

WEST KAUAI ENERGY PROJECT BENEFITS

ENVIRONMENTAL BENEFITS

1.	Significant Renewable Energy Production	The Project is expected to contribute approximately 23.6% to KIUC's RPS in 2024 (year 1) and 18.1% in 2048 (year 25) .
2.	Significant Reduction in Fossil Fuel Use and Oil-Fired Dispatch	The Project is expected to result in approximately 8.5 million fewer gallons of fuel being used annually , resulting in approximately 212 million gallons less fuel being used over the initial 25-year term of the PPA .
3.	Significant Net Reduction in Greenhouse Gas (GHG) Emissions	KIUC estimates that the Project will result in an estimated net reduction in GHG of approximately 2 million metric tons of carbon dioxide equivalent (MTCO₂e) for the Project's operation stage and 2.5 million MTCO₂e for the Project's lifecycle over twenty-five years
4.	Other Air Quality Improvements	<p>The Project will result in air quality improvements by reducing GHG and reducing the production and release of various air pollutants. Based on KIUC's 2020 emissions data, KIUC expects that the operation of the Project will result in a net annual reduction of the following criteria pollutants, as follows:</p> <ul style="list-style-type: none"> • Carbon Monoxide: 30.5 tons • Particulate Matter: 13.9 tons • Sulfur Oxides: 0.4 tons • Nitrogen Oxides: 294.7 tons • Volatile Organic Compounds: 6.0 tons • Ammonia: 1.5 tons

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5.	Decreased Overall Noise Emissions from Electricity Generation	<p>The renewable energy from the Project would offset energy that would otherwise be produced by noisier existing legacy fossil generation units at either Port Allen or Kapaia, resulting in a net decrease in noise emissions for Kauai’s electricity generation.</p> <p>The operation of the Project’s rehabilitated reservoirs, ditches, and water control infrastructure as well as the Project’s PV Solar Array and substation are expected to have no noise increase from the existing noise environment, and is not expected to have any impacts that other types of developments may have on the surrounding community, such as increased traffic, visual blight, smells or odors, etc.</p>
RELIABILITY BENEFITS		
6.	Firm Capacity with KIUC Dispatch Control	<p>The Project will provide KIUC with firm capacity that KIUC will have dispatch control over, and without the intermittent nature and variability associated with photovoltaic and other non-firm renewable energy sources.</p> <p>The Project is also designed to be as flexible as possible to allow KIUC to dispatch the energy at any time and in any manner that is most beneficial to KIUC’s system. Energy production under the PPA to KIUC’s grid during the daytime will occur mostly during the early morning and late afternoon hours each day, when higher-cost fossil-generation can be displaced, during periods of cloudy/rainy weather when solar PV projects are delivering little to no energy to KIUC’s grid, and to address fluctuations in PV output to KIUC’s grid caused by cloud cover in order to stabilize and minimize impacts to the KIUC grid.</p> <p>None of the energy from the Project is expected to be delivered to KIUC’s grid during the mid-day solar saturation period at times when excess solar energy production from distributed energy resources is available.</p>
7.	Improved Ability to Address and Respond to System Reliability Issues Caused by Fluctuations in PV Solar Output	<p>Most of the PV energy from the PV solar array will be used to pump water uphill during the daytime. The Project is designed to be as flexible as possible to allow KIUC to dispatch the energy at any other time and in any manner that is most beneficial to KIUC’s system, such as to address fluctuations in PV output to KIUC’s grid caused by cloud cover to stabilize and minimize impacts to the KIUC grid.</p>

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	During the Daytime Hours	None of the energy from the Project is expected to be delivered to KIUC's grid during the mid-day solar saturation period at times when excess solar energy production from distributed energy resources is available. As a result, the PV generation from the Project is not anticipated to exacerbate the existing minimum daytime load conditions on KIUC's system.
8.	Adequacy of Supply Requirements	By providing firm capacity , the Project will assist KIUC in continuing to meet its adequacy of supply requirements established by the Public Utilities Commission.
9.	Energy Storage Benefits over Battery Energy Storage System (BESS)	The combination of the Puu Opae Reservoir and the Mana Powerhouse will function as an energy storage resource similar to a BESS but with meaningful and significant advantages as compared to a BESS in terms of (1) the duration of storage capability, (2) the ability to capture additional water from the upper segment of the Project, further increasing the storage duration, and (3) the use of a rotating, synchronous generator to create AC power instead of using inverters as required by PV and BESS.
10.	Rotating, synchronous generator	<p>The Project's use of a rotating, synchronous generator will provide increased inertia, voltage support, and fault current to the KIUC grid as compared to similarly-sized inverters. KIUC currently relies on the synchronous condenser capability of the Kapaia Power Station to ensure adequate inertia, voltage support, and fault current when operating the grid at 100% renewable energy because KIUC's current renewable mix is so heavily-tilted toward PV and BESS energy sources (currently as much as 90%).</p> <p>The increased inertia, voltage support and fault current from the Project's rotating, synchronous generator will help to further assist with grid stability and reliability, which will become even more and more critical as KIUC continues to increase its ability to operate for longer and longer periods at 100% renewable energy.</p>

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11.	Black Start and Microgrid Capable	<p>The Project will be black start and micro-grid capable.</p> <p>As an example of how the Project's black start capability could benefit KIUC's operations, a situation occurred in Hanapepe on January 5, 2015 where a fault on both transmission lines in the area caused an 11.5-hour power outage for KIUC's members/customers west of Port Allen. The black start capability of WKEP to bring loads online without the need for an external power source would have significantly decreased the duration of the 11.5-hour outage if the same or similar scenario occurred after WKEP is online.</p> <p>The microgrid capability will also benefit KIUC's customers on the west side of Kauai by giving KIUC the ability to segregate WKEP to operate on a stand-alone basis due to operational, reliability or other issues on other portions of KIUC's grid, which would allow certain portions of the west side to still receive power when they may not have otherwise been able to but for WKEP.</p>
12.	Natural Solar Dispatch Hedge	<p>The Project's hydropower generation will provide a natural dispatch hedge to solar PV through their different reliance on weather patterns (e.g., in general, excessive rain increases the ability for hydropower electric generation to offset decreased solar PV capacity during cloudy-rainy periods; and conversely, during periods of little to no rainfall and thus likely maximum solar PV production, there is a decreased potential for hydropower water availability).</p> <p>This becomes even more important after considering that solar PV and hydropower generation are the only two viable renewable resource alternatives for near-future renewable development on Kauai.</p> <p>As an illustration of how this natural dispatch hedge between hydropower and solar PV generation could benefit KIUC's grid and KIUC's members/customers, KIUC experienced multiple concurrent days of no to very little sun in July of 2019. This situation, and the combination of other synchronous machines offline, left KIUC with no choice but to conduct rolling blackouts until the weather cleared and synchronous machines were repaired. With WKEP online, the available water flowing through the Puu Opaе and Mana Powerhouses would have allowed hydropower generation to offset the impact of the loss of solar generation. Under the same situation that occurred in July of 2019, KIUC would have been</p>

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		able to utilize WKEP to minimize and even possibly eliminate the need for rolling blackouts altogether.
13.	Potential Synchronous Condensing Capability of the Mana Powerhouse	The Mana Powerhouse may be capable of providing synchronous condensing capability when not generating real power (i.e., during the mid-day period). This would give KIUC an additional, large synchronous condenser (Kapaia Power Station being the first) in order to ensure adequate inertia, voltage support, and fault current when operating the grid at 100% renewable energy.
14.	Multiple Points of Common Coupling	Multiple points of common coupling (PCC) will give the Project's hydropower generator the ability to support grid reliability when the power generation mode of the 20 MW Mana Powerhouse turbine is offline. This function will assist KIUC in supporting voltage on the west side of the island and provide short circuit current for system protection.
15.	WKEP Substation Benefits	<p>The Project has been designed to allow for the addition of two new future distribution breakers at the WKEP Substation, which will be connected in parallel with the 4 MW Puu Opae Powerhouse PCC. The ability to feed load from the WKEP Substation will allow for increased reliability for the PMRF and Mana Substation loads.</p> <p>This will also allow KIUC to better service its customers/members through improved switching capacity from the Project and to maintain KIUC's safety in clearing faults as quickly as possible via additional short circuit current from the 20 MW Mana Powerhouse.</p>
16.	Project Inverter Benefits	The Project inverters will be programmed to be grid forming with fast response, fault ride-through, and frequency and voltage droop capability. This will benefit grid reliability.
17.	Load / Underfrequency Load Shed Capability	The Project pumps will provide significant interruptible load / under-frequency load shed capability. As part of KIUC's underfrequency load shed scheme, the Project will have automatic underfrequency load shed for pumps as a first priority load shed rather than automatic opening of distribution circuits, and frequency and voltage fast droop response to dampen frequency and voltage excursions. This means it will be less likely that KIUC members will lose power as a result of load shedding.

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18.	Enhanced KIUC System Protection from Flooding Events	<p>Regardless of the location selected for the WKEP Substation, the PV solar array and the WKEP Substation are being designed to meet engineering standards for high water levels associated with both flood inundation and tsunami events. The solar panels will be elevated off the ground, and the mounting system design will be based on geotechnical engineering for the specific site. In addition, the PV solar array would be an unmanned facility, thus lowering the risk to human safety in the event of a sudden flooding or tsunami event.</p> <p>KIUC also notes that its existing Mana Substation is located within the FEMA designated Flood Zone A and Tsunami Evacuation Zones. As a result, building the WKEP Substation in accordance with engineering standards for high water events (which will allow for decommissioning of the Mana Substation) may further protect KIUC's system from water inundation.</p>
19.	No Expected Curtailment	<p>KIUC does not anticipate curtailment for WKEP, since the solar portion of the Project will be combined with enough pump load and battery storage to either use or store all of the solar energy that can be produced by the Project.</p> <p>Because KIUC will control the dispatch of the Project and there will be flexibility in dispatching the Project due to its significant amount of storage, KIUC will be able to schedule the Project's component shut-downs (whether for convenience or in order to perform maintenance on KIUC's system) without inducing curtailment. If for some reason, KIUC does need to curtail, however, KIUC is naturally incentivized to minimize the magnitude and duration of any such curtailment.</p>
PPA PRICING BENEFITS		
20.	Cost Savings to KIUC and its Members	<p>KIUC estimates that the subject PPA will save KIUC and its members/customers between \$157 and \$172 million (net present value using a 5% discount rate) over the 25-year PPA term of the PV/BESS Facility.</p> <p>KIUC believes that the costs and risks of KIUC developing the subject Project on its own or through an affiliate are materially greater upon KIUC and its members/customers than the arrangement with AES. This includes AES's ability to monetize the available tax incentives of the Project on behalf of KIUC's members/customers in a less risky, more cost</p>

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		<p>effective and much more efficient manner. AES will be taking on the costs and risks of developing the Project pursuant to a PPA arrangement that will provide KIUC and its members/customers with a stabilized pricing structure, whereby AES will be able to efficiently monetize taking on the development risks and costs of constructing all components of the Project (with the exception of the New Overhead Circuit and Conductor Work), to the specifications agreed to by KIUC.</p>
21.	<p>PPA Pricing Stability and Savings</p>	<p>The energy rate and capacity charges under the subject PPA are advantageous because they will not increase and are intended to remain fixed or stable for their applicable terms (25-years for the energy rate, 40-years for the PSH Monthly Capacity Charge, and 50-years for the Hydropower-only Monthly Capacity Charge). This provides stability for KIUC's members and is materially lower than the forecasted cost of oil generation that the PPA will displace, which will result in savings as noted in Item 20 above and lower effective rates for KIUC's members.</p> <p>Based on KIUC's Project development history, the MJA Final Cost Estimate, the various tests against KIUC's internal cost of development average annual cost per MWh, and the reasonableness of the PV/BESS energy rate/charges, and also in recognition of the risk mitigation that a third-party PPA arrangement would provide, KIUC determined that the combination of each of the PPA's price terms produced an average annual cost per MWh that is not only reasonable but advantageous for a capacity project of this magnitude, with the full flexibility of dispatch that KIUC requires.</p> <p>Without the proposed Project, KIUC would need to (at least in the near term) continue to produce the energy that would otherwise be served by WKEP using fossil fuel fired generation, which uses highly refined oil products, like ultra-low sulfur diesel and naphtha. The prices of these fuels are tied to overseas market indexes that are affected by both local and global events, and the prices change each month according to the market indexes. As such, continuing to use fossil fuel will undoubtedly result in more rate instability than using the renewable energy produced from WKEP under the terms of the subject PPA.</p> <p>As a result, the PPA arrangement would allow KIUC to spend less money to provide electricity to the island at a more fixed and stable pricing structure, and in a manner that would shift expenditures to local sources through the production of locally-generated clean,</p>

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firm and dispatchable energy, while also providing ratepayer savings to its members/customers.

OTHER COMMUNITY / ECONOMY / PUBLIC INTEREST BENEFITS

22.

Diversified Agriculture / Enhanced Food Security

One of the Project's primary purposes is to provide a **reliable irrigation water supply** to support diversified agriculture on lands adjacent to the Project site, consisting of mauka lands managed by both DHHL and ADC (which includes lands owned by ADC), and the agricultural fields on the Mana Plains that are managed by KAA.

Irrigation deliveries would be made available throughout the year according to streamflow availability, DHHL's water reservation, the Waimea Mediation Agreement (aka Watershed Agreement), lease terms with DHHL and ADC, and in accordance with an Operations Agreement between water users on the Kokee Ditch Irrigation System. Project operations would be coordinated with water users to provide the greatest possible availability and efficiency of irrigation water deliveries.

The Project design and layout will allow for the entire allowed diversion quantity of 11 MGD (on a rolling average basis) to be delivered to agricultural lands for irrigation purposes. Of the rolling average of 11 MGD, up to 10 MGD (or over 90% of the water) could also be used to generate renewable energy during its delivery from the Puu Lua Reservoir to the points of use. In addition, the **rehabilitation of the existing reservoirs will also provide for stored irrigation reserves** for periods between rain events.

This will provide an **increased agricultural potential for thousands of acres of public lands** on the west side of Kauai, which likely would be lost if the subject Project does not occur.

A significant portion of a typical farmer's land costs is the sourcing and delivery of irrigation water. Unlike the former large plantation business, smaller diversified farmers cannot practically undertake the burdens of building and maintaining major irrigation systems like the Kokee Ditch. The Project's rehabilitation and maintenance of the existing Puu Opaе, Puu Lua and Mana Reservoirs and related Kokee Ditch infrastructure to assist with the Project's hydropower electric generation and pumped storage capability will provide the benefit of **supporting and subsidizing diversified agriculture** by removing the costs and complexities involved in providing reliable irrigation water to lands adjacent to the Project

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		<p>site at designated points along the WKEP flowline. The specific types of agriculture that are currently planted and that will be planted in the future will be determined by the land owners and their farming tenants.</p> <p>The Project's ability to reliably deliver water for irrigation to support diversified agriculture will have the community benefit of being able to increase the island's food security and generate employment opportunities for the local community.</p>
23.	<p>Rehabilitation of Existing Reservoirs and Ditch Infrastructure</p>	<p>Another one of the Project's primary purposes is the rehabilitation of the existing Puu Opae, Puu Lua, and Mana Reservoirs and related ditch system infrastructure. All of these reservoirs/dams are near or at the end of their useful lives, with the Puu Lua Reservoir operating at a reduced capacity and the Puu Opae Reservoir and Mana Reservoir currently drained for safety reasons due to their deteriorated conditions.</p> <p>The Project's new features will reduce seepage losses through the use of a liner at the Puu Opae and Mana Reservoirs and the replacement of almost five (5) miles of open ditch between the Puu Moe Divide and the Puu Opae Reservoir with pipeline. There will also be an elimination of losses for water delivered to the Mana Plain with the use of a pipeline between the Puu Opae and Mana Reservoirs.</p> <p>The rehabilitated reservoirs will also use liners or rock armoring and gradual embankment slopes, which will prevent soil erosion potential. Further, the automatic water level monitoring that the Project will provide will also help to decrease the likelihood of soil related impacts from storms and ungulate damage.</p> <p>The Project has also been designed so that the operation of the Puu Opae Powerhouse and Mana Powerhouse will not cause water pollution – no foreign objects or chemicals will be introduced to the water during passage through the penstocks, pumps or turbines. These operations will also not introduce or remove heat to the water during passage through the powerhouses. In addition, the majority of WKEP's construction activities will occur far away from surface water resources along the ditch system footprint to the west of the Waimea Canyon.</p> <p>Best Management Practices are included in the Project's construction plans to reduce erosion and other impacts during construction. Specific features included in the design of</p>

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		<p>the permanent structures of the Project will prevent erosion and other impacts to the dams over their respective useful lives.</p> <p>The above rehabilitation and long-term maintenance component of the Project will offer numerous benefits to the State, the local communities of Kekaha and Waimea, and the island of Kauai. Since these improvements and upgrades, along with their ongoing maintenance, is 100% necessary for the production of renewable energy from the Project, these ancillary enhanced benefits to the State, the local communities of Kekaha and Waimea, and the island of Kauai as set forth below come at no additional cost to the member/customers of KIUC.</p>
24.	<p>Compliance with Hawaii State Dam Safety Standards</p>	<p>The State-owned Puu Lua Reservoir, Puu Opaе Reservoir and Mana Reservoir are currently not up to current Hawaii State dam safety standards (e.g., Hawaii Dam and Reservoir Safety Act of 2007). The rehabilitation efforts for WKEP include bringing these reservoirs up to current standards.</p> <p>These efforts, in turn, will provide various public safety improvements, including to assist in mitigating future flood risks in the area.</p>
25.	<p>Transfer of Rehabilitation and Maintenance Responsibilities from State Agencies / Avoiding Negative Impacts</p>	<p>The assumption of the infrastructure rehabilitation and maintenance responsibilities by the Project will relieve the burden of such responsibilities on various State agencies.</p> <p>In the absence of the Project:</p> <ul style="list-style-type: none"> • The rehabilitation and ongoing maintenance of the existing reservoirs would remain the responsibility of the State, which could result in increased costs to the State or possibly lead to reservoirs being decommissioned and the ditch system falling into disrepair and potentially being shut down completely. • The continued lack of maintenance and failure to bring the Puu Lua Reservoir up to current Hawaii State dam safety standards could result in the decommissioning and draining of the Puu Lua Reservoir, which would result in the elimination of a valued recreational trout fishing program and could jeopardize water availability between rain events to DHHL and other downstream users along the ditch system. • The Kokee Ditch would remain under the ownership/management of ADC. The continued disrepair of the diversions and the Kokee Ditch would lead to reduced

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		<p>agriculture potential for thousands of acres of public lands on the west side of Kauai, as well as the lowering in value of a State-owned asset.</p> <ul style="list-style-type: none"> • The practical implementation of the diversion and delivery of water, repair of roads, and installation of electrical distribution to DHHL-managed mauka lands would not occur or would be the responsibility of DHHL, which is not part of DHHL’s 20-year plan, thus risking the viability of the lands for the foreseeable future. • Several planned stream and ditch gages, which are to be completed as part of the Project, would not be added to tributaries of the Waimea River and the Kokee Ditch. • The existing unlined ditch from the Puu Moe Divide to the Puu Opae Reservoir would remain in place. This unlined ditch is in significant disrepair and irrigation to DHHL pastoral lots is only served by a pipe that runs down the middle of the road, which is not a reliable situation and is of concern to the water user and the Division of Forestry and Wildlife (DOFAW), which is the agency that maintains the road that is on DLNR land. • Necessary road repairs would not be completed.
26.	<p>Ability to Immediately Respond to Changing Weather and Stream Flows / Increased Data Collection</p>	<p><u>Ability to Immediately Respond to Changing Weather and Flows</u></p> <p>As a result of the infrastructure rehabilitation efforts, the diversions will operate on a fully automatic basis. This automatic operation will allow responsive diversion flow management as the stream flow changes, and implementation of the interim instream flow standard (IIFS) can happen in response to changes in stream flow. This eliminates the dependency on site access by ditch operators, which is often limited or not possible in the more remote areas. Automation of the diversion operations will reliably ensure compliance with IIFS requirements, decrease water waste, improve energy production, and decrease demands on operation personnel.</p> <p>During periods of average or typical stream flow patterns, the gates would adjust repeatedly throughout the day to manage the diversion volumes within the limits of the IIFS requirements and ditch capacities. During high stream flow periods or extended heavy precipitation events when the available flows exceed the capacity of the ditches, or when</p>

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		<p>the Puu Lua Reservoir is already at full capacity, the gates would automatically restrict flow into the ditch so that excess flows would remain in the streams and be discharged at the diversion spillways. During extreme high flow events, the diversion intake gates would be partially or fully closed to isolate the Kokee Ditch system from excess inflow.</p> <p><u>Data Collection</u></p> <p>The Project will also increase data collection on tributaries to the Waimea River. WKEP will include the installation of three new stream gages at the Kawaikoi, Kauaikinana and Kokee Streams, and three new ditch gages will be installed at the Kawaikoi, Kauaikinana and Kokee Diversions. The gages' data will contribute to knowledge of the watershed, operation of WKEP, and Phase Two IIFS compliance. The addition of flow measurement points and recording devices to the diverted steam and ditches would support efficient and compliant use of the water resources, including data collection of natural stream flows on all four streams. This operational compliance with the Phase Two IIFS will benefit all users of the water system.</p> <p>In monitoring the water levels, flow gages in the streams and ditches will provide information to the control system. The control logic would incorporate the Phase Two IIFS requirements and determine if more or less water should be diverted to maintain the required Phase Two IIFS in each stream. The control system would then send open or close pulse commands to immediately make the required inlet gate position adjustments. These automatic adjustments would keep the proper amount of water in the streams by regulating the amount of water admitted to the ditch. The automation system would be capable of independent local control but would communicate flow conditions, gate setting, and any alarm conditions to the Project's main control system. The data gathered regarding stream flows would be made available to the State and would be used to help inform decisions regarding reservoir management and energy generation. The automatic control/monitoring of the water levels will also help to decrease the likelihood of soil related impacts from storms and ungulate damage.</p>
27.	<p>Public Safety Improvements Including Mitigation of Future Flood Risks</p>	<p><u>Improved Public Safety.</u></p> <p>WKEP will rehabilitate old plantation irrigation ditches, reservoirs and access, which would in turn improve public safety and increase the stability and integrity of the structures for the long-term against future natural hazards.</p>

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In addition, the Upper Penstock, which will be completely buried, would replace the current open ditch and the Puu Opae Reservoir would be lined and then fenced for both public safety reasons and to protect the liner from ungulate damage.

Mitigation of Future Flood Risks.

The rehabilitation efforts will also assist in **mitigating future flood risks in the area.**

More specifically, the repairs to the Puu Lua Reservoir, Puu Opae Reservoir, and Mana Reservoir **will bring the reservoirs into compliance with Hawaii State Dam Safety Standards**, which would decrease the risk of a future dam breach thereby providing some protection from flooding of downstream lands. The rehabilitation of each reservoir would include construction of a new spillway, new outlet works, and reduced slope gradient of embankments. All three reservoirs are located off stream, and as such the volume of water entering each is limited to either open ditch capacity or the new penstock that will be constructed as part of the Project. The terrain surrounding each reservoir significantly limits the potential for additional run off entering the reservoirs.

In addition, the diversions will operate on a fully automatic basis, with water level monitoring systems installed at each reservoir and flow gages in the streams and ditches that will provide information to the control system and allow for responsive diversion flow management as the stream flow changes. During high stream flow periods or extended heavy precipitation events when the available flows exceed the capacity of the ditches, or when the Puu Lua Reservoir is already at full capacity, the gates would automatically restrict flow into the ditch so that excess flows would remain in the streams and be discharged at the diversion spillways. **During extreme high flow events, the diversion intake gates would be partially or fully closed to isolate the Kokee Ditch system from excess inflow.**

Further, **in extreme emergencies involving rising water levels, all three reservoirs could be drained as required by Hawaii State Dam Safety Standards.**

KIUC also conducted literature reviews to assess potential impacts related to predicted sea rise levels across the Project location. Based on the literature reviewed and information available at the time, it is anticipated that potential flooding on the Mana Plain associated with future sea level rise can be addressed by the Mana storm drain system that was constructed by the Kekaha Sugar Company in 1923 in order to drain low terrain areas to

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		<p>provide land for agriculture. The Mana storm drain system is an extensive network of ditches and pumps spread across the Mana Plains area that drains storm run off or high water inundation from the area.</p> <p><u>Enhanced Firefighting Abilities</u></p> <p>The Project will support and enhance firefighting capabilities on the west side of Kauai and in Kokee through increased access and availability of water from the reservoirs.</p>
28.	<p>Increased Access and Recreational Opportunities</p>	<p>The improved and upgraded infrastructure and rehabilitation of the Puu Lua Reservoir will enhance the benefit of this reservoir as an already popular trout fishing resource and will also provide improved shoreline access for fishing. The Project will benefit trout fishermen and recreational users at Puu Lua through the enhanced public access to the Puu Lua Reservoir and the increased storage capacity of the reservoir.</p> <p>In addition, both roads on DHHL property that provide access to the Puu Opae Reservoir will be repaired and maintained as part of the Project. These improved roads will remain open to DHHL beneficiaries that are granted access to the Puu Opae area by DHHL.</p> <p>In total, over nine (9) miles of State-owned unpaved access roads will be repaired and maintained as part of the scope of the Project.</p> <p>In the absence of the subject Project, these road repairs will not occur. In addition, the continued lack of maintenance and failure to bring the Puu Lua Reservoir up to current Hawaii State dam safety standards could result in the decommissioning and draining of the reservoir. This would result in the elimination of the valued recreational trout fishing program and could jeopardize water availability between rain events to DHHL and other downstream users along the ditch system.</p>
29.	<p>Benefits to DHHL and its Beneficiaries</p>	<p>The only source of water for irrigation to the mauka lands managed by DHHL is the Kokee Irrigation Ditch System. The Project's rehabilitation efforts will provide a reliable irrigation water supply to support diversified agriculture on these lands.</p> <p>The Project will also provide lease revenue to DHHL.</p> <p>The quantity of water to be delivered to DHHL's Puu Opae lands under the Project will be up to 6.9 MGD. This is the amount of water requested by DHHL following discussions with</p>

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the Kekaha Hawaiian Homestead Association (KHHA) and other DHHL tenants and is based on the DHHL water reservation approved by the Commission on Water Resource Management in June 2017.

During these discussions, various concerns were raised by farmers on managing water flows that may impact farming operations on DHHL lands, which resulted in various items agreed to by KIUC as part of the Project to address these concerns, such as:

- Water will be delivered to Puu Opae through a screen that will **filter sediment and other debris** before entering the penstock.
- A tap will be provided on the penstock at the DHHL pastoral lots to allow **access to water for farmers** in that location.
- A **storage tank** will also be installed at the pastoral lots.
- A **storage buffer for irrigation** will be maintained in the Puu Opae Reservoir as well as at the Puu Lua Reservoir for irrigation use.
- A new dedicated **low-level outlet for irrigation** will be installed at the Puu Opae Reservoir.
- A pump at the Puu Opae Reservoir will be provided with the **capacity to pump water uphill** to the KHHA licensed acres. The cost of the pump, power for the pump, and maintenance or replacement of the pump will be covered by the Project.
- To address concerns with the need to remove a tree located on the Puu Opae dam embankment that the KHHA community frequently used as a gathering spot (which removal is needed to meet dam safety requirements), KIUC agreed with KHHA and DHHL to collaborate on a project that will use seeds from the tree for **KHHA reforestation projects** in other nearby areas and to provide the wood from the tree to the KHHA community for its use in creating something out of the wood such as a **bench or archway** that will be meaningful and symbolic to the community.
- Both roads on DHHL property that provide access to the Puu Opae Reservoir will be repaired and maintained as part of the Project. These **improved roads** will remain

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open to DHHL beneficiaries that are granted access to the Puu Opae area by DHHL.

- **During the construction period, water will be made available** to farmers through the Kokee Ditch or some other means.

The Project is considered an **important component for DHHL's West Kauai Regional Plan**. This DHHL plan identifies the development of the Puu Opae area as a priority project for DHHL, including providing agricultural leases. The Project would provide DHHL with the irrigation water necessary to achieve some of the agricultural goals included in the DHHL plan and would also further the purposes of the Hawaiian Homes Commission Act of 1921.

The Project would also (1) provide road improvements, electricity service, and certain water delivery infrastructure to **support the DHHL's Puu Opae Kuleana Homestead Settlement Plan to offer 251 homestead lots** (11 Pastoral and 240 Subsistence Agriculture) on 1,421 acres in the Waimea area of West Kauai; and (2) provide non-potable water to DHHL's 240 Kuleana Subsistence Agricultural Lots development. These projects are intended to contribute to **increased food security** for DHHL lessees/residents, and support the State's objective to expand **economic growth and job opportunities** in agricultural activities.

The Project also **further DHHL's Hoomaluo Energy Policy**, which identifies five objectives to enable native Hawaiians and the community to work together to achieve energy self-sufficiency and sustainability. The five objectives are as follows:

- **Malama aina.** Respect and protect our native home lands.
- **Koo.** Facilitate the use of diverse renewable energy resources.
- **Kukulu pono.** Design and build homes and communities that are energy efficient, self-sufficient and sustainable.
- **Kokua no i na kahu.** Provide energy efficiency, self-sufficiency, and sustainability opportunities to existing homesteaders and their communities.
- **Hoonaaauao.** Prepare and equip beneficiaries to promote a green, energy efficient lifestyle in and around communities.

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		<p>The Project would meet all five objectives identified.</p> <p>In the absence of the Project, the practical implementation of the diversion and delivery of water, repair of roads, and installation of electrical distribution to DHHL-managed mauka lands would not occur or would be the responsibility of DHHL, which is not part of DHHL’s 20-year plan, thus risking the viability of the lands for the foreseeable future.</p> <p>The continued lack of maintenance and failure to bring the Puu Lua Reservoir up to current Hawaii State dam safety standards could result in the decommissioning and draining of the Puu Lua Reservoir, which would result in the elimination of a valued recreational trout fishing program and could jeopardize water availability between rain events to DHHL and other downstream users along the ditch system.</p> <p>Even beyond that, in the absence of the Project, it is possible that Kokee Ditch would stop operating or operate at a reduced capacity, which would severely limit or remove water access for DHHL lands. Without such water, these lands would be significantly limited in terms of usability and feasibility for DHHL beneficiaries.</p>
30.	Benefits to ADC/KAA	<p>The Project will provide a reliable irrigation water supply to support diversified agriculture on lands adjacent to the Project site, including mauka lands managed by ADC (which includes lands owned by ADC) and the agricultural fields on the Mana Plains that are managed by KAA.</p> <p>It will also provide lease revenue to ADC.</p> <p>Water available for generation at the Mana Powerhouse will be used for hydroelectric generation at both the Puu Opae and Mana Powerhouses and will then be made available for irrigation to ADC/KAA.</p> <p>In addition, during outreach efforts, concerns were raised by ADC and KAA regarding water flows and potential impacts to their farming businesses and ensuring that the Project will be integrated into their current system of irrigation delivery and future plans for a pressurized irrigation system on the Mana Plains. To address these concerns, the Project will be integrated into their current system of irrigation delivery and a new dedicated irrigation pump well drawing from the Mana Reservoir will be installed and will connect directly to KAA’s new pressurized Kekaha Ditch irrigation pipeline.</p>

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		<p>By linking the Kokee Ditch Irrigation System to the Mana Plain, WKEP would provide an efficient reliable source of irrigation for ADC agricultural fields on the Mana Plain as a potential primary source of irrigation.</p>
<p>31.</p>	<p>Employment Opportunities/Additional State Revenues</p>	<p>It is estimated that approximately 200 short-term jobs will be created during the construction phase of the Project. This is assuming 2,080 work hours per person per year, or a total of approximately 416,000 work hours for the Project.</p> <p>KIUC also retained SMS to do a socioeconomic impact assessment for the Project (Assessment) to estimate the economic effects on jobs, earnings, and contributions to the local tax base attributable to the Project. The Assessment concluded that:</p> <p><i>[T]he West Kaua'i Energy Project will generate substantial and positive impacts on the Kaua'i County economy. The construction, long-term operation and maintenance expenditures, and the savings from the petroleum offset will create a total of 27,320 person-years of employment over 78 years. The construction and [Operation and Maintenance] payroll will generate a sum of \$788.3 million of earnings in Kaua'i throughout the Project. The Project will also add an estimated \$207.4 million and \$4.9 million to the State and County tax base, respectively.</i></p> <p>The Assessment further notes that, during and after the PPA, the total of 27,320 person-years of employment mentioned above would amount to 350 jobs per year over the 78-year period. The jobs created by construction will be mostly confined to the construction trades and will be short term, existing only for the duration of the construction phase. However, the jobs created by Operation and Maintenance expenditures and lease payments will vary but be concentrated in the utilities, engineering, and public administration fields and will likely be long-term jobs.</p> <p>The Project would also provide lease revenues to DHHL and ADC.</p>
<p>32.</p>	<p>Enhanced Firefighting Abilities</p>	<p>The work being performed as part of the Project will support firefighting capabilities on the west side of Kauai and in Kokee through increased access and availability of water from the reservoirs. Specifically, the Project will provide water for fire suppression through the three rehabilitated reservoirs in areas where water is not currently available, and will provide reliable sources of water for helicopters during firefighting operations, thereby</p>

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		improving fire protection in these areas.
33.	Increased Sustainability for the Kauai Community and State	<p>Act 8, Special Session Laws of Hawaii 2005, established the Hawaii Sustainability Task Force to develop a Hawaii 2050 Sustainability Plan in collaboration with the State auditor, which was originally published in 2008 and updated in 2018. This plan identifies the following five goals as integrated philosophies as to where the State should be headed.</p> <ul style="list-style-type: none"> • Sustainability as a Way of Life: Living sustainably is part of our daily practice in Hawaii. • Sustainable Economy: Our diversified and globally competitive economy enables us to live, work, and play in Hawaii. • Sustainable Environment and Natural Resources: Our natural resources are responsibly and respectfully used, replenished, and preserved for future generations. • Sustainably Community and Social Well Being: Our community is strong, healthy, vibrant and nurturing, providing safety nets for those in need. • Sustaining Kanaka Maoli Culture and Island Values: Our Kanaka Maoli and island cultures and values are thriving and perpetuated. <p>The Project meets the goals of the Hawaii 2050 Sustainability Plan as it would provide renewable energy production and resources to support agricultural production and displace the use of 8.5 million gallons of fuel each year, which would benefit the surrounding communities, the County, and the State. Further, the Project’s provision of irrigation to support diversified agricultural lands would increase food security and generate employment opportunities and would also sustain island cultures and values as they relate to agriculture. In addition, the rehabilitation of the existing reservoirs and ditch infrastructure is needed in order to bring the reservoirs in compliance with existing Hawaii State dam standards and avoid the ditch system from falling into a state of disrepair and to allow for its productive use for future generations, which furthers the public trust doctrine that obligates the State to sufficiently promote the development and utilization of natural resources and in a manner consistent with their conservation and in furtherance of the self-sufficiency of the State.</p>