Represent a 6-month Delay in Wind Farm Energy Production

This case represents a scenario in which the wind farms do not come on line until six months after the submarine cable is tested and available. The Base Case wind energy production is reduced by 50% for year 1 only. Year 1 assumes that the total cost for wind would be 50% of the Base Case year 1 cost, and assumes100% of the year 1 cost recovery to install and operate the cable and O'ahu system upgrades. The remaining 19 years assume the Base Case wind energy production and costs.

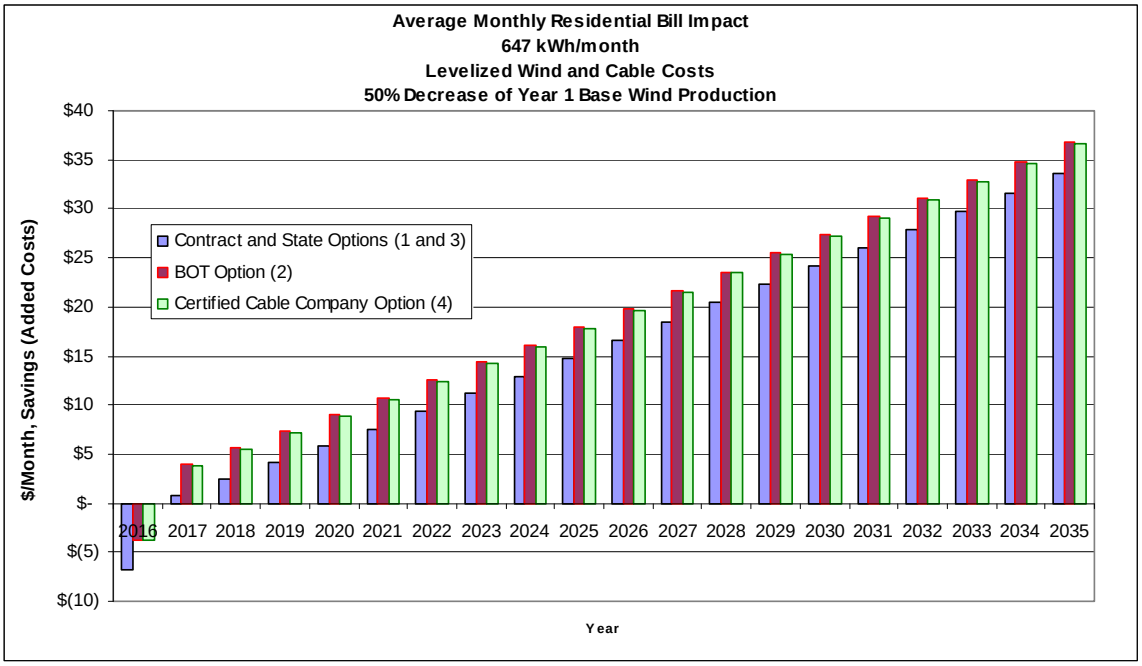
Nominal Wind and Cable Costs

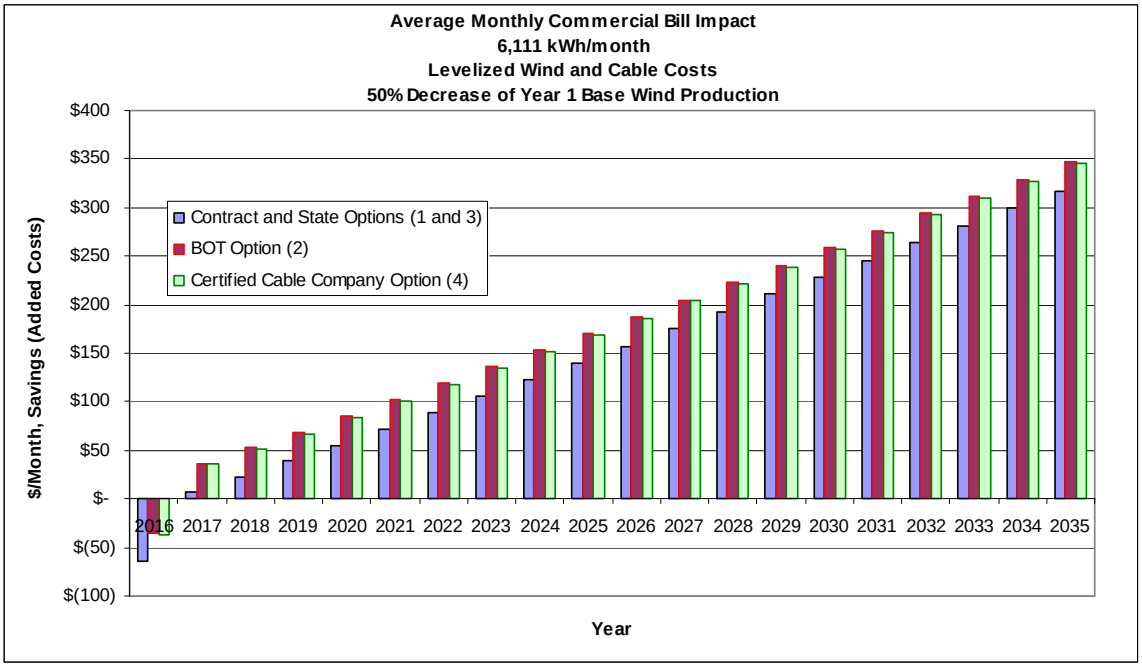


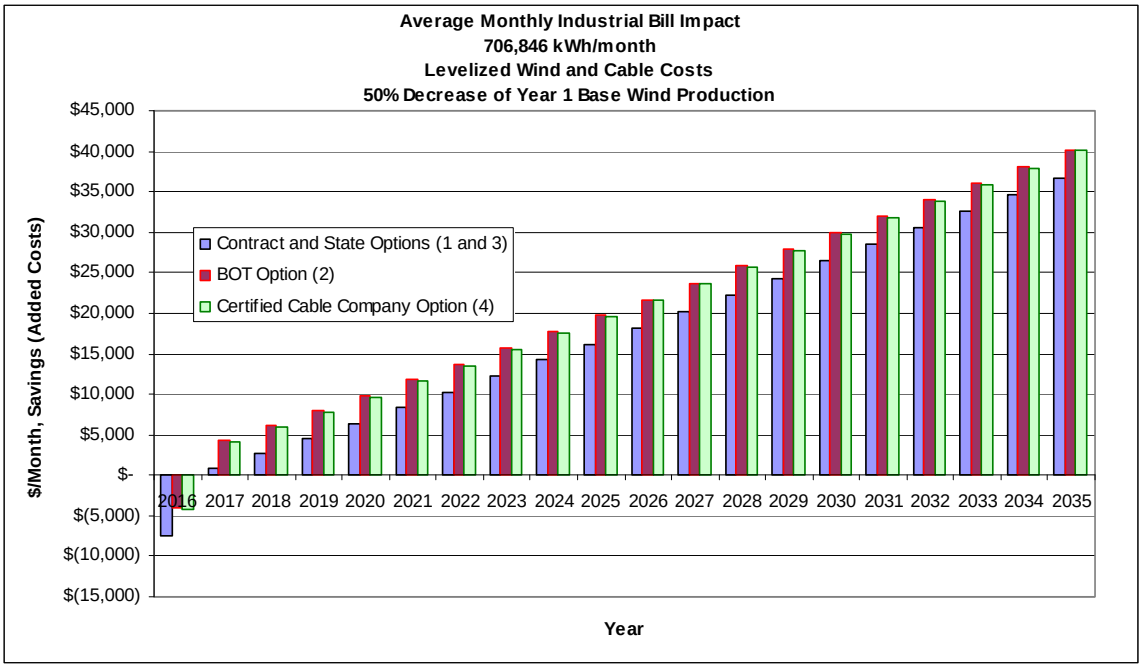

Average Monthly Commercial Bill Impact
6,111 kWh/month
Nominal Wind and Cable Costs
50% Decrease of Year 1 Base Wind Production
$/Month, Savings (Added Costs)
$400
$350
$300
$250
$200
$150
$100
$50
$-
$(50)
$(100)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year


Average Monthly Industrial Bill Impact
706,846 kWh/month
Nominal Wind and Cable Costs
50% Decrease of Year 1 Base Wind Production
$/Month, Savings (Added Costs)
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$-
$(5,000)
$(10,000)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year

Levelized Wind and Cable Costs






Average Monthly Industrial Bill Impact
706,846 kWh/month
Levelized Wind and Cable Costs
50% Decrease of Year 1 Base Wind Production
$/Month, Savings (Added Costs)
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$-
$(5,000)
$(10,000)
$(15,000)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year

Twenty-year Graphs for 2016 COD, Base Case with Battery

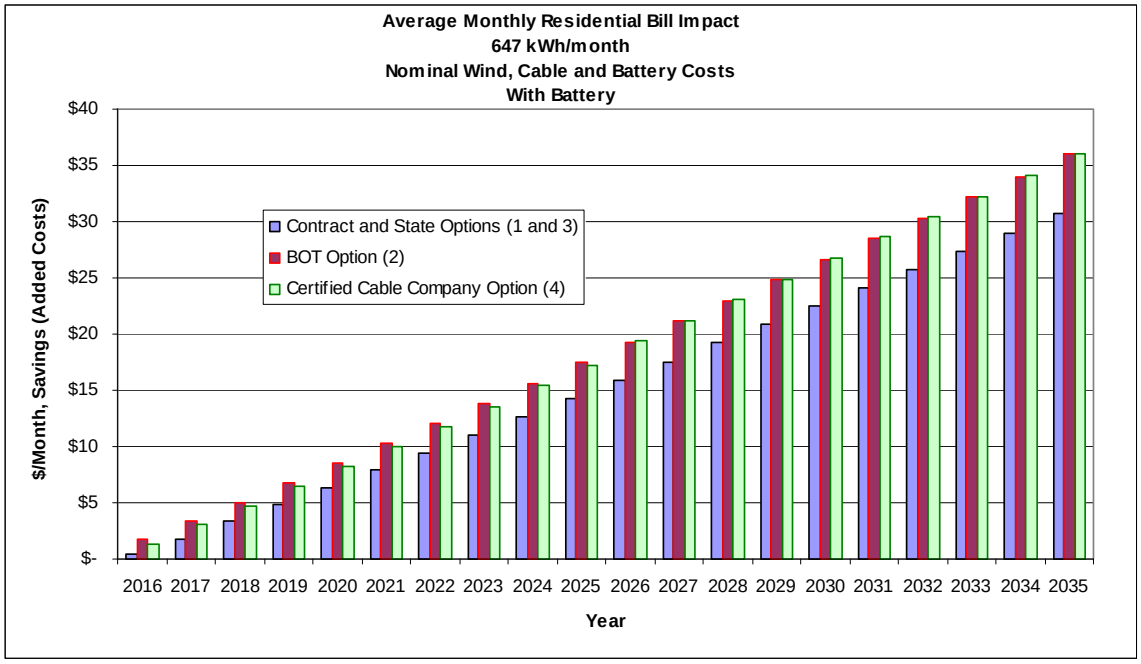
This case represents a scenario in which the wind farms are required to install a 100 MW battery backup system on the Molokaʻi side of the HVDC cable. The capital recovery and operating costs to install the battery are added to recovery of the costs to install the submarine cable and to upgrade the Oʻahu system.

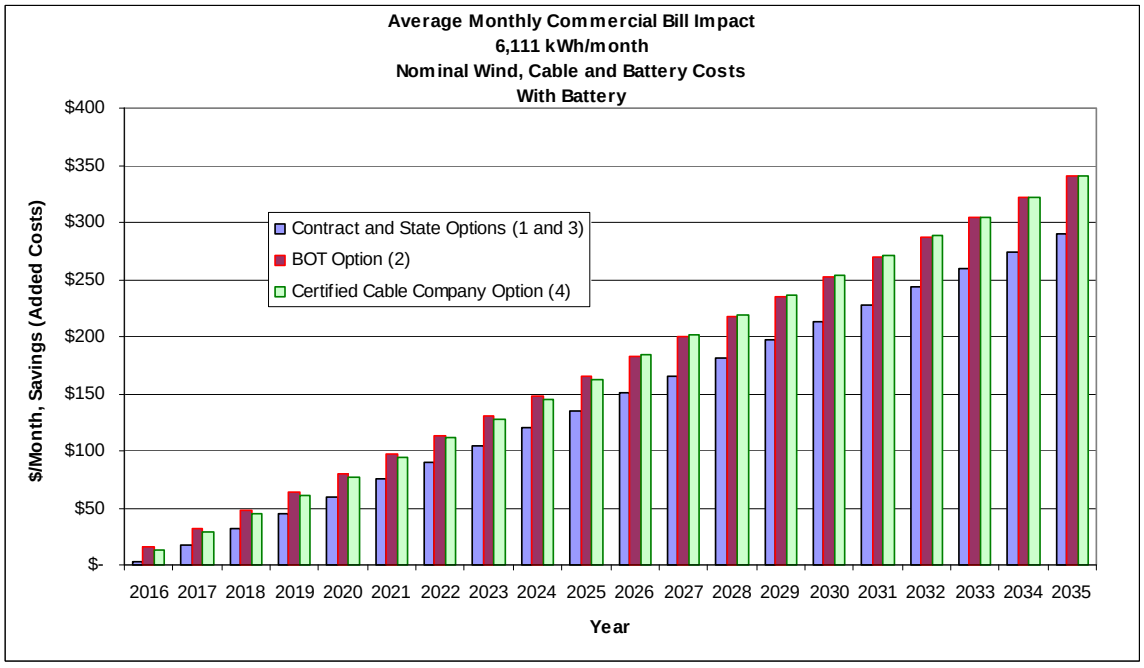
The following are the assumptions used to estimate the annual costs for the the battery system on Molokaʻi.

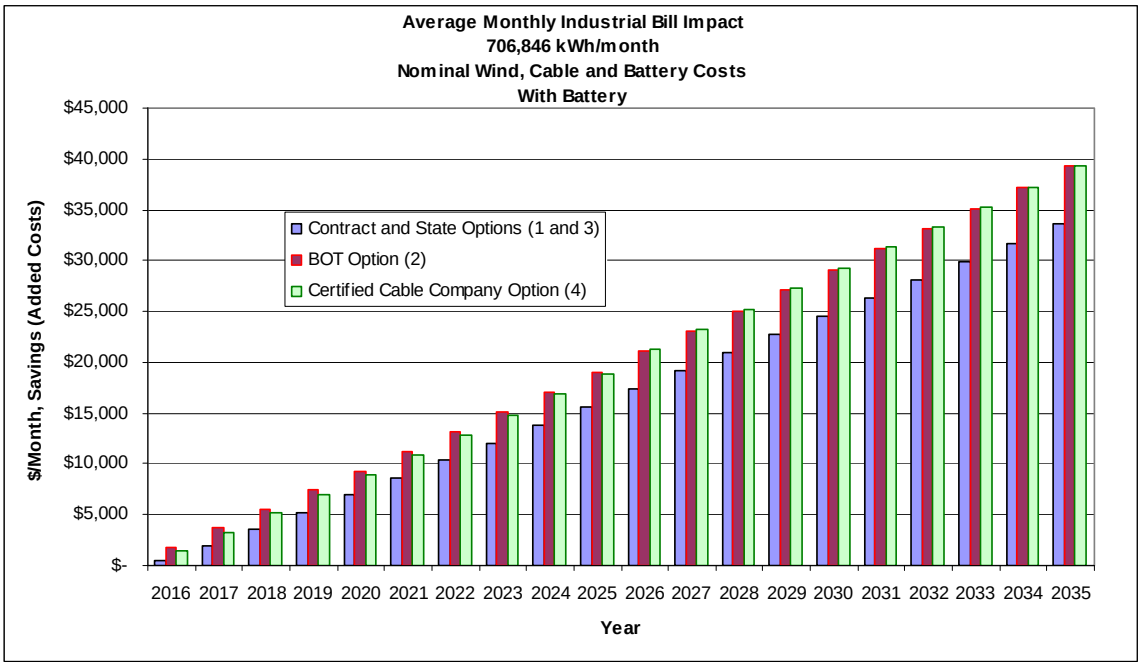
The assumptions used for the recovery of 100 MW battery system costs are:

- $50 million (2009$) capital cost for battery per Xtreme Power ($500 per kWh).
- Return on Equity = 20%
- Interest Rate on Debt = 7.22%
- Term of Debt: 20 years
- Debt/Equity = 80/20
- Depreciable Life = 20 years
- Operation & Maintenance costs = 2% of installed capital cost
- Levelized Annual Revenue Requirement for Battery System $8,587,000

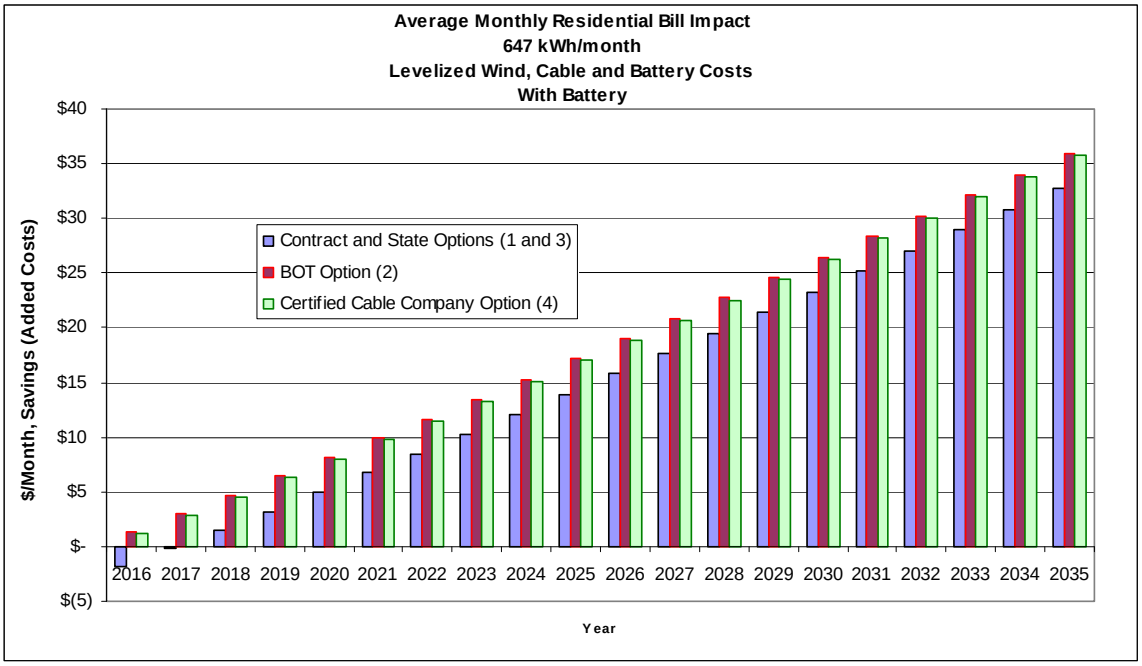
Nominal Wind, Cable, and Battery Costs

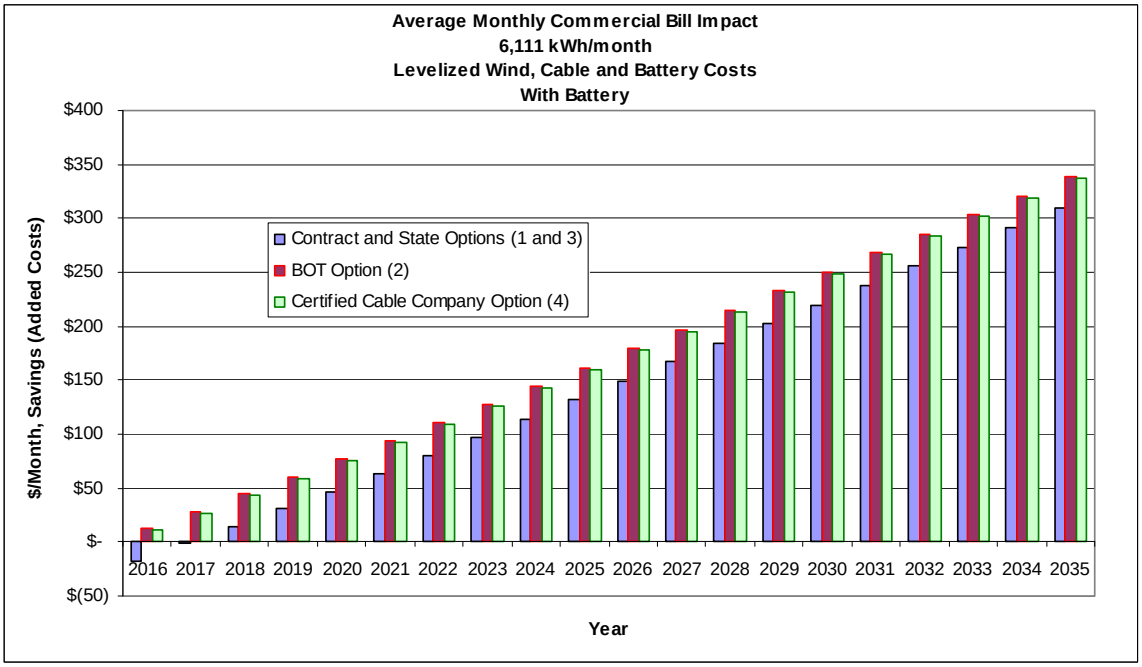


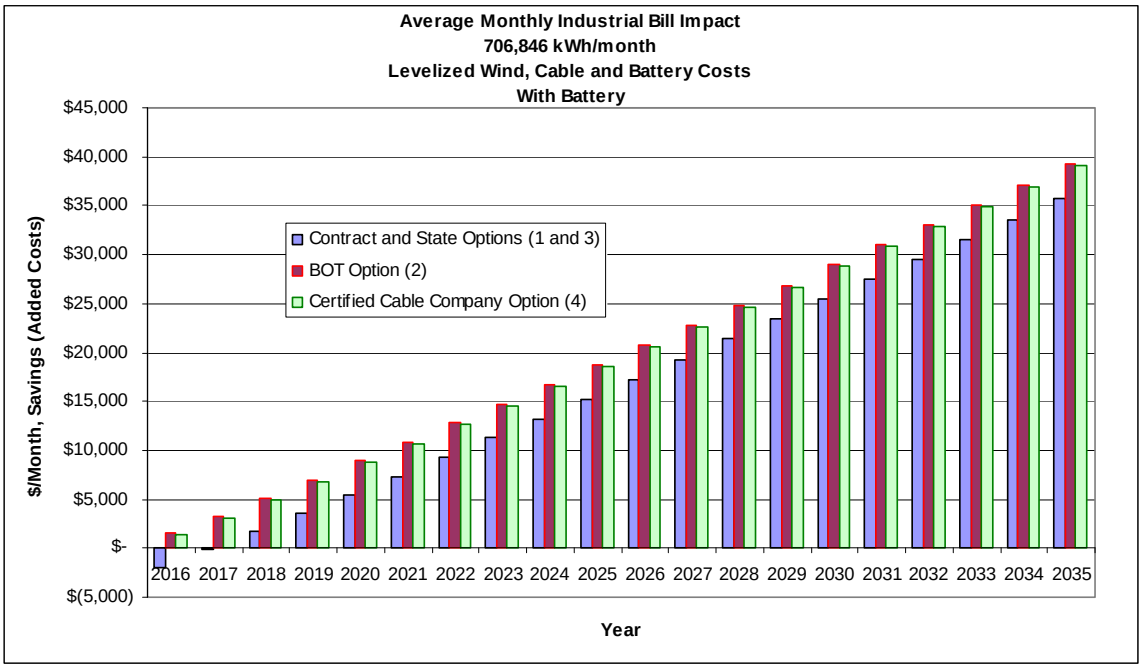



Average Monthly Industrial Bill Impact
706,846 kWh/month
Nominal Wind, Cable and Battery Costs
With Battery
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$-
$/Month, Savings (Added Costs)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year

Levelized Wind, Cable, and Battery Costs






Average Monthly Industrial Bill Impact
706,846 kWh/month
Levelized Wind, Cable and Battery Costs
With Battery
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$-
$(5,000)
$/Month, Savings (Added Costs)
Contract and State Options (1 and 3)
BOT Option (2)
Certified Cable Company Option (4)
2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035
Year

Appendix 13. Project Sensitivities

Average Monthly Power Supply Cost, Including Fuel Oil Costs

647 kWh, Average Monthly Residential Customer Use Average Monthly Power Suppy Cost, $						
Cable Capital Cost	Wind Farm Capacity Factor					
$Millions	32.25%	37.25%	42.25%	47.25%	52.25%	Status Quo
$755	$ 113.87	$ 113.10	$ 112.32	$ 111.55	$ 110.78	$ 107.59
$705	$ 113.30	$ 112.52	$ 111.75	$ 110.98	$ 110.20	$ 107.59
$655	$ 112.72	$ 111.95	$ 111.17	$ 110.40	$ 109.63	$ 107.59
$605	$ 112.15	$ 111.37	$ 110.60	$ 109.83	$ 109.05	$ 107.59
$555	$ 111.57	$ 110.80	$ 110.02	$ 109.25	$ 108.48	$ 107.59
Cable Capital Cost	Interest Rate					
$Millions	5.0%	5.5%	6.0%	6.5%	7.0%	Status Quo
$655	$ 110.69	$ 110.93	$ 111.17	$ 111.42	$ 111.67	$ 107.59

6,111 kWh, Average Monthly Commercial Customer Use Average Monthly Power Suppy Cost, $						
Cable Capital Cost	Wind Farm Capacity Factor					
$Millions	32.25%	37.25%	42.25%	47.25%	52.25%	Status Quo
$ 755	$ 1,076	$ 1,069	$ 1,062	$ 1,054	$ 1,047	$ 1,017
$ 705	$ 1,071	$ 1,064	$ 1,056	$ 1,049	$ 1,042	$ 1,017
$ 655	$ 1,065	$ 1,058	$ 1,051	$ 1,043	$ 1,036	$ 1,017
$ 605	$ 1,060	$ 1,053	$ 1,045	$ 1,038	$ 1,031	$ 1,017
$ 555	$ 1,055	$ 1,047	$ 1,040	$ 1,033	$ 1,025	$ 1,017
Cable Capital Cost	Interest Rate					
$Millions	5.0%	5.5%	6.0%	6.5%	7.0%	Status Quo
$655	$ 1,046	$ 1,048	$ 1,051	$ 1,053	$ 1,055	$ 1,017

706,846 kWh, Average Monthly Industrial Customer Use Average Monthly Power Suppy Cost, $						
Cable Capital Cost	Wind Farm Capacity Factor					
$Millions	32.25%	37.25%	42.25%	47.25%	52.25%	Status Quo
$ 755	$ 124,484	$ 123,638	$ 122,792	$ 121,946	$ 121,100	$ 117,618
$ 705	$ 123,856	$ 123,010	$ 122,164	$ 121,318	$ 120,472	$ 117,618
$ 655	$ 123,227	$ 122,381	$ 121,535	$ 120,689	$ 119,843	$ 117,618
$ 605	$ 122,598	$ 121,753	$ 120,907	$ 120,061	$ 119,215	$ 117,618
$ 555	$ 121,970	$ 121,124	$ 120,278	$ 119,432	$ 118,586	$ 117,618
Cable Capital Cost	Interest Rate					
$Millions	5.0%	5.5%	6.0%	6.5%	7.0%	Status Quo
$655	$ 121,002	$ 121,268	$ 121,535	$ 121,803	$ 122,072	$ 117,618

Average Monthly Big Wind Project Cost, Excluding Fuel Oil Costs

647 kWh, Average Monthly Residential Customer Use
Average Monthly Power Suppy Cost, $

Cable Capital Cost	Wind Farm Capacity Factor					
$Millions	32.25%	37.25%	42.25%	47.25%	52.25%	Status Quo
$755	$ 22.76	$ 24.54	$ 26.32	$ 28.10	$ 29.89	$ -
$705	$ 22.19	$ 23.97	$ 25.75	$ 27.53	$ 29.31	$ -
$655	$ 21.61	$ 23.39	$ 25.17	$ 26.95	$ 28.74	$ -
$605	$ 21.04	$ 22.82	$ 24.60	$ 26.38	$ 28.16	$ -
$555	$ 20.46	$ 22.24	$ 24.02	$ 25.80	$ 27.59	$ -

Cable Capital Cost	Interest Rate					
$Millions	5.0%	5.5%	6.0%	6.5%	7.0%	Status Quo
$655	$ 24.69	$ 24.93	$ 25.17	$ 25.42	$ 25.66	$ -

6,111 kWh, Average Monthly Commercial Customer Use
Average Monthly Power Suppy Cost, $

Cable Capital Cost	Wind Farm Capacity Factor					
$Millions	32.25%	37.25%	42.25%	47.25%	52.25%	Status Quo
$755	$ 215.12	$ 231.96	$ 248.79	$ 265.63	$ 282.46	$ -
$705	$ 209.69	$ 226.52	$ 243.36	$ 260.19	$ 277.03	$ -
$655	$ 204.25	$ 221.09	$ 237.92	$ 254.76	$ 271.59	$ -
$605	$ 198.82	$ 215.65	$ 232.49	$ 249.32	$ 266.16	$ -
$555	$ 193.38	$ 210.22	$ 227.05	$ 243.89	$ 260.72	$ -

Cable Capital Cost	Interest Rate					
$Millions	5.0%	5.5%	6.0%	6.5%	7.0%	Status Quo
$655	$ 233.31	$ 235.61	$ 237.92	$ 240.24	$ 242.56	$ -

706,846 kWh, Average Monthly Industrial Customer Use
Average Monthly Power Suppy Cost, $

Cable Capital Cost	Wind Farm Capacity Factor					
$Millions	32.25%	37.25%	42.25%	47.25%	52.25%	Status Quo
$755	$ 24,882	$ 26,829	$ 28,776	$ 30,724	$ 32,671	$ -
$705	$ 24,253	$ 26,201	$ 28,148	$ 30,095	$ 32,042	$ -
$655	$ 23,625	$ 25,572	$ 27,519	$ 29,466	$ 31,414	$ -
$605	$ 22,996	$ 24,943	$ 26,891	$ 28,838	$ 30,785	$ -
$555	$ 22,368	$ 24,315	$ 26,262	$ 28,209	$ 30,156	$ -

Cable Capital Cost	Interest Rate					
$Millions	5.0%	5.5%	6.0%	6.5%	7.0%	Status Quo
$655	$ 26,986	$ 27,252	$ 27,519	$ 27,787	$ 28,056	$ -

Incremental Monthly Customer Bills, Including Fuel Oil Costs

647 kWh, Average Monthly Residential Customer Use
Incremental Monthly Customer Bill, $

Cable Capital Cost	Wind Farm Capacity Factor					
$Millions	32.25%	37.25%	42.25%	47.25%	52.25%	Status Quo
$755	$ 6.28	$ 5.51	$ 4.73	$ 3.96	$ 3.19	$ -
$705	$ 5.71	$ 4.93	$ 4.16	$ 3.38	$ 2.61	$ -
$655	$ 5.13	$ 4.36	$ 3.58	$ 2.81	$ 2.04	$ -
$605	$ 4.56	$ 3.78	$ 3.01	$ 2.23	$ 1.46	$ -
$555	$ 3.98	$ 3.21	$ 2.43	$ 1.66	$ 0.89	$ -

Cable Capital Cost	Interest Rate					
$Millions	5.00%	5.50%	6.00%	6.50%	7.00%	Status Quo
$655	$ 3.10	$ 3.34	$ 3.58	$ 3.83	$ 4.07	$ -

6,111 kWh, Average Monthly Commercial Customer Use
Incremental Monthly Customer Bill, $

Cable Capital Cost	Wind Farm Capacity Factor					
$Millions	32.25%	37.25%	42.25%	47.25%	52.25%	Status Quo
$755	$ 59.36	$ 52.05	$ 44.73	$ 37.42	$ 30.11	$ -
$705	$ 53.93	$ 46.61	$ 39.30	$ 31.99	$ 24.67	$ -
$655	$ 48.49	$ 41.18	$ 33.87	$ 26.55	$ 19.24	$ -
$605	$ 43.06	$ 35.74	$ 28.43	$ 21.12	$ 13.80	$ -
$555	$ 37.62	$ 30.31	$ 23.00	$ 15.68	$ 8.37	$ -

Cable Capital Cost	Interest Rate					
$Millions	5.00%	5.50%	6.00%	6.50%	7.00%	Status Quo
$655	$ 29.25	$ 31.56	$ 33.87	$ 36.18	$ 38.50	$ -

706,846 kWh, Average Monthly Industrial Customer Use
Incremental Monthly Customer Bill, $

Cable Capital Cost	Wind Farm Capacity Factor					
$Millions	32.25%	37.25%	42.25%	47.25%	52.25%	Status Quo
$755	$ 6,866	$ 6,020	$ 5,174	$ 4,328	$ 3,482	$ -
$705	$ 6,238	$ 5,392	$ 4,546	$ 3,700	$ 2,854	$ -
$655	$ 5,609	$ 4,763	$ 3,917	$ 3,071	$ 2,225	$ -
$605	$ 4,980	$ 4,134	$ 3,288	$ 2,442	$ 1,596	$ -
$555	$ 4,352	$ 3,506	$ 2,660	$ 1,814	$ 968	$ -

Cable Capital Cost	Interest Rate					
$Millions	5.00%	5.50%	6.00%	6.50%	7.00%	Status Quo
$655	$ 3,384	$ 3,650	$ 3,917	$ 4,185	$ 4,454	$ -

Appendix 14. Risk / Responsibility Matrix

RISK	CONTRACT	BOT	STATE	CCC
Environmental Review & Permitting				
Programmatic EIS	State	State	State	State
Tiered EIS & Permitting of Cable	Cable Developer	Cable Developer	Cable Developer	Cable Developer
Tiered EIS & Permitting of Wind Projects	Wind Project Developer	Wind Project Developer	Wind Project Developer	Wind Project Developer
Tiered EIS & Permitting of Oahu Upgrades	HECO	HECO	HECO	CCC
Financing				
Cable Project prior to Commercial Operation Date ("COD")	Cable Developer	Cable Developer	Cable Developer	CCC
Cable Project after COD	Cable Developer	HECO	Cable Developer	CCC[19]
Development/Construction of Cable Project to COD	Cable Developer	Cable Developer	Cable Developer	CCC
Ownership of Cable Project				
Prior to COD	Cable Developer	Cable Developer	Cable Developer	CCC
After COD	Cable Developer	HECO	Cable Developer	CCC[19]
COD Delays[20]				
Delays in achieving COD of Cable Project—Wind Project on Schedule[21]	Cable Developer & Wind Developer	Cable Developer & Wind Developer	Cable Developer & Wind Developer	CCC
Delays in achieving COD of Wind Project—Cable Project on Schedule[22]	Wind Project Developer or HECO depending on PPA terms	HECO	Wind Project Developer or HECO or State depending on PPA & RA[23]	CCC

[19] HECO on 10th Anniversary of COD if purchase option is exercised.

[20] The risk formulation set forth below may not be achievable in the relevant contracts with the Wind Developers and Cable Developer given the "project-on-project risk" that many developers will not take. If it is not achievable and the PUC is unwilling to allow payments to flow until both the Wind Project and Cable Project achieve COD, a consortium arrangement between the Wind Developer and Cable Developer may be required.

[21] This assumes that the Wind Developer only begins receiving payments when its project achieves COD and energy is delivered to HECO.

[22] This assumes that the Cable Developer begins receiving payments upon COD in Options #1 and 3 or ownership is transferred to HECO when the Cable Project achieves COD. Alternatively, the FTCPA can provide that the Cable Developer only begins receiving payments when both its project and the Wind Project achieve COD for Options #1 and 3 or the BOT Agreement can provide that the Cable Developer does not transfer ownership in the Cable Project to HECO until the Cable Project and Wind Project achieve COD. For Option 4, CCC would receive payments when cable is used and useful. If PUC allows AFUDC to be charged, HECO ratepayers would be bearing risk.

[23] The "RA" is the Reimbursement Agreement with the State and HECO as parties which provides for HECO to reimburse the State for its payment obligations to the Cable Developer.

RISK	CONTRACT	BOT	STATE	CCC
Delays in achieving COD of both Cable Project and Wind Project	Cable Developer for Cable Project Wind Project Developer for Wind Project	Cable Developer for Cable Project Wind Project Developer for Wind Project	Cable Developer for Cable Project Wind Project Developer for Wind Project	CCC for Cable Project; Wind Project Developer for Wind Project
Payments to Cable Developer after COD	HECO	None	State	HECO
Default by HECO after COD	HECO's Ratepayers	HECO's Shareholders	State	HECO's Ratepayers
Operating after COD				
Cable Project	Cable Developer for both Cable Project & payments for lost wind production	HECO Wind Project Developer	Cable Developer Wind Project Developer	CCCC[19]
Wind Projects	Wind Project Developer	Wind Project Developer	Wind Project Developer	Wind Project Developer

Appendix 15. Summary of Navigant's Relevant Experience

Long Island Power Authority Cross Sound Cable RFP
The RFP developed and managed by Navigant sought qualified vendors to submit proposals for a High Voltage DC undersea cable that would link Long Island to the ISO-New England electricity market allowing LIPA to import low cost energy from New England and Canada and provide additional reliability benefits to Long Island. Navigant Consulting assisted LIPA in (i) drafting the RFP and FTCPA (Firm Transmission Capacity Purchase Agreement), (ii) all phases of the evaluating proposals and selecting a winner, and (iii) contract negotiations. After a careful review of the proposals, the contract was awarded to TransÉnergie for the construction of a 330 MW VSC HVDC undersea cable from Shoreham, NY to New Haven, CT. Navigant Consulting also assisted LIPA in litigation associated with the procurement from a losing proposer and played a project management role from the perspective of monitoring the construction of the converter station in New Haven, Connecticut, including the directional drilling required to bring the cable from New Haven Harbor to the converter station. A Navigant team member also participated in the development of the Common Operating Instructions for the project. Navigant also arranged for the purchase and delivery by LIPA of large blocks of hydropower over the cable from New England and Canada.

Long Island Power Authority Base Load RFP
Proposals for generating projects and/or merchant transmission lines (between 250 MW and 600 MW) to neighboring control areas were the subject of this RFP. After a thorough evaluation of all proposals pursuant to a multi-phase review process developed by Navigant Consulting, the Caithness Long Island Energy Center ("Caithness") (new 326 MW combined cycle power plant) and the Neptune Regional Transmission System ("Neptune") **(new 660 MW HVDC cable between Sayreville, New Jersey and New Cassel, New York)** were selected. A PPA was completed with Caithness and a FTCPA was negotiated with Neptune, along with several ancillary agreements with each party. The Neptune project achieved commercial operations in 2007 and the Caithness project achieved commercial operations in 2009. Navigant Consulting assisted LIPA in developing the RFP and administering the RFP process, evaluating proposals, negotiating contracts (PPA, FTCPA, easement agreements, change orders) with the winning proposers, and obtaining all approvals of the procurement process and contracts. A Navigant team member negotiated the operational protocols for the inter-system deliveries of power and energy between the New York Independent System Operator and the PJM system operator. That team member also participated in multi-party negotiations leading to a successful $660 million project financing with credit support for the cable

project. Since becoming commercial in 2007, the cable has been operating reliably at a very high capacity factor.

Long Island Power Authority RFP (jointly with Northeast Utilities) for the Engineering, Procurement, Construction, Removal Disposal and Replacement of the Norwalk to Northport Submarine Cable
This project entailed the removal and disposal of an existing high voltage cable that was leaking fluids into the Long Island Sound and replacing that cable with a new 450 MW solid dielectric AC cable. A Navigant Consulting team member participated in the development of the RFP, the selection process and the negotiation of an EPC contract with the successful bidder.

New York Power Authority - Hudson Transmission Partners Project
The HTP Project is a 660 MW HVDC back-to-back transmission project that will interconnect midtown Manhattan with New Jersey. When installed, the new cable will accommodate the purchase of lower cost capacity and energy as well as renewable energy from PJM. Navigant Consulting participated in the negotiation of the Firm Transmission Capacity Purchase Agreement for this project and performed numerous economic analyses demonstrating the benefits that the project provided to New York City in particular as well as all of New York State. A Navigant team member oversaw the work of a special federal Energy Regulatory Commission counsel and the negotiation of PJM agreements (including the interconnection agreement) necessary for the cable project.

New York Power Authority - Sound Cable Project
This project entailed the installation of a controllable 600 MW AC cable under Long Island Sound connecting the transmission systems of the Consolidated Edison Company and the Long Island Power Authority. A Navigant Consulting team member was responsible for the negotiation of the Sound Cable Project Facilities and Marketing Agreement between NYPA and the Long Island Lighting Company (LIPA's predecessor) as well as the related Substation Expansion Agreement with Con Edison to accommodate the cable. This cable, which is virtually always fully loaded, allows for the import of low cost energy from Upstate New York and from Canada.

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