Redwood Coast Energy Authority
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BOARD OF DIRECTORS MEETING AGENDA

Humboldt Bay Municipal Water District Office **March 28, 2019**
828 7th Street, Eureka, CA 95501 **Thursday, 3:30 p.m.**

In compliance with the Americans with Disabilities Act, if you need assistance to participate in this meeting, please contact the Clerk of the Board at the phone number, email or physical address listed above at least 72 hours in advance.

Pursuant to Government Code section 54957.5, all writings or documents relating to any item on this agenda which have been provided to a majority of the Board of Directors, including those received less than 72 hours prior to the RCEA Board meeting, will be made available to the public in the agenda binder located in the RCEA lobby during normal business hours, and at *www.redwoodenergy.org*.

PLEASE NOTE: Speakers wishing to distribute materials to the Board at the meeting are asked to provide 12 copies to the Clerk of the Board.

OPEN SESSION Call to Order

1. REPORTS FROM MEMBER ENTITIES

2. ORAL COMMUNICATIONS

This time is provided for people to address the Board or submit written communications on matters not on the agenda. At the conclusion of all oral and written communications, the Board may respond to statements. Any request that requires Board action will be set by the Board for a future agenda or referred to staff.

3. CONSENT CALENDAR

All matters on the Consent Calendar are considered to be routine by the Board and are enacted on one motion. There is no separate discussion of any of these items. If discussion is required, that item is removed from the Consent Calendar and considered separately. At the end of the reading of the Consent Calendar, Board members or members of the public can request that an item be removed for separate discussion.

3.1 Approve Minutes of February 28, 2019, Board Meeting.
3.2 Approve Disbursements Report.
3.3 Accept Financial Reports.
3.4 Authorize the Executive Director to Execute an Amendment to the Power Purchase Agreement with DG Fairhaven Power, LLC Changing the Green Attribute Price Associated with Surplus Delivered Energy from $14.50 per Megawatt-hour to $17.00 per Megawatt-hour.

4. REMOVED FROM CONSENT CALENDAR ITEMS

Items removed from the Consent Calendar will be heard under this section.

5. OLD BUSINESS

5.1 Offshore Wind Project Grid-Interconnection Study

Consider approval of expenditure of $273,500 toward the Redwood Coast Offshore Wind Project's CAISO interconnection process phase-2 financial security posting and authorize the Executive Director to execute any associated documents.

6. NEW BUSINESS

6.1. FY 2018-2019 2nd Quarter Budget Summary

Adopt proposed FY18-19 Budget Mid-Year Adjustment with revised FY18-19 Budget Totals.

6.2. Salary Survey Report

Receive salary survey report.

6.3. RCEA Energy Efficiency Programs Update (Information only, no action)

6.4. Audit Services RFP

Authorize staff to issue a request for proposals for professional financial audit services and complete a review of submitted proposals and authorize the Executive Director to contract with the selected respondent and execute all associated documents following review and approval by the RCEA Board Finance Subcommittee and RCEA Legal Counsel.

COMMUNITY CHOICE ENERGY (CCE) BUSINESS (Confirm CCE Quorum)

Items under this section of the agenda relate to CCE-specific business matters that fall under RCEA's CCE voting provisions, with only CCE-participating jurisdictions voting on these matters with weighted voting as established in the RCEA joint powers agreement.

7. OLD CCE BUSINESS

7.1. Feed-In Tariff

Authorize staff to launch the RCEA Feed-in Tariff program effective April 1.

7.2. 100% Clean and Renewable Electricity by 2025 Goal

Adopt Resolution 2019-1 of the Board of Directors of the Redwood Coast Energy Authority Adopting the Target of a 100% Clean and Renewable Electricity Mix by 2025.

8. NEW CCE BUSINESS – None.

END OF COMMUNITY CHOICE ENERGY (CCE) BUSINESS

9. STAFF REPORTS

9.1. Community Choice Energy Program Update by Power Resources Director Richard Engel.

9.2. Building Lease Renewal Report by Operations Director Dana Boudreau.

10. FUTURE AGENDA ITEMS

11. ADJOURNMENT

NEXT REGULAR MEETING
Thursday, April 25, 2019, 3:30 p.m.
Humboldt Bay Municipal Water District Office
828 7th Street, Eureka, CA 95501

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BOARD OF DIRECTORS DRAFT MEETING MINUTES

Humboldt Bay Municipal Water District Office **February 28, 2018**
828 7th Street, Eureka, CA 95501 **Thursday, 3:30 p.m.**

Chair Michael Winkler called a regular meeting of the Board of Directors of the Redwood Coast Energy Authority to order on the above date at 3:28 p.m. Notice of this meeting was posted on February 22, 2019. PRESENT: Vice Chair Austin Allison, Estelle Fennell (arrived 3:30 p.m.), Summer Daugherty (arrived 3:33 p.m.), Dean Glaser, Dwight Miller, Robin Smith, Frank Wilson, Chair Michael Winkler, Sheri Woo. ABSENT: None. STAFF PRESENT: Business Planning and Finance Director Lori Biondini; Operations Director and Acting Executive Director Dana Boudreau; Power Resources Director Richard Engel; Matt Hague, CPA; Demand Side Management Director Lou Jacobson; Clerk of the Board Lori Taketa.

REPORTS FROM MEMBER ENTITIES

Director Smith reported that Ferndale residents care about clean energy and current perceived community reluctance toward Terra-Gen's Humboldt Wind Project is likely based on negative memories of Shell's past, attempted wind project.

Director Fennell arrived at 3:30 p.m. She reported that she sits on the Eel Russian River Commission and is monitoring the PG&E bankruptcy with regard to the Potter Valley Project.

Director Daugherty arrived at 3:33 p.m.

Director Woo reported that both Humboldt Bay Municipal Water District Ruth Lake turbines are running and generating hydropower. She expressed uncertainty about whether PG&E would pay for the electricity.

Director Allison reported that the City of Eureka was working toward using non-CRV glass for road repair rather than sending the material to landfills. The City of Eureka is working toward a goal of zero waste city operations by 2020.

Chair Winkler stated the City of Arcata set a goal to phase out natural gas use in City facilities in 15 years and move toward high-efficiency electrical heating and cooking devices powered by renewable sources in new construction.

ORAL COMMUNICATIONS

Chair Winkler invited public comment.

Arcata resident Sean Armstrong stated that the Sierra Club is working with municipalities to ban natural gas in new construction and the City of Berkeley is about to issue an ordinance to do this. Mr. Armstrong reported that local studies find $2000-3000 in cost savings per

apartment when natural gas is not installed. Mr. Armstrong encouraged RCEA to focus first on replacing inefficient, health-harming gas stoves with high-efficiency electric stoves.

Member of the public Ellen Golla stated that if RCEA is going to encourage a transition to electric heating, people who heat with electricity need to receive credits, otherwise more rate payers will use wood stoves for heat and cause more health hazards.

Chair Winkler stated that ratepayers who heat their homes with electricity are entitled to double the normal baseline quantity, or the amount of electricity a household can purchase at the lowest rate.

Humboldt State University students representing the Sunrise Movement stated their support for the Green New Deal and a transition to 100% renewable energy which does not include biomass. They thanked the directors and staff for their work.

Chair Winkler closed public comment.

CLOSED SESSION

Chair Winkler invited public comment. No one came forward to speak. Chair Winkler closed public comment.

The RCEA Board convened in closed session at 3:43 p.m. to consider the following items:

3.1 Public Employee Performance Evaluation, pursuant to Government Code Section 54957(b)(1): Executive Director

3.2 Conference with labor negotiator pursuant to Government Code Section 54957.6:
RCEA representative: Director Sheri Woo.
Unrepresented employee: Executive Director

The Board reconvened to open session at 3:52 p.m. Chair Winkler stated there was nothing to report out from the closed session.

CONSENT CALENDAR

6.1 Approve Minutes of January 28, 2019, Board Meeting.
6.2 Approve Disbursements Report.
6.3 Accept Financial Reports.
6.4 Receive the 2017 Power Source Disclosure Audit.
6.5 Approve Amendment No. 4 to Agreement for Employment of Executive Director with Matthew Marshall.
6.6 Authorize the Executive Director to execute an amendment to the power purchase agreement with Humboldt Sawmill Company with the following key contract adjustments:

- Extend contract end date to 2024.
- Reduce unit price for the period March 1, 2019-December 31, 2019 to $65/MWh, thereafter increasing to a price of $67/MWh, subject to an annual

consumer price index adjustment beginning on the anniversary of the contract amendment in 2021.

Chair Winkler invited public comment. No one came forward to speak. Chair Winkler closed public comment.

M/S: Wilson, Glaser. Approve Consent Calendar items.

The motion passed. Ayes: Allison, Daugherty, Fennell, Glaser, Miller, Smith, Winkler. Noes: None. Absent: None. Abstentions: Wilson, Woo (recused from voting on item 6.6).

Chair Woo recused herself from voting on agenda item 6.6 due to a conflict of interest. Chair Woo's conflict arises from her employment at SHN Engineers and Geologists, which performs work for Humboldt Redwood Company, of which the Humboldt Sawmill Company is a subsidiary. Chair Woo is also an SHN shareholder. Chair Woo does not supervise any employees working with HSC and her interest in the HSC power purchase agreement is remote. Director Wilson also recused himself from voting on item 6.6 because he is an HRC employee.

OLD BUSINESS

8.1 FY 16-17 Fiscal Audit – Independent Auditor's Report (Information only)

David L. Moonie & Co. CPA Matt Hague reviewed the means by which he audited the agency and the Community Choice Energy program for fiscal year 2016-17. Mr. Hague reviewed the report and findings, stating that some prior year findings were repeated due to the subsequent year's delayed audit.

The directors confirmed that staff's response to findings were satisfactory. Director Woo stated that the Board acknowledges the agency's dramatic growth and takes the agency's financial responsibilities very seriously. Ms. Woo stated that the newly-formed Finance Subcommittee will be paying close attention to agency fiscal matters and that audits would be completed in a timely manner.

Chair Winkler invited public comment. No one came forward to speak. Chair Winkler closed public comment.

8.2 ACV Microgrid Updates, Construction Agreement, MOU and Lease

David Carter, Managing Research Engineer at Schatz Energy Research Center presented a status report on the Redwood Coast Airport Renewable Energy Microgrid project, Humboldt County's third and largest microgrid project, which will integrate a large amount of distributed renewable energy resources into the larger utility grid and provide state-mandated battery storage. The project's innovative DC coupling technology will insulate the larger grid from the 2.1MW solar array's production fluctuations when clouds block the sun. The generated electricity will create revenue for RCEA by selling electricity when it is most valuable, provide disaster resiliency for the regional airport and Coast Guard station, and provide local renewable energy to CCE customers. The project is PG&E's first front-of-the-meter microgrid.

The project's completed CEQA process resulted in a mitigated negative declaration and the FAA approval process is progressing on schedule. The solar panels will meet strict requirements and be oriented to prevent glare for pilots. Final design and permitting work will take place in 2019. Lab testing will take place in early 2020. Construction will be complete and commissioning will start in the beginning of 2021. The project is anticipated to be in operation for 25 years.

Tesla Senior Manager of Utilities, America Tristan Glenwright participated in the meeting by phone and stated that the battery service life is 15+ years, at which time they will operate at 70% capacity. Additional batteries may be required at that point to operate at full capacity.

Upon inquiry by Director Woo about the PG&E bankruptcy's effect on their project contracts, Mr. Carter stated that PG&E supports the project and sees microgrids as a way to operate the grid more safely in fire-prone areas in the future. The two full-time PG&E staff dedicated to the project are funded by a separate source, a CEC technology innovation grant.

Chair Winkler invited public comment.

A member of the public inquired whether the County would localize energy distribution if PG&E went bankrupt. Chair Winkler stated that RCEA has localized energy supply control through the CCE program.

Members of the public asked about electric vehicle charging at the airport, to which Mr. Carter responded that the project design includes four EV chargers with space for three more as demand grows.

A member of the public asked about the payback schedule for the project given the airport's foggy location, to which Mr. Carter responded that while the payback period may be longer than projects in sunny locations, this technology research and development project's data will be tracked to inform future projects and policy.

Chair Winkler closed public comment.

The directors referred to the community-developed Comprehensive Action Plan for Energy (CAPE) and the RePower Humboldt Plan, pointing to RCEA's participation in this project as part of these plans' implementation. Chair Winkler stated he would like the Board to consider revision of the RePower Humboldt Plan and staff added that a CAPE revision is in process.

M/S: Allison, Miller: Authorize the Executive Director to develop and execute, upon approval by the RCEA General Counsel, an agreement with Tesla Inc. for engineering, procurement, and construction services for the Redwood Coast Airport Renewable Energy Microgrid Project and any other associated documents as necessary.

The motion passed on a unanimous voice vote. Ayes: Allison, Daugherty, Fennell, Glaser, Miller, Smith, Wilson, Winkler, Woo. Noes: None. Absent: None. Abstentions: None.

M/S: Allison, Fennell: Authorize the Executive Director to execute the Redwood Coast Airport Renewable Energy Microgrid Memorandum of Understanding based on pending mutual agreement of all parties.

The motion passed on a unanimous voice vote. Ayes: Allison, Daugherty, Fennell, Glaser, Miller, Smith, Wilson, Winkler, Woo. Noes: None. Absent: None. Abstentions: None.

8.3 Finance Subcommittee Membership

Director Daugherty stated she would like to serve on the Finance Subcommittee.

Chair Winkler invited public comment. No one came forward to speak. Chair Winkler closed public comment.

M/S: Fennell, Allison: Appoint Summer Daugherty to the Finance Subcommittee for a one-year term ending on the first regular Board meeting of 2020.

The motion passed on a unanimous voice vote. Ayes: Allison, Daugherty, Fennell, Glaser, Miller, Smith, Wilson, Winkler, Woo. Noes: None. Absent: None. Abstentions: None.

COMMUNITY CHOICE ENERGY (CCE) BUSINESS

Chair Winkler determined a quorum was present to conduct CCE business.

OLD CCE BUSINESS

10.1 Offshore Wind Project Update (Information only)

Director of Business Planning and Finance Lori Biondini reported on the offshore wind project kick off meeting with the Humboldt Bay Harbor, Recreation and Conservation District and project partners where harbor infrastructure construction timelines were discussed. Staff is consulting with The Energy Authority to evaluate the energy to be provided by this project. The Bureau of Ocean Energy Management's lease application response is expected in a little less than 18 months. Staff is exploring submitting a Headwaters Fund Grant application to help pay for project development thus far.

Chair Winkler invited public comment. No one came forward to speak. Chair Winkler closed public comment.

NEW CCE BUSINESS

11.1 Community Advisory Committee 100% Clean and Renewable 2025 Goal Recommendation

Demand Side Management Director Lou Jacobson reported that the Community Advisory Committee came to a consensus recommendation on January 18 that the Board adopt a

100% clean and renewable electricity by 2025 goal without modifying other existing RCEA targets and establish a process to obtain public input on the definitions of “clean” and “renewable.”

Director Jacobson presented The Energy Authority’s analysis that meeting a 100% renewable goal by 2025 using existing state definitions of “renewable” would impact the CCE program’s ability to meet existing reserve, local solar and community program targets. TEA estimates a reduction in net revenue in 2023 of $6.5 million without biomass and $6.7 million with extended biomass contracts.

Director Jacobson added that both RePower Humboldt and CAPE, the CCE program’s steering documents, already outline aggressive 100% renewable energy by 2030 goals, and that the CAC’s proposal accelerates achievement of this goal by 5 years.

Director Jacobson stated a staff recommendation that RCEA lead a community discussion on definitions of 100% “clean” and “renewable” in late March or early April, reassess CCE program impacts after this discussion, and present the findings to the Board in April or May.

The Directors requested analysis of biomass’ impacts on climate, health and local industry; clarified biomass’ inability to provide newly state-mandated dispatchable energy; verified that the Schatz Energy Research Center’s local biomass residue impact study findings will be available at the end of 2019; and were advised by staff to factor the following in their decision making: mandated long-term renewable power contract requirements, RePower Humboldt’s goal of 100% local renewable energy by 2030, RCEA’s current local renewable power solicitation, and the higher cost of local electricity procurement. The Directors were reminded that local offshore wind would likely become available between 2024-2026.

Chair Winkler invited public comment.

Valentina Acosta of Humboldt State University’s Sunrise Movement stated her support for the Green New Deal’s climate change-oriented agenda and her opposition to biomass for its negative environmental effect.

Arcata CCE customer Diane Ryerson stated her support for: 100% renewable energy by 2025, offshore wind, the solar microgrid, rapid storage development, collaboration with cities and the County to exceed state energy conservation requirements, requiring community benefit agreements for all energy infrastructure contracts, preserving existing redwood forests and fostering old-growth characteristics in mixed forests. She requested that her CCE bill payments go to wind, solar and energy storage, and not to subsidize burning timber industry waste.

Arcata resident Walt Paniak stated his support for replacing biomass with solar and wind energy and energy storage, citing health, greenhouse gas emission and cost concerns with biomass. He requested that the public be notified about past and current tax credits for renewable contracts.

Colin Fiske, Executive Director of the Coalition for Responsible Transportation Priorities, RCEA Community Advisory Committee member and 350 Humboldt volunteer stated that the Board’s adoption of the CAC’s recommendation would demonstrate recognition of the climate

crisis' urgency and reflect support of the community's priorities and values. Mr. Fiske supports adopting the 2025 recommendation as an official goal, conducting community outreach for an understanding of what constitutes clean and renewable energy, and use of the information gathered for planning purposes.

Tom Wheeler, Executive Director of EPIC, urged the Board to adopt the 100% clean and renewable energy by 2025 goal and pointed out that many RCEA member agencies have already adopted this goal.

Member of the public Wendy Ring stated that CO2 emission decline must begin by 2020 in order to avoid global warming of over 1.5 degrees centigrade and that global warming must be considered when defining "renewable." She stated cost is not a factor since non-action will cost much more.

Jack Nounnan of North Coast Earth First! and Climate Crisis Fund supported taking action now to avert devastation and community cooperation to monitor forest industry impacts.

Arcata resident and 350 volunteer Pat Carr stated support for the 100% renewable energy by 2025 goal and opposition to biomass use. He supports seeking maximum community input on the definition of clean and renewable energy and on RCEA's path to achieve this goal.

Upon inquiry by member of the public Chuck Dwelly about whether RCEA is considering tidal energy as a resource, Chair Winkler responded that the agency's current plans need to be based on commercially available sources, and tidal energy is not yet commercially available.

A member of the public stated her support for community discussion on clean and renewable energy definitions, requesting extending public discussion over several months due to anticipated developments, and inquired how staff derived the financial impact amounts for 100% renewable energy by 2025.

Member of the public John Schaefer stated that moving to all-renewable energy by 2025 is possible but will be difficult. Mr. Schaefer opposes local biomass due to the age and emissions of the region's power plants and supports RCEA growing more trees. He advised against reliance on offshore wind due to costliness but favored onshore wind.

Member of the public Ellen Golla stated that people other than herself also care about biomass. Ms. Golla opposes the use of the term "renewable" in favor of "clean" energy and is in favor of moving toward clean energy that excludes biomass.

Erik Rydberg, McKinleyville resident and Green Party of Humboldt Coordinating Committee member stated support for the Green New Deal and the Sunrise Movement. Mr. Rydberg opposes biomass, is concerned with climate change's life-threatening effects, and supports moving from renewable to clean energy immediately regardless of expense.

Humboldt Wind Project Community Liaison Natalynne DeLapp spoke about the Humboldt Wind onshore wind project, stating the project could potentially meet 40% of Humboldt County's electricity needs and would support a 100% clean and local energy goal.

Arcata and Eureka resident Kelsey Reedy spoke on behalf of Humboldt Move to Amend and the Green Party of Humboldt County, stating support for 100% clean and renewable energy by 2025, opposition to biomass and support for using funds for clean energy.

Eureka resident and 350 Humboldt volunteer Deborah Dukes asked what kind of world we will leave the HSU Sunrise Movement members in the name of rate savings or appeasing rate payers. Ms. Dukes stated that she has taken all energy saving and fuel switching actions an individual can take and requested the directors make difficult decisions on behalf of the County for a better future world.

Lily Price of HSU Sunrise Movement stated that miracles are possible if we work together.

Eureka resident and 350 Humboldt Climate Action Committee member Cena Marino stated that no one is speaking for the species dying because of climate change and that people need to speak on their behalf.

Chair Winkler closed public comment.

The directors discussed the importance of having fewer children to address climate change, the effect of rapid 100% clean energy implementation on the agency's survival, the availability of other funding sources to accelerate the transition, the challenge of informing the Humboldt County ratepayers who do not share the concerns of the community members present at the meeting, the current option for ratepayers to opt up to 100% renewable energy through RCEA's CCE program to share the cost of attaining the 2025 goal, the need for more discussion so the directors and the public can understand options and costs, and the possibility of holding meetings such as were held prior to the CCE program's launch which resulted in the agency's current reserve building and community program goals.

Individual directors expressed support for community outreach and participation, the need for more information on how The Energy Authority arrived at the projected cost of reaching the accelerated goal, suggested updating the RePower Humboldt plan and requested an inventory of locally-procurable energy sources and education partners. Concern was also expressed about being unrealistic about expensive new initiatives and the cost potentially making RCEA less competitive to ratepayers than PG&E, the impossibility of controlling other countries' climate-influencing actions, and the need for energy redundancy through biomass.

Chair Winkler read his written response to local residents who emailed him regarding this issue and included his five personal energy goals for RCEA and Humboldt County. Response from other directors included requesting that Chair Winkler's goals not be considered as representative of the Board, that they be assessed by staff and included in discussion while updating the agency's guiding plans.

Staff pointed out that the RePower Humboldt visioning process involved three years to scope and engage the public and cost about $200,000 and that onshore wind, biomass, solar, and offshore wind resources have not changed since the plan's publication six years ago. Chair Winkler stated that technology has changed.

Acting Executive Director Boudreau summarized Board direction to staff, stating that staff is to present the Board with a deeper analysis of the financial impacts of 100% renewable

energy by 2025 based on existing CCE action guidelines. The Board further directs staff to present suggestions on what a public engagement process might look like and the estimated costs of this work.

11.2 PG&E Bankruptcy Update (Information only)

General Counsel Nancy Diamond reported that the PG&E bankruptcy is very complex and affects the agency on multiple fronts. Counsel Diamond is working closely with the California Community Choice Association (CalCCA) to ensure that CCA payments collected by PG&E are not considered PG&E assets during bankruptcy proceedings. The bankruptcy court has affirmatively declared that revenues collected on behalf of the CCAs are the property of the CCAs. The CalCCA group has retained bankruptcy counsel and the CCAs are receiving payments.

END OF COMMUNITY CHOICE ENERGY (CCE) BUSINESS

STAFF REPORTS

12.1 Update by Demand Side Management Director Lou Jacobson on RCEA's Energy Efficiency programs.

Demand Side Management Director Lou Jacobson reported on RCEA's current and past year energy efficiency work, including completion of over 400 Energy Watch projects in 2018. These services were delivered in partnership with PG&E and led to approximately 2.4 million kWh in first year energy savings. The CCE-funded public agency solar program (PASP) has identified 22 feasible solar projects at local public agencies. Should all feasible projects be completed, staff estimate that the effort will result in approximately 1.5 MW DCPV installed, potentially leading to $400,000 in energy savings in the first year. Staff is working to bring in additional resources through a PG&E program to help address energy efficiency opportunities for a number of local water and wastewater treatment plant operators. PASP also supported the completion of 26 additional efficiency projects leading to the disbursement of more than $35,000 in incentives. The residential CCE-program helped fund 146 residential services. The Clean Energy Jobs Act of 2012 or Proposition 39 support services have led to more than 50 completed public works projects including: solar panels; smart thermostats; efficient lighting, windows and refrigeration; heat pumps; and fuel switching from propane. Prop 39 implementation will end in 2020 and final project reporting will sunset in 2021. Staff is beginning to assess a Comprehensive Action Plan for Energy (CAPE) update and is also working with the County on a multijurisdictional climate and energy action plan. Staff is also working with the Community Advisory Committee to solicit energy efficiency program ideas from the community through a Citizen Sourcing Program.

Director Jacobson described changes in energy efficiency program funding and the opportunities staff is pursuing to continue providing these services, such as joining with other agencies to form a rural regional energy network or becoming a program administrator.

12.2 Report from Acting Executive Director Dana Boudreau

Acting Executive Director Dana Boudreau read a statement from Executive Director Matthew Marshall acknowledging outgoing Board Chair Sheri Woo's efforts during the Community

Choice Energy launch, her commitment to a transparent process, stakeholder engagement, and bold and expedient action to address the climate crisis.

FUTURE AGENDA ITEMS

The directors requested more information from Demand Side Management Director Lou Jacobson on the Rural Regional Energy Network and Program Administrator status.

CLOSED SESSION

Chair Winkler invited public comment on the closed session item. No one came forward to speak. Chair Winkler closed public comment.

The RCEA Board convened in closed session at 6:35 p.m. to consider the following item:

14.1 Closed Session to meet with legal counsel per Government Code Section 54956.9(c), In re PG&E, Bankruptcy Court, 19-30088, Northern District of California.

The Board reconvened to open session at 6:54 p.m.

M/S: Daugherty/Allison: Retain the law firm of Boutin Jones, Inc. as bankruptcy counsel for PG&E bankruptcy matters and authorize Executive Director Matthew Marshall and General Counsel Nancy Diamond to finalize the terms of the retention agreement.

The motion passed on a unanimous voice vote. Ayes: Allison, Daugherty, Fennell, Glaser, Miller, Smith, Wilson, Winkler, Woo. Noes: None. Absent: None. Abstentions: None.

Chair Winkler adjourned the meeting at 6:55 p.m.

Respectfully Submitted,

Lori Taketa
Clerk of the Board

Redwood Coast Energy Authority
Disbursements Report
As of January 31, 2019

Accrual Basis

Type	Date	Num	Name	Memo	Amount
Check	01/01/2019	9005	CoPower	Vision Premium	-359.90
Bill Pmt -Check	01/07/2019	ACH	The Energy Authority	CAISO Invoice #20190103	-141,479.27
Liability Check	01/07/2019	E-pay	EDD	499-0864-3 QB Tracking # -147538478	-31.73
Liability Check	01/07/2019	E-pay	Internal Revenue Service	74-3104616 QB Tracking # -147455478	-267.98
Liability Check	01/07/2019	E-pay	EDD	499-0864-3 QB Tracking # -116761478	-3,437.29
Liability Check	01/07/2019	E-pay	Internal Revenue Service	74-3104616 QB Tracking # -116587478	-16,897.28
Liability Check	01/07/2019	E-pay	EDD	499-0864-3 QB Tracking # -116434478	-2,168.17
Paycheck	01/10/2019	9126	Payroll	Payroll 12/15-12/31/18	-43,610.96
Liability Check	01/11/2019	9127	Umpqua Bank	HSA Contributions	-558.04
Liability Check	01/11/2019	9128	Calvert	IRA Contributions	-9,486.08
Bill Pmt -Check	01/11/2019	9129	ABC Office Equipment	December print charges/service contract.	-254.58
Bill Pmt -Check	01/11/2019	9130	Best Cleaners	Coverall & linens laundering	-20.00
Bill Pmt -Check	01/11/2019	9131	Braun Blaising Smith Wynne	Legal Services - Regulatory	-2,187.86
Bill Pmt -Check	01/11/2019	9132	Burks, K.	December mileage reimbursement	-86.16
Bill Pmt -Check	01/11/2019	9133	CA Dept. of Tax & Fee Administration	Electrical Energy Surcharge Return	-45,909.78
Bill Pmt -Check	01/11/2019	9134	CalCCA	Operational Member dues Q3 18/19	-22,390.00
Bill Pmt -Check	01/11/2019	9135	Central Office	Copying, Holiday cards	-69.59
Bill Pmt -Check	01/11/2019	9136	City of Arcata	December Utility User Tax	-7,575.53
Bill Pmt -Check	01/11/2019	9137	City of Blue Lake	December Utility User Tax	-718.18
Bill Pmt -Check	01/11/2019	9138	City of Eureka-Water	Water service, 11/26-12/26/18	-155.96
Bill Pmt -Check	01/11/2019	9139	David L. Moonie & Co., LLP	Contract fee- audit for 16/17 - 4th	-750.00
Bill Pmt -Check	01/11/2019	9140	Developed Employment Services, LLC.	Facilities maintenance work	-53.76
Bill Pmt -Check	01/11/2019	9141	Diamond, Nancy	Legal Services	-13,834.65
Bill Pmt -Check	01/11/2019	9142	Engel, R.	December mileage	-29.43
Bill Pmt -Check	01/11/2019	9143	Enterprise	Rental car agreements	-208.95
Bill Pmt -Check	01/11/2019	9144	Enterprise Tolls	Toll Fine: Rental agreement #45MKWC	-11.95
Bill Pmt -Check	01/11/2019	9145	Eureka Rubber Stamp	Boad meeting nameplates	-40.69
Bill Pmt -Check	01/11/2019	9146	FedEx	Contract document mailing	-8.15
Bill Pmt -Check	01/11/2019	9147	Ferndale USD	Ferndale High School self-install rebate/Audit 5288.	-4,016.67
Bill Pmt -Check	01/11/2019	9148	Fischer, A.	Travel reimbursement- CivicSpark	-43.49
Bill Pmt -Check	01/11/2019	9149	Fortuna Union HSD	Fortuna High School self-install rebate/Audit 5254.	-170.00
Bill Pmt -Check	01/11/2019	9150	Headwaters Fund - Interest	RCEA loan December 2018 Interest 3846000 8001	-50,000.00
Bill Pmt -Check	01/11/2019	9151	HSU Fdn FCEV ARV-14-055	November contract services 000163/SP33574	-525.55
Bill Pmt -Check	01/11/2019	9152	Humboldt Builders' Exchange	(4) Medium Plan Copies	-10.85
Bill Pmt -Check	01/11/2019	9153	Jacobson, L.	Travel to PG&E Meeting 12/10-12/11/18	-381.35
Bill Pmt -Check	01/11/2019	9154	Local Government Commission	October 2018 CivicSpark Services	-2,086.36
Bill Pmt -Check	01/11/2019	9155	MCOG	Contract services / ARV-14-055 FY 2017-18	-2,000.00
Bill Pmt -Check	01/11/2019	9156	North Coast Cleaning	December Cleaning Service	-402.00
Bill Pmt -Check	01/11/2019	9157	Owen, P.	December mileage reimbursement.	-20.71
Bill Pmt -Check	01/11/2019	9158	PG&E EV Account	EV stations November	-404.66
Bill Pmt -Check	01/11/2019	9159	PG&E Utility Account	November utilities/lighting upgrade financing	-963.58
Bill Pmt -Check	01/11/2019	9160	Pierson's Home Ctr	Facilities materials	-26.01
Bill Pmt -Check	01/11/2019	9161	Ponting, W.	December mileage reimbursement	-48.51
Bill Pmt -Check	01/11/2019	9162	Recology	December garbage service	-90.72
Bill Pmt -Check	01/11/2019	9163	SDRMA Dental	Dental Insurance	-2,518.91
Bill Pmt -Check	01/11/2019	9164	SDRMA Medical	Medical Insurance	-35,426.64
Bill Pmt -Check	01/11/2019	9165	Shred Aware	Shredding services	-35.00
Bill Pmt -Check	01/11/2019	9166	Siskiyou County EDC	Contract services / ARV-14-055 FY 2017-18	-2,000.00
Bill Pmt -Check	01/11/2019	9167	Stephenson, Nancy	Postage purchase reimbursement	-30.00
Bill Pmt -Check	01/11/2019	9168	Stitch Witch	Merchandise Order	-192.68
Bill Pmt -Check	01/11/2019	9169	Suddenlink Communications	Internet access	-1,106.20
Bill Pmt -Check	01/11/2019	9170	Terry, P.	December mileage reimbursement	-17.11
Bill Pmt -Check	01/11/2019	9171	Times Printing Company	Outside printing services - CCA mailers	-819.67
Bill Pmt -Check	01/11/2019	9172	Verizon Wireless	December tablet/cell service for field staff/mobile br	-228.60
Bill Pmt -Check	01/11/2019	9173	City of Arcata	December High Energy Use Tax	-1,534.90
Bill Pmt -Check	01/11/2019	9174	Enterprise Tolls	Toll Fine: Rental agreement #4966J1	-11.95
Check	01/11/2019	9175	EUC Customer	EUC Assessment reimbursement	-500.00
Check	01/11/2019	9176	EUC Customer	EUC Assessment reimbursement	-500.00

Type	Date	Num	Name	Memo	Amount
Bill Pmt -Check	01/14/2019	ACH	The Energy Authority	CAISO Invoice #20190103	-158,547.41
Bill Pmt -Check	01/14/2019	ACH	The Energy Authority	CAISO Invoice #20190110-Dec	-147,707.17
Bill Pmt -Check	01/14/2019	ACH	The Energy Authority	CAISO Invoice #20190110	-83.54
Bill Pmt -Check	01/15/2019	ACH	The Energy Authority	TEA Invoice #20190115	-1,796,467.78
Bill Pmt -Check	01/18/2019	ACH	VISA	December Statement 11/21/18-12/19/18	-4,803.67
Bill Pmt -Check	01/25/2019	ACH	DG Fairhaven	DG Fairhaven December 2018	-200,760.19
Bill Pmt -Check	01/25/2019	ACH	Humboldt Redwood Company	Humboldt Redwood CO. December 2018	-623,725.29
Bill Pmt -Check	01/25/2019	ACH	CalPine Corporation	Calpine December 2018 Costs	-72,478.75
Liability Check	01/25/2019	E-pay	EDD	499-0864-3 QB Tracking # -1708447774	-3,624.85
Liability Check	01/25/2019	E-pay	Internal Revenue Service	74-3104616 QB Tracking # -1708359774	-18,085.02
Liability Check	01/25/2019	E-pay	EDD	499-0864-3 QB Tracking # -1708295774	-2,115.11
Bill Pmt -Check	01/25/2019	9180	Arcata Technology Center	Site Host Reimbursement 10/1/18-12/31/18	-524.38
Bill Pmt -Check	01/25/2019	9181	Blue Lake Rancheria	Site Host Reimbursement 10/1/18 - 12/31/18	-207.10
Bill Pmt -Check	01/25/2019	9182	Braun Blaising Smith Wynne	Legal Services - Regulatory	-6,349.68
Bill Pmt -Check	01/25/2019	9183	City of Arcata	Site Host Reimbursement 10/1/18 - 12/31/18	-596.45
Bill Pmt -Check	01/25/2019	9184	City of Blue Lake	Site Host Reimbursement 10/1/18 - 12/31/18	-38.28
Bill Pmt -Check	01/25/2019	9185	City of Eureka - REVNet	Site Host Reimbursement 10/1/18-12/31/18	-311.34
Bill Pmt -Check	01/25/2019	9186	City of Trinidad	Site Host Reimbursement 010/1/18-12/31/18	-60.48
Bill Pmt -Check	01/25/2019	9187	County of Humboldt-Public Works	ARV-14-055 Travel Stipend	-200.00
Bill Pmt -Check	01/25/2019	9188	Donald Dame	Professional Services - Risk Mgmt	-393.75
Bill Pmt -Check	01/25/2019	9189	GHD	Site Host Reimbursement 10/1/18 - 12/31/18	-244.70
Bill Pmt -Check	01/25/2019	9190	Humboldt Lock & Safe	Duplicate keys	-13.02
Bill Pmt -Check	01/25/2019	9191	Mission Uniform & Linen	Janitorial services	-20.92
Bill Pmt -Check	01/25/2019	9192	Morehead, M.	Purchase reimbursement - office supplies	-23.19
Bill Pmt -Check	01/25/2019	9193	North Coast Unified Air Quality	Site Host Reimbursement 10/1/18-12/31/18	-162.34
Bill Pmt -Check	01/25/2019	9194	NYLEX.net, Inc.	Onsite network support services - February	-3,200.00
Bill Pmt -Check	01/25/2019	9195	PG&E CCA	Aggregate Data Charge	-1,840.00
Bill Pmt -Check	01/25/2019	9196	Pisenti & Brinker	Procedures report for 2017 power content label	-6,000.00
Bill Pmt -Check	01/25/2019	9197	Platt/Rexel	Bulb purchases	-18,855.29
Bill Pmt -Check	01/25/2019	9198	SDRMA Dental	February Premium	-1,048.75
Bill Pmt -Check	01/25/2019	9199	Solomon, J.	December mileage reimbursement	-71.83
Bill Pmt -Check	01/25/2019	9200	St. Joseph Hospital	Site Host Reimbursement 10/1/18-12/31/18	-521.83
Bill Pmt -Check	01/25/2019	9201	Times Printing Company	Msc. printing services	-880.02
Bill Pmt -Check	01/25/2019	9202	Wattle, Jo	ARV-14-055 Travel Stipend	-211.40
Bill Pmt -Check	01/25/2019	9203	Winzler, John	Office Lease - February	-4,350.00
Paycheck	01/25/2019	9221	Payroll	Payroll 1/1-1/15/19	-46,867.85
Bill Pmt -Check	01/28/2019	ACH	The Energy Authority	CAISO Invoice #20190124	-49,674.99
Bill Pmt -Check	01/28/2019	ACH	The Energy Authority	CAISO Invoice #20190124	-199,719.10
Bill Pmt -Check	01/28/2019	ACH	The Energy Authority	CAISO Invoice #20190124-Oct	-196,216.17
Check	01/30/2019	9204-9220	NEM Customers	NEM Account Closeout	-678.03
TOTAL					**-3,986,393.71**

Redwood Coast Energy Authority
Balance Sheet
As of January 31, 2019

	Jan 31, 19
ASSETS	
Current Assets	
Checking/Savings	
1010 · Petty Cash	414.35
1050 · GRANTS & DONATIONS 3840	15,204.58
1060 · Umpqua Checking-9271	-117,541.80
1070 · OLD Umpqua Dep Cntrl Acct 1687	1,720,649.33
1075 · Umpqua Reserve Account 2300	5,000,000.00
8413 · COUNTY TREASURY 3839	5,065.52
Total Checking/Savings	6,623,791.98
Accounts Receivable	
1100 · Accounts Receivable	324,550.30
Total Accounts Receivable	324,550.30
Other Current Assets	
1101 · Allowance for Doubtful Accounts	-240,283.54
1103 · Accounts Receivable-Other	5,562,777.42
1120 · Inventory Asset	21,715.00
1202 · Prepaid Expenses	-23,876.03
Total 1210 · Retentions Receivable	50,616.96
Total Other Current Assets	5,370,949.81
Total Current Assets	12,319,292.09
Total Fixed Assets	151,725.39
Total Other Assets	4,100.00
TOTAL ASSETS	**12,475,117.48**
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Total Accounts Payable	2,763,409.42
Total Credit Cards	-1,386.56
Other Current Liabilities	
Total 2100 · Payroll Liabilities	133,520.09
Total 2210 · Retentions Payable	4,499.69
Total Other Current Liabilities	138,019.78
Total Current Liabilities	2,900,042.64
Long Term Liabilities	
Total 2700 · Long-Term Debt	79,203.21
2703 · TEA Phase I & II	114,065.31
Total Long Term Liabilities	193,268.52
Total Liabilities	3,093,311.16
Equity	
2320 · Investment in Capital Assets	147,113.19
3200 · LTD - Headwaters Loan	-74,591.02
3203 · LTD - TEA Phase I & II	-114,065.31
3900 · Fund Balance	8,476,621.74
Net Income	910,161.72
Total Equity	9,345,240.32
TOTAL LIABILITIES & EQUITY	**12,438,551.48**

Redwood Coast Energy Authority
Profit & Loss Budget vs. Actual
July 2018 through January 2019

	Jul '18 - Jan 19	Budget	% of Budget
Ordinary Income/Expense			
Income			
5 REVENUE EARNED			
Total 5000 · Revenue - government agencies	86,739.49	111,600.00	77.72%
Total 5100 · Revenue - program related sales	7,796.09	18,000.00	43.31%
Total 5400 · Revenue-nongovernment agencies	714,985.14	1,210,000.00	59.09%
5500 · Revenue - Electricity Sales			
Total 5510 · Electricity Sales	27,216,543.56	51,940,000.00	52.4%
5580 · Uncollectable Accounts	-81,676.00	-160,000.00	51.05%
Total 5500 · Revenue - Electricity Sales	27,134,867.56	51,780,000.00	52.4%
5 REVENUE EARNED - Other	5,000.00		
Total 5 REVENUE EARNED	27,949,388.28	53,119,600.00	52.62%
Total Income	27,949,388.28	53,119,600.00	52.62%
Expense			
Total 6 WHOLESALE POWER SUPPLY	22,913,049.59	39,880,000.00	57.46%
Total 7 PERSONNEL EXPENSES	1,312,299.84	2,253,700.00	58.23%
Total 8.1 FACILITIES AND OPERATIONS	155,117.62	211,400.00	73.38%
Total 8.2 COMMUNICATIONS AND OUTREACH	64,361.18	108,200.00	59.48%
Total 8.3 TRAVEL AND MEETINGS	27,589.56	48,000.00	57.48%
8.4 PROFESSIONAL & PROGRAM SRVS			
8400 · Regulatory	33,585.00	94,600.00	35.5%
8410 · Contracts - Program Related Ser	75,349.02	427,200.00	17.64%
8420 · Accounting	17,500.00	55,000.00	31.82%
8430 · Legal	114,095.09	85,000.00	134.23%
8450 · Wholesale Services - TEA	339,468.43	585,000.00	58.03%
8460 · Procurement Credit - TEA	405,104.57	800,000.00	50.64%
8470 · Data Management - Calpine	582,418.65	1,100,000.00	52.95%
Total 8.4 PROFESSIONAL & PROGRAM SRVS	1,567,520.76	3,146,800.00	49.81%
Total 8.5 PROGRAM EXPENSES	371,558.69	1,268,000.00	29.3%
Total 8.6 INCENTIVES & REBATES	262,411.63	460,000.00	57.05%
Total 9 NON OPERATING COSTS	365,317.69	565,800.00	64.57%
Total Expense	27,039,226.56	47,941,900.00	56.4%
Net Ordinary Income	910,161.72	5,177,700.00	17.58%
Reserve Contributions	2,500,000.00	3,000,000.00	83.33%
Net Income	**-1,589,838.28**	**2,177,700.00**	**-73.01%**

REDWOOD COAST EnergyAuthority

STAFF REPORT

Agenda Item # 3.4

AGENDA DATE:	March 28, 2019
TO:	Board of Directors
PREPARED BY:	Richard Engel, Director of Power Resources
SUBJECT:	DG Fairhaven Contract Amendment No. 2

SUMMARY

In January 2019, the Board authorized the Executive Director to develop and execute an amendment to RCEA's agreement with DG Fairhaven Power, LLC, renewing the agreement for a 12-month period beginning March 1, 2019. That amendment was subsequently developed and was executed on February 28, 2019. In the course of discussions, DG Fairhaven management requested an adjustment in the agreement's Green Attribute Price associated with Surplus Delivered Energy. After consulting with staff at The Energy Authority (TEA), RCEA staff negotiated with DG Fairhaven to set this price at $17.00 per megawatt-hour (MWh), an increase from the current value of $14.50. The proposed new value is in line with current bid prices of Portfolio Content Category 1 (in-state) Renewable Energy Certificates (RECs).

Because this represents a potential increase in contract costs, staff is returning to the Board to consider this proposed amendment.

FINANCIAL IMPACTS

RCEA's contract with DG Fairhaven sets a base price that RCEA pays DG Fairhaven for generation up to a set contract capacity, equivalent to operating the facility at a constant output of 10 megawatt (MW). During the current contract renewal period (March 2019-February 2020), this price is $65 per MWh in certain months when the plant is providing resource adequacy value as part of the contract, and $59 in other months when that value has previously been committed to another buyer.

Per the contract, additional energy (i.e., Surplus Delivered Energy) produced in any month is compensated at the California Independent System Operator's (CAISO) weighted average electricity price for that month, plus a Green Attribute Price to compensate DG Fairhaven for the additional value of renewable energy over "brown" power. This Green Attribute Price is proposed to be adjusted to $17.00 per MWh, in keeping with recent changes in the market value of RECs.

It should be noted that, in its first twelve-month contract period, DG Fairhaven did not produce any Surplus Delivered Energy. If this pattern continues in the current contract period, the proposed change will have no financial impact.

As a hypothetical extreme scenario, if the facility were to operate at its maximum output (Pmax in the contract) of 16.75 MW 24 hours a day, in a 30-day month it could produce 4,860 MWh of Surplus Delivered Energy. The proposed $2.50/MWh increase could add $12,150 to RCEA's

monthly energy procurement costs. This would represent about a 4% increase over DG Fairhaven's average monthly invoice during 2018. Part of this cost could be recovered by re-selling surplus RECs on the short-term market. However, this scenario is deemed unlikely, based on the plant's operating history to date.

RECOMMENDED ACTION:

Authorize the Executive Director to execute the attached amendment to the power purchase agreement with DG Fairhaven Power, LLC changing the Green Attribute Price associated with Surplus Delivered Energy from $14.50 per megawatt-hour to $17.00 per megawatt-hour.

ATTACHMENT

Amendment No. 2 to RCEA's Power Purchase Agreement with DG Fairhaven Power, LLC

AMENDMENT No. 2 TO
POWER PURCHASE AGREEMENT
(DG Fairhaven Power, LLC)

This is a second amendment ("Amendment") to that certain Power Purchase Agreement ("PPA") made by and between the Redwood Coast Energy Authority ("Buyer") and DG Fairhaven Power, LLC ("Seller") on February 12, 2018, amended on March 1, 2019 (the PPA and Amendment are collectively referred to herein as the "PPA"). This Second Amendment is effective April 1, 2019.

RECITALS

WHEREAS, the parties desire to revise the PPA to adjust the Green Attribute Price.

NOW THEREFORE, in consideration of the mutual covenants, conditions and terms recited herein and made a material part hereof, the parties agree as follows:

1. **Green Attribute Price**. Section C of the Cover Sheet is here by replaced by the following:

"C. Contract Price

The Contract Price for each MWh of Product as measured by Delivered Energy shall be as shown:

Time Period	Contract Price
March 1, 2019 – March 31, 2019	$65.00
April 1, 2019 – December 31, 2019	$59.00
January 1, 2020 – February 29, 2020	$65.00

The Contract Price for each MWh of Product as measured by Surplus Delivered Energy shall be Energy Price plus Green Attribute Price. "Energy Price" means the weighted average CAISO price associated with Surplus Delivered Energy for each Delivery Month

"Green Attribute Price" means the $17.00 per MWh payment for Green Attributes associated with Surplus Delivered Energy conveyed to Buyer in accordance with the terms of this Agreement."

2. **Ratification of Agreement**. The terms and conditions of the Agreement, including all exhibits and attachments, are ratified in their entirety except to the extent inconsistent with the terms and provisions of this Amendment. In the event of such inconsistency, this Amendment shall control.

IN WITNESS WHEREOF, the parties have executed this Amendment No.2 effective as of the date written above.

(*Signatures on following page*)

D.G. FAIRHAVEN POWER, LLC:

By: _____ Date: _____
Name:
Title:

REDWOOD COAST ENERGY AUTHORITY:

By: _____ Date: _____
Name:
Title:

Approved as to form:

_____ Date: _____
Nancy Diamond, General Counsel

REDWOOD COAST EnergyAuthority

STAFF REPORT
Agenda Item # 5.1

AGENDA DATE:	March 28, 2019
TO:	Board of Directors
PREPARED BY:	Matthew Marshall, Executive Director
SUBJECT:	Offshore Wind Interconnection Study

SUMMARY

One of the critical requirements for moving forward with the development of an offshore wind project is completing a grid interconnection study with the California Independent System Operator (CAISO). Through a multi-year, multi-phase study process CAISO evaluates the grid impacts of connecting the proposed project to the electricity transmission grid and determines what grid upgrades will be required for the project to be approved.

In April of 2018 RCEA and its offshore wind development partners (EDP Renewables, Aker Solutions, and Principle Power) began the CAISO study process and equally cost-shared the initial phase-1 $400,000 study fee/deposit to CAISO. RCEA and its partners received the phase-1 results from CASIO, which preliminarily indicate the feasibility of the projects potential viability.

The phase-1 study results identify transmission system impacts caused by the project, necessary system upgrades, associated costs assigned to the project, and the amount of the financial security posting, calculated as a percentage of upgrades, to be paid by the project to proceed to phase 2 of the of the interconnection study process.

If the project team does not post this financial security then the project would drop out of the CAISO process and lose its place in the interconnection queue (it would have to reapply and start over from the beginning of the process in a future year's cohort of projects).

FINANCIAL IMPACT

If RCEA wishes to continue to participate in the cost-sharing of the CAISO study process, RCEA would be asked to contribute $273,500 toward the study costs.

Additional details on possibly participating in this further cost-sharing will be provided at the Board meeting.

STAFF RECOMMENDATION

Consider approval of expenditure of $273,500 toward the Redwood Coast Offshore Wind Project's CAISO interconnection process phase-2 financial security posting and authorize the Executive Director to execute any associated documents.

Public Comment

for Agenda Item # 5.1
Offshore Wind Project
CAISO Grid Interconnection Study

From:	Sheri L Woo
To:	Matthew Marshall; Lori Taketa
Subject:	Fwd: Please don't authorize expenditure for CAISO interconnection study, for offshore wind
Date:	Wednesday, March 27, 2019 11:11:57 AM

Hi, this for public comment.
Thanks, Sheri

---------- Forwarded message ---------
From: [redacted]
Date: Tue, Mar 26, 2019, 4:41 PM
Subject: Please don't authorize expenditure for CAISO interconnection study, for offshore wind
To: <efennell@co.humboldt.ca.us>, <dmiller@trinidad.ca.gov>, <sdaugherty@bluelake.ca.gov>, <aallison@ci.eureka.ca.gov>, <dglaser@ci.fortuna.ca.us>, <wilsonf@cityofriodell.ca.gov>, <woo@hbmwd.com>, Robin Smith <cityclerk@ci.ferndale.ca.us>

The RCEA agenda for this month includes Old Business

"5.1 Consider approval of expenditure of $273,500 toward the Redwood Coast Offshore Wind Project's CAISO interconnection process phase-2 financial security posting and authorize the Executive Director to execute any associated documents."

Here's why authorization would be a bad idea:

There's been no credible feasibility study of offshore wind here;
In a feasibility study, CAISO interconnection evaluation is one of the last steps, not the first;
Floating offshore wind in Europe has been quite expensive (Hywind in Scotland came in at capacity cost of $8800/kW compared with US on-shore costs of $1600/kW in 2017) with most of that difference in material cost;
Floating offshore wind trials in Europe have no long term track record;
Our harbor isn't deep enough for the equipment necessary;
Better offshore wind resources are further down the coast;
Terra-Gen's onshore wind above Ferndale is clearly more economic, and those developers know what they are doing;
If offshore wind here were a good idea we could find developers who know what they are doing to come and do a feasibility study.

I strongly support renewable energy and have worked in wind and solar since 1985, but when so many better ideas are available I do not support uneconomic ones.

This interconnection evaluation is the equivalent of paying to design a hydrogen powered train for East-West Rail.

RCEA has a wonderful track record as a retail agency helping Humboldt County residents, and I hope it will continue to do that.

Give me a call if I can clarify further,

John Schaefer
[redacted]

REDWOOD COAST EnergyAuthority

STAFF REPORT
Agenda Item # 6.1

AGENDA DATE:	March 28, 2019
TO:	Board of Directors
PREPARED BY:	Lori Biondini, Director of Business Planning and Finance
SUBJECT:	RCEA Fiscal Year 2018-2019 Budget Mid-Year Adjustment

SUMMARY

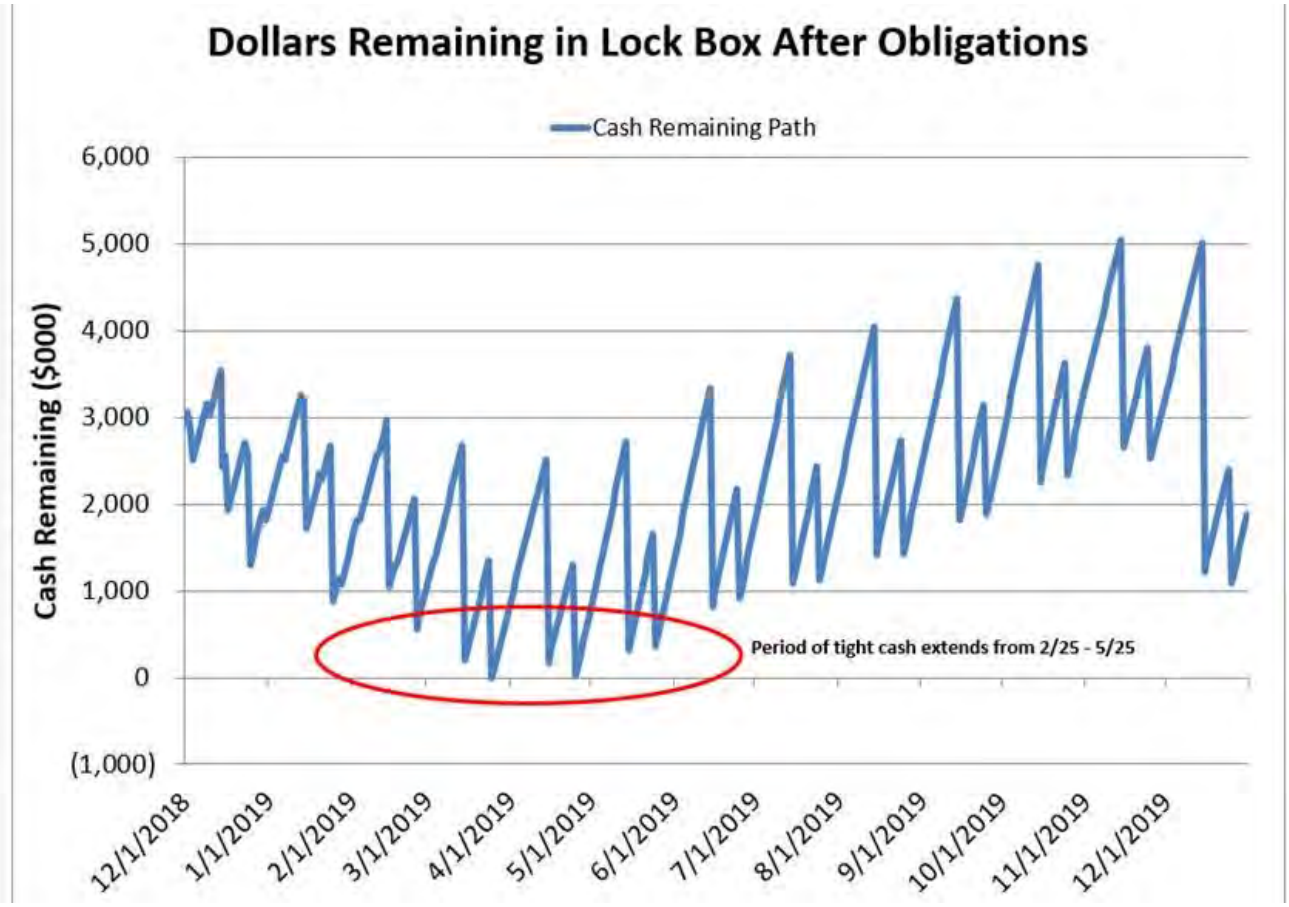
Attached is the proposed mid-year adjustment to the 2018-19 RCEA annual budget. Only one substantive adjustment of the adopted budget is necessary. All other revenue and expense line items are on-track to be within their budgeted limit.

Some items of note:

1. RCEA has exceeded the budgeted amount for Legal Fees under the Professional and Program Services expense category by 34% and anticipates continuing to require regular legal support through General Counsel and two additional firms that provide specialist support to the Prop. 39 funding and the CCE programs. RCEA also incurred HR-related legal expenses this fiscal year. Staff propose adjusting this budget item from $85,000 to $150,000, an increase of $65,000. We are proposing reducing "Contracts – Program Related Services" by $65,000, which was planned for expenses associated with the offshore wind project and is tracking to be underspend for the fiscal year.

2. The Community Choice Energy (CCE) program continues to be RCEA's largest program, with annual electricity sales making up the majority of revenue and wholesale power supply costs making up the majority of expenses. Our electricity sales revenue during the months of November, December and January was $500-700K less than the first four months of the fiscal year, resulting in current revenue at 52% of our budgeted amount, just a little short of the 58% is should be as of January. This is not unexpected as winter electricity rates went into effect in October. This reduction in revenue is combined with higher than usual power supply costs and additional renewable energy credit settlements for previous purchases that came due in January. According to a cash-flow analysis prepared by The Energy Authority (see graph below), this dip is expected to last through May 2019. As a result of our deposit control account ("lock box") balance nearing zero, a total of $1.75M was moved from the reserve account to the deposit control to cover power supply expenses in February (not reflected on the current financial statements). Because RCEA has a commitment with TEA to maintain minimum balances in these two accounts, staff deliberated with TEA staff before moving funds, and TEA confirmed that the reserve account is there to serve this exact purpose. Program forecasts are still positive, suggesting that net income will achieve the minimum CCE reserve requirement of $6 million next year as well as making additional progress toward the

targeted $35 million in total rate-stabilization/contingency reserve funds. This is assuming that RCEA does not make any rate changes until May, and that the 2019 PCIA change will not go into effect until May.



3. The 2018-19 Budget does not include expenses related to the equipment and construction costs associated with the Airport Microgrid Project. As mentioned in the accompanying staff report when the budget was approved, some costs will be incurred this fiscal year. We now know that these will include:
    a. ~$80K to Schweitzer Engineering Laboratories upon reaching the first milestone of their contract, anticipated to be this month.
    b. $10,800 Interconnection Study Fee deposit to PG&E.

    Both payments will be reimbursed from the CEC grant award.

RECOMMENDED ACTION

Adopt proposed FY18-19 Budget Mid-Year Adjustment with revised FY18-19 Budget Totals.

ATTACHMENTS

Proposed FY18-19 Budget Mid-Year Adjustment

Redwood Coast Energy Authority
Proposed FY18-19 Budget Mid-Year Adjustment

	Total 2018-19 Budget	Proposed Mid-Year Adjustment	Proposed Revised Total 2018-19 Budget
Ordinary Income/Expense			
REVENUE EARNED			
Total Revenue - government agencies	111,600	-	111,600
Total Revenue - program related sales	18,000	-	18,000
Total Revenue-nongovernment agencies	1,210,000	-	1,210,000
Electricity Sales Revenue			
Electricity Sales - Retail Revenue	51,940,000	-	51,940,000
Electricity Sales - Uncollectable Accounts	(160,000)	-	(160,000)
Total Electricity Sales Revenue	51,780,000	-	51,780,000
Total REVENUE EARNED	53,119,600	-	53,119,600
Gross Revenue	53,119,600	-	53,119,600
Expense			
TOTAL WHOLESALE POWER SUPPLY	39,880,000	-	39,880,000
7 EXPENSES - PERSONNEL	-		
7101 · Screening/Testing Services	600	-	600
7102 · Safety	1,000	-	1,000
7103 · Staff Training and Development	21,000	-	21,000
PERSONNEL EXPENSES	2,253,700	-	2,253,700
FACILITIES AND OPERATIONS	211,400	-	211,400
COMMUNICATIONS AND OUTREACH	108,200	-	108,200
TRAVEL AND MEETINGS	48,000	-	48,000
PROFESSIONAL AND PROGRAM SERVICES			
Internal inter-program funding	-	-	-
Contracts - Program Related Services	427,200	(65,000)	362,200
Wholesale Services - TEA	585,000	-	585,000
Procurement Credit - TEA	800,000	-	800,000
Data Management - Calpine	1,100,000	-	1,100,000
Regulatory	94,600	-	94,600
Accounting	55,000	-	55,000
Legal	85,000	65,000	150,000
PROFESSIONAL AND PROGRAM SERVICES	3,146,800	-	3,146,800
PROGRAM EXPENSES	1,268,000	-	1,268,000
INCENTIVES AND REBATES	460,000	-	460,000
NON OPERATING COSTS	565,800	-	565,800
Total Expense	47,941,900	-	47,941,900
RESERVE REQUIREMENT CONTRIBUTIONS	3,000,000	-	3,000,000
Net Income	2,177,700	-	2,177,700

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REDWOOD COAST EnergyAuthority

STAFF REPORT
Agenda Item # 6.2

AGENDA DATE:	March 28, 2019
TO:	Board of Directors
PREPARED BY:	Patrick Owen, Manager, Human Resources & Workforce Development
SUBJECT:	Salary Survey Update

SUMMARY

Please find attached an updated salary survey (Attachment A), which is required to be prepared and presented to the Board of Directors every two years, as per the Compensation Policy adopted by the Board at its December 2016 meeting. The original December 2016 salary survey was prepared in consultation with HR subject matter expert, Don Turko, and was based on comparisons made to "Benchmark Classifications" at "Labor Market Agencies."

A few of the benchmark classifications at the comparison public agencies have had job title changes – please refer to the footnotes at the bottom of page 2 of the attachment.

Reviewers of the data will see that over the past ~26 months since the original survey, the benchmark classifications have seen salary increases between roughly 4% and 14%; during this same period, the federal Bureau of Labor Statistic's Consumer Price Index – All Urban Consumers, West Region (CPI-W) has increased by 6.7%.

FINANCIAL IMPACT

No impact at this time. Staff may propose a revised RCEA salary schedule based on the updated survey as part of the upcoming fiscal year budget development process.

STAFF RECOMMENDATION

Receive salary survey report.

ATTACHMENTS:

Attachment A – March 2019 Salary Survey

Attachment B – RCEA Compensation Policy

UPDATE: Salary Survey of Benchmark Classifications at RCEA's Labor Market Agencies

Originally presented to RCEA Board 12/12/16, *updated 3/20/19*

Figures represent base pay only; while RCEA offers comparable insurance benefits to other local public agencies, it should be noted that some of these Labor Market Agencies participate in CalPERS which provides a significantly greater value than RCEA's basic 3% retirement plan matching contribution to deferred compensation plan

Title	Organization	Dec 2016 Midpoint of range or single point	***Mar-19*** *Midpoint of range or single point*	% increase from previous
Assistant/Associate/Coordinator				
Student/Grad Student Assistant [1]	HSU Schatz Energy Research Center	$36,628.80	$31,106.40	-15.1%
Administrative Assistant	City of Eureka	$33,201.00	$34,907.50	5.1%
Administrative Support	North Coast Air Quality Management Distric	$30,341.50	$31,567.38	4.0%
Clerk I	Trinity County PUD	$37,876.50	$42,993.60	13.5%
Customer Services Representative I/II	City of Ukiah Electric Utility	$38,158.44	$41,993.82	10.1%
Administrative Secretary	County of Humboldt	$37,719.42	$39,062.40	3.6%
AVERAGE		**$35,654.28**	**$36,938.52**	**3.6%**
Current RCEA Midpoint (step 5)		**$35,000.00**		
Specialist/Senior Specialist				
Admin				
Customer Service & Accounting/HR Assistant	Humboldt Bay Municipal Water District	$48,124.00	$51,822.00	7.7%
Executive Assistant & Board Secretary	Humboldt Bay Municipal Water District	$50,528.00	$54,408.00	7.7%
Assistant To The APCO & Clerk Of The Board	North Coast Air Quality Management Distric	$61,008.00	$63,473.06	4.0%
IT Technician I/II	County of Humboldt	$55,791.48	$57,782.40	3.6%
Clerk II	Trinity County PUD	$54,538.00	$58,323.20	6.9%
Clerk III	Trinity County PUD	$61,765.50	$66,071.20	7.0%
Accounting & HR Specialist	Humboldt Bay Municipal Water District	$55,723.00	$60,006.00	7.7%
Programatic				
Project Specialist (lower range) [2]	Mendocino Energy Watch Program	$46,227.64	$46,227.64	0.0%
Project Specialist (upper range) [2]	Mendocino Energy Watch Program	$58,531.20	$58,531.20	0.0%
Burn Permit Coordinator	North Coast Air Quality Management Distric	$61,008.00	$63,473.06	4.0%
Electric Utility Program Coordinator	City of Ukiah Electric Utility	$51,548.76	$54,950.94	6.6%
Utility Services Team Leader	City of Ukiah Electric Utility	$50,291.34	$53,610.54	6.6%
Operations/Customer Service Specialist	Humboldt Bay Municipal Water District	$55,723.00	$60,006.00	7.7%
Program & Regulatory Analyst	Humboldt Bay Municipal Water District	$60,942.00	$67,092.72	10.1%
Research Engineer	HSU Schatz Energy Research Center	$51,823.20	$77,022.00	48.6%
Customer Care Specialist	Sonoma Clean Power	$62,500.00	$62,500.00	0.0%
AVERAGE		**$55,379.57**	**$59,706.25**	**7.8%**
Current RCEA Midpoint (Specialist step 8)		**$55,000.00**		
Technician/Senior Technician				
Sustainability and Energy Efficiency Specialist I	Mendocino Energy Watch Program	$58,791.20	$58,791.20	0.0%
Sustainability and Energy Efficiency Specialist II	Mendocino Energy Watch Program	$74,432.80	$74,432.80	0.0%
Inspector I-III	North Coast Air Quality Management Distric	$61,008.00	$63,473.06	4.0%
Air Pollution Specialist	North Coast Air Quality Management Distric	$61,008.00	$63,473.06	4.0%
Electrical Engineering Technician I-III	City of Ukiah Electric Utility	$71,433.72	$81,524.58	14.1%
Utility Worker	Trinity County PUD	$70,034.00	$87,349.60	24.7%
AVERAGE		**$66,117.95**	**$71,507.38**	**8.2%**
Current RCEA Midpoint (Tech step 8)		**$65,000.00**		

Figures represent base pay only; while RCEA offers comparable insurance benefits to other local public agencies, it should be noted that some of these Labor Market Agencies participate in CalPERS which provides a significantly greater value than RCEA's basic 3% retirement plan matching contribution to deferred compensation plan

			Mar-19	
Title	**Organization**	**Dec 2016 Midpoint of range or single point**	***Midpoint of range or single point***	**% increase from previous**
Manager/Senior Manager				
Admin				
Controller	North Coast Air Quality Management Distric	$61,008.00	$63,473.06	4.0%
Administrative Assistant [3]	Trinity County PUD	$76,108.00	$77,000.01	1.2%
Deputy (Assistant) Finance Director	City of Eureka	$79,314.00	$81,089.50	2.2%
Billing & Customer Service Manager	City of Ukiah Electric Utility	$65,673.97	$68,301.00	4.0%
Public Works Operations Manager	City of Eureka	$68,514.00	$70,172.50	2.4%
Programatic				
Development and Sustainability Manager I	Mendocino Energy Watch Program	$79,154.40	$79,154.40	0.0%
Special Projects Manager	City of Eureka	$79,314.00	$81,089.50	2.2%
Project Manager	City of Eureka	$68,514.00	$70,172.50	2.4%
Deputy Public Works Director	City of Eureka	$83,280.00	$85,236.00	2.3%
Permits and Planning Manager	North Coast Air Quality Management Distric	$88,793.00	$84,058.57	-5.3%
Compliance and Enforcement Manager	North Coast Air Quality Management Distric	$82,308.00	$84,058.57	2.1%
Senior Research Engineer	HSU Schatz Energy Research Center	$78,041.60	$93,666.00	20.0%
Construction Projects Manager	County of Humboldt	$75,447.96	$78,124.80	3.5%
AVERAGE		**$75,805.46**	**$78,122.80**	**3.1%**
Current RCEA Midpoint (Manager step 8)		**$75,000.00**		
Director				
Administrative				
Business Manager	Humboldt Bay Municipal Water District	$84,732.00	$91,242.00	7.7%
Finance Director	City of Eureka	$106,296.00	$108,830.00	2.4%
Chief Financial Officer	Trinity County PUD	$82,890.00	$119,869.15	44.6%
Office Administrator	Trinity County PUD	$93,902.00	$105,307.96	12.1%
Compliance Manager	Sonoma Clean Power	$120,000.00	$135,000.00	12.5%
Programatic				
Development and Sustainability Manager II	Mendocino Energy Watch Program	$100,193.60	$100,193.60	0.0%
Assistant Utility Director	City of Ukiah Electric Utility	$109,363.20	$141,694.56	29.6%
Electrical Superintendent [4]	City of Ukiah Electric Utility	$98,208.60	$128,813.28	31.2%
Superintendent	Humboldt Bay Municipal Water District	$93,411.00	$100,590.00	7.7%
Electric Superintendant	Trinity County PUD	$160,914.00	$160,154.80	-0.5%
Director of Power Services	Sonoma Clean Power	$160,000.00	$160,000.00	0.0%
Director of Programs	Sonoma Clean Power	$135,000.00	$135,000.00	0.0%
AVERAGE		**$112,075.87**	**$123,891.28**	**10.5%**
Current RCEA Midpoint (step 5)		**$100,000.00**		
Executive Director				
General Manager	Humboldt Bay Municipal Water District	$122,400.00	$134,328.00	9.7%
Air Pollution Control Officer	North Coast Unified Air Quality District	$138,320.00	$124,480.00	-10.0%
General Manager	Trinity County Public Utility District	$202,774.00	$225,050.80	11.0%
Electric Utility Director	City of Ukiah Electric Utility	$144,000.00	$170,070.72	18.1%
Chief Executive Officer	Sonoma Clean Power	$205,000.00	$275,000.00	34.1%
AVERAGE		**$162,498.80**	**$185,785.90**	**14.3%**
Current RCEA Midpoint (step 5)		**$130,000.00**		

Footnotes:

[1] Salary shown for Dec 2016 is for Administrative Assistant

[2] Position(s) formerly titled "Scheduler-Planner Specialist I & II"

[3] Salary shown for Dec 2016 is for Assistant Office Administrator

[4] Position formerly titled Electrical Supervisor

REDWOOD COAST ENERGY AUTHORITY

EMPLOYEE COMPENSATION POLICY

1. Purpose

The purpose of this policy is to define the philosophy of compensation for the Redwood Coast Energy Authority (hereinafter the Authority) for regular employees, and to specifically define how salary increases for various job classifications are determined.

The Compensation Policy specifically addresses:

- Objectives of the Policy
- Statement of Compensation Policy
- Basis for Determination of Salary and Salary Changes
- Salary Surveys
- Internal Alignment
- Review of Performance and Salary
- Procedures

Specific clarification of Performance Evaluation, Employee Classifications, and all matters pertaining to employee benefits are addressed under separate policies.

2. Definitions

a. Average of the Salary Survey

The average of the salary survey is the average of the salary figures for all the agencies surveyed at the mid-point of the salary range.

b. Labor Market Agencies

The Authority recognizes one labor market for all of its regular positions. The labor market includes the following agencies:

1. Humboldt Bay Municipal Water District
2. City of Eureka
3. County of Humboldt
4. North Coast Unified Air Quality Management District
5. HSU Schatz Energy Research Center
6. Mendocino Energy Watch (administered by Community Development Commission of Mendocino County)
7. Trinity County Public Utility District
8. City of Ukiah Electric Utility
9. Sonoma Clean Power

Additions and/or deletions to the recognized labor market may be made by the Board at a scheduled meeting of the Authority.

c. Benchmark Classification

A benchmark classification is a position or classification which is regarded as representative or comparable from agency to agency and which will serve as the basis for the internal alignment of salaries of related agency classifications. The Executive Director shall determine the benchmark positions to be utilized in any survey.

d. Salary Surveys

A periodic survey of the Labor Market Agencies will be conducted of the designated benchmark classifications at least every two (2) years. The results of the survey, including the collected raw survey data will be shared with the Authority board in a public meeting prior to adoption of changes to the Authority's salary ranges.

e. Merit Increase

A salary increase granted to an employee on the basis of performance that meets or exceeds performance criteria for the job classification.

3. Statement of Policy

In order to attract and retain qualified employees at all levels of the organization, it is the policy of the Authority to maintain fair and competitive salary ranges consistent, within the economic constraints of the Authority, with the labor market in which we compete for talented employees.

a. Statement of Compensation Policy

It is the policy of the Authority to:

i. Establish salary ranges that reflect the value of various jobs, as determined by periodic job evaluation and review, taking into account the duties and levels of responsibility of each job;

ii. Establish salary ranges consistent with the Authority's fiscal ability to maintain services consistent with projected revenues and Board direction;

iii. Survey other agencies who employ similar positions relative to salary and to adjust salary ranges when warranted by changing economic and competitive factors, including periodic salary surveys;

iv. Encourage superior performance by adjusting the salary of each employee on the basis of the quality of individual performance (merit) as determined by performance evaluations;

v. Ensure that compensation is not influenced by race, creed, national origin, color, marital status, age, sex or sexual identity, or disability.

b. Basis for Determination of Salary and Salary Changes

Salary levels will be based upon:

i. The fair and competitive salary ranges adopted by the Authority Board consistent with the economic constraint of the Authority and the labor market. This will be determined by the Board and at its sole discretion after reviewing the local area's consumer price index, salary increases granted by the comparable Labor Market Agencies, and the Authority's ability to maintain organizational services at a level consistent with projected revenues and Board direction.

ii. A periodic (every 2 years) salary survey of benchmark positions within the established labor market to determine if any classifications should be considered for a market adjustment in salary;

iii. Internal Authority classification relationships, and;

iv. All compensation increases within a classification's salary range will be based upon merit.

c. Salary Surveys

The Authority has identified the Labor Market Agencies for benchmark classifications. The biennial salary survey shall identify the "average" level of salary for each benchmark classification paid by the labor market.

d. Internal Alignment

A minimum and maximum salary range is established for each job classification based upon external labor market data and upon the internal alignment of job classifications throughout the Authority. The alignment of the job classification system will be maintained and reviewed on a regular and systemic basis.

e. Review of Performance and Salary

While the performance of each employee is regularly reviewed, overall performance and salary level shall be appraised, in detail, at least once during every twelve (12) month period. The merit of employee performance as reported on such appraisals will determine salary increases to be granted.

Change in pay of an individual employee shall primarily reflect upon competence in the performance of all assigned duties and sustained accomplishment of the objectives and tasks of the position. Performance will be evaluated by those in management having direct supervisory responsibility for the employee and shall be reviewed and approved in accordance with the procedures outlined in the Performance Evaluation Policy.

Specific situations which warrant review of performance and of salary include the following:

i. New Hire/Initial Hire Employees

Before an applicant is hired or an employee promoted to a new or revised position, a job description must be prepared and the position must be evaluated, approved and placed in a salary range. Starting salary will be at the minimum established for the range, with the following exceptions:

- Directors may appoint new employees up to and including 5% above the range minimum, subject to approval of the Executive Director.
- The Executive Director may authorize appointments up to and including the mid-point of the salary range in the event of a recruitment emergency or exceptional qualifications of a candidate.

During the initial employment period, or first twelve (12) months of employment, employees are eligible to receive up to a 5% increase based upon the merit of their performance.

ii. Merit Increases

Employees are eligible to receive up to a 5% salary increase per year based upon the merit of their performance as established in their annual performance evaluation. The merit increase consideration allows an individual employee's salary to increase within the range established for his/her job classification (ie., no more than the maximum salary in the salary range.)

iii. Compensation Adjustments

Employees may receive additional compensation adjustments at such time that the Board determines that classifications and/or salary ranges should be adjusted based upon survey data. However the Board retains the jurisdiction to adjust salary ranges without modifying individual salaries, or to adjust individual salaries only for a portion of the classification (for example limiting the adjustment to employees who have been at the top step of the salary range for more than one year).

iv. Promotion

Employees promoted to a new position in a classification with a higher salary range will be compensated at least at the minimum salary in the new range.

A promoted employee begins a twelve (12) month probationary period in the new classification. During this period, employees are eligible to receive up to a 5% merit increase based upon completion of probation and a performance review with satisfactory or better performance.

v. Out of Class Pay

Subject to the prior written authorization of the Executive Director, employees may be eligible for up to 5% out of class pay for performing the majority of their assigned duties at a level significantly above their current job classification for periods 60 or more days.

4. Procedures for Approval of Salary Adjustments

a. Documentation Required

To ensure that salary adjustments are based upon an individual employee's current performance, proposed personnel actions that result in a change in compensation must include an explanation of the employee's performance in the space provided at the bottom of the Personnel Action Form (PAF).

b. Procedure

i. Supervisors shall evaluate employee performance formally prior to any personnel action that affects salary positively, or negatively. The Personnel Action Form should be prepared and forwarded to the Director responsible for Human Resources for the Authority. It is important that proposed compensation increases are not discussed with the employee until after the Director responsible for Human Resources has reviewed the PAF for accuracy and consistency with the employee's salary, performance history, and policy.

ii. The Director responsible for Human Resources will receive and review all Employee PAFs and initiate further discussion with the supervisor if necessary. If the PAF documents are in order, the supervisor will be authorized to schedule a meeting with the employee to discuss both their performance and the recommended salary adjustments and effective date.

iii. The completed evaluation form, signed by the employee and supervisor shall be returned to Human Resources for processing and permanent placement in the employee's personnel file.

REDWOOD COAST EnergyAuthority

STAFF REPORT

Agenda Item # 6.3

AGENDA DATE:	March 28, 2019
TO:	Board of Directors
PREPARED BY:	Lou Jacobson, Demand Side Management Director
SUBJECT:	RCEA Energy Efficiency Programs Update

SUMMARY

Demand Side Management Director Lou Jacobson will provide an update on RCEA's Energy Efficiency programs.

RECOMMENDED ACTION

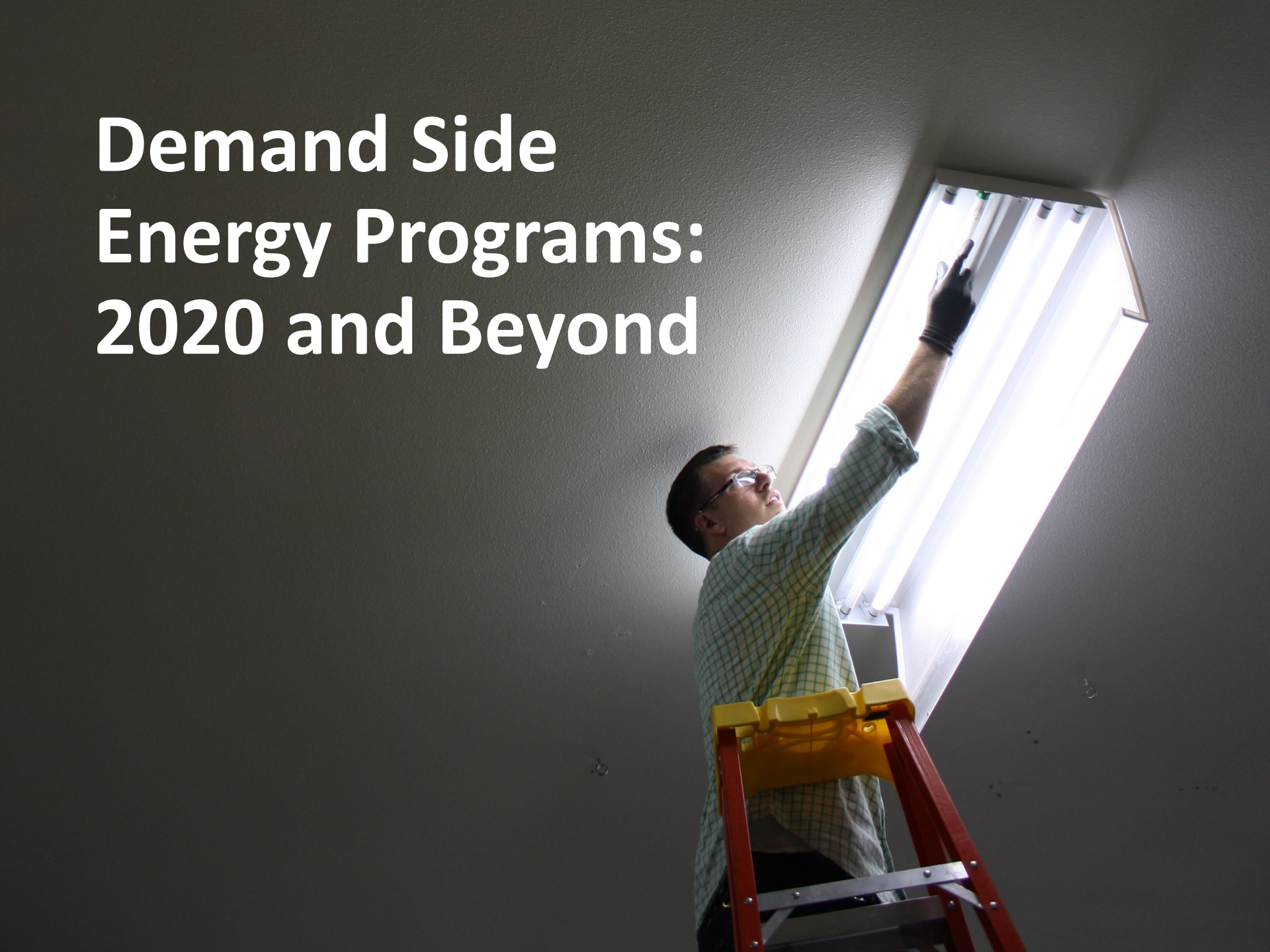
None. Information only.

ATTACHMENTS

Director Jacobson will present a powerpoint report at Thursday's Board meeting.

Materials Received After Packet Publication

Demand Side Energy Programs: 2020 and Beyond



REDWOOD COAST Energy Authority

Programs: 2020 and Beyond

- Citizen Sourcing
- Energy Watch
- Program Administrator Status
- Rural Regional Energy Network

REDWOOD COAST
EnergyAuthority

Citizen Sourcing Update

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Energy Watch: 2020 and Beyond

- PG&E Local Government Partnership
- 3rd Party Implementation Request for Abstracts and Proposals
- Additional Bridge Year

REDWOOD COAST energy watch

REDWOOD COAST Energy Authority

Program Administrator (PA) Status

- Lancaster Choice Energy Model (Election/PA Lite)
  - Administration through an advice letter = Election
  - Relatively short lead-time (An estimated and Approximate 6-9 Months)
  - Non-Duplicative to Investor Owned Utility programs
  - Limited funding and service scope
- Marin Clean Energy Model (Application/Full PA)
  - Administration through Standard Regulatory Pathway = Application
  - Long lead time (An estimated and approximate 18-24 Months)
  - Full funding and service scope

REDWOOD COAST Energy Authority

Program Administrator (PA) Efforts to Date

- **Election**
  - Reviewed Lancaster's efforts
  - Calculated available funds
  - Have had initial conversations with regulators
  - Ran initial portfolio tests to determine reasonableness of cost-effectiveness requirements

- **Application**
  - No effort to date

REDWOOD COAST Energy Authority

Rural Regional Energy Network (R-REN)

- Regional Energy Networks (CPUC Decision 12.11.015)
  - Should represent a large group of customers with similar characteristics by at minimum geography or demography. Proposals by one or two cities/counties would not necessarily constitute a REN
  - Proposal must be made by a local government entity

- Threshold for Review
  - Must focus on activities that utilities cannot or do not intend to undertake
  - Pilot activities where there is no current utility program offering and where scalability may be possible
  - Pilot activities in hard to reach markets, whether or not there is a current utility program that may overlap

REDWOOD COAST Energy Authority

R-REN & the Hard to Reach Working Group (RHTR)

- Association of Monterey Bay Area Governments
- Community Development Commission of Mendocino County
- High Sierra Energy Foundation
- Kern County
- Redwood Coast Energy Authority
- San Juaquin Valley Clean Energy Organization
- San Luis Obispo County
- Sierra Business Council
- Ventura County

RHTR Working Group Jurisdictions

REDWOOD COAST Energy Authority

R-REN Efforts to Date

- Participation on RHTR R-REN subcommittee
- Coordination with regulators
- Passed initial threshold for review test
- Beginning energy efficiency stakeholder socialization
- March 27th 2019, Commission ruled to seek comments on the future of RENs
  - Comments due April 16th
  - Reply comments due April 26th

REDWOOD COAST EnergyAuthority

2020 Options Compared

Table 1: Programmatic Factors Across CPUC Funding Channels

	PG&E 3rd Party Solicitations	Elect PA Status	Apply for PA Status	R-REN Formation
Ready by January 1st 2020	X/?	?		
Ready by July 1st 2020		X		?
Ready by January 1st 2021		X	?	?
Exploration	X	X		X
General Programmatic Stability	?	X	X	X
Total Resource Cost Requirements	?	X	X	
Non-Duplicative	X	X		X
Must pass Threshold for Review Tests				X
Contracted Directly with PG&E	X			
PG&E as Fiscal Agent		X	X	
IOU as Fiscal Agent				X

X = Likely

? = Uncertain but possible

REDWOOD COAST Energy Authority

A Key 2020 Decision Point is Approaching

- Key Questions
  - Do we want to continue to pursue the PG&E RFA/P process?
  - Do we want to become a Program Administrator?
  - Do we want to pursue both?

- Staff Recommendation
  - RCEA Board approve the election of Program Administrator status in parallel to,
  - Continuing to participate in the PG&E solicitation process, and
  - Continuing the exploration and potential development of a Rural REN.

REDWOOD COAST Energy Authority

Questions?

Lou Jacobson
Director of Demand Side Management | Redwood Coast Energy Authority
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REDWOOD COAST EnergyAuthority

STAFF REPORT

Agenda Item # 6.4

AGENDA DATE:	March 28, 2019
TO:	Board of Directors
PREPARED BY:	Lori Biondini, Director of Business Planning and Finance
SUBJECT:	Financial Audit Professional Services Request for Proposals

SUMMARY

For the past five years RCEA has been engaged with David L. Moonie & Co., LLC to complete our annual financial audits. When RCEA launched the Community Choice Energy program, David L. Moonie & Co., LLC agreed to continue performing audit services for fiscal year (FY) 2016-17 but indicated that they were wary of the additional auditing responsibility/workload that the new CCE program would require. Having declined to perform our FY 2017-18 financial audit, in addition to the fact that we have extended their engagement two years beyond their original three-year commitment, staff is recommending issuing a request for proposals to solicit engagement with another qualified firm for professional auditing services.

Staff is proposing to direct this process and complete the review of any submitted proposals. Based on this review, staff would recommend to the Board Finance Subcommittee the proposal that best meets RCEA's needs.

FINANCIAL IMPACTS

A modest amount of staff time is needed to direct the RFP process and review submitted proposals. If the process is successful, staff will recommend pursuing a fee-for-services engagement.

RECOMMENDED ACTION:

Authorize staff to issue a request for proposals for professional financial audit services and complete a review of submitted proposals and authorize the Executive Director to contract with the selected respondent and execute all associated documents following review and approval by the RCEA Board Finance Subcommittee and RCEA Legal Counsel.

Alternatively, if the full Board wishes to review proposals then a recommendation from the Finance Subcommittee could be presented for a decision by the full Board at the April or May Board meeting.

ATTACHMENT

Redwood Coast Energy Authority Request for Proposal for Professional Auditing Services

REDWOOD COAST ENERGY AUTHORITY

Request for Proposal for Professional Auditing Services

INTRODUCTION

The Redwood Coast Energy Authority is soliciting proposals from qualified certified public accounting firms to audit its financial statements for a three-year period, beginning with the fiscal year ending June 30, 2018 (FY 2017-18, FY 2018-19, and FY 2019-20). The contract may be canceled if the Authority determines the audit services to be unsatisfactory.

Proposals must be received by 5:00 pm on April 19, 2019. Proposals should be submitted to the Redwood Coast Energy Authority: Finance Subcommittee at 633 3rd Street, Eureka CA 95501. Questions may be directed to the Lori Biondini, Director of Business Planning and Finance, lbiondini@redwoodenergy.org, (707)269-1700.

Background

The Redwood Coast Energy Authority (RCEA) was formed in 2003 as a Joint Powers Authority (JPA), a local government agency of the State of California. RCEA is governed by a nine-member Board of Directors comprised of representatives designated by the governing body of each of its member agencies who are appointed to serve for terms of one or more years.

RCEA's mission is to develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient and renewable resources available in the region. It offers a wide range of energy efficiency and renewable energy services to all customer sectors in Humboldt County. In 2017, RCEA became a community choice aggregator, serving around 93% of electricity customers within its jurisdiction. RCEA has an annual operating budget of approximately $53 million. The agency operates through multiple funding sources from both public and private sectors, comprised of contracts and grants, with the majority derived from electricity retail sales revenues. RCEA does not currently receive any federal funding awards.

As a JPA, RCEA is required to have its Board approve an operating budget each year. The Board approves a monthly financial report, which presents the monthly and year-to-date financial activity of RCEA (fund balances, receipts, expenditures, and budget vs. actual). More detailed information on RCEA and its finances can be found at https://redwoodenergy.org/about/board-of-directors/ and https://redwoodenergy.org/about/documents/.

The financial staff, under the direction of the Executive Director, includes the Director of Business Planning and Finance responsible for overseeing business and finance activities, the Finance Manager who is responsible for accounts payable, payroll processing and reporting, deposits, and purchasing, a Contract and Grants Specialist responsible for accounts receivable, procurement support, and contracting set-up and processing. RCEA engages the services of the accounting firm of David L. Moonie & Co., LLP, on an as needed basis. RCEA uses QuickBooks as its accounting software and maintains its accounts on an accrual basis. All closing entries and accruals are performed by the accountant, or the Finance Manager under the direction of the accountant. The remainder of RCEA's staff is organized in four other divisions, including Operations, Demand Side Management Programs, Power Resources Programs, and Executive support staff.

Prior Auditor

David L. Moonie & Co., LLP has served as RCEA's auditor for the past five years.

SERVICES REQUIRED – Scope of Work

The selected auditor will be required to complete the following tasks:

1. Audit of RCEA's financial statements for three fiscal years (2017-18 ending June 30, 2018, 2018-19 ending June 30, 2019, 2019-20 ending June 30, 2020). Each annual audit shall be performed in accordance with Government Code section 26909 and the following:
    a. Generally Accepted Government Auditing Standards (GAGAS) in the United States;
    b. Minimum Audit Requirements and Reporting Guidelines for Special Districts from the California Code of Regulations (Title 2, Section 1131.2);
    c. Single Audit Act in accordance with the Office of Management and Budget's Uniform Guidance, if required.
2. Express an opinion as to whether RCEA's financial statements are fairly presented, in all material respects, in conformance with generally accepted accounting principles (GAAP) standards and issue an independent auditors' report stating this opinion.
3. Test internal control over financial reporting and compliance with laws, regulations, contracts or grant agreements in accordance with GAGAS.
4. Apply limited procedures related to the Required Supplementary Information, Management's Discussion and Analysis, and the Supplementary Information. RCEA will be responsible for the preparation of the Management Discussion and Analysis.
5. Prepare a report to the Board of Directors and Management which identifies any control deficiencies, significant deficiencies and material weaknesses and your recommendations for improvements in accounting and administrative controls.
6. Communicate immediately and in writing all irregularities and illegal acts, or indications of illegal acts, of which they become aware, to the Executive Director and Director of Business Planning and Finance.
7. Prepare the annual State Controller's Special Districts Financial Transactions Report.
8. Provide professional assistance and advice as required regarding compliance with applicable financial accounting and reporting standard, including.
9. Attend periodic meetings, including:
    a. Meet with RCEA staff to discuss timing and progress;
    b. Up to two meetings with the RCEA Board's Finance Subcommittee to approve scope and schedule, and one at the conclusion of the audit to present results.
    c. Up to three meetings with RCEA's Board of Directors at a regular business meeting to present the audited financial statements and reports after the completion of each fiscal year audit.
10. Minimize undue interference with RCEA's business operations.

Schedule

Provide an audit plan, including work requested	No later than June 1, 2019
Commence field work	No later than June 30, 2019
Complete field work	No later than September 1, 2019
Final draft Financial Statements presented. Staff will use this document to draft a Management's Discussion and Analysis letter and will provide the auditor with a review draft within 14 days	November 1, 2019
Final copies of audited financial statements issued	No later than November 15, 2019

A similar schedule will be developed for audits of subsequent fiscal years.

KEY DATES – Proposal Evaluation and Selection

Key dates for proposal evaluation and selection are as follows:

Distribution of RFP	April 1
Deadline for submission of questions	5:00pm, PST April 8
Proposal submission	5:00pm, PST April 19
Proposal review	April 22-26
Interviews, as needed	Week of April 29
Recommendation	May 3
Notification and engagement	Week of May 6

Questions

Questions regarding this RFP should be address to Lori Biondini, Director of Business Planning and Finance, at lbiondini@redwoodenergy.org. A copy of the most recent audited financial statements and the Board-adopted 2017-2018 budget are available at

Proposal Submission

Please submit proposals by **5:00pm PST, April 19 2019** electronically to lbiondini@redwoodenergy.org, Attn: Proposal for Professional Auditing Services, or in print to the RCEA offices at 633 3rd Street, Eureka, CA 95501. Late submissions may not be accepted.

Proposal Review and Recommendation

Proposals will be reviewed by a review committee which, at its discretion, may request a meeting with one or more proposers. During the evaluation process, RCEA reserves the right, where it may serve the agency's best interest, to request additional information and clarification from proposers, or to allow the corrections of errors and omissions.

A recommendation on the selection of the proposal best meeting the requirements set forth in this RFP will be forwarded to the RCEA Board of Directors Finance Subcommittee for final approval. The Finance

Subcommittee shall make the final decision as to which firm RCEA will enter into contract negotiations with to perform the requested services. The Finance Subcommittee reserve the right to remove from consideration any or all proposals at its sole discretion.

We will make every effort to administer the proposal process in accordance with the terms and dates discussed in this RFP. However, we reserve the right to modify the proposal process and dates as deemed necessary and reserve the right to not award a contract. RCEA assumes no obligation for any costs incurred by any proposer in preparing the response to this request, attending an interview, or any other activity prior to award of the contract to the selected proposer.

TERMS AND CONDITIONS

Submission of a proposal indicates acceptance by the firm of the conditions contained in this RFP unless clearly and specifically noted in the proposal submitted and confirmed in any resulting contract between RCEA and the selected firm.

Contract

The audit services contract will become effective on the execution of the contract for three (3) fiscal years, with continued engagement beyond the first year based on the following conditions: upon completion of the independent audit reports for each fiscal year, the RCEA Finance Board Subcommittee will evaluate the performance of the audit firm. The performance evaluation may include factors such as:

- Did the firm meet all audit requirements?
- Did the firm maintain an audit schedule, which met specification requirements?
- Were reports and recommendations timely, clear, complete, and fair?
- Were the firm personnel assigned to the audit those identified in the proposal? Did they perform their duties in a professional manner?
- Was the firm responsive to special audit service needs during the year?

Assistance Provided to the Auditor

RCEA staff will be available during the audit period to assist the auditor by providing access and direction to information, documentation, and be available for explanation of all inquiries. RCEA will provide the auditors will reasonable workspace, phone, wireless internet and copier access.

Additional Services

If it should become necessary for RCEA to request the auditor to render any additional services to ether supplement the services requested in this RFP or to perform additional work as a result of the specific recommendations included in any report issued on this engagement, then such additional work shall be performed only if set forth in an addendum to the contract between RCEA and the firm. Any such additional work agreed to shall be performed at the same rates set forth in the schedule of fees and expenses included in the Proposal Data Sheet and the contents of the Technical Proposal.

Payment

Progress payments will be made on work completed during the course of the contract. Interim billings shall cover a period of not less than a calendar month.

Insurance

The auditor shall maintain comprehensive general liability and professional liability coverage in the minimum amount of $1 million minimum for each, and shall provide, prior to execution of a contract, a Certificate of Insurance with RCEA named as additional insured.

PROPOSAL REQUIREMENTS

Cover/Transmittal Page

- Proposing firm's name, address, and phone, and the location of the office from which the work on this audit is to be performed.
- Name(s) of person(s) authorized to represent the proposer, authorized to answer questions and bind the firm, the person(s) title and contact information.
- An affirmative statement that the firm and all assigned key professional staff are properly licensed to practice in California.
- An affirmative statement that it is independent of RCEA as defined by GAGAS.
- A list of any professional relationships involving RCEA for the past five (5) years, together with a statement explaining why such relationships do not constitute a conflict of interest relative to performing the proposed work.
- A statement acknowledging that the firm shall give RCEA written notice of any professional relationships entered into during this period of agreement.

Qualifications

- Provide a description of firm qualifications and experience with respect to auditing local governments or other governmental agencies as well as experience with the preparation of basic financial statements in compliance with the standards outlined in the Scope of Work.
- Provide a list of references for which the firm has performed governmental audits.
- Provide information on the results of any federal or state desk review or field reviews of the firms' audits during the past three (3) years, and the circumstances and status of any disciplinary action taken or pending against the firm during the past three (3) years with state regulatory bodies or professional organizations.
- Provide a description of the qualifications of all personnel who will be assigned to this audit.

Audit Approach

The proposal should include a workplan explaining the audit methodology and timing for each segment of work throughout the fiscal year, including:

- The planned number of hours for auditing staff for each segment
- Any software to be used
- Analytical and sampling procedures used
- Approach to understanding and documenting internal controls
- Approach to determining laws and regulations that will be applicable
- Any identified potential audit problems and special assistance required of RCEA.

Costs and Fees

Please list the total all-inclusive cost of the audit engagement to complete work specified in the Scope of Work section for each fiscal year. Please list fees for additional services and/or applicable billing rate for additional services requested.

Proposals shall contain provisions to the effect that in the event that extraordinary circumstances warrant more intensive and detailed services beyond those in the contractual agreement, the firm shall provide in writing and in advance the reasons for the additional services together with an estimate of costs. All additional work as agreed in advance by RCEA shall be compensated for at the same rate quoted in the proposal.

SELECTION CRITERIA

Proposals will be considered responsive to this RFP if they meet all the following mandatory elements:

- The audit firm is independent, insured and licensed to practice in California.
- The firm has no conflict of interest with any other work to be performed for RCEA.
- The firm has provided references and the results of any state or federal reviews that are indicative of a record of quality audit work.

Responsive proposals will be further evaluated on the following criteria:

- Responsiveness of the proposal to this RFP in its entirety.
- Prior experience in providing auditing services to government agencies comparable to RCEA.
- Qualifications of the firm and assigned staff, as well as the quality of management support.
- Audit approach: whether the proposed workplan is acceptable and presents a thorough understanding of the scope of work; the adequacy of the proposed staffing and techniques; and commitment to the timeline.
- Cost and fees.

REDWOOD COAST EnergyAuthority

STAFF REPORT
Agenda Item # 7.1

AGENDA DATE:	March 28, 2019
TO:	Board of Directors
PREPARED BY:	Mahayla Slackerelli, Account Services Manager
SUBJECT:	Feed-in Tariff

SUMMARY

In 2016, the Board of Directors adopted a Feed-in Tariff (FIT) as a goal in the guidelines for the Community Choice Energy (CCE) program. A FIT was included in the guidelines to encourage the development of individual renewable energy projects of one megawatt or less. At its November 2018 meeting in item 9.6, the Board directed staff to prepare all materials needed for a FIT program and bring these to the Board for approval. This is proposed to be a first come first serve program, with a preference for applicant heterogeneity.

The attached materials constitute an application, tariff and power purchase agreement as well as a list of eligible EnviroStor Brownfields, submitted to the Board for review and approval. With the Board's approval, staff propose to implement the FIT in April.

PRICING

While the framework of the FIT is largely unchanged from the initial staff presentation at the November 2018 Board Meeting, staff's recommendation on pricing has shifted. Staff suggests a starting price of $80/MWh, with $2/MWh price adjustments occurring every two months as needed. The program, as designed, includes a price ceiling of $90/MWh and a price floor of $70/MWh. This is a reduction from the $80-$100 range initially proposed. We believe this adjustment better aligns the tariff with current pricing for long-term renewable energy contracts at this scale, while still offering a reasonably attractive price to stimulate local renewable energy development. The National Renewable Laboratory estimated that for solar projects between 10 kilowatts and two megawatts built in 2018 the levelized cost of energy is $60/MWh to $120/MWh (Fu, Feldman and Margolis, 2018).

In addition to the base rate listed above, this program offers incentives for projects with qualities that align with the RCEA's mission and add community benefits. If a project is built on a previously developed site, on a Brownfield identified in the EnviroStor list, or the applicant or prime developer is a local business, the project is eligible for a modest price increase for the first five contract years. Please see the attached tariff for details. This definition of local business used here is specific to this program and is not intended to set precedent for future RCEA programs.

FINANCIAL IMPACTS

Due to the program's design, FIT net costs, defined as costs paid to developers minus the value of the energy, could not exceed $4,889,095 over 20 years, nor could it be less than $3,308,799 if it is fully subscribed. A likely scenario, given the potential for bonus price adders and pacing of market adjustments would be a net cost of $3,830,543 over 20 years. Depending on the bonus adders that applicants are eligible for 5-20% of the cost of the project will be front-loaded in the first five years.

RECOMMENDED ACTIONS

Authorize staff to launch the RCEA Feed-in Tariff program effective April 1.

Citation

Fu, Ran, David Feldman, and Robert Margolis. 2018. *U.S. Solar Photovoltaic System Cost Benchmark: Q1 2018*. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-72399. https://www.nrel.gov/docs/fy19osti/72399.pdf.

ATTACHMENTS

FIT Packet:

1. FIT Tariff
2. FIT Application
3. FIT Power Purchase Agreement
4. FIT Generation Forecast Template
5. EnviroStor Brownfields List

REDWOOD COAST EnergyAuthority

FEED IN TARIFF

Eligibility Criteria

An Eligible Small-Scale Distributed Renewable Generation Resource ("Eligible Resource") must meet the following criteria:

New Resource. The Eligible Resource must be new, meaning that the Eligible Resource must not have produced or delivered electric energy prior to the date on which its FIT Application is received by RCEA.

Small-Scale. The nameplate generating capacity of any Eligible Resource must be smaller than 1 MW (megawatt), alternating current.

Located in RCEA Service Territory. The Eligible Resource must be located entirely within the service territory of Redwood Coast Energy Authority, as such service territory is defined on the date of FIT Application submittal.

RPS Compliant. The Eligible Resource must use a fuel source permitted under California's current RPS program, as further described in the California Energy Commission's Renewables Portfolio Standard Eligibility Guidebook. Eligible fuel sources include, but are not limited to, the following:

Biomass	Biodiesel
Fuel cells using renewable fuels	Digester gas
Landfill gas	Municipal solid waste
Ocean wave	Ocean thermal
Tidal current	Solar Photovoltaic
Small hydroelectric	Solar thermal
Wind	Geothermal

Interconnection. Projects need to interconnect using Pacific Gas & Electric Company (PG&E's) Wholesale Distribution Tariff (WDT) to be eligible. Electric interconnection of the Eligible Resource, including execution of all applicable agreements, shall be the sole responsibility of the FIT applicant, inclusive of all related costs, and shall be completed consistent with interconnection requirements specified by PG&E and/or the California Independent System Operator (CAISO), as appropriate.

Permits. The FIT applicant must obtain all necessary permits from the appropriate jurisdictional agency having authority and shall maintain such permits, as may be required, for the duration of the Agreement.

Bundled Product. The product sold by an Eligible Resource and purchased by RCEA shall include all electric energy, net of station service, environmental attributes (including related Renewable Energy Certificates, which shall be transferred to RCEA) and capacity. For the sake of clarity, environmental attributes shall include all emission reduction benefits associated with the generation of renewable electricity by the Eligible Resource as well as other attributes. Participating Applicants will need to register with WREGIS and transfer all Renewable Energy Credits (RECs) to RCEA's account.

FEED IN TARIFF

FIT Agreement. All Eligible Resources shall execute RCEA's FIT Agreement which is a standard, non-negotiable, long term power purchase agreement (PPA).

Prime Agriculture Land Exclusion. New renewable energy projects for the FIT may not be developed on Prime Agriculture land. Site eligibility may be determined by consulting the County of Humboldt's WebGIS portal http://webgis.co.humboldt.ca.us/HCEGIS2.0/. For prime agricultural soils, select the "Natural Resources" Layer Group and "NRCS 2014 Soils (Proposed)" Layer within that Group. Facilities on "Farmland of statewide importance" or "Prime farmland if irrigated" as identified in this Layer are discouraged.

FIT Agreement Length

Contract length will be set at 20 years. More details are in the standard contract.

FIT Contract Initial Base Price

The initial contract base price is $0.08/kilowatt-hour (kWh) *[$80/MWh].*

Market Adjusting Pricing

The base price for the FIT is subject to periodic adjustments based on the market. After each two-month period the base price of the FIT will be adjusted to reflect market interest in the program. In a two-month period, 2 MWs of capacity will be available for contract while total programmatic capacity lasts. At the end of each period, if 0-25% of the available capacity is claimed the base price in the next period will increase by $0.002/kilowatt-hour (kWh) *[$2.00/MWh].* If 25%-75% of the period capacity is claimed, the base price in the next period will stay the same. If 75%-100% of the capacity is brought under contract, the base price for the next period will decrease by $0.002/kilowatt-hour (kWh) *[$2.00/MWh].* The base price for each new period will be available on RCEA's website by the first day of the period.

Price Ceiling and Floor

While the FIT base price may adjust upward or downward from the initial $0.08/kilowatt-hour (kWh) *[$80/MWh],* the base price may not exceed $0.09/kilowatt-hour (kWh) *[$90/MWh]* and may not drop below $0.07/kilowatt-hour (kWh) *[$70/MWh].* The base price ceiling and floor do not include bonus incentives. When applicable, bonus incentives may be included in a project's price that would otherwise exceed the price ceiling.

Bonus Incentives

RCEA may adjust FIT pricing for certain Eligible Resources that meet the following criteria:

Bonus Criteria	Bonus Amount	Bonus Payout Period
EnviroStor Brownfield	$0.01 / kWh *($10 / MWh)*	Paid during first 5 contract years of Eligible Resource operation.
Previously Developed Site Location	$0.005 / kWh *($5 / MWh)*	
Local Business	$0.005 / kWh *($5 / MWh)*	

Bonus payments, if any, will be added to the contract base price for the first five (5) years of the contract. After the first five contract years, the price will revert to the base price in effect at the time the project application was received.

FEED IN TARIFF

The bonus incentives for EnviroStor Brownfields and for Previously Developed Sites cannot be claimed together. If a project is eligible for both incentives the higher, EnviroStor Brownfields, incentive will be applied.

Details on required documentation are outlined in the FIT Application. Characteristics are defined as follows:

EnviroStor Brownfields are specific sites identified by the Department of Toxic Substances Control data management system, EnviroStor. A list of eligible sites may be found at *URL.*

Previously Developed Sites are defined as areas that either contain or have contained structures or were used for parking, loading or storage related to a previous or existing land use other than agricultural grazing or crop production within the last 20 years. To claim this bonus, the previously developed land must make up at least 20% of the project footprint. Development documentation, in the form of building permits or verifiable ground, aerial, or satellite photography, as solely determined by RCEA, must be provided by the FIT applicant.

Local Business To qualify for the Local Business incentive the applicant and/or prime contractor must have a place of business (i.e. possesses a business license) and is headquartered in Humboldt County.

FIT Payments

Payments will be made monthly by RCEA to the applicant for each Eligible Resource based on metered electric deliveries. Meter readings delivered by PG&E will be used for payment determination and quantification as described in the FIT Agreement.

FIT Capacity Limit

RCEA's FIT has a capacity limit of six megawatts. The program will continue until there is no remaining available capacity, or until RCEA decides at its discretion to stop accepting new applications.

Forecasting Requirements

Generation forecasts will be required at the time of application and updated (as needed) during construction and throughout the Delivery Term. Underperforming years may be grounds for penalties and changes to the PPA or termination as appropriate.

Penalties

If the system over-generates beyond 115% of contractual output in any contract year, compensation will be at 50% of standard price per kWh of surplus generation up to any contractual and/or financial limits for that contract year.

System underperformance that results in less than 80% of contractual output for two consecutive years is grounds for contract renegotiation or termination.

Collateral

Applicants are required to post and maintain a collateral requirement of twenty dollars ($20.00) for each kilowatt (kW AC) of Contract Capacity. The Collateral Requirement will be held by RCEA and must be in the form of either cash deposit or Letter of Credit.

Fees and Deposit

There is a non-refundable application fee of $500, and a required deposit of $4 per kW (AC) of installed capacity, which is fully refundable upon project completion.

FEED IN TARIFF

Application Timeline
Interconnection supplemental review must be complete (i.e. tendered IA in place) and application for permits submitted at time of FIT application to RCEA.

Curing Period
RCEA will review all applications upon receipt. If there are minor errors in the application the applicant will have ten days to correct the deficiencies after being informed by RCEA. The applicant will retain their place in the queue during this curing period. If the applicant fails to correct those errors in the ten-day window their place in the queue will be forfeited.

Applicant Heterogeneity Preference
If there are more than three (3) applications in a given period, including more than one application from one applicant, contracts will be awarded to different applicants to maximize heterogeneity.

Application Queue
All applications submitted will be accepted on a first come-first served basis. Projects that have missed their milestones may be terminated to allow for more applications.

Board Approval
The RCEA Board of Directors must approve every FIT PPA before execution.

REDWOOD COAST EnergyAuthority

Date Received: _____
FIT Record #: _____
Assigned RCEA Staff: _____

Feed-in Tariff Application

By submitting this application, applicants agree to: 1) pursue the construction and operation of a new (not yet delivering electricity to the grid) source of renewable electricity; 2) review, understand and abide by all of the terms and conditions identified in the Redwood Coast Energy Authority (RCEA) Feed-in Tariff Program (Feed-In Tariff and Power Purchase Agreement) adopted on X/XX/XXXX; and 3) immediately notify RCEA in the event any of the information provided in this application changes or ceases to be correct.

Applicant Information

PROJECT (FACILITY) NAME				
APPLICANT'S FORM OF BUSINESS & STATE OF ORGANIZATION				
APPLICANT NAME		TITLE		
APPLICANT COMPANY				
APPLICANT STREET ADDRESS		CITY	STATE	ZIP
MAILING ADDRESS (If different from above)		CITY	STATE	ZIP
PHONE	ALT. PHONE	EMAIL		

Generating Unit Information *(Note: Generator Must Be Located within RCEA's Service Territory)*

Location Address: _____ City: _____ Zip:_____

Parcel Number: _____

Permitting Agency/Jurisdiction: _____

Is there a Williamson Act contract on the property? ☐ Yes ☐ No

Is this property Prime Agriculture land as defined in the Tariff? ☐ Yes ☐ No

Renewable Resource Type: _____

Proposed Generator Capacity (at point of delivery): _____ kW (AC) ***Note: Size limited to less than 1 MW.***

Expected Annual Energy Output: _____kWh

Anticipated Interconnection Agreement Execution Date: _____

Description of Physical Interconnection Point:_____

Interconnection Service Voltage: _____ kV

Expected Commercial Operation Date: _____

Is there Redwood Coast Energy Authority service at this address? ☐ Yes ☐ No

If yes, PG&E Account #: _____

(continue following page)

Company Structure

If applicant is a company rather than an individual, briefly describe the ownership structure of the company, including full legal name and valid phone number of all principals: _____

_____

Site Control

Briefly describe the site control for this project (lease, direct ownership or other): _____

_____

Financial Plan

Briefly describe your intended financing plan for the referenced generator. Identify prospective partners and intended share of ownership assigned to each: _____

_____

_____

Bonus Information

Bonuses for which you are applying and will document: ☐EnviroStor Brownfield ☐Previously Developed Site

☐Local Business *(please describe below)*

EnviroStor Brownfield: If the project is located on an EnviroStor identified brownfield, please list the EnviroStor number, Project Name and Status:

_____

_____

Previously Developed Sites: If applicable, briefly describe the location where the generator will be installed:

_____

_____

Local Business: To qualify for the Local Business bonus, applicants must utilize a project developer and/or prime contractor which is headquartered within Humboldt County. If this bonus is desired, please list such entities, including related business addresses: _____

_____

_____

Generator Interconnection (PG&E)

As the organization responsible for distribution system planning, maintenance and safety, PG&E will be your primary point of contact for all matters related to generator interconnection. Feed-in Tariff applicants will work directly with PG&E during the generator interconnection process. Applicants may access the following website for information regarding PG&E's generator interconnection process:

- http://www.pge.com/en/b2b/energytransmissionstorage/newgenerator/index.page.
- PG&E's wholesale generator interconnection application can be accessed at the following link: http://www.pge.com/mybusiness/customerservice/nonpgeutility/generateownpower/egi/

Briefly describe your progress and timeline for completing PG&E's Generator Interconnection Process:

_____

Application Queue

All applications will be accepted and queued on a first come-first served basis.

Fees

As noted under Application Checklist, the reservation deposit and non-refundable application fee must be submitted as a part of this completed Feed-in Tariff application. Please remit payment by check payable to Redwood Coast Energy Authority.

Reservation deposits will be refunded once the project is constructed and delivering electricity to Redwood Coast Energy Authority. The full deposit amount will be included with the first payment for generated electricity. If the project fails to demonstrate substantial progress which results in removal from the project queue, the reservation deposit will be forfeited.

In the event that an application is deemed approved and enters the queue but is unable to proceed for lack of RCEA program funds or other reason not attributable to the applicant, the deposit will be fully refunded.

Milestones and Schedule

At RCEA's sole discretion, any project that fails to demonstrate substantial progress toward completion of any outstanding development checklist item may have its Feed-in Tariff Application rejected at any time. Specified timelines for each milestone are listed in Appendix E of the Power Purchase Agreement.

The applicant is encouraged to coordinate with assigned RCEA staff throughout the process. Please submit additional requisite documents to the assigned RCEA staff member as such documents become available, referencing the applicant's assigned Feed-In Tariff (FIT) Record Number.

APPLICATION CHECKLIST

THE FOLLOWING MUST BE COMPLETED AND SUBMITTED TO RCEA AS PART OF THE FEED-IN TARIFF APPLICATION:

1. ☐ **Feed-in Tariff Application (this document)**
2. ☐ **Tendered (draft) Interconnection Agreement or evidence project has passed Fast Track screening**
3. ☐ **Evidence of site control throughout the Delivery Term of the Power Purchase Agreement ("PPA") and form of site control**
4. ☐ **Confirmation of permit application and review**
5. ☐ **Feed-in Tariff Generation Forecast**
6. ☐ **Non-Refundable Application Fee – $500.00**
7. ☐ **Reservation Deposit – Proposed Generator Capacity (total kilowatts AC) x $4 = $ _____**

Submit completed Feed-in Tariff applications and payment to RCEA via mail:

Redwood Coast Energy Authority
Attn: Feed-In Tariff
633 3rd St
Eureka, CA 95501

Upon receipt of all application materials, including the payment of applicable fees and deposit amounts, RCEA will perform a completeness review of such materials within 20 business days. Incomplete applications will be

rejected and returned to applicant (along with the reservation deposit) with no further processing. Applicant may resubmit application with correction of deficiencies. RCEA will approve complete applications within 30 business days of application submittal. Information received by RCEA in conjunction with this application is considered public information. RCEA will not be deemed to have accepted Applicant's offer and will not be bound by any term thereof, unless and until authorized representatives of Applicant and RCEA execute a FIT PPA. Prior to such execution, RCEA reserves the right to reject any Application, at any time and for any reason whatsoever, in its sole discretion.

Confirmation of application receipt will be delivered by email along with an assignment to an RCEA staff member and FIT Record Number. For any questions regarding this application for RCEA's Feed-in Tariff Program, please contact us at 707-269-1700 or feedintariff@redwoodenergy.org.

☐ *By submission of this Feed-in Tariff Application, I acknowledge review and acceptance of RCEA's FIT Power Purchase Agreement Terms and Conditions available at* FIT URL.

X:_____ Date:_____

Redwood Coast Energy Authority Feed-in Tariff Program

REDWOOD COAST EnergyAuthority

FEED-IN TARIFF

POWER PURCHASE AGREEMENT

between

REDWOOD COAST ENERGY AUTHORITY

and

[FIT PROJECT OWNER]

FEED-IN TARIFF
POWER PURCHASE AGREEMENT

TABLE OF CONTENT

FEED-IN TARIFF
POWER PURCHASE AGREEMENT

The Redwood Coast Energy Authority, a California Joint Powers Authority ("Buyer" or "RCEA"), and _____ ("Seller"), a _____ *[Seller's form of business entity and state of organization]*, hereby enter into this Power Purchase Agreement ("Agreement") made and effective as of the Execution Date. Seller and Buyer are sometimes referred to in this Agreement jointly as "Parties" or individually as "Party." In consideration of the mutual promises and obligations stated in this Agreement and its appendices, the Parties agree as follows:

1. DOCUMENTS INCLUDED

This Agreement includes the following appendices, which are specifically incorporated herein and made a part of this Agreement:

Appendix A Definitions

Appendix B Commercial Operation Date Confirmation Letter

Appendix C Forecasting Requirements

Appendix D Description of the Facility

Appendix E Seller's Milestone Schedule

Appendix F Notices List

This Agreement specifically incorporates herein by reference as if appended hereto the following documents (collectively referred to herein as the "Referenced Documents"):

Feed-in Tariff dated [*insert date of applicable Tariff*]

Feed-in Tariff Application, submitted by Seller, dated *[insert date of application]*

Feed-in Tariff Generation Forecast dated *[insert date of applicable document]*

To the extent any provisions of the Referenced Documents conflict with any other provisions of the Agreement, the other provisions of the Agreement shall control.

2. SELLER'S FACILITY AND COMMERCIAL OPERATION DATE

This Agreement governs Buyer's purchase of the Product from the electrical generating facility (hereinafter referred to as the "Facility" or "Project") as described in this Section.

2.1. Facility Location. The Facility is physically located at:

2.2. Facility Name. The Facility is named _____.

2.2.1. The Facility's renewable resource is _____. [e.g., biogas, hydro, etc.]

2.3. Interconnection Point. The Facility is connected to the Pacific Gas & Electric Company ("PG&E") electric system at [include description of physical interconnection point], i.e. Interconnection Point, at a service voltage of _____ kV.

2.4. Delivery Point. The Delivery Point for Energy is the Interconnection Point.

2.5. Facility Description. A description of the Facility, including a summary of its significant components, a drawing showing the general arrangements of the Facility, and a single line diagram illustrating the interconnection of the Facility and loads with the Transmission/Distribution Owner's electric distribution system, is attached and incorporated herein as Appendix D.

2.6. Commercial Operation.

2.6.1. The Facility's expected Commercial Operation Date is _____,

2.6.2. Seller shall achieve Commercial Operation no later than the expected Commercial Operation Date specified in Section 2.6.1, which date shall be no later than eighteen (18) months from the Execution Date of this Agreement. The expected Commercial Operation Date specified in Section 2.6.1 may be extended for only the following reasons:

2.6.2.1. If Seller has taken all commercially reasonable actions (including but not limited to Seller's timely filing of all required applications and documents, payment of all applicable fees, and completion of all electric system upgrades needed, if any) to have the Project physically interconnected to the Transmission/Distribution Owner's distribution system, but fails to secure any necessary commitments from the Transmission/Distribution Owner for such interconnection and upgrades due to delays beyond Seller's reasonable control, then the expected Commercial Operation Date specified in

Section 2.6.1 shall be extended for the number of days necessary to physically interconnect the Facility; provided, however, that such delay may not extend the expected Commercial Operation Date specified in Section 2.6.1 for a period of more than six (6) months; or

2.6.2.2. If Seller has taken all commercially reasonable actions (including but not limited to Seller's timely filing of all required applications and documents and payment of all applicable fees, if any) to obtain permits necessary to construct and operate the facility but fails to secure any such permits due to delays beyond Seller's reasonable control, then the expected Commercial Operation Date specified in Section 2.6.1 shall be extended for the number of days necessary to secure such permits; provided, however, that such delay may not extend the expected Commercial Operation Date specified in Section 2.6.1 for a period of more than six (6) months; or

2.6.2.3. In the event of Force Majeure, the expected Commercial Operation Date specified in Section 2.6.1 shall be extended on a day-to-day basis for a cumulative period of not more than six (6) months; provided that Seller complies with Section 11.

2.6.2.4. Extensions under Section 2.6.2.1, 2.6.2.2, and 2.6.2.3, to the extent they may occur concurrently, shall run concurrently.

2.6.3. Seller shall provide Notice to Buyer of the Commercial Operation Date of the Facility no later than thirty (30) days before such date.

2.6.4. Notwithstanding anything in this Agreement, if Seller is unable to achieve Commercial Operation by the expected Commercial Operation Date specified in Section 2.6.1, which may be extended pursuant to Section 2.6.2, then Seller shall either (i) terminate the Agreement, in which case Buyer may retain the full Reservation Deposit, or (ii) pay to Buyer daily delay damages in the amount of twenty cents ($0.20) for each kilowatt of Contract Capacity for each day beyond the expected Commercial Operation Date specified in Section 2.6.1, as may be extended pursuant to Section 2.6.2, that Seller requires to achieve Commercial Operation.

2.6.5. Commercial Operation shall occur only when all of the following conditions have been satisfied:

2.6.5.1. the Facility's status as an Eligible Renewable Energy Resource is demonstrated by Seller's receipt of pre-certification from the CEC;

2.6.5.2. the Parties have executed and exchanged the "Commercial Operation Date Confirmation Letter" attached as Appendix B;

2.6.5.3. Seller has obtained and is in compliance with the Interconnection Agreement for the Facility, and Seller has satisfied all applicable CAISO Tariff requirements and metering requirements in Sections 6.1 and 6.2;

2.6.5.4. Seller has furnished to Buyer all insurance documents required under Section 10;

2.6.5.5. Seller has provided thirty (30) days' Notice prior to the Commercial Operation Date as required under Section 2.6.3;

2.6.5.6. Seller has obtained all permits necessary to operate the Facility and is in compliance with all Laws applicable to the operation of the Facility;

2.6.5.7. Seller has successfully installed and tested the Facility at its full Contract Capacity, and the Facility is capable of reliably generating at its full Contract Capacity; and

2.6.5.8. Seller has satisfied the Collateral Requirement set forth in Section 3.9.

3. CONTRACT CAPACITY AND QUANTITY; TERM; CONTRACT PRICE; BILLING; COLLATERAL REQUIREMENT

3.1. Contract Capacity. The Contract Capacity is _____ kW, alternating current (AC). The Contract Capacity shall not exceed 1,000 kW AC.

3.2. Contract Quantity. The "Contract Quantity" during each Contract Year is the amount set forth in the applicable Contract Year in the "Delivery Term Contract Quantity Schedule," set forth below, which amount is net of Station Use. Seller shall have the option to update the Delivery Term Contract Quantity Schedule one (1) time prior to Commercial Operation Date.

Delivery Term Contract Quantity Schedule	
Contract Year	**Contract Quantity (kWh/Yr)**
1	
2	
3	
4	
5	
6	

Delivery Term Contract Quantity Schedule	
Contract Year	**Contract Quantity (kWh/Yr)**
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

3.3. Transaction. During the Delivery Term, Seller shall sell and deliver, or cause to be delivered, and Buyer shall purchase and receive, all Product produced by or associated with the Facility that is delivered to the Delivery Point. In no event shall Seller have the right to procure the Product from sources other than the Facility for sale or delivery to Buyer under this Agreement. Buyer shall have no obligation to receive or purchase the Product from Seller prior to the Commercial Operation Date or after the end of the Delivery Term.

3.4. Term of Agreement; Survival of Rights and Obligations.

3.4.1. The term shall commence upon the Execution Date of this Agreement and shall remain in effect until the conclusion of the Delivery Term unless terminated sooner pursuant to Sections 10.4 or 11 of this Agreement (the “Term”).

3.4.2. Notwithstanding anything to the contrary in this Agreement, all of the rights and obligations that this Agreement expressly provides survive termination as well as the rights and obligations that arise from Seller’s or Buyer’s covenants, agreements, representations, and warranties applicable to, or to be performed, at or during any time before or as a result of the termination of this Agreement.

3.5. Delivery Term. Seller shall deliver the Product from the Facility to Buyer for a period of twenty (20) Contract Years for all generation technologies. The Delivery Term shall commence on the Commercial Operation Date and continue until the end of the last Contract Year unless the Agreement is terminated sooner pursuant to the terms of the Agreement.

3.6. Contract Price.

3.6.1. Throughout the Delivery Term, and subject to and in accordance with the terms of this Agreement, Buyer shall pay the Contract Price to Seller for the Product based on the amount of Delivered Energy. The Contract Price shall be $_____ per kWh of Delivered Energy with an additional $_____ per kWh for Delivered Energy during the first five (5) Contract Years.

3.6.2. In any Contract Year, if the amount of Delivered Energy exceeds one hundred fifteen percent (115%) of the annual Contract Quantity amount, the Contract Price for such Delivered Energy in excess of one hundred fifteen percent (115%) shall be adjusted to be seventy-five percent (75%) of the applicable Contract Price.

3.6.3. Seller shall curtail production of the Facility in accordance with the applicable Notice after receipt of: (a) Notice from Buyer that Buyer has been instructed by the CAISO or the Transmission/Distribution Owner or any other jurisdictional entity to curtail Energy deliveries; or (b) Notice that Seller has been given a curtailment order or similar instruction in order to respond to an Emergency; or (c) Notice of a Curtailment Order issued by Buyer. Buyer shall have no obligation to pay Seller for any Product delivered in violation of this Section 3.6.3 or for any Product that Seller would have been able to deliver but for the fact of a curtailment pursuant to this Section 3.6.3. Seller shall assume all liability and reimburse Buyer for any and all costs and charges incurred by Buyer, including but not limited to CAISO penalties, as a result of Seller delivering Energy in violation of the Section 3.6.3.

3.6.4. Buyer shall have the right, but not the obligation, to issue to Seller a Curtailment Order. Buyer shall pay Seller the Contract Price for the Product Seller would have been able to deliver but for the fact that Buyer issued a Curtailment Order (“Paid Curtailed Product”).

3.6.5. Buyer shall estimate the amount of Product the Facility would have been able to deliver under Sections 3.6.4. Buyer shall apply accepted industry standards in making such an estimate and take into consideration past performance of the Facility, and other relevant information, for example, meteorological and solar irradiance data. Seller shall cooperate with Buyer’s requests for information associated with any estimate made hereunder. Buyer’s estimates under this Section 3.6.5 for the amount of Product that the Facility would have been able to deliver but for Buyer’s issuance of a Curtailment Order will be determined in Buyer’s reasonable discretion.

3.7. Billing.

3.7.1. The amount of Delivered Energy shall be determined by the meter specified in Section 6.2.1 or Check Meter, as applicable. Buyer has no obligation to purchase from Seller any Energy that is not or cannot be delivered to the Delivery Point, regardless of circumstance. Buyer will not be obligated to pay Seller for any Product that Seller delivers in violation of Section 3.6.3, including any Product Seller delivers in excess of the amount specified in any Curtailment Order.

3.7.2. For the purpose of calculating monthly payments under this Agreement, the amount recorded by the meter specified in Section 6.2.1 or Check Meter, as applicable, will be multiplied by the Contract Price noted in Section 3.6.1, as possibly adjusted under Section 3.6.2, less any Energy produced by the Facility for which Buyer is not obligated to pay Seller as set forth in Section 3.7.1.

3.7.3. On or before the last Business Day of the month immediately following each calendar month, Seller shall determine the amount of Delivered Energy received by Buyer pursuant to this Agreement for each monthly period and issue an invoice showing the calculation of the payment. Seller shall also provide to Buyer: (a) records of metered data sufficient to document and verify the generation of Delivered Energy by the Facility during the preceding month; (b) access to any records; and (c) an invoice, in the format specified by Buyer.

In the event an invoice or portion thereof or any other claim or adjustment arising hereunder, is disputed, payment of the undisputed portion of the invoice shall be required to be made when due, with Notice of the objection given to the other Party. Any invoice dispute or invoice adjustment shall be in writing and shall state the basis for the dispute or adjustment. Payment of the disputed amount shall not be required until the dispute is resolved. In the event adjustments to payments are required as a result of inaccurate meter(s), Buyer in its reasonable discretion shall determine the correct amount of Delivered Energy received under this Agreement during any period of inaccuracy and recompute the amount due from Buyer to Seller for the Delivered Energy delivered during the period of inaccuracy. The Parties agree to use good faith efforts to resolve the dispute or identify the adjustment as soon as possible. Upon resolution of the dispute or calculation of the adjustment, any required payment shall be made within thirty (30) days of such resolution.

3.7.4. In the event an invoice or portion thereof or any other claim or adjustment arising hereunder, is disputed, payment of the undisputed portion of the invoice shall be required to be made when due, with Notice of the objection given to the other Party. Any invoice dispute or invoice adjustment shall be in writing and shall state the basis for

the dispute or adjustment. Payment of the disputed amount shall not be required until the dispute is resolved. In the event adjustments to payments are required as a result of inaccurate meter(s), Buyer in its reasonable discretion shall determine the correct amount of Delivered Energy received under this Agreement during any period of inaccuracy and recompute the amount due from Buyer to Seller for the Delivered Energy delivered during the period of inaccuracy. The Parties agree to use good faith efforts to resolve the dispute or identify the adjustment as soon as possible. Upon resolution of the dispute or calculation of the adjustment, any required payment shall be made within thirty (30) days of such resolution.

3.7.5. All interest paid or payable under this Agreement shall be computed as simple interest using the Interest Rate and, unless specified otherwise in this Agreement, shall be paid concurrently with the payment or refund of the underlying amount on which such interest is payable.

3.8. Title and Risk of Loss. Title to and risk of loss related to the Energy from the Facility shall transfer from Seller to Buyer at the Delivery Point. Seller warrants that it will deliver to Buyer the Product from the Facility free and clear of all liens, security interests, claims, and encumbrances or any interest therein or thereto by any person.

3.9. Collateral Requirement. On or before the Commercial Operation Date, Seller shall post and thereafter maintain a collateral requirement equal to twenty dollars ($20.00) for each kilowatt of Contract Capacity (the "Collateral Requirement"). The Collateral Requirement will be held by Buyer and must be in the form of either cash deposit or Letter of Credit. The Collateral Requirement shall be posted to Buyer and maintained at all times during the Delivery Term. Buyer shall be entitled to draw upon the Collateral Requirement for any damages arising upon Buyer's declaration of an Early Termination Date as set forth in Section 11.3. In the event that Buyer draws on the Collateral Requirement, Seller shall promptly replenish such Collateral Requirement to the amount specified in this Section 3.9. Buyer shall return the unused portion of the Collateral Requirement to Seller promptly at the end of the Delivery Term, once all payment obligations of the Seller under this Agreement have been satisfied. Buyer shall pay simple interest on cash held to satisfy the Collateral Requirements at the rate and in the manner set forth in Section 3.7.4.

4. GREEN ATTRIBUTES; RESOURCE ADEQUACY BENEFITS; ERR REQUIREMENTS

4.1. Green Attributes. Seller hereby provides and conveys all Green Attributes associated with all electricity generation from the Project to Buyer as part of the Product being delivered. Seller represents and

warrants that Seller holds the rights to all Green Attributes from the Project, and Seller agrees to convey and hereby conveys all such Green Attributes to Buyer as included in the delivery of the Product from the Project.

4.2. Conveyance of Product. Throughout the Delivery Term, Seller shall provide and convey the Product to Buyer in accordance with the terms of this Agreement, and Buyer shall have the exclusive right to the Product. Seller shall, at its own cost, take all actions and execute all documents or instruments that are reasonable and necessary to effectuate the use of the Green Attributes, Resource Adequacy Benefits, if any, and Capacity Attributes, if any, for Buyer's benefit throughout the Delivery Term.

4.3. WREGIS. Seller shall cause and allow Buyer, or Buyer's agent, to be the "Qualified Reporting Entity" and "Account Holder" (as such terms are defined by WREGIS) for the Facility within thirty (30) days after the Commercial Operation Date. In the event that Buyer is not the Qualified Reporting Entity, Seller shall, at its sole expense, take all actions necessary and provide any documentation requested by Buyer in support of WREGIS account administration and compliance with the California Renewables Portfolio Standard. Seller, at its sole expense, shall take all necessary steps and submit/file all necessary documentation to ensure that the Facility remains an Eligible Renewable Energy Resource throughout the Delivery Term as outlined in Section 4.5 and that all WREGIS Certificates associated with the Product accrue to Buyer and will satisfy the requirements of the California Renewables Portfolio Standard.

4.4. Resource Adequacy Benefits.

4.4.1. During the Delivery Term, Seller grants, pledges, assigns and otherwise commits to Buyer all of the Contract Capacity, including Capacity Attributes, if any, from the Project to enable Buyer to meet its Resource Adequacy or successor program requirements, as the CPUC, CAISO or other regional entity may prescribe ("Resource Adequacy Requirements").

4.4.2. If providing any Resource Adequacy, Seller shall comply with the Resource Adequacy requirements set forth in the CAISO Tariff, including Section 40 thereof, as may be changed from time to time.

4.4.3. If providing any Resource Adequacy, Seller shall cooperate in good faith with and comply with reasonable requests of Buyer and the CAISO to enable Buyer and/or the CAISO to assign Capacity Attributes and Resource Adequacy Benefits to the Facility.

4.5. Eligible Renewable Energy Resource. Seller shall take all actions necessary to achieve and maintain status as an Eligible Renewable Energy Resource or ERR throughout the Delivery Term. Within thirty (30) days after the Commercial Operation Date, Seller shall file an application or other appropriate request with the CEC for CEC Certification for the Facility. Seller shall expeditiously seek CEC Certification, including promptly responding to any requests for information from the requesting authority.

5. REPRESENTATION AND WARRANTIES; COVENANTS

5.1. Representations and Warranties. On the Execution Date, each Party represents and warrants to the other Party that:

5.1.1. it is duly organized, validly existing and in good standing under the Laws of the jurisdiction of its formation;

5.1.2. the execution, delivery and performance of this Agreement are within its powers, have been duly authorized by all necessary action and do not violate any of the terms and conditions in its governing documents, any contracts to which it is a party or any Laws;

5.1.3. this Agreement and each other document executed and delivered in accordance with this Agreement constitutes a legally valid and binding obligation enforceable against it in accordance with its terms;

5.1.4. it is not Bankrupt and there are no proceedings pending or being contemplated by it or, to its knowledge, threatened against it which would result in it being or becoming Bankrupt; and

5.1.5. there is not pending or, to its knowledge, threatened against it or any of its Affiliates any legal proceedings that could materially adversely affect its ability to perform its obligations under this Agreement.

5.2. General Covenants. Each Party covenants that throughout the Term of this Agreement:

5.2.1. it shall continue to be duly organized, validly existing and in good standing under the Laws of the jurisdiction of its formation;

5.2.2. it shall maintain (or obtain from time to time as required, including through renewal, as applicable) all regulatory authorizations necessary for it to legally perform its obligations under this Agreement; and

5.2.3. it shall perform its obligations under this Agreement in a manner that does not violate any of the terms and conditions in its governing documents, any contracts to which it is a party, or any Law.

5.3. Seller's Representations, Warranties and Covenants. In addition to the representations, warranties and covenants specified in Sections 5.1 and 5.2, Seller makes the following additional representations, warranties and covenants to Buyer, as of the Execution Date:

5.3.1. Seller has not participated in the Self-Generation Incentive Program (as defined in CPUC Decision 01-03-073), the California Solar Initiative (as defined in CPUC Decision 06-01-024), and/or other similar California ratepayer subsidized program relating to energy production or rebated capacity costs with respect to the Facility.

5.3.2. Seller's execution of this Agreement will not violate Public Utilities Code Section 2821(d)(1), if applicable;

5.3.3. Seller has met all applicable legal and regulatory requirements to sell wholesale electricity in California;

5.3.4. Seller, and, if applicable, its successors, represents and warrants that throughout the Delivery Term of this Agreement that: (i) the Project qualifies and is certified by the CEC as an Eligible Renewable Energy Resource ("ERR") as such term is defined in Public Utilities Code Section 399.12 or Section 399.16; and (ii) the Project's output delivered to Buyer qualifies under the requirements of the California Renewables Portfolio Standard. To the extent a change in law occurs after execution of this Agreement that causes this representation and warranty to be materially false or misleading, it shall not be an Event of Default if Seller has used commercially reasonable efforts to comply with such change in law;

5.3.5. Seller and, if applicable, its successors, represents and warrants that throughout the Delivery Term of this Agreement the Renewable Energy Credits transferred to Buyer conform to the definition and attributes required for compliance with the California Renewables Portfolio Standard, as set forth in California Public Utilities Commission Decision 08-08-028, and as may be modified by subsequent decision of the California Public Utilities Commission or by subsequent legislation. To the extent a change in law occurs after execution of this Agreement that causes this representation and warranty to be materially false or misleading, it shall not be an Event of Default if Seller has used commercially reasonable efforts to comply with such change in law;

5.3.6. Throughout the Delivery Term, Seller shall: (a) own and operate the Facility; (b) deliver the Product to Buyer free and clear of all liens, security interests, claims, and encumbrances or any interest therein or thereto by any individual or entity; and (c) hold the rights to all of the Product;

5.3.7. Seller is acting for its own account, has made its own independent decision to enter into this Agreement and as to whether this Agreement is appropriate or proper for it based upon its own judgment, is not relying upon the advice or recommendations of the Buyer in so doing, and is capable of assessing the merits of, and understands and accepts, the terms, conditions and risks of this Agreement;

5.3.8. Throughout the Delivery Term: (a) Seller shall not convey, transfer, allocate, designate, award, report or otherwise provide any or all of the Product, or any portion thereof, or any benefits derived therefrom, to any party other than Buyer; and (b) Seller shall not start-up or operate the Facility per instruction of or for the benefit of any third party, except as required by other Laws;

5.3.9. Seller has not relied on any promises, representations, statements or information of any kind that are not contained in this Agreement in deciding to enter into this Agreement;

5.3.10. The construction of the Facility shall comply with all Laws, including applicable state and local laws, building standards, and interconnection requirements;

5.3.11. No other person or entity, including any other generating facility, has any rights in connection with Seller's Interconnection Agreement or Seller's Interconnection Facilities and no other persons or entities shall have any such rights during the Term;

5.3.12. During the Delivery Term, Seller shall not allow any other person or entity, including any other generating facility, to use Seller's Interconnection Facilities; and

5.3.13. All representations made by Seller in its Feed-in Tariff Application are true and correct.

6. GENERAL CONDITIONS

6.1. CAISO Agreements; CAISO Costs; Interconnection Agreements. During the Delivery Term, Seller shall comply with all contractual, metering, and applicable interconnection requirements, including those set forth in the Interconnection Agreement, Transmission/Distribution Owner's applicable tariffs, the CAISO Tariff and implementing CAISO standards and requirements, and all Laws so as to be able to deliver Energy to the Delivery Point. Seller shall provide and maintain during the Delivery Term, at its cost, all data processing gateways or remote intelligence gateways, telemetering equipment and data acquisition services, and associated measuring and recording equipment necessary to meet all applicable WREGIS and CAISO requirements

applicable to the Facility during the Delivery Term. Seller shall also secure and maintain in full force all of the CAISO agreements, certifications, and approvals required in order for the Facility to comply with the CAISO Tariff and any other agreement necessary to deliver Product to Buyer during the Delivery Term. Seller shall submit its request to interconnect the Facility and obtain an Interconnection Agreement pursuant to Transmission/Distribution Owner's Wholesale Distribution Tariff. For avoidance of doubt, Facilities that interconnect pursuant to CPUC Rule 21 are not eligible for this Agreement.

6.2. Metering Requirements.

6.2.1. All Energy from the Project must be delivered through a single revenue quality meter and that meter must be dedicated exclusively to the Project. All Delivered Energy purchased under this Agreement must be measured by the Project's revenue quality meter(s) to be eligible for payment under this Agreement. Seller shall bear all costs relating to all metering equipment installed to accommodate the Project.

6.2.2. Buyer may, at its sole cost, furnish and install one Check Meter at the interconnection associated with the Facility at a location provided by Seller that is compliant with Buyer's electric service requirements. The Check Meter may be interconnected with Buyer's communication network, or the communication network of Buyer's Agent, to permit periodic, remote collection of revenue quality meter data. In the event that Buyer elects to install a Check Meter, Buyer may compare the Check Meter data to the Facility's revenue meter data. If the deviation between the Facility's revenue meter data and the Check Meter data for any comparison is greater than 0.3%, Buyer may provide Notice to Seller of such deviation and the Parties shall mutually arrange for a meter check or recertification of the Check Meter or the Facility's revenue meter, as applicable. Each Party shall bear its own costs for any meter check or recertification. Testing procedures and standards for the Check Meter shall be the same as for a comparable Buyer-owned meter. Parties shall have the right to have representatives present during all such tests. The Check Meter, if Buyer elects to install a Check Meter, is intended to be used for back-up purposes in the event of a failure or other malfunction of the Facility's revenue meter, and Check Meter data shall only be used to validate the Facility's revenue meter data and, in the event of a failure or other malfunction of the Facility's revenue meter, in place of the Facility's revenue meter until such time that the Facility's revenue meter is recertified.

6.3. Meter Data. Seller hereby agrees to provide all meter data to Buyer in a form acceptable to Buyer, including any inspection, testing and

calibration data and reports. Seller shall grant Buyer and Buyer's agent the right to retrieve the meter readings from Seller or Seller's meter reading agent, which may be PG&E.

6.4. Standard of Care. Seller shall: (a) maintain and operate the Facility and Interconnection Facilities in conformance with the Interconnection Agreement, the CAISO Tariff, all Laws, and Prudent Electrical Practices; (b) obtain any governmental authorizations and permits required for the construction and operation of the Facility and Interconnection Facilities; and (c) generate, schedule and perform transmission services in compliance with all applicable CAISO operating policies, criteria, rules, guidelines and tariffs and Prudent Electrical Practices. Seller shall reimburse Buyer for any and all losses, damages, claims, penalties, or liability Buyer incurs as a result of Seller's failure to obtain or maintain any governmental authorizations and permits required for construction and operation of the Facility throughout the Term of this Agreement.

6.5. Access Rights.

6.5.1. Operations Logs. Seller shall maintain a complete and accurate log of all material operations and maintenance information on a daily basis. Such log shall include, but not be limited to, information on power production, fuel consumption (if applicable), efficiency, availability, maintenance performed, outages, results of inspections, manufacturer recommended services, replacements, electrical characteristics of the generators, control settings or adjustments of equipment and protective devices. Seller shall provide this information electronically to Buyer within twenty (20) days of Buyer's request.

6.5.2. Access Rights. Buyer, its authorized agents, employees and inspectors may, on reasonable advance notice under the circumstances, visit the Project during normal business hours for purposes reasonably connected with this Agreement. Buyer, its authorized agents, employees and inspectors must (a) at all times adhere to all safety and security procedures as may be required by Seller; and (b) not interfere with the operation of the Project. Buyer shall make reasonable efforts to coordinate its emergency activities with the safety and security departments, if any, of the Project operator. Seller shall keep Buyer advised of current procedures for contacting the Project operator's safety and security departments, if any exist.

6.6. Protection of Property. Seller shall be solely responsible for protecting its own facilities from possible damage resulting from electrical disturbances or faults caused by the operation, faulty operation, or non-

operation of the Transmission/Distribution Owner's facilities. Buyer shall not be liable for any such damages so caused.

6.7. Forecasting. Seller shall comply with the forecasting in Appendix C.

6.8. Greenhouse Gas Emissions. Seller acknowledges that a Governmental Authority may require Buyer to take certain actions with respect to greenhouse gas emissions attributable to the generation of Energy, including, but not limited to, reporting, registering, tracking, allocating for or accounting for such emissions. Promptly following Buyer's written request, Seller agrees to take all commercially reasonable actions and execute or provide any and all documents, information, or instruments with respect to generation by the Facility reasonably necessary to permit Buyer to comply with such requirements, if any.

6.9. Reporting and Record Retention.

6.9.1. Seller shall use commercially reasonable efforts to meet the Milestone Schedule set forth in Appendix E and avoid or minimize any delays in meeting such schedule. Seller shall provide Project development status reports in a format and a frequency, which shall not exceed one (1) report per month, specified by the Buyer. The report shall describe Seller's progress relative to the development, construction, and startup of the Facility, as well as a Notice of any anticipated change to the Commercial Operation Date and whether Seller is on schedule to meet the Commercial Operation Date.

6.9.2. Seller shall within ten (10) Business Days of receipt thereof provide to Buyer copies of any Interconnection Agreement and all other material reports, studies and analyses furnished by any Transmission/Distribution Owner, and any correspondence with the Transmission/Distribution Owner related thereto, concerning the interconnection of the Facility to the Transmission/Distribution Owner's electric system or the transmission of Energy on the Transmission/Distribution Owners' electric system.

6.9.3. Seller shall provide to Buyer on the Commercial Operation Date, and within thirty (30) days after the completion of each Contract Year thereafter during the Delivery Term, a copy of any inspection and maintenance report regarding the Facility that was also provided to the Transmission/Distribution Owner during the previous Contract Year.

6.10. Tax Withholding Documentation. Upon Buyer's request, Seller shall promptly provide to Buyer Internal Revenue Service tax Form W-9 and California tax Form 590 (or their equivalent), completed with Seller's information, and any other documentation necessary for Buyer to

comply with its tax reporting or withholding obligations with respect to Seller.

6.11. Modifications to Facility. During the Delivery Term, Seller shall not repower or materially modify or alter the Facility without the written consent of Buyer. Material modifications or alterations include, but are not limited to, (a) movement of the Site, (b) changes that may increase or decrease the expected output of the Facility other than as allowed under Section 3.2, (c) changes that may affect the generation profile of the Facility, (d) changes that may affect the ability to accurately measure the output of Product from the Facility and (e) changes that conflict with elections, information or requirements specified elsewhere in this Agreement. Material modifications or alterations do not include maintenance and repairs performed in accordance with Prudent Electrical Practices. Seller shall provide to Buyer Notice not less than ninety (90) days before any proposed repowering, modification or alteration occurs describing the repowering, modification or alteration to Buyer's reasonable satisfaction.

6.12. No Additional Incentives. Seller agrees that during the Term of this Agreement it shall not seek additional compensation or other benefits pursuant to the Self-Generation Incentive Program, as defined in CPUC Decision 01-03-073, the California Solar Initiative, as defined in CPUC Decision 06-01-024, Buyer's net energy metering tariff, or other similar California ratepayer subsidized program relating to energy production with respect to the Facility.

6.13. Small Hydro/Private Energy Producer. Seller agrees to provide to Buyer copies of each of the documents identified in California Public Utilities Code Section 2821(d)(1), if applicable, as may be amended from time to time, as evidence of Seller's compliance with such Public Utilities Code section prior to the Commercial Operation Date and, after the Commercial Operation Date, within thirty (30) days of Seller's receipt of written request.

6.14. Site Control. Seller shall have Site Control as of the earlier of: (a) the Commercial Operation Date; or (b) any date before the Commercial Operation Date to the extent necessary for the Seller to perform its obligations under this Agreement and, in each case, Seller shall maintain Site Control throughout the Delivery Term. Seller shall promptly provide Buyer with Notice if there is any change in the status of Seller's Site Control.

7. INDEMNITY

Seller shall defend, save harmless and indemnify Buyer and its directors, officers, officials, and employees against and from any and all loss, liability, damage, expense , and costs (including without limitation costs and fees of

litigation and reasonable attorneys' fees) of every nature resulting from or arising out of Seller's performance of its obligations under this Agreement , or its failure to comply with any of its obligations contained in this Agreement, except such loss or damage which was caused by the sole negligence or willful misconduct of Buyer.

8. INSURANCE

8.1. Insurance Coverage. Seller shall, at its own expense, starting on the Execution Date and until the end of the Term, and for such additional periods as may be specified below, provide and maintain in effect the following insurance policies and minimum limits of coverage as specified below, and such additional coverage as may be required by Law, with insurance companies authorized to do business in the state in which the services are to be performed, with an A.M. Best's Insurance Rating of not less than A-:VII.

8.1.1. Commercial general liability insurance, written on an occurrence, not claims-made basis, covering all operations by or on behalf of Seller arising out of or connected with this Agreement, including coverage for bodily injury, broad form property damage, personal and advertising injury, products/completed operations, contractual liability, premises-operations, owners and contractors protective, hazard, explosion, collapse and underground. Such insurance must bear a combined single limit per occurrence and annual aggregate of not less than one million dollars ($2,000,000.00), exclusive of defense costs, for all coverages. Such insurance must contain standard cross-liability and severability of interest provisions. If Seller elects, with Buyer's written concurrence, to use a "claims made" form of commercial general liability insurance, then the following additional requirements apply: (a) the retroactive date of the policy must be prior to the Execution Date; and (b) either the coverage must be maintained for a period of not less than four (4) years after this Agreement terminates, or the policy must provide for a supplemental extended reporting period of not less than four (4) years after this Agreement terminates. Governmental agencies which have an established record of self-insurance may provide the required coverage through self-insurance.

8.1.2. Workers' compensation insurance with statutory limits, as required by the state having jurisdiction over Seller's employees, and employer's liability insurance with limits of not less than: (a) bodily injury by accident - one million dollars ($1,000,000.00) each accident; (b) bodily injury by disease - one million dollars ($1,000,000.00) policy limit; and (c) bodily injury by disease - one million dollars ($1,000,000.00) each employee.

8.1.3. Commercial automobile liability insurance covering bodily injury and property damage with a combined single limit of not less than one million dollars ($1,000,000.00) per occurrence. Such insurance must cover liability arising out of Seller's use of all owned, non-owned and hired automobiles in the performance of the Agreement.

8.1.4. Umbrella/excess liability insurance, written on an occurrence, not claims-made basis, providing coverage excess of the underlying employer's liability, commercial general liability, and commercial automobile liability insurance, on terms at least as broad as the underlying coverage, with limits of not less than four million dollars ($4,000,000.00) per occurrence and in the annual aggregate.

8.2. Additional Insurance Provisions.

8.2.1. On or before the later of (a) sixty (60) days after the Execution Date and (b) the date immediately preceding commencement of construction of the Facility, and again within a reasonable time after coverage is renewed or replaced, Seller shall furnish to Buyer certificates of insurance evidencing the coverage required above, written on forms and with deductibles reasonably acceptable to Buyer. Notwithstanding the foregoing sentence, Seller shall in no event furnish Buyer certificates of insurance evidencing required coverage later than the Commercial Operation Date. All deductibles, co-insurance and self-insured retentions applicable to the insurance above must be paid by Seller. All certificates of insurance must note that the insurers issuing coverage must endeavor to provide Buyer with at least thirty (30) days' prior written notice in the event of cancellation of coverage. Buyer's receipt of certificates that do not comply with the requirements stated in this Section 8.2.1, or Seller's failure to provide such certificates, do not limit or relieve Seller of the duties and responsibility of maintaining insurance in compliance with the requirements in this Section 8 and do not constitute a waiver of any of the requirements of Section 8.

8.2.2. Insurance coverage described above in Section 8.1 shall provide for thirty (30) days written Notice to Buyer prior to cancellation, termination, alteration, or material change of such insurance.

8.2.3. Evidence of coverage described above in Section 8.1 shall state that coverage provided in primary and is not excess to or contributing with any insurance or self-insurance maintained by Buyer.

8.2.4. Buyer shall have the right to inspect or obtain a copy of the original policy(ies) of insurance.

8.2.5. All insurance certificates, endorsements, cancellations, terminations, alterations, and material changes of such insurance must be issued,

clearly labeled with this Agreement's identification number and submitted in accordance with Section 9 and Appendix F.

8.2.6. The insurance requirements set forth in Section 8.1 shall apply as primary insurance to, without a right of contribution from, any other insurance maintained by or afforded to Buyer, its subsidiaries and Affiliates, and their respective officers, directors, shareholders, agents, and employees, regardless of any conflicting provision in Seller's policies to the contrary. To the extent permitted by Law, Seller and its insurers shall be required to waive all rights of recovery from or subrogation against Buyer, its subsidiaries and Affiliates, and their respective officers, directors, shareholders, agents, employees and insurers. The commercial general liability insurance required in Section 8.1.1 and the umbrella/excess liability insurance required in Section 8.1.4 must name Buyer, its subsidiaries and Affiliates, and their respective officers, directors, shareholders, agents and employees, as additional insureds for liability arising out of Seller's construction, use or ownership of the Facility.

8.2.7. Seller shall remain liable for all acts, omissions or default of any subcontractor or subsupplier and shall indemnify, defend and hold harmless Buyer for any and all loss or damages, as well as all costs, charges and expenses which Buyer may suffer, incur, or bear as a result of any acts, omissions or default by or on behalf of any subcontractor or subsupplier.

8.2.8. If Seller fails to comply with any of the provisions of this Section 8, Seller, among other things and without restricting Buyer's remedies under Law or otherwise, shall, at its own cost, act as an insurer and provide insurance in accordance with the terms and conditions of this Section 8. With respect to the required commercial general liability insurance set forth in Section 8.1.1, umbrella/excess liability insurance set forth in Section 8.1.4, and commercial automobile liability insurance set forth in Section 8.1.3, Seller shall provide a current, full and complete defense to Buyer, its subsidiaries and Affiliates, and their respective officers, directors, shareholders, agents, employees, assigns, and successors in interest, in response to a third party claim in the same manner that an insurer with an A.M. Best's Insurance Rating of A-:VII would have, had the insurance been maintained in accordance with the terms and conditions set forth in this Section 8 and given the required additional insured wording in the commercial general liability insurance and umbrella/excess liability insurance, and standard "Who is an Insured" provision in commercial automobile liability form.

9. NOTICES

Notices (other than forecasts and scheduling requests) shall, unless otherwise specified herein, be in writing and may be delivered by hand delivery, United States mail, overnight courier service, facsimile, or electronic messaging (e-mail). A notice sent by facsimile transmission or e-mail will be recognized and shall be deemed received on the Business Day on which such notice was transmitted if received before 5 p.m. Pacific prevailing time (and if received after 5 p.m., on the next Business Day) and a notice by overnight mail or courier shall be deemed to have been received on the next Business Day after such Notice is sent or such earlier time as is confirmed by the receiving Party unless it confirms a prior oral communication, in which case any such notice shall be deemed received on the day sent. A Party may change its addresses by providing notice of same in accordance with this provision. All Notices, requests, invoices, statements or payments for this Facility must reference this Agreements identification number. Notices shall be provided as indicated in Appendix F.

10. FORCE MAJEURE

10.1. No Default for Force Majeure. Neither Party shall be in default in the performance of any of its obligations set forth in this Agreement when and to the extent failure of performance is caused by Force Majeure.

10.2. Requirements Applicable to Claiming Party. If a Party, because of Force Majeure, is rendered wholly or partly unable to perform its obligations when due under this Agreement, such Party (the "Claiming Party") shall be excused from whatever performance is affected by the Force Majeure to the extent so affected. In order to be excused from its performance obligations under this Agreement by reason of Force Majeure:

10.2.1. The Claiming Party, on or before the fourteenth (14^{th}) day after the initial occurrence of the claimed Force Majeure, must give the other Party Notice describing the particulars of the occurrence; and

10.2.2. The Claiming Party must provide timely evidence reasonably sufficient to establish that the occurrence constitutes Force Majeure as defined in this Agreement.

10.3. **Limitations. The suspension of the Claiming Party's performance due to Force Majeure may not be greater in scope or longer in duration than is required by such Force Majeure. In addition, the Claiming Party shall use diligent efforts to remedy its inability to perform. When the Claiming Party is able to resume performance of its obligations under this Agreement, the Claiming Party shall give the other Party prompt Notice to that effect.**

10.4. Termination. Either Party may terminate this Agreement on at least five (5) Business Days' prior Notice, in the event of Force Majeure which materially interferes with such Party's ability to perform its obligations under this Agreement and which (a) extends for more than 365 consecutive days, (b) extends for more than a total of 365 days in any consecutive 540-day period, or (c) is consistent with Section 2.6.2.2.

11. EVENTS OF DEFAULT AND TERMINATION

11.1. Termination. Unless terminated earlier pursuant to Section 10.4 or this Section 11, this Agreement automatically terminates immediately following the last day of the Delivery Term.

11.2. Events of Default. An "Event of Default" means, with respect to a Party, the occurrence of any of the following:

11.2.1. With respect to either Party:

11.2.1.1. A Party becomes Bankrupt;

11.2.1.2. Except for an obligation to make payment when due, if there is a failure of a Party to perform any material covenant or obligation set forth in this Agreement (except to the extent such failure provides a separate termination right for the non-breaching Party or to the extent excused by Force Majeure), if such failure is not remedied within thirty (30) days after Notice thereof from the non-breaching Party to the breaching Party;

11.2.1.3. A Party fails to make any payment due and owing under this Agreement, if such failure is not cured within five (5) Business Days after Notice from the non-breaching Party to the breaching Party; or

11.2.1.4. Any representation or warranty made by a Party (a) is false or misleading in any material respect when made or (b) becomes false or misleading in any material respect during the Term.

11.2.2. With respect to Seller:

11.2.2.1. Seller fails to take all corrective actions specified in any Buyer Notice, within the time frame set forth in such Notice, that the Facility is out of compliance with any term of this Agreement; provided that if such corrective action falls under a specific termination right under Section 11.2.2, then the time frame, if any, set forth for such right shall apply;

11.2.2.2. The Facility has not achieved Commercial Operation by the expected Commercial Operation Date specified in Section 2.6.1 and Seller has not elected to pay daily delay damages pursuant to Section 2.6.4;

11.2.2.3. Subject to Section 10, Seller delivers less than 80% of the applicable Contract Quantity from the Facility to Buyer for a period of two (2) consecutive Contract Years;

11.2.2.4. Seller fails to maintain its status as an ERR as set forth in Section 4.5 of the Agreement;

11.2.2.5. Seller abandons the Facility;

11.2.2.6. Seller installs generating equipment at the Facility that exceeds the Contract Capacity and such excess generating capacity is not removed within five (5) Business Days after Notice from Buyer;

11.2.2.7. Seller delivers or attempts to deliver to the Delivery Point for sale under this Agreement product that was not generated by the Facility;

11.2.2.8. Seller fails to install any of the equipment or devices necessary for the Facility to satisfy the Contract Capacity set forth in Section 3.1;

11.2.2.9. An unauthorized assignment of the Agreement, as set forth in Section 15;

11.2.2.10. Seller fails to reimburse Buyer any amounts due under this Agreement;

11.2.2.11. Seller breaches the requirements in Section 6.12 regarding incentives; or

11.2.2.12. Seller fails to maintain the Collateral Requirement set forth in Section 3.9.

11.3. Declaration of an Event of Default. If an Event of Default has occurred, the non-defaulting Party shall have the right to: (a) send Notice, designating a day, no earlier than five (5) days after such Notice and no later than twenty (20) days after such Notice, as an early termination date of this Agreement ("Early Termination Date"); (b) accelerate all amounts owing between the Parties; (c) terminate this Agreement and end the Delivery Term effective as of the Early Termination Date; (d) collect any Settlement Amount under Section 11.5; and (e) if the defaulting party is the Seller and Buyer terminates the Agreement prior

to the start of the Commercial Operation Date, Buyer shall have the right to retain the entire Reservation Deposit.

11.4. Suspension of Performance. If an Event of Default shall have occurred, the non-defaulting Party has the right to immediately suspend performance under this Agreement and pursue all remedies available at Law or in equity against the defaulting Party (including monetary damages), except to the extent that such remedies are limited by the terms of this Agreement.

11.5. Calculation of Settlement Amount.

11.5.1. If either Party exercises a termination right under Section 12 after the Commercial Operation Date, the non-defaulting Party shall calculate a settlement amount ("Settlement Amount") equal to the amount of the non-defaulting Party's aggregate Losses and Costs less any Gains, determined as of the Early Termination Date. Prior to the Commercial Operation Date, the Settlement Amount shall be Zero dollars ($0).

11.5.2. If the non-defaulting Party's aggregate Gains exceed its aggregate Losses and Costs, if any, determined as of the Early Termination Date, the Settlement Amount shall be Zero dollars ($0).

11.5.3. The Buyer shall not have to enter into replacement transactions to establish a Settlement Amount.

11.5.4. Buyer shall have the right to draw upon the Collateral Requirement to collect any Settlement Amount owed to Buyer.

11.6. Rights and Remedies Are Cumulative. The rights and remedies of the Parties pursuant to this Section 11 shall be cumulative and in addition to the rights of the Parties otherwise provided in this Agreement.

11.7. Duty to Mitigate. Buyer and Seller shall each have a duty to mitigate damages pursuant to this Agreement, and each shall use reasonable efforts to minimize any damages it may incur as a result of the other Party's non-performance of this Agreement, including with respect to termination of this Agreement.

11.8. Right of First Refusal.

11.8.1. If Seller terminates this Agreement pursuant to Section 10.4, or if Seller has an Event of Default prior to the Commercial Operation Date, neither Seller nor Seller's Affiliates may sell, or enter into a contract to sell, Energy, Green Attributes, Capacity Attributes, or Resource Adequacy Benefits, generated by, associated with or attributable to a generating facility installed at the Site to a party other

than Buyer for a period of two (2) years following the effective date of such termination ("Restricted Period").

11.8.2. This prohibition on contracting and sale shall not apply if, before entering into such contract or making a sale to a party other than Buyer, Seller or Seller's Affiliate provides Buyer with a written offer to sell the Energy, Green Attributes, Capacity Attributes and Resource Adequacy Benefits to Buyer at the Contract Price and on other terms and conditions materially similar to the terms and conditions contained in this Agreement and Buyer fails to accept such offer within forty-five (45) days after Buyer's receipt thereof.

11.8.3. Neither Seller nor Seller's Affiliates may sell or transfer the Facility, or any part thereof, or land rights or interests in the Site of the proposed Facility during the Restricted Period so long as the limitations contained in this Section 11.8 apply, unless the transferee agrees to be bound by the terms set forth in this Section 11.8 pursuant to a written agreement reasonably approved by Buyer.

11.8.4. Seller shall indemnify and hold Buyer harmless from all benefits lost and other damages sustained by Buyer as a result of any breach of the covenants contained within this Section 11.8.

12. GOVERNMENTAL CHARGES

12.1. Governmental Charges. Seller shall pay or cause to be paid all taxes imposed by any Governmental Authority ("Governmental Charges") on or with respect to the Product or the Transaction arising at the Delivery Point, including, but not limited to, ad valorem taxes and other taxes attributable to the Project, land, land rights or interests in land for the Project. Buyer shall pay or cause to be paid all Governmental Charges on or with respect to the Product or the Transaction from the Delivery Point. In the event Seller is required by Law or regulation to remit or pay Governmental Charges which are Buyer's responsibility hereunder, Buyer shall reimburse Seller for such Governmental Charges within thirty (30) days of Notice by Seller. If Buyer is required by Law or regulation to remit or pay Governmental Charges which are Seller's responsibility hereunder, Buyer may deduct such amounts from payments to Seller with respect to payments under the Agreement; if Buyer elects not to deduct such amounts from Seller's payments, Seller shall reimburse Buyer for such amounts within thirty (30) days of Notice from Buyer. Nothing shall obligate or cause a Party to pay or be liable to pay any Governmental Charges for which it is exempt under the Law. A Party that is exempt at any time and for any reason from one or more Governmental Charges bears the risk that such exemption shall be lost or the benefit of such exemption reduced; and thus, in the event a Party's exemption is lost or reduced, each Party's responsibility with

respect to such Governmental Charge shall be in accordance with the first four sentences of this Section.

13. RELEASE OF INFORMATION AND RECORDING CONVERSATION

13.1. Release of Information. Seller authorizes Buyer to release to the FERC, CEC, the CPUC, other Governmental Authority, and/or media outlet information regarding the Facility, including the Seller's name and location, and the size, location and operational characteristics of the Facility, the Term, the ERR type, photographs of the project, the Commercial Operation Date, greenhouse gas emissions data, and the net power rating of the Facility, as requested from time to time pursuant to the CEC's, CPUC's or applicable Governmental Authority's rules and regulations.

13.2. Public Announcements. Seller shall make no public announcement regarding any aspect of this Agreement or the role of Seller in regards to the development or operation of the Project without the prior written consent of Buyer, which consent shall not be unreasonably withheld. Any public announcement by Seller must comply with California Business and Professions Code § 17580.5 and with the *Guides for the Use of Environmental Marketing Claims*, published by the Federal Trade Commission, as it may be updated from time to time.

14. ASSIGNMENT

14.1. General Assignment. Except as provided in Sections 14.2 and 14.3, Seller may not assign this Agreement or its rights hereunder without the prior written consent of the Buyer, which consent shall not be unreasonably withheld or delayed so long as among other things (a) the assignee assumes the Seller's payment and performance obligations under this Agreement, (b) the assignee agrees in writing to be bound by the terms and conditions hereof, (c) Seller delivers evidence satisfactory to Buyer of the proposed assignee's technical and financial capability to meet or exceed Seller's obligations hereunder and (d) the Seller delivers such tax and enforceability assurance as Buyer may reasonably request.

14.2. Assignment to Financing Providers. Seller may assign this Agreement as collateral for any financing or refinancing of the Project (including any tax equity or lease financing) with the prior written consent of the Buyer, which consent shall not be unreasonably withheld or delayed. The Parties agree that, the consent provided to Buyer in accordance with this Section 14.2 shall be in a form substantially similar to the Form of Financing Consent attached hereto as Appendix H; provided that (a) Buyer shall not be required to consent to any additional terms or conditions beyond those contained in Appendix H, including extension of any cure periods or additional remedies for financing providers, and

(b) Seller shall be responsible at Buyer's request for Buyer's reasonable costs and attorneys' fees associated with the review, negotiation, execution and delivery of documents in connection with such assignment.

14.3. Notice of Change in Control. Except in connection with public market transactions of the equity interests or capital stock of Seller or Seller's Affiliates, Seller shall provide Buyer notice of any direct change of control of Seller (whether voluntary or by operation of Law).

15. GOVERNING LAW

This agreement and the rights and duties of the parties hereunder shall be governed by and construed, enforced and performed in accordance with the laws of the state of California, without regard to principles of conflicts of law. To the extent enforceable at such time, each party waives its respective right to any jury trial with respect to any litigation arising under or in connection with this agreement.

16. DISPUTE RESOLUTION

16.1. Intent of the Parties. The sole procedure to resolve any claim arising out of or relating to this Agreement is the dispute resolution procedure set forth in this Section 17, except that either Party may seek an injunction in Superior Court Humboldt County, California if such action is necessary to prevent irreparable harm, in which case both Parties nonetheless will continue to pursue resolution of all other aspects of the dispute by means of this procedure.

16.2. Management Negotiations.

16.2.1. The Parties will attempt in good faith to resolve any controversy or claim arising out of or relating to this Agreement by prompt negotiations between each Party's authorized representative, or such other person designated in writing as a representative of the Party (each a "Manager"). Either Manager may request a meeting, to be held in person or telephonically, to initiate negotiations to be held within ten (10) Business Days of the other Party's receipt of such request, at a mutually agreed time and place.

16.2.2. All communication and writing exchanged between the Parties in connection with these negotiations shall be deemed inadmissible as evidence such that it cannot be used or referred to in any subsequent judicial or arbitration process between the Parties, whether with respect to this dispute or any other.

16.2.3. If the matter is not resolved within forty-five (45) days of commencement of negotiations under Section 16.2.1, or if the Party receiving the written request to meet refuses or does not meet within

the ten (10) Business Day period specified in Section 16.2.1, either Party may initiate arbitration of the controversy or claim according to the terms of Section 16.3.

16.3. Arbitration Initiation. If the dispute cannot be resolved by negotiation as set forth in Section 16.2 above, then the Parties shall resolve such controversy through arbitration ("Arbitration"). The Arbitration shall be adjudicated by one retired judge or justice from the JAMS panel. The Arbitration shall take place in Humboldt County, California, and shall be administered by and in accordance with JAMS' Commercial Arbitration Rules. If the Parties cannot mutually agree on the arbitrator who will adjudicate the dispute, then JAMS shall provide the Parties with an arbitrator pursuant to its then-applicable Commercial Arbitration Rules. The arbitrator shall have no affiliation with, financial or other interest in, or prior employment with either Party and shall be knowledgeable in the field of the dispute. Either Party may initiate Arbitration by filing with the JAMS a notice of intent to arbitrate at any time following the unsuccessful conclusion of the management negotiations provided for in Section 16.2.

17. MISCELLANEOUS

17.1. Severability. If any provision in this Agreement is determined to be invalid, void or unenforceable by any court having jurisdiction, such determination shall not invalidate, void, or make unenforceable any other provision, agreement or covenant of this Agreement. Any provision of this Agreement held invalid or unenforceable only in part or degree will remain in full force and effect to the extent not held invalid or unenforceable.

17.2. Counterparts. This Agreement may be executed in one or more counterparts each of which shall be deemed an original and all of which shall be deemed one and the same Agreement. Delivery of an executed counterpart of this Agreement by facsimile or PDF transmission will be deemed as effective as delivery of an originally executed counterpart. Each Party delivering an executed counterpart of this Agreement by facsimile or PDF transmission shall also deliver an originally executed counterpart, but the failure of any Party to deliver an originally executed counterpart of this Agreement shall not affect the validity or effectiveness of this Agreement.

17.3. General. No amendment to or modification of this Agreement shall be enforceable unless reduced to writing and executed by both Parties. This Agreement shall not impart any rights enforceable by any third party other than a permitted successor or assignee bound to this Agreement. Waiver by a Party of any default by the other Party shall not be construed as a waiver of any other default. The term "including" when used in this Agreement shall be by way of example only and shall

not be considered in any way to be in limitation. The headings used herein are for convenience and reference purposes only.

17.4. Interpretation. Whenever this Agreement specifically refers to any Law, tariff, Governmental Authority, regional reliability council, Transmission/Distribution Owner, or credit rating agency, the Parties hereby agree that the references also refers to any successor to such Law, tariff or organization.

17.5. Construction. The Agreement will not be construed against any Party as a result of the preparation, substitution, or other event of negotiation, drafting or execution thereof.

17.6. Joint Powers Authority. Seller hereby acknowledges and agrees that Buyer is organized as a Joint Powers Authority in accordance with the Joint Powers Act of the State of California (Government Code Section 6500 et seq.) pursuant to a Third Amended and Restated Joint Powers Agreement dated October 13, 2016 (the "Joint Power Agreement"), that Buyer is a public entity separate from its members, and that under the Joint Powers Agreement the members have no liability for any obligations or liabilities of Buyer. Seller agrees that Buyer shall solely be responsible for all debts, obligations and liabilities to Seller accruing and arising out of this Agreement, and Seller agrees that it shall have no rights against, and shall not make any claim, take any actions or assert any remedies against, any of Buyer's members, any cities or counties participating in Buyer's community choice aggregation program, or any of Buyer's retail customers in connection with this Agreement.

FEED-IN TARIFF
POWER PURCHASE AGREEMENT

IN WITNESS WHEREOF, each Party has caused this Agreement to be duly executed by its authorized representative as of the date of last signature provided below.

	REDWOOD COAST ENERGY AUTHORITY
(Seller)	(Buyer)
(Signature)	(Signature)
(Type/Print Name)	(Type/Print Name)
(Title)	(Title)
(Date)	(Date)

Appendix A - Definitions

"Affiliate" means, with respect to a Party, any entity that, directly or indirectly, through one or more intermediaries, controls, or is controlled by, or is under common control with that Party.

"Arbitration" has the meaning set forth in Section 16.

"As-Available Facility" means a generating facility that is powered by one of the following sources, except for a de minimis amount of Energy from other sources: (a) wind, (b) solar energy, (c) hydroelectric potential derived from small conduit water distribution facilities that do not have storage capability, or (d) other variable sources of energy that are contingent upon natural forces other than geothermal.

"Available Capacity" means the rated alternating current (AC) generating capacity of the Facility, expressed in whole kilowatts, that is available to generate Product.

"Bankrupt" means with respect to any entity, such entity:

(a) Files a petition or otherwise commences, authorizes or acquiesces in the commencement of a proceeding or cause of action under any bankruptcy, insolvency, reorganization or similar law, or has any such petition filed or commenced against it;

(b) Makes an assignment or any general arrangement for the benefit of creditors;

(c) Otherwise becomes bankrupt or insolvent (however evidenced);

(d) Has a liquidator, administrator, receiver, trustee, conservator or similar official appointed with respect to such entity or any substantial portion of its property or assets; or

(e) Is generally unable to pay its debts as they fall due.

"Baseload Facility" means a generating facility that does not qualify as an As-Available Facility.

"Business Day" means any day except a Saturday, Sunday, a Federal Reserve Bank holiday, or the Friday following Thanksgiving during the hours of 8:00 a.m. and 5:00 p.m. local time for the relevant Party's principal place of business where the relevant Party in each instance shall be the Party from whom the notice, payment or delivery is being sent.

"CAISO" means the California Independent System Operator Corporation or any successor entity performing similar functions.

"CAISO Grid" means the system of transmission lines and associated facilities that have been placed under the CAISO's operational control.

"CAISO Tariff" means the CAISO FERC Electric Tariff, Fifth Replacement Volume No. 1, as amended from time to time.

"California Renewables Portfolio Standard" means the renewable energy program and policies codified in California Public Utilities Code Sections 399.11 through 399.33 and California Public Resources Code Sections 25740 through 25751, as such provisions may be amended or supplemented from time to time.

"Capacity Attributes" means any current or future defined characteristic, certificate, tag, credit, or ancillary service attribute, whether general in nature or specific as to the location or any other attribute of the Project, intended to value any aspect of the capacity of the Project to produce Energy or ancillary services, including, but not limited to, any accounting construct so that the full Contract Capacity of the Project may be counted toward a Resource Adequacy Requirement or any other measure by the CPUC, the CAISO, the FERC, or any other entity invested with the authority under federal or state Law, to require Buyer to procure, or to procure at Buyer's expense, Resource Adequacy or other such products.

"CEC" means the California Energy Commission or its successor agency.

"CEC Certification" means certification by the CEC that the Facility is an ERR and that all Energy produced by the Facility qualifies as generation from an ERR.

"CEC Pre-Certification" means provisional certification of the proposed Facility as an ERR by the CEC upon submission by a facility of a complete application and required supplemental information.

"Check Meter" means the Buyer revenue-quality meter section(s) or meter(s), which Buyer may require at its discretion, and which will include those devices normally supplied by Buyer or Seller under the applicable utility electric service requirements.

"Claiming Party" has the meaning set forth in Section 10.2.

"Commercial Operation" means the Contract Capacity has been installed and the Facility is operating and able to produce and deliver the Product to Buyer pursuant to the terms of this Agreement.

"Commercial Operation Date" means the date on which the Facility achieves Commercial Operation.

"Contract Capacity" means the amount of electric energy generating capacity, set forth in Section 3.1, that Seller commits to install at the Site.

"Contract Price" has the meaning set forth in Section 3.6.

"Contract Quantity" has the meaning set forth in Section 3.2.

"Contract Year" means a period of twelve (12) consecutive months with the first Contract Year commencing on the Commercial Operation Date and each subsequent Contract Year commencing on the anniversary of the Commercial Operation Date.

"Costs" means (a) brokerage fees, commissions and other similar third-party transaction costs and expenses reasonably incurred either in terminating any arrangement pursuant to which it has hedged its obligations or in entering into new arrangements which replace the Transaction; and (b) all reasonable attorneys' fees and expenses incurred in connection with the termination of the Transaction.

"CPUC" means the California Public Utilities Commission, or successor entity.

"Credit Rating" means, with respect to any entity, (a) the rating then assigned to such entity's unsecured senior long-term debt obligations (not supported by third party credit enhancements), or (b) if such entity does not have a rating for its unsecured senior long-term debt obligations, then the rating assigned to such entity as an issuer rating by S&P and/or Moody's. If the entity is rated by both S&P and Moody's and such ratings are not equivalent, the lower of the two ratings shall determine the Credit Rating. If the entity is rated by either S&P or Moody's, but not both, then the available rating shall determine the Credit Rating.

"Current Inverters" means devices used to convert DC electric energy to alternating current electric energy. [*for solar photovoltaic technology]*

"Curtailment Order" means any instruction from Buyer to Seller to reduce the delivery of Energy from the Facility for any reason other than as set forth in Sections 3.6.3 (a) or (b).

"DC" means direct current. *[for solar photovoltaic technology]*

"DC Collection System" means the DC equipment, cables, components, devices and materials that interconnect the Photovoltaic Modules with the Current Inverters. *[for solar photovoltaic technology]*

"Delivered Energy" means all Energy produced from the Facility and delivered by Seller to the Delivery Point, expressed in kWh, as recorded by the meter specified in Section 6.2.1 or the Check Meter, as applicable.

"Delivery Point" has the meaning set forth in Section 2.5.

"Delivery Term" has the meaning set forth in Section 3.5.

"Early Termination Date" has the meaning set forth in Section 11.3.

"Eligible Renewable Energy Resource" or "ERR" has the meaning set forth in Public Utilities Code Sections 399.12 or Section 399.16 and California Public Resources

Code Section 25741, as these code provision may be amended or supplemented from time to time.

"Emergency" means (a) an actual or imminent condition or situation which jeopardizes the integrity of the electric system or the integrity of any other systems to which the electric system is connected or any condition so defined and declared by the CAISO; or (b) an emergency condition as defined under an Interconnection Agreement and any abnormal interconnection or system condition that requires automatic or immediate manual action to prevent or limit loss of load or generation supply, that could adversely affect the reliability of the electric system or generation supply, that could adversely affect the reliability of any interconnected system, or that could otherwise pose a threat to public safety.

"Energy" means three-phase, 60-cycle alternating current electric energy measured in kWh, net of Station Use. For purposes of the definition of "Green Attributes," the word "energy" shall have the meaning set forth in this definition.

"Execution Date" means the latest signature date found at the end of the Agreement.

"Facility" has the meaning set forth in Section 2. The terms "Facility" or "Project" as used in this Agreement are interchangeable.

"FERC" means the Federal Energy Regulatory Commission or any successor government agency.

"Force Majeure" means any occurrence that was not anticipated as of the Execution Date that:

(a) In whole or in part:

(i) Delays a Party's performance under this Agreement;

(ii) Causes a Party to be unable to perform its obligations; or

(iii) Prevents a Party from complying with or satisfying the conditions of this Agreement;

(b) Is not within the control of that Party; and

(c) The Party has been unable to overcome by the exercise of due diligence, including war, riot, civil disturbance or disobedience, terrorism, sabotage, strike or labor dispute, or unforeseen curtailment or reduction in deliveries at the direction of a Transmission/Distribution Owner or the CAISO.

Force Majeure does not include:

(d) The lack of wind, sun or other fuel source of an inherently intermittent nature;

(e) Reductions in generation from the Facility resulting from ordinary wear and tear, deferred maintenance or operator error; or

(f) Any delay in providing, or cancellation of, interconnection service by a Transmission/Distribution Owner or the CAISO, except to the extent such delay or cancellation is the result of a force majeure claimed by the Transmission/Distribution Owner or the CAISO.

"Gains" means with respect to any Party, an amount equal to the present value of the economic benefit to it, if any (exclusive of Costs), resulting from the termination of the Transaction, determined in a commercially reasonable manner, subject to Section 11.5. Factors used in determining economic benefit may include, without limitation, reference to information either available to it internally or supplied by one or more third parties, including, without limitation, quotations (either firm or indicative) of relevant rates, prices, yields, yield curves, volatilities, spreads or other relevant market data in the relevant markets, market price referent, market prices for a comparable transaction, forward price curves based on economic analysis of the relevant markets, settlement prices for a comparable transaction at liquid trading platforms (e.g., NYMEX), all of which should be calculated for the remaining Delivery Term to determine the value of the Product.

"Governmental Authority" means any federal, state, local or municipal government, governmental department, commission, board, bureau, agency, or instrumentality, or any judicial, regulatory or administrative body, having jurisdiction as to the matter in question.

"Governmental Charges" has the meaning set forth in Section 12.1.

"Green Attributes" means any and all credits, benefits, emissions reductions, offsets, and allowances, howsoever entitled, attributable to the generation from the Project, and its avoided emission of pollutants. Green Attributes include but are not limited to Renewable Energy Credits, as well as: (1) any avoided emission of pollutants to the air, soil or water such as sulfur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO) and other pollutants; (2) any avoided emissions of carbon dioxide (CO2), methane (CH4), nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride and other greenhouse gases (GHGs) that have been determined by the United Nations Intergovernmental Panel on Climate Change, or otherwise by law**,** to contribute to the actual or potential threat of altering the Earth's climate by trapping heat in the atmosphere[1]; (3) the reporting rights to these avoided emissions, such as Green

[1] Avoided emissions may or may not have any value for GHG compliance purposes. Although avoided emissions are included in the list of Green Attributes, this inclusion does not create any right to use those avoided emissions to comply with any GHG regulatory program.

Tag Reporting Rights. Green Tag Reporting Rights are the right of a Green Tag Purchaser to report the ownership of accumulated Green Tags in compliance with federal or state law, if applicable, and to a federal or state agency or any other party at the Green Tag Purchaser's discretion, and include without limitation those Green Tag Reporting Rights accruing under Section 1605(b) of The Energy Policy Act of 1992 and any present or future federal, state, or local law, regulation or bill, and international or foreign emissions trading program. Green Tags are accumulated on a MWh basis and one Green Tag represents the Green Attributes associated with one (1) MWh of Energy. Green Attributes do not include (i) any energy, capacity, reliability or other power attributes from the Project, (ii) production tax credits associated with the construction or operation of the Project and other financial incentives in the form of credits, reductions, or allowances associated with the project that are applicable to a state or federal income taxation obligation, (iii) fuel-related subsidies or "tipping fees" that may be paid to Seller to accept certain fuels, or local subsidies received by the generator for the destruction of particular preexisting pollutants or the promotion of local environmental benefits, or (iv) emission reduction credits encumbered or used by the Project for compliance with local, state, or federal operating and/or air quality permits. If the Project is a biomass or biogas facility and Seller receives any tradable Green Attributes based on the greenhouse gas reduction benefits or other emission offsets attributed to its fuel usage, it shall provide Buyer with sufficient Green Attributes to ensure that there are zero net emissions associated with the production of electricity from the Project.

"Interconnection Agreement" means the small generator interconnection agreement entered into separately between Seller, Transmission/Distribution Owner, and CAISO (as appropriate) obtained by Seller pursuant to Transmission/Distribution Owner's Wholesale Distribution Tariff.

"Interconnection Facilities" has the meaning set forth in the tariff applicable to the Seller's Interconnection Agreement.

"Interconnection Point" has the meaning set forth in Section 2.4.

"Interest Rate" means the rate per annum equal to the "Monthly" Federal Funds Rate (as reset on a monthly basis based on the latest month for which such rate is available) as reported in Federal Reserve Bank Publication H.15-519, or its successor publication.

"JAMS" means JAMS, Inc. or its successor entity, a judicial arbitration and mediation service.

"kW" means kilowatt.

"kWh" means kilowatt-hour.

"kWPDC" means peak DC power. *[for solar photovoltaic technology]*

APPENDIX A - DEFINITIONS

"Law" means any statute, law, treaty, rule, regulation, ordinance, code, permit, enactment, injunction, order, writ, decision, authorization, judgment, decree or other legal or regulatory determination or restriction by a court or Governmental Authority of competent jurisdiction, including any of the foregoing that are enacted, amended, or issued after the Execution Date, and which becomes effective during the Delivery Term; or any binding interpretation of the foregoing.

"Letter of Credit" means an irrevocable, non-transferable standby letter of credit issued either by a U.S. commercial bank or a foreign bank with a U.S. branch office with a Credit Rating of at least "A-" by S&P and "A3" by Moody's (without a "credit watch", "negative outlook" or other rating decline alert if its Credit Rating is "A-" by S&P or "A3" by Moody's). The Letter of Credit must be substantially in the form as contained in Appendix G to this Agreement; provided that if the Letter of Credit is issued by a branch of a foreign bank, Buyer may require changes to such form.

"Losses" means, with respect to any Party, an amount equal to the present value of the economic loss to it, if any (exclusive of Costs), resulting from the termination of the Transaction, determined in a commercially reasonable manner, subject to Section 11.5. Factors used in determining the loss of economic benefit may include, without limitation, reference to information either available to it internally or supplied by one or more third parties including, without limitation, quotations (either firm or indicative) of relevant rates, prices, yields, yield curves, volatilities, spreads or other relevant market data in the relevant markets, market price referent, market prices for a comparable transaction, forward price curves based on economic analysis of the relevant markets, settlement prices for a comparable transaction at liquid trading platforms (e.g. NYMEX), all of which should be calculated for the remaining term of the Transaction to determine the value of the Product.

"Manager" has the meaning set forth in Section 16.2.

"Mechanical Completion" means that all equipment and systems that are necessary to generate the effective capacity of the Facility are installed. The Facility is mechanically, electrically, and structurally constructed with all control systems installed and connected. The Facility is functionally complete to the extent necessary to begin commissioning and testing of the Facility, though commissioning and testing need not have commenced."

"MW" means megawatt (AC).

"MWh" means megawatt-hour.

"Notice," unless otherwise specified in the Agreement, means written communications by a Party to be delivered by hand delivery, United States mail, overnight courier service, facsimile or electronic messaging (e-mail).

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"Party" means the Buyer or Seller individually, and "Parties" means both collectively. For purposes of Section 16 (Governing Law) the word "party" or "parties" shall have the meaning set forth in this definition.

"Photovoltaic Module" means the individual module or component that produces DC electric energy from sun light. *[for solar photovoltaic technology]*

"Photovoltaic Module DC Rating" means, for each Photovoltaic Module installed or to be installed at the Site, the number (expressed in kWPDC) stated on the nameplate affixed thereto representing the manufacturer's maximum (at "peak" sunlight) DC power rating at the standard test condition ("Pmp" or Power maximum at peak). *[for solar photovoltaic technology]*

"Product" means all Energy produced by the Facility throughout the Delivery Term, net of Station Use and electrical losses from the Facility to the Delivery Point; all Green Attributes; all Capacity Attributes, if any; and all Resource Adequacy Benefits, if any; generated by, associated with or attributable to the Facility throughout the Delivery Term.

"Project" has the meaning set forth in Section 2. The terms "Facility" and "Project" as used in this Agreement are interchangeable.

"Prudent Electrical Practices" means those practices, methods and acts that would be implemented and followed by prudent operators of electric energy generating facilities in the Western United States, similar to the Facility, during the relevant time period, which practices, methods and acts, in the exercise of prudent and responsible professional judgment in the light of the facts known at the time the decision was made, could reasonably have been expected to accomplish the desired result consistent with good business practices, reliability and safety. Prudent Electrical Practices shall include, at a minimum, those professionally responsible practices, methods and acts described in the preceding sentence that comply with manufacturers' warranties, restrictions in this Agreement, and the requirements of Governmental Authorities, WECC standards, the CAISO and Laws. Prudent Electrical Practices also includes taking reasonable steps to ensure that:

(a) Equipment, materials, resources, and supplies, including spare parts inventories, are available to meet the Facility's needs;

(b) Sufficient operating personnel are available at all times and are adequately experienced and trained and licensed as necessary to operate the Facility properly and efficiently, and are capable of responding to reasonably foreseeable emergency conditions at the Facility and Emergencies whether caused by events on or off the Site;

(c) Preventive, routine, and non-routine maintenance and repairs are performed on a basis that ensures reliable, long term and safe operation of the Facility,

and are performed by knowledgeable, trained, and experienced personnel utilizing proper equipment and tools;

(d) Appropriate monitoring and testing are performed to ensure equipment is functioning as designed;

(e) Equipment is not operated in a reckless manner, in violation of manufacturer's guidelines or in a manner unsafe to workers, the general public, or the Transmission/Distribution Owner's electric system or contrary to environmental laws, permits or regulations or without regard to defined limitations such as, flood conditions, safety inspection requirements, operating voltage, current, volt ampere reactive (VAR) loading, frequency, rotational speed, polarity, synchronization, and control system limits; and

(f) Equipment and components are designed and manufactured to meet or exceed the standard of durability that is generally used for electric energy generating facilities operating in the Western United States and will function properly over the full range of ambient temperature and weather conditions reasonably expected to occur at the Site and under both normal and emergency conditions.

"Renewable Energy Credit" has the meaning set forth in Public Utilities Code Section 399.12(h), as may be amended from time to time or as further defined or supplemented by Law.

"Reservation Deposit" means the deposit submitted by Seller to Buyer at the time Seller submitted its application for a feed-in tariff contract, which amount shall equal four dollars ($4.00) for each kilowatt of proposed alternating current (AC) generator capacity. Buyer shall return the Reservation Deposit to Seller once the Project achieves Commercial Operation by crediting Seller the full amount of the Reservation Deposit on Buyer's first payment for delivered Product. Buyer shall retain the full amount of the Reservation Deposit in the event the Project does not achieve Commercial Operation by the Commercial Operation Date.

"Resource Adequacy" means the procurement obligation of load serving entities, including Buyer, as such obligations are described in CPUC Decisions D.04-10-035 and D.05-10-042 and subsequent CPUC decisions addressing Resource Adequacy issues, as those obligations may be altered from time to time in the CPUC Resource Adequacy Rulemakings (R.) 04-04-003 and (R.) 05-12-013 or by any successor proceeding, and all other Resource Adequacy obligations established by any other entity, including the CAISO.

"Resource Adequacy Benefits" means the rights and privileges attached to the Facility that satisfy any entity's resource adequacy obligations, as those obligations are set forth in any Resource Adequacy Rulings and shall include any local, zonal or otherwise locational attributes associated with the Facility.

"Resource Adequacy Requirements" has the meaning set forth in Section 4.4.1.

"Resource Adequacy Rulings" means CPUC Decisions 04-01-050, 04-10-035, 05-10-042, 06-06-064, 06-07-031, 07-06-029, 08-06-031, 09-06-028, 10-06-036, 11-06-022, 12-06-025, 13-06-024, 15-06-063, 16-06-045, 17-06-027, 18-06-030, 18-06-031, and any subsequent CPUC ruling or decision, or any other resource adequacy laws, rules or regulations enacted, adopted or promulgated by any applicable Governmental Authority, as such decisions, rulings, Laws, rules or regulations may be amended or modified from time-to-time during the Delivery Term.

"Restricted Period" has the meaning set forth in Section 11.8.1.

"Settlement Amount" has the meaning set forth in Section 11.5.

"Site" means the real property on which the Facility is, or will be, located, as further described in Appendix D.

"Site Control" means the Seller: (a) owns the Site, (b) leases the Site, (c) is the holder of a right-of-way grant or similar instrument with respect to the Site, or (d) prior to the Commercial Operation Date, has the unilaterally exercisable contractual right to acquire or cause to be acquired on its behalf any of (a), (b), or (c).

"Station Use" means energy consumed within the Facility's electric energy distribution system as losses, as well as energy used to operate the Facility's auxiliary equipment. The auxiliary equipment may include, but is not limited to, forced and induced draft fans, cooling towers, boiler feeds pumps, lubricating oil systems, plant lighting, fuel handling systems, control systems, and sump pumps. This use is not to exceed 1% of average annual output.

"Term" has the meaning set forth in Section 3.4.1.

"Transaction" means the particular transaction described in Section 3.3.

"Transmission/Distribution Owner" means any entity or entities responsible for operating the electric distribution system or transmission system, as applicable, at and beyond the Interconnection Point.

"WECC" means the Western Electricity Coordinating Council, the regional reliability council for the Western United States, Northwestern Mexico and Southwestern Canada.

"Wind Turbines" means the wind turbine generators installed on the Site as part of the Facility including any replacements or substitutes therefore. *[for wind technology]*

"WREGIS" means the Western Renewable Energy Generating Information System or any successor renewable energy tracking program.

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"WREGIS Certificate Deficit" has the meaning set forth in Section 4.3.5. *[for Facilities (1) 500 kW or greater and (2) eligible for a CAISO revenue meter.]*

"WREGIS Certificates" has the same meaning as "Certificate" as defined by WREGIS in the WREGIS Operating Rules and are designated as eligible for complying with the California Renewables Portfolio Standard. *[for Facilities (1) 500 kW or greater and (2) eligible for a CAISO revenue meter.]*

"WREGIS Operating Rules" means those operating rules and requirements adopted by WREGIS as of December 2010, as subsequently amended, supplemented or replaced (in whole or in part) from time to time. *[for Facilities (1) 500 kW or greater and (2) eligible for a CAISO revenue meter.]*

*** End of Appendix A ***

APPENDIX B - COMMERCIAL OPERATION DATE CONFIRMATION LETTER

Appendix B – Commercial Operation Date Confirmation Letter

In accordance with the terms of that certain Small Renewable Generator Power Purchase Agreement dated _____("Agreement") for the Facility named _____ by and between REDWOOD COAST ENERGY AUTHORITY "Buyer") and _____ ("Seller"), this letter serves to document the Parties further agreement that (i) the conditions precedent to the occurrence of the Commercial Operation Date have been satisfied as of this _____ day of _____, _____. This letter shall confirm the Commercial Operation Date, as defined in the Agreement, as the date referenced in the preceding sentence.

IN WITNESS WHEREOF, each Party has caused this Agreement to be duly executed by its authorized representative as of the date of last signature provided below:

By:	By:
	REDWOOD COAST ENERGY AUTHORITY
(Seller)	(Buyer)
(Signature)	(Signature)
(Type/Print Name)	(Type/Print Name)
(Title)	(Title)
(Date)	(Date)

*** *End of Appendix B* ***

Appendix C – Forecasting Requirements

A. AVAILABLE CAPACITY FORECASTING.

Seller shall provide the Available Capacity forecasts described below. ***[The following bracketed language applies to As-Available solar or wind Projects only]*** **[**Seller's availability forecasts below shall include Project availability and updated status of ***[The following bracketed language applies to solar Projects only]*** **[**photovoltaic panels, inverters, transformers, and any other equipment that may impact availability**]** or ***[The following bracketed language applies to wind Projects only]*** **[**transformers, wind turbine unit status, and any other equipment that may impact availability**].]** ***[The following bracketed language applies to As-Available Product only]*** Seller shall use commercially reasonable efforts to forecast the Available Capacity of the Project accurately and to transmit such information in a format reasonably acceptable to Buyer. Buyer and Seller shall agree upon reasonable changes to the requirements and procedures set forth below from time-to-time, as necessary.

1. Annual Forecast of Available Capacity. No later than (I) the earlier of July 1 of the first calendar year following the Execution Date or one hundred and eighty (180) days before the first day of the first Contract Year of the Delivery Term ("First Annual Forecast Date"), and (II) on or before July 1 for each calendar year from the First Annual Forecast Date for every subsequent Contract Year during the Delivery Term, Seller shall provide to Buyer a non-binding forecast of the hourly Available Capacity for each day in each month of the following calendar year in a form reasonably acceptable to Buyer.

2. Monthly Forecast of Available Capacity. Ten (10) Business Days before the beginning of each month during the Delivery Term, Seller shall provide to Buyer a non-binding forecast of the hourly Available Capacity for each day of the following month in a form reasonably acceptable to Buyer.

*** *End of Appendix C* ***

Appendix D – Description of the Facility

Seller should complete the information below and attach a description of the Facility, including a summary of its significant components, a drawing showing the general arrangements of the Facility, and a single line diagram illustrating the interconnection of the Facility and loads with Buyer's electric distribution system.

Name of the Facility: _____

Address of the Facility: _____

Description of the Facility, including a summary of its significant components, such as for solar photovoltaic [Photovoltaic Modules, DC Collection System, Current Inverters], meteorological station, instrumentation and any other related electrical equipment:

Drawing showing the general arrangement of the Facility:

A single-line diagram illustrating the interconnection of the Facility with Buyer:

A legal description of the Site, including a Site map:

Longitude and latitude of the centroid of the Site:

*** *End of Appendix D* ***

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APPENDIX E – SELLER'S MILESTONE SCHEDULE

Feed-In Tariff Milestones and Action Steps for [ProFIT Project Developer]

Action Steps	Time Allowance		Due On *	Date Completed	Responsible Party
STEP 1. Submit Application & Tendered Interconnection Agreement[1]				1/1/2019	Developer
1A. Submit Documentation in Support of Bonuses (if applicable)	*Due with Initial Application*				Developer
1B. Review Application for Eligibility and Assign FIT Record Number	20 BD	from Step 1	1/27/2019		RCEA
STEP 2. Approve Application	30 BD	from Step 1	2/10/2019		RCEA
STEP 3. Sign conditional PPA	30 BD	from Step 2	3/24/2019		Both
STEP 4. Submit Proof of Insurance	30 BD	from Step 3	4/23/2019		Developer
STEP 5. Acquire Full Interconnection Agreement	30 BD	from Step 3	4/23/2019		Developer
5A. Submit Interconnection Agreement within 10 days of receipt	10 BD	from Step 5	5/3/2019		Developer
STEP 6. Submit confirmation of RPS request receipt by CEC and copy of CEC-RPS 1	30 BD	from Step 5	5/23/2019		Developer
STEP 7. File project with WREGIS & submit proof to RCEA	30 BD	from Step 5	5/23/2019		Developer
STEP 8. Pay Interconnection Fees. & submit proof to RCEA	30 BD	from Step 5	5/23/2019		Developer
STEP 9. Acquire conditional use and construction permits	180 BD	from Step 3	9/20/2019		Developer
9A. Submit proof of permits to RCEA	5 BD	from Step 7	9/27/2019		Developer
9B. Submit Local Labor Plan (if applicable)	10 BD	from Step 7	10/4/2019		Developer
STEP 10. Notify RCEA 10 business days in advance of ground breaking	10 BD	prior to groundbreaking			Developer
STEP 11. Mechanical Completion	240 BD	from Step 7	5/18/2020		Developer
11A. Submit Final Local Labor Supporting Documentation (if applicable)	15 BD	from Step 11	6/2/2020		Developer
11B. RCEA to review and approve Final Local Labor Documentation	10 BD	from Step 11A	6/15/2020		RCEA
STEP 12. Notify RCEA 30 business days in advance of commercial operation	30 BD	from Step 13	8/13/2020		Developer
STEP 13. Start of Commercial Operation	18 months	from Step 3	9/23/2020		Developer
STEP 14. Submit CEC Certification	90 BD	from Step 12	12/22/2020		Developer

***** Please note that once FIT application is received and processed by Redwood Coast Energy Authority the due dates become binding milestones. Missing due dates may be grounds for changing a project's queue position and/or contract termination.

[1] For clarification, the tendered interconnection agreement is the final draft from PG&E's Wholesale interconnection Services prior to execution of that agreement.

BD= Business Day, CD = Calendar Days

**** End of Appendix E ****

Appendix F – Notices List

Name: _____ [***Seller's Name***], a _____ _____ [***include place of formation and business type***] ("Seller")	Name: REDWOOD COAST ENERGY AUTHORITY, a California corporation ("Buyer" or "RCEA")
All Notices: ***[Seller to complete]***	All Notices:
Delivery Address: Street: City: State: Zip:	Delivery Address: [UPDATE]
Mail Address: (if different from above)	Mail Address: [UPDATE]
Attn: Phone: Facsimile:	Attn: Phone: Facsimile:
DUNS: Federal Tax ID Number:	DUNS: Federal Tax ID Number:
Invoices: Attn: Phone: Facsimile:	**Invoices:** Attn: Phone: Facsimile:
Payments: Attn: Phone: Facsimile:	**Payments:** Attn: Phone: Facsimile:
Wire Transfer: BNK: ABA: ACCT:	**Wire Transfer:** BNK: ABA: ACCT:
Credit and Collections: Attn: Phone: Facsimile:	**Credit and Collections:** Attn: Phone: Facsimile:

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APPENDIX F – NOTICES LIST

With additional Notices of an Event of Default to Contract Manager:	**Contract Manager:**
Attn: _____	Attn:
Phone: _____	Phone:
Facsimile: _____	

*** End of Appendix F***

APPENDIX G – FORM OF LETTER OF CREDIT

Issuing Bank Letterhead and Address

STANDBY LETTER OF CREDIT NO. XXXXXXXX

Date: [insert issue date]

Beneficiary: Redwood Coast Energy Authority
633 3rd St,
Eureka, CA 95501

Attention:

Applicant: [Insert name and address of Applicant]

Letter of Credit Amount: [insert amount]

Expiry Date: [insert expiry date]

Ladies and Gentlemen:

By order of **[insert name of Applicant]** ("Applicant"), we hereby issue in favor of Redwood Coast Energy Authority (the "Beneficiary") our irrevocable standby letter of credit No. **[insert number of letter of credit]** ("Letter of Credit"), for the account of Applicant, for drawings up to but not to exceed the aggregate sum of U.S. $ **[insert amount in figures followed by (amount in words)]** ("Letter of Credit Amount"). This Letter of Credit is available with **[insert name of issuing bank, and the city and state in which it is located]** by sight payment, at our offices located at the address stated below, effective immediately, and it will expire at our close of business on **[insert expiry date]** (the "Expiry Date").

Funds under this Letter of Credit are available to the Beneficiary against presentation of the following documents:

1. Beneficiary's signed and dated sight draft in the form of Exhibit A hereto, referencing this Letter of Credit No. **[insert number]** and stating the amount of the demand; and

2. One of the following statements signed by an authorized representative or officer of Beneficiary:

APPENDIX G – FORM OF LETTER OF CREDIT

A. "Pursuant to the terms of that certain **[insert name of the agreement]** (the "Agreement"), dated **[insert date of the Agreement]**, between Beneficiary and **[insert name of Seller under the Agreement],** Beneficiary is entitled to draw under Letter of Credit No. **[insert number]** amounts owed by **[insert name of Seller under the Agreement]** under the Agreement; or

B. "Letter of Credit No. **[insert number]** will expire in thirty (30) days or less and **[insert name of Seller under the Agreement]** has not provided replacement security acceptable to Beneficiary.

Special Conditions:

1. Partial and multiple drawings under this Letter of Credit are allowed;
2. All banking charges associated with this Letter of Credit are for the account of the Applicant;
3. This Letter of Credit is not transferable; and
4. The Expiry Date of this Letter of Credit shall be automatically extended without a written amendment for a period of one year and on each successive Expiry Date, unless at least sixty (60) days before the then current Expiry Date, we notify you by registered mail or courier that we elect not to extend the Expiry Date of this Letter of Credit for such additional period.

We engage with you that drafts drawn under and in compliance with the terms of this Letter of Credit will be duly honored upon presentation, on or before the Expiry Date (or after the Expiry Date as provided below), at our offices at **[insert issuing bank's address for drawings]**.

All demands for payment shall be made by presentation of originals or copies of documents; or by facsimile transmission of documents to **[insert fax number]**, Attention: **[insert name of issuing bank's receiving department]**, with originals or copies of documents to follow by overnight mail. If presentation is made by facsimile transmission, you may contact us at **[insert phone number]** to confirm our receipt of the transmission. Your failure to seek such a telephone confirmation does not affect our obligation to honor such a presentation.

Our payments against complying presentations under this Letter of Credit will be made no later than on the sixth (6th) banking day following a complying presentation.

Except as stated herein, this Letter of Credit is not subject to any condition or qualification. It is our individual obligation, which is not contingent upon reimbursement and is not affected by any agreement, document, or instrument between us and the Applicant or between the Beneficiary and the Applicant or any other party.

Except as otherwise specifically stated herein, this Letter of Credit is subject to and governed by the *Uniform Customs and Practice for Documentary Credits, 2007 Revision,* International Chamber of Commerce (ICC) Publication No. 600 (the "UCP

600"); provided that, if this Letter of Credit expires during an interruption of our business as described in Article 36 of the UCP 600, we will honor drafts presented in compliance with this Letter of Credit within thirty (30) days after the resumption of our business and effect payment accordingly.

The law of the State of California shall apply to any matters not covered by the UCP 600.

For telephone assistance regarding this Letter of Credit, please contact us at **[insert number and any other necessary details]**.

Very truly yours,

[insert name of issuing bank]

By: _____
Authorized Signature

Name: **[print or type name]**

Title: _____

*** *End of Appendix G****

APPENDIX H – FORM OF CONSENT TO ASSIGNMENT

CONSENT AND AGREEMENT

This CONSENT AND AGREEMENT ("Consent and Agreement") is entered into as of **[**_____ __**, 2**___**]**, between REDWOOD COAST ENERGY AUTHORITY ("RCEA"), and **[**_____**]** , as collateral agent (in such capacity, "Financing Provider"), for the benefit of various financial institutions (collectively, the "Secured Parties") providing financing to [_____] ("Seller"). RCEA, Seller, and the Financing Provider shall each individually be referred to as a "Party" and collectively as the "Parties".

Recitals

A. Pursuant to that certain Power Purchase Agreement dated as of _____, 2___ (as amended, modified, supplemented or restated from time to time, as including all related agreements, instruments and documents, collectively, the "Assigned Agreement") between RCEA and Seller, RCEA has agreed to purchase energy from Seller.

B. The Secured Parties have provided, or have agreed to provide, to Seller financing (including a financing lease) pursuant to one or more agreements (the "Financing Documents"), and require that Financing Provider be provided certain rights with respect to the "Assigned Agreement" and the "Assigned Agreement Accounts," each as defined below, in connection with such financing.

C. In consideration for the execution and delivery of the Assigned Agreement, RCEA has agreed to enter into this Consent and Agreement for the benefit of Seller.

Agreement

1. Definitions. Any capitalized term used but not defined herein shall have the meaning specified for such term in the Assigned Agreement.

2. Consent. Subject to the terms and conditions below, RCEA consents to and approves the pledge and assignment by Seller to Financing Provider pursuant to the Loan Agreement and/or Security Agreement of (a) the Assigned Agreement, and (b) the accounts, revenues and proceeds of the Assigned Agreement (collectively, the "Assigned Agreement Accounts").

3. Limitations on Assignment. Financing Provider acknowledges and confirms that, notwithstanding any provision to the contrary under applicable law or in any Financing Document executed by Seller, Financing Provider shall not assume, sell or otherwise dispose of the Assigned Agreement (whether by foreclosure sale, conveyance in lieu of foreclosure or otherwise) unless, on or before the date of any such assumption, sale or

disposition, Financing Provider or any third party, as the case may be, assuming, purchasing or otherwise acquiring the Assigned Agreement (a) cures any and all defaults of Seller under the Assigned Agreement which are capable of being cured and which are not personal to the Seller, (b) executes and delivers to RCEA a written assumption of all of Seller's rights and obligations under the Assigned Agreement in form and substance reasonably satisfactory to RCEA, (c) otherwise satisfies and complies with all requirements of the Assigned Agreement, (d) provides such tax and enforceability assurance as RCEA may reasonably request, and (e) is a Permitted Transferee (as defined below). Financing Provider further acknowledges that the assignment of the Assigned Agreement and the Assigned Agreement Accounts is for security purposes only and that Financing Provider has no rights under the Assigned Agreement or the Assigned Agreement Accounts to enforce the provisions of the Assigned Agreement or the Assigned Agreement Accounts unless and until an event of default has occurred and is continuing under the Financing Documents between Seller and Financing Provider (a "Financing Default"), in which case Financing Provider shall be entitled to all of the rights and benefits and subject to all of the obligations which Seller then has or may have under the Assigned Agreement to the same extent and in the same manner as if Financing Provider were an original party to the Assigned Agreement.

"Permitted Transferee" means any person or entity who is reasonably acceptable to RCEA. Financing Provider may from time to time, following the occurrence of a Financing Default, notify RCEA in writing of the identity of a proposed transferee of the Assigned Agreement, which proposed transferee may include Financing Provider, in connection with the enforcement of Financing Provider's rights under the Financing Documents, and RCEA shall, within thirty (30) business days of its receipt of such written notice, confirm to Financing Provider whether or not such proposed transferee is a "Permitted Transferee" (together with a written statement of the reason(s) for any negative determination) it being understood that if RCEA shall fail to so respond within such thirty (30) business day period such proposed transferee shall be deemed to be a "Permitted Transferee".

4. Cure Rights.

(a) Notice to Financing Provider by RCEA. RCEA shall, concurrently with the delivery of any notice of an event of default under the Assigned Agreement (each, an "Event of Default") to Seller (a "Default Notice"), provide a copy of such Default Notice to Financing Provider pursuant to Section 9(a) of this Consent and Agreement. In addition, Seller shall provide a copy of the Default Notice to Financing Provider the next business day after receipt from RCEA, independent of any agreement of RCEA to deliver such Default Notice.

(b) Cure Period Available to Financing Provider Prior to Any Termination by RCEA. Upon the occurrence of an Event of Default, subject to (i) the expiration of the relevant cure periods provided to Seller under the Assigned Agreement, and (ii) Section

4(a) above, RCEA shall not terminate the Assigned Agreement unless it or Seller provides Financing Provider with notice of the Event of Default and affords Financing Provider an Additional Cure Period (as defined below) to cure such Event of Default. For purposes of this Agreement "Additional Cure Period" means (i) with respect to a monetary default, ten (10) days in addition to the cure period (if any) provided to Seller in the Assigned Agreement, and (ii) with respect to a non-monetary default, thirty (30) days in addition to the cure period (if any) provided to Seller in the Assigned Agreement.

(c) Failure by RCEA to Deliver Default Notice. If neither RCEA nor Seller delivers a Default Notice to Financing Provider as provided in Section 4(a), the Financing Provider's applicable cure period shall begin on the date on which notice of an Event of Default is delivered to Financing Provider by either RCEA or Seller. Except for a delay in the commencement of the cure period for Financing Provider and a delay in RCEA's ability to terminate the Assigned Agreement (in each case only if both RCEA and Seller fail to deliver notice of an Event of Default to Financing Provider), failure of RCEA to deliver any Default Notice shall not waive RCEA's right to take any action under the Assigned Agreement and will not subject RCEA to any damages or liability for failure to provide such notice.

(d) Extension for Foreclosure Proceedings. If possession of the Project (as defined in the Assigned Agreement) is necessary for Financing Provider to cure an Event of Default and Financing Provider commences foreclosure proceedings against Seller within thirty (30) days of receiving notice of an Event of Default from RCEA or Seller, whichever is received first, Financing Provider shall be allowed a reasonable additional period to complete such foreclosure proceedings, such period not to exceed ninety (90) days; provided, however, that Financing Provider shall provide a written notice to RCEA that it intends to commence foreclosure proceedings with respect to Seller within ten (10) business days of receiving a notice of such Event of Default from RCEA or Seller, whichever is received first. In the event Financing Provider succeeds to Seller's interest in the Project as a result of foreclosure proceedings, the Financing Provider or a purchaser or grantee pursuant to such foreclosure shall be subject to the requirements of Section 3 of this Consent and Agreement.

5. Setoffs and Deductions. Each of Seller and Financing Provider agrees that RCEA shall have the right to set off or deduct from payments due to Seller each and every amount due RCEA from Seller whether or not arising out of or in connection with the Assigned Agreement. Financing Provider further agrees that it takes the assignment for security purposes of the Assigned Agreement and the Assigned Agreement Accounts subject to any defenses or causes of action RCEA may have against Seller.

6. No Representation or Warranty. Seller and Financing Provider each recognizes and acknowledges that RCEA makes no representation or warranty, express or implied, that Seller has any right, title, or interest in the Assigned Agreement or as to the priority of the assignment for security purposes of the Assigned Agreement or the Assigned

Agreement Accounts. Financing Provider is responsible for satisfying itself as to the existence and extent of Seller's right, title, and interest in the Assigned Agreement, and Financing Provider releases RCEA from any liability resulting from the assignment for security purposes of the Assigned Agreement and the Assigned Agreement Accounts.

7. Amendment to Assigned Agreement. Financing Provider acknowledges and agrees that RCEA may agree with Seller to modify or amend the Assigned Agreement, and that RCEA is not obligated to notify Financing Provider of any such amendment or modification to the Assigned Agreement. Financing Provider hereby releases RCEARCEA from all liability arising out of or in connection with the making of any amendment or modification to the Assigned Agreement.

8. Payments under Assigned Agreement. RCEA shall make all payments due to Seller under the Assigned Agreement from and after the date hereof to [_____], as depositary agent, to ABA No. [_____], Account No. [_____], and Seller hereby irrevocably consents to any and all such payments being made in such manner. Each of Seller, RCEA and Financing Provider agrees that each such payment by RCEA to such depositary agent of amounts due to Seller from RCEA under the Assigned Agreement shall satisfy RCEA's corresponding payment obligation under the Assigned Agreement.

9. Miscellaneous.

(a) Notices. All notices hereunder shall be in writing and shall be deemed received (i) at the close of business of the date of receipt, if delivered by hand or by facsimile or other electronic means, or (ii) when signed for by recipient, if sent registered or certified mail, postage prepaid, provided such notice was properly addressed to the appropriate address indicated on the signature page hereof or to such other address as a party may designate by prior written notice to the other parties, at the address set forth below:

If to Financing Provider:	
Name:	
Address:	
Attn:	
Telephone:	
Facsimile:	
Email:	

If to RCEA:	

FEED-IN TARIFF
POWER PURCHASE AGREEMENT

APPENDIX H – FORM OF CONSENT TO ASSIGNMENT

Name:	
Address:	
Attn:	
Telephone:	
Facsimile:	
Email:	

(b) No Assignment. This Consent and Agreement shall be binding upon and shall inure to the benefit of the successors and assigns of RCEA, and shall be binding on and inure to the benefit of the Financing Provider, the Secured Parties and their respective successors and permitted transferees and assigns under the loan agreement and/or security agreement.

(c) No Modification. This Consent and Agreement is neither a modification of nor an amendment to the Assigned Agreement.

(d) Choice of Law. The parties hereto agree that this Consent and Agreement shall be construed and interpreted in accordance with the laws of the State of California, excluding any choice of law rules which may direct the application of the laws of another jurisdiction.

(e) No Waiver. No term, covenant or condition hereof shall be deemed waived and no breach excused unless such waiver or excuse shall be in writing and signed by the party claimed to have so waived or excused.

(f) Counterparts. This Consent and Agreement may be executed in one or more duplicate counterparts, and when executed and delivered by all the parties listed below, shall constitute a single binding agreement.

(g) No Third Party Beneficiaries. There are no third party beneficiaries to this Consent and Agreement.

(h) Severability. The invalidity or unenforceability of any provision of this Consent and Agreement shall not affect the validity or enforceability of any other provision of this Consent and Agreement, which shall remain in full force and effect.

(i) Amendments. This Consent and Agreement may be modified, amended, or rescinded only by writing expressly referring to this Consent and Agreement and signed by all parties hereto.

IN WITNESS WHEREOF, each of RCEA and Financing Provider has duly executed this Consent and Agreement as of the date first written above.

FEED-IN TARIFF
POWER PURCHASE AGREEMENT
APPENDIX H – FORM OF CONSENT TO ASSIGNMENT

Redwood Coast Energy Authority (RCEA)

By: _____
Name: _____
Title: _____

[_____**]**
(Financing Provider), as collateral agent

By: _____
Name: _____
Title: _____

ACKNOWLEDGEMENT

The undersigned hereby acknowledges the Consent and Agreement set forth above, makes the agreements set forth therein as applicable to Seller, including the obligation of Seller to provide a copy of any Default Notice it receives from RCEA to Financing Provider the next business day after receipt by Seller, and confirms that the Financing Provider identified above and the Secured Parties have provided or are providing financing to the undersigned.

[_____][name of Seller]

By: _____
Name: _____
Title: _____

**** End of Appendix H****

Generating Facility Estimated Energy Production Profile

Project Name: _____ **Project Location:** _____ **FIT Record # (for internal use only):** _____

Please provide a generation profile forecast of each month's average-day net output energy production, stated in MW by hour, by month and by year.

Year 1

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Year 2

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 3

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 4

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 5

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30

Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 6

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 7

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 8

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 9

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 10

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30

Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 11

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 12

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 13

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 14

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
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Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 15

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 16

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 17

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
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Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 18

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 19

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 20

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

Year 21

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Hourly Total	Days/Month
Jan																									-	31
Feb																									-	28
Mar																									-	31
Apr																									-	30
May																									-	31
Jun																									-	30
Jul																									-	31
Aug																									-	31
Sep																									-	30
Oct																									-	31
Nov																									-	30
Dec																									-	31
Monthly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	

REDWOOD COAST EnergyAuthority

Humboldt County Brownfield Sites Eligible for Feed-in Tariff Incentive

Redwood Coast Energy Authority (RCEA) makes no assertion regarding the ownership, availability, or suitability of these sites for renewable energy development. RCEA has not communicated with the owners of these properties.

ENVIROSTOR ID	PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS	CITY
12240010	CAL-PACIFIC LUMBER COMPANY - HOOPA	Certified	State Response	HWY 96	HOOPA
12360001	CENTERVILLE BEACH NAVAL FACILITY	Certified	State Response	5 MILES WEST OF FERNDALE, CA	FERNDALE
60001912	College of the Redwoods Range Complex	Inactive - Action Required	Evaluation	7351 Tompkins Hill Road	Eureka
12490007	CUMMINGS ROAD LANDFILL	Refer: Other Agency	Evaluation	END OF CUMMINGS ROAD	EUREKA
12240119	EEL RIVER SAWMILLS, MILL A	Active	State Response	1053 NORTHWESTERN AVE	FORTUNA
60000042	FORMER ROGER'S GARAGE	Inactive - Needs Evaluation	Voluntary Cleanup	1622 Old Arcata Road	Arcata
12750001	G&R METAL	Refer: RWQCB	Evaluation	132 W. FIRST STREET	EUREKA
12240121	HALVORSON MILLS	Refer: RWQCB	Evaluation	1415 WATERFRONT DRIVE	EUREKA
12240038	HOOPA VENEER	Certified	State Response	HWY 96	HOOPA
60000411	Humboldt Pacific Transport	Refer: RWQCB	Evaluation	1403 Eeloa Avenue	Rio Dell
12470001	HUMBOLDT PACIFIC TRANSPORTATION INC	Inactive - Needs Evaluation	Evaluation	1404 EEOLA AVENUE	RIO DELL
53240001	JENSEN LUMBER COMPANY	Certified	State Response	80 MILES WEST OF REDDING OFF HWY 3	HYAMPOM
53100007	JOSEPH DARIN DEVELOPMENT	No Further Action	Evaluation	P. O. BOX 237	JUNCTION

12490004	Maxim Gas Company of Eureka	Inactive - Needs Evaluation	Evaluation	210 H Street /622 Second Street	EUREKA
12240045	MCINTOSH LUMBER COMPANY, INC	No Action Required	Evaluation	501 HATCHERY ROAD	BLUE LAKE
12240115	MCNAMARA AND PEEPE LUMBER MILL	Active	State Response	1619 GLENDALE DRIVE	ARCATA
12240047	MCNORD LUMBER CO	Inactive - Needs Evaluation	Evaluation	HWY 299	ARCATA
80000558	Mount Pierce Radio Relay Annex (J09CA0878)	No Further Action	State Response	5 miles southwest of Scotia, CA, on Monumnet Road	Scotia
12240120	MOZZETTI LANDFILL	No Action Required	Voluntary Cleanup	1053 NORTHWESTERN AVE	FORTUNA
80000564	Naval Auxiliary Air Station, Arcata (J09CA0799)	Refer: RWQCB	State Response	0.67 Mi NE of Hammond Truck Road and Quarry Road	Mckinleyville
80001831	PACIFIC GAS & ELECTRIC/ HUMBOLDT BAY POWER PLANT	Active	Voluntary Cleanup	1000 KING SALMON AVE	EUREKA
12490001	PG&E EUREKA 1	Refer: RWQCB	State Response	RAILROAD STREET AND GENEVA	EUREKA
12490003	PG&E EUREKA 2	Inactive - Needs Evaluation	Evaluation	H/I/FIRST/2ND/ STREETS	EUREKA
12070002	REDWOOD ACRES	Refer: RWQCB	Voluntary Cleanup	3750 HARRIS STREET	EUREKA
12240068	SCHMIDBAUER LUMBER INC	Refer: RWQCB	Voluntary Cleanup	FT OF CLARK	EUREKA
53240004	SIERRA PACIFIC	Inactive - Needs Evaluation	Evaluation	MILL AVE AND HWY 3	HAYFORK
12240118	SIMPSON REDWOOD CO.	Certified / Operation & Maintenance	Voluntary Cleanup	FOSTER AVENUE	ARCATA

Materials Received After Packet Publication



Community Choice Energy
Feed-in Tariff Staff Report

March 28th, 2019

REDWOOD COAST EnergyAuthority

REDWOOD COAST Energy Authority

Feed-in Tariff Timeline

2016: Board set FIT goal

2018: Board directed staff to prepare FIT materials

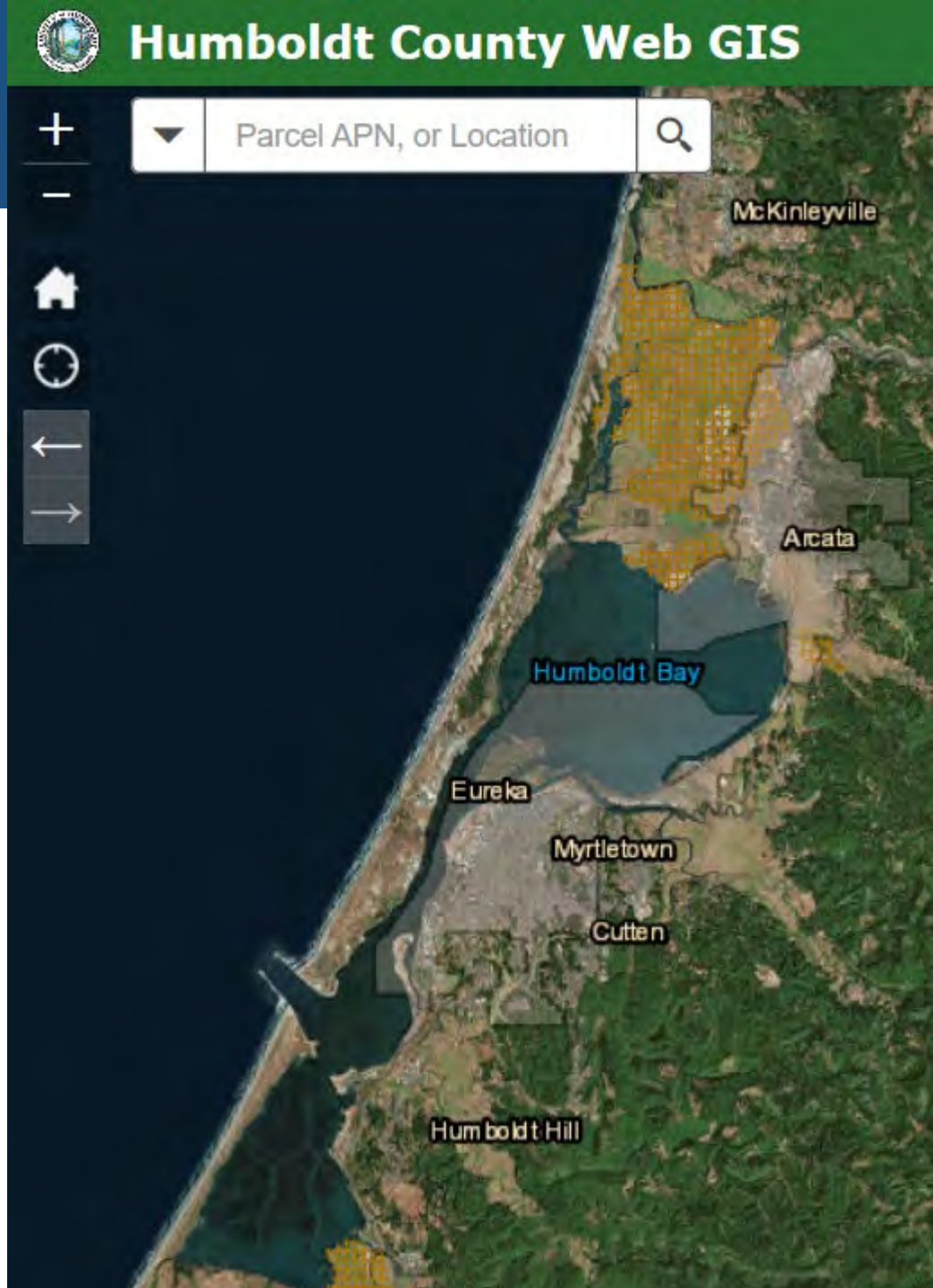
2019: Program proposal

REDWOOD COAST EnergyAuthority

Prime Agriculture Land Exclusion

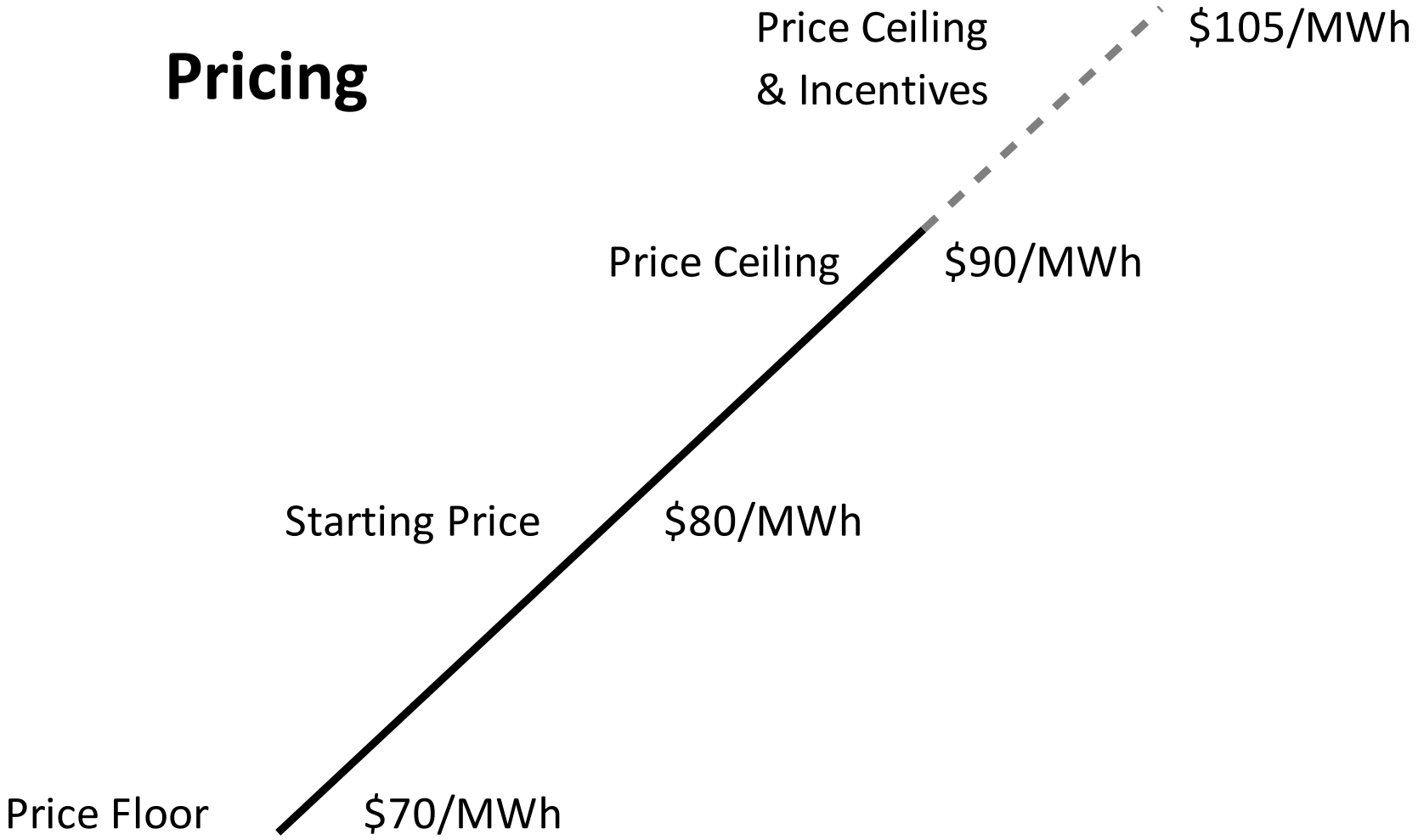
- Prohibit projects on identified prime soils
- Discourage projects on “Farmland of statewide Importance” or “Prime Farmland if irrigated”

Redwoodenergy.org/feed-in-tariff/



REDWOOD COAST
EnergyAuthority

Pricing



REDWOOD COAST
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FIT Market Adjusting Pricing

Each 2-month period has 2 megawatts of capacity available for contract.

If **0%-25%** of the capacity is claimed, it signals that the price is too low and it increases by $2.00/MWh.

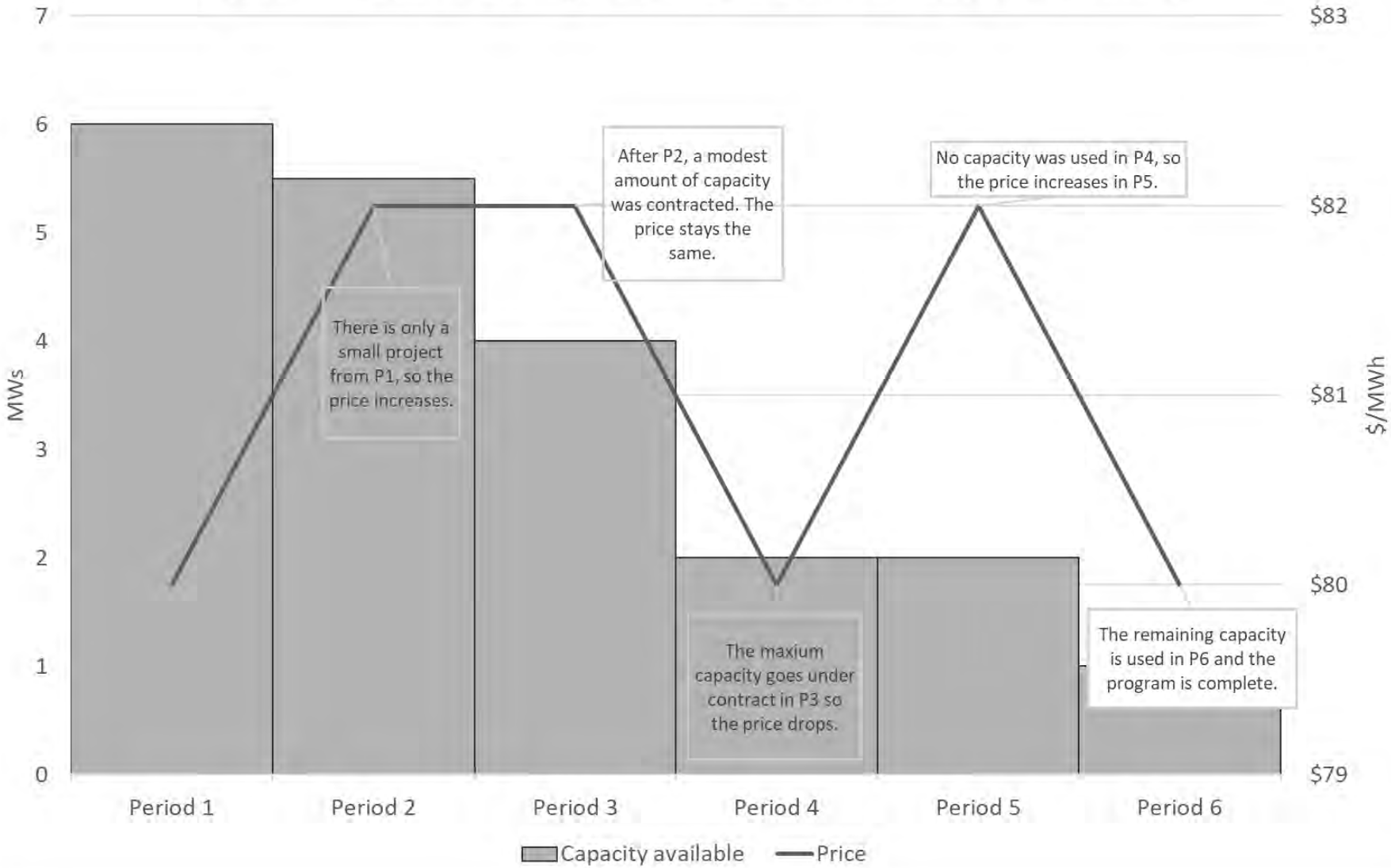
If **25%-75%** of the capacity is claimed, the price is right and it stays the same.

If **75%-100%** of the capacity is claimed, the price is too high and it decreases by $2.00/MWh.

0-0.5 MW	0.5-1.5 MW	1.5-2 MW

REDWOOD COAST
EnergyAuthority

Hypothetical Market Pricing Scenario with Diminishing Program Capacity



REDWOOD COAST Energy Authority

Bonus Incentives

Bonus Criteria	Bonus Amount	Bonus Payout Period
EnviroStor Brownfield	**$0.01 / kWh** *($10 / MWh)*	**Paid during first 5 contract years of Eligible Resource operation.**
Previously Developed Site	**$0.005 / kWh** *($5 / MWh)*	
Local Business	**$0.005 / kWh** *($5 / MWh)*	

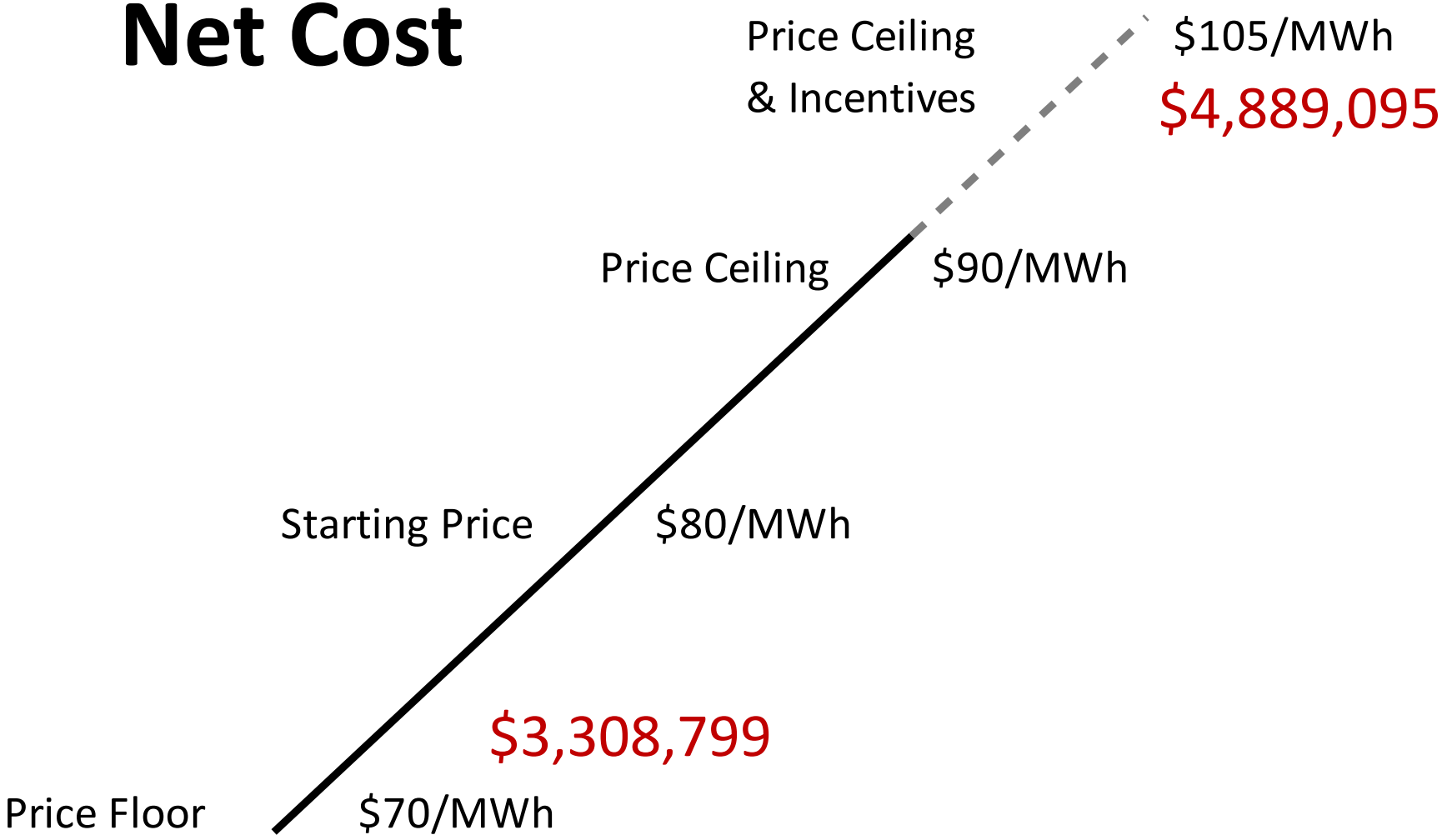
REDWOOD COAST Energy Authority

Total FIT Pricing: Middle Scenario ($/MWh)						
		Bonus Adders			Final Pricing	
Capacity (MW)	Base Price	Local	Built Environment	EPA	First 5 Year Price	15 Year Price
1	80	5			85	80
1	82	5		10	97	82
1	82		5		87	82
1	80		5		85	80
1	82				82	82
1	80				80	80
				Average Price	86.0	81

Total Net Cost Over 20 Years
$3,735,254

REDWOOD COAST Energy Authority

Net Cost





Thank you

Questions?

REDWOOD COAST EnergyAuthority

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REDWOOD COAST EnergyAuthority

STAFF REPORT
Agenda Item # 7.2

AGENDA DATE:	March 28, 2019
TO:	Board of Directors
PREPARED BY:	Matthew Marshall, Executive Director
SUBJECT:	100% Clean and Renewable Electricity by 2025 Goal

SUMMARY

At their January 8, 2019 meeting, RCEA's Community Advisory Committee (CAC) moved by consensus to recommend that the RCEA Board of Directors "adopt a 100% clean and renewable electricity by 2025 goal without modifying other existing RCEA targets and establish a process to obtain public input on the definitions of 'clean' and 'renewable.'" The City of Eureka, the City of Arcata, and the County of Humboldt have adopted similar resolutions setting a target of 100% renewable electricity by 2025.

Attached is a proposed resolution that staff prepared based on the CAC's recommendation. RCEA's Comprehensive Action Plan for Energy (CAPE) and the RePower Humboldt strategic plan have established the goal of supplying the majority of the county's electricity demand from local renewable resources by 2030; the CAC's recommendation would accelerate that goal by 5 years.

The resolution also proposes that this 2025 target be incorporated into a larger planning effort to update the CAPE in 2019. This would include conducting additional technical and economic analysis on the feasibility and cost-impacts of achieving the target and also engaging the community to gather input on further defining and focusing the details of how the goal would be implemented.

This CAPE update effort will be aligned with the country-wide, multi-jurisdictional Climate Action Plan effort that the County of Humboldt has initiated this year. RCEA is supporting the County and Cities in this effort, and coordinating the CAPE update with this work will ensure that RCEA's plan aligns with its member-governments' goals and will also facilitate gathering input from the broader community. Staff is working with County staff to develop a contract that will be presented to the RCEA Board in April, and additional details of the timeline and community engagement for these activities will be presented at that time.

At the February RCEA Board meeting staff presented some preliminary financial analysis on the potential cost impacts of adopting a 100% by 2025 target. The preliminary results of that analysis indicate that it is financially feasible for RCEA to achieve that target, but that to the extent that it would increase power procurement costs it would impact the resources available to fund other goals such as customer rate savings, building the contingency reserve fund, and funding for customer programs. Incorporating the analysis of the 100% goal into a broader

CAPE update will facilitate an assessment of the cost-effectiveness of achieving that goal compared to directing funding to other greenhouse-gas reduction strategies, such as supporting the electrification of transportation and building natural gas end-uses.

The resolution proposes that the outcomes from the 2019 CAPE update would then be used to inform the 2020 update to the State-required long-term Integrated Resource Plan for RCEA's community energy program.

FINANCIAL IMPACT

The long-term impacts of accelerating RCEA's renewable electricity mix target from 2030 to 2025 will likely result in some incremental increase to power supply costs; the resolution directs staff to analyze the details of potential cost impacts from various scenarios for achieving the 100% by 2025 goal and present the findings of that analysis for further consideration by the Board later in 2019.

There will be near-term costs in staff and consultant time to conduct the planning and analysis associated with the CAPE update proposed in the resolution. These activities can be covered by the CCA program budget as well as the 2019 Energy Watch Program budget for strategic initiatives – activities through the remainder of the 2018-19 fiscal year can be covered by the existing budget, and staff can incorporate subsequent costs into the budgeting process for 2019-2020.

It should be noted that State regulations require RCEA to update its integrated resource plan by May of 2020, so a significant portion of the anticipated planning costs will have to be incurred to meet that requirement regardless of whether RCEA incorporates an updated 2025 goal into that update.

STAFF RECOMMENDATION

Adopt Resolution 2019-1 of the Board of Directors of the Redwood Coast Energy Authority Adopting the Target of 100% Clean and Renewable Electricity Mix by 2025.

ATTACHMENT:

Resolution 2019-1 of the Board of Directors of the Redwood Coast Energy Authority Adopting the Target of 100% Clean Renewable Electricity Mix by 2025.

RESOLUTION NO. 2019-1

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE REDWOOD COAST ENERGY AUTHORITY ADOPTING THE TARGET OF A 100% CLEAN AND RENEWABLE ELECTRICITY MIX BY 2025

WHEREAS, the 100 Percent Clean Energy Act of 2018 established as a policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers by December 31, 2045; and

WHEREAS, RCEA was established in 2003 with its purpose including to "develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient and renewable resources available in the region for the benefit of the Member agencies and their constituents;" and

WHEREAS, in 2012 the RCEA Board adopted a Comprehensive Action Plan for Energy (CAPE) that established a vision for 2030 that includes Humboldt County no longer being a net energy importer and the majority of the community's energy needs being met by renewable energy sources; and

WHEREAS, in 2013 RCEA finalized the RePower Humboldt Strategic Plan which further evaluated and reaffirmed the goal of Humboldt County meeting the majority of its electricity needs as well as a significant portion of its heating and transportation energy needs from local renewable resources by 2030; and

WHEREAS, in 2017 RCEA launched a community choice energy program to establish local control over the County's electricity supply to be able to advance the goals established in the CAPE and the RePower Humboldt Strategic Plan; and

WHEREAS, the RCEA Board of Directors, with input from the community, adopted as the community choice energy program's core goal maximizing the use of local renewable energy while providing competitive rates to customers, and further adopted Guidelines for the Community Energy Program Launch-period Strategy and Targets for the first five years of the program through 2021; and

WHEREAS, RCEA is on track toward achieving the targets established in the Launch-period Guidelines and it is necessary to build on and expand those targets to achieve RCEA's 2030 goals as well as the state's 2045 target, and also that the CAPE states that it shall be periodically updated by the RCEA Board; and

WHEREAS, time is of the essence to eliminate the use of fossil fuels to mitigate the impacts of climate change and to realize the local economic benefits of transitioning to renewable sources of energy.

NOW THEREFORE, BE IT RESOLVED that the Board of Directors of the Redwood Coast Energy Authority adopts the target of a 100% clean and renewable electricity power generation mix for RCEA's community choice energy program by 2025.

BE IT FURTHER RESOLVED that RCEA staff is directed to:

1. Develop by the end of 2019 a proposed update to RCEA's Comprehensive Action Plan for Energy that incorporates the target of a 100% clean and renewable electricity mix by 2025, and the process to develop that update shall include:

    a. Analyzing the technical feasibility and cost impacts of various scenarios to meet the 100% renewable goal, considering different resource mixes and local vs non-local sources.

    b. Gathering community input on how RCEA will implement the 100% clean and renewable goal, including on how to fully define "clean"; as a minimum baseline it is defined as power sources that are non-fossil fuel, non-nuclear, and in compliance with all applicable air, water, and other environmental regulations. ("Renewable" is already defined by the State's Renewable Portfolio Standard.)

    c. Considering not just electricity generation but also addressing through high-efficiency electrification the reduction of fossil fuel use for heating, cooking, industrial uses, and transportation, and planning for any resulting increase in needed renewable electricity supply to meet these needs.

    d. Analyzing the feasibility of adding energy storage, both end-use and large-scale, short-duration and inter-seasonal, using batteries, biological storage, thermal storage, and other technologies to buffer and allow increased usage of variable renewable energy sources such as wind and solar PV.

    e. Evaluating the need for upgrades to the electric grid at both micro and macro scales to enhance resilience and support development of both community-scale distributed energy systems as well as large-scale local renewable energy projects capable of exporting energy from the county.

    f. Continuing to prioritize efforts to increase efficiency and conservation of all energy end uses, as well as continuing to incorporate goals around local economic and community benefits and local energy security and resilience.

    g. Integrating and consolidating into the CAPE key elements of other subsequent RCEA planning documents, including RePower Humboldt, RCEA's Regional Electric Vehicle Readiness Plan, and the Community Energy Program Launch-Period Guidelines, and also working to align the CAPE with the climate action plans of RCEA's member governments.

2. Following the evaluation and adoption of the updated CAPE by the RCEA Board of Directors, incorporate the relevant elements of the CAPE into the long-term Integrated Resource Plan for RCEA's community energy program which will be submitted to the California Public Utilities Commission in 2020.

Adopted this ___day of _____, 2019

ATTEST:

_____ _____

Michael Winkler, RCEA Board Chair

Lori Taketa, Clerk of the Board

Date: _____

Date: _____

CLERK'S CERTIFICATE

I hereby certify that the foregoing is a true and correct copy of Resolution No. 2019-1 passed and adopted at a regular meeting of the Redwood Coast Energy Authority, County of Humboldt, State of California, held on the ____ day of _____, 2019, by the following vote:

AYES:

NOES:

ABSENT:

ABSTENTIONS:

_____

Clerk of the Board, Redwood Coast Energy Authority

From:	Walter Paniak
To:	Lori Taketa
Subject:	Statement by chair of California Public Utilities Commission
Date:	Friday, March 22, 2019 6:54:27 PM
Attachments:	My turn_ Biomass electricity isnt cheap wont end wildfires CALmatters.pdf

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The title of the attached article is : Biomass electricity isn’t cheap, won’t end wildfires.

Michael Picker is the chair of the California PUC. If possible please add this the agenda packet for next week.

This comment is from Walt Paniak residing in Arcata.

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Walt Paniak

California's forests are overgrown, in need of timber cutting. Image by aetb via Thinstock

My turn: Biomass electricity isn't cheap, won't end wildfires

Guest Commentary | Aug. 23, 2018 | COMMENTARY, ECONOMY, ENVIRONMENT, MY TURN

GUEST COMMENTARY: Find out more about submitting a commentary.

By Michael Picker, *Special to CALmatters*

With California's commitment to renewable energy and the growing concern about wildfires, biomass electrical generation is increasingly being promoted at the state Capitol as a tool for addressing both challenges as the legislative session is about to end. For a number of reasons, this approach has a lot to overcome.

A clean-energy policy has a different set of concerns than the issue of safety from wildfires. For clean energy, policymakers focus on emissions, price, and the ability of new resources to work together in ways that keep the lights on.

Fire safety revolves around reducing fuel, hardening communities to withstand ferocious fires and clearing vegetation from near electric lines. While these policies are not contradictory, there are obstacles to making them work in harmony.

There are 26 biomass plants in California that can generate enough electricity to power about 400,000 homes. These facilities rely on fuel sources ranging from agricultural waste to wood waste from lumber mills. Most of the plants are located near the fuel sources to reduce trucking costs. Many plants are not well suited to use fuel from high-risk fire areas since it is difficult to deliver sufficient fuel without incurring prohibitive costs, even if electric customers pay a premium for the energy.

After Gov. Jerry Brown's 2015 "Tree Mortality Emergency" proclamation, California utilities entered into a number of biomass contracts. These were focused on forest waste that was sold at premium prices to account for the cost of obtaining the forest fuel and could generate enough electricity for more than 100,000 homes. But even with prices two to four times higher than solar or wind power, most of the facilities will struggle to obtain enough fuel.

Increased use of biomass faces other obstacles, too. New power plants far from customers would require new transmission lines. Small power lines that served remote areas in the Sierra forests don't have the size and equipment to bring enough power to meet electrical needs hundreds of miles away. Building new power lines or upgrading existing ones to these biomass plants can cost millions of dollars.

Historically, biomass plants that burned forest waste were either owned by lumber mills or had entered into partnerships with them, but the California timber industry has shrunk. Now, public agencies such as the U.S. Forest Service are the major supplier of wood But with limited budgets to log and remove dead trees, not much progress has been made in reducing fire fuel.

The governor's interagency Forest Management Task Force is coordinating a study to identify and assess barriers to wider use of fuels from high-risk areas. But the current level of forest activities probably isn't enough to supply biomass facilities with an economically viable flow of fuel from high-hazard areas and is insufficient to meet forest management needs within those same fire-prone regions.

Building a new sustainable forestry industry in the Sierra and Siskiyou mountains could make biomass facilities more effective as part of a whole array of fire prevention tools, as well as offering jobs and economic development in those communities.

But on its own, biomass is a limited fire prevention tool and will require extensive ratepayer subsidies. Even with subsidies, biomass may not work as an effective fire-prevention tool outside pine forests.

It seems clear that if we're counting on biomass electricity generators to significantly reduce the number and ferocity of fires, we'll fall short. If we expect these generators

to help with carbon reduction, we'll also fall short. And if we overbuild these plants to provide more electricity, we'll overshoot our demand for what customers need.

Simple solutions to complex issues often sound good at first but may look unwise in hindsight. If there is a role for biomass in mitigating against more destructive wildfires, it's only part of a much larger firefighting and sustainable forestry strategy.

Michael Picker is president of the California Public Utilities Commission, Michael.picker@cpuc.ca.gov. He wrote this commentary for CALmatters.

Commentaries

CALmatters welcomes commentary pieces focused on California policy and politics. Below are our guidelines:

- We will edit them, post them on our site and share them with our news partners. They may publish them.
- Your op-eds must be exclusive to CALmatters and no more than 650 words.
- Please include your photo and email address for publication.
- Please also include phone number so we can reach you.
- If your piece is selected for publication, we will ask that you sign a release, and statement that you have read and accept our ethics policy.

Please contact Dan Morain with any questions, dmorain@calmatters.org, (916) 201.6281.

READER REACTIONS

- **BIOMASS ENERGY**, *by Bill Walzer, Berkeley on Aug. 26, 2018*

Want to submit a reader reaction? You can find our submission guidelines here. Please contact Dan Morain with any questions, reactions@calmatters.org, (916) 201.6281.

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COMMENTARY

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CalTrans issues

My turn: Here's how to avert California's next health care crisis

COMMENTARY

My turn: Self-driving cars must not leave the rest of us behind

COMMENTARY

From: Walter Paniak
To: Lori Taketa
Subject: Fwd: One further question about biomass
Date: Wednesday, March 27, 2019 4:16:55 PM

Correction 2017 data not 2007 data.
Sorry.

---------- Forwarded message ---------
From: **Walter Paniak** <[redacted]>
Date: Wed, Mar 27, 2019 at 1:52 PM
Subject: Fwd: One further question about biomass
To: Lori Taketa <ltaketa@redwoodenergy.org>

Found an error in California Energy commission report for 2007 for the Scotia power plant.
Distribute if needed.

---------- Forwarded message ---------
From: **Nyberg, Michael@Energy** [redacted]
Date: Wed, Mar 27, 2019 at 1:29 PM
Subject: RE: One further question about biomass
To: Walter Paniak [redacted]
CC: Gee, David@Energy [redacted]

Good catch Walt. Yes, it seems the power plant incorrectly reported those values. I have a call into the company to correct the ongoing reporting.

The proper values should be:

E0063 – Scotia:

2017 Gross MWh: 118,495

2017 Net MWh: 89,865

2016 Gross MWh: 125,957

2016 Net MWh: 106,263

I will update the figures on the next website update.

Thanks again,

Michael

Michael Nyberg

Supervisor, Supply Data & Analysis Unit

Energy Assessments Division

California Energy Commission

[redacted]

[redacted]

www.energy.ca.gov

From: Walter Paniak [redacted]
Sent: Wednesday, March 27, 2019 12:55 PM
To: Nyberg, Michael@Energy [redacted]
Subject: One further question about biomass

Look at plant 50049 Humboldt Redwood at Scotia. There might be a clerical error. It looks like 48 thousand MWh parasite usage. Any thoughts?

Thanks

Walt Paniak

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Walt Paniak

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Walt Paniak
--
Walt Paniak

California Biomass and Waste-To-Energy Statistics & Data

In 2017, biomass-produced electricity in our state totaled 5,767 gigawatt-hours (GWh) or 2.8 percent of the state's total system power. A total of 93 operating biomass power plants, with an installed capacity about 1,305 megawatts, are in California.

Biomass power plant is the general term for waste-to-energy power plants that burn organic material. They are comprised of four specific types defined by the fuel they burn:

- Biomass
- Digester Gas (Anaerobic Digestion)
- Landfill Gas
- Municipal Solid Waste (MSW)

The plant pictured on the right is the Wheelabrator Shasta Energy Company power plant in Anderson, California. It uses forest "residue" that is chipped up - dead and downed trees and slash and debris from logging - as its fuel.

For an animated movie about how a waste-to-energy plant works, go to:
http://wheelabratortechnologies.com/index.cfm/plants/how-it-works/

Contact: Michael Nyberg, michael.nyberg@energy.ca.gov

Photo by Warren Gretz NREL 00298

Biomass & Waste-to-Energy Electricity Production

(In Gigawatt-Hours; Includes Imports)

Go to a Different Year ▼ Go

Year	Company Name	EIA Plant ID	CEC Plant ID	Plant Name	State	Capacity (MW)	Gross MWh	Net MWh

From: Linda Lee
To: Lori Taketa
Subject: Please Pass Proposed Resolution 2019-1 for 100% Clean and Renewable Energy by 2025
Date: Wednesday, March 27, 2019 10:35:39 AM

Thank you for working on this. Time's a-wastin'...It is very important that we make this happen.
thank you,

Vaden Jantz, Manila

Berkeley
UNIVERSITY OF CALIFORNIA

Daniel L. Sanchez
Cooperative Extension Specialist
Department of Environmental Science, Policy, and Management

160 Mulford Hall
Berkeley, CA 94720
[redacted]
https://ourenvironment.berkeley.edu/people/daniel-sanchez

To: Board of Redwood Coast Energy Authority
Date: March 28th, 2019
From:
Daniel L. Sanchez, PhD., Cooperative Extension Specialist; Department of Environmental Science, Policy, and Management, University of California Berkeley
Yana Valachovic, University of California Cooperative Extension County Director and Forest Advisor; Humboldt and Del Norte Counties

Dear RCEA Board,

As Specialists and Advisors with University of California Cooperative Extension, we wish to highlight the importance of using local biomass[1] as a clean energy source and applaud Redwood Coast Energy Authority (RCEA) utilization of biomass in meeting your renewable portfolio. We appreciate RCEA's efforts to procure a power mix that produces benefits for our local community, economy, and the environment.

Our support for bioenergy production in Humboldt County arises from its numerous benefits: clean energy, improved forest health, ambitious climate change mitigation, and rural job creation. We recognize that no energy source is perfect, but on the balance, locally produced and utilized biomass provides numerous public trust, environmental, and economic benefits. Below, we summarize the unique role that biomass plays in helping RCEA achieve these goals and respond to some of the questions and concerns that were documented in the February RCEA monthly board minutes. More information about the benefits of woody biomass and bioenergy is included in an appendix to this letter.

Clean energy
There is no universally accepted definition of clean energy. Definitions can incorporate life cycle analysis, social justice, and other externalities. Nevertheless, the vast majority of scientists and governments classify biomass as both a clean energy and renewable (i.e. non-fossil fuel) source. The State of California considers solar, wind, geothermal, biomass, small hydro, renewable methane, ocean wave, ocean thermal, or fuel cells as renewable fuels[2].

We assert that when bioenergy is made from locally grown trees and shrubs it is a clean energy source. Not only do trees convert solar energy into fixed carbon, they store energy organically with far lower environmental impact than fossil fuels. This naturally fixed carbon and energy may then be managed as habitat in the forest, harvested for use as a building material, or utilized as energy in a biomass plant. Burning

[1] The term "biomass" most simply defined is the organic matter in trees, agricultural crops, and other living plant materials "Woody biomass" refers to trees, shrubs, bushes, or products derived from these woody plants that accumulate to an amount that is a hazard or disposal problem. Woody biomass can be used for heat, bioenergy, and forest or agricultural products.
[2] https://focus.senate.ca.gov/sb100/faqs

biomass through bioenergy production is importantly distinguished from burning fossil fuels in that biomass is part of the actively cycled carbon in the atmosphere and was sequestered within the past 40-100 years, while fossil fuels reintroduce carbon into the atmosphere sequestered 60-200 million years ago and removed from the carbon cycle.

We believe that all clean energy sources have an important role to play in fighting climate change and producing renewable energy. In this regard, biomass provides many advantages, especially when it is utilized from the local area. From producing long-lived building materials that sequester carbon, to generating renewable heating, cooling, and energy in local communities, smart biomass utilization can support the interrelated goals of forest health, forest carbon sequestration, water and air quality, creating and maintaining jobs, as well as keeping forests healthy for everyone's enjoyment and recreation.

Additionally, the 2019 Green New Deal supports mobilization of a wide-range of clean energy technologies, including biomass. The Green New Deal sets a goal of "meeting 100 percent of the power demand in the United States through clean, renewable, and zero-emission energy sources." RCEA has already shown to be a leader in how to implement this vision in an economically and socially sustainable way.

Forest health

The fire seasons of 2017 and 2018 in California[3] have been a reality check for many, forcing a collective understanding that the fire problem is not just about fire. In California alone, at least 129 million trees have died since 2010, due to a combination of fire suppression leading to overstocked and dense forests[4], drought, and pests. Managing the large number of dead trees is a difficult challenge, particularly within the context of protecting rural California residents. As a result of the recognition of these multifaceted challenges, in January 2019 the Governor charged CAL FIRE and the Resources Agency with the task of reducing fuels to protect our most vulnerable communities. CAL FIRE estimates that 15 million acres need forest restoration[5] and recognizes that "while it is not possible to eliminate wildfire risks in California; focused and deliberate action can protect communities and improve forest and fuels conditions to enable a more moderate and healthier wildfire cycle that can coexist with Californians". These challenges are not limited to the Sierra Nevada and are common throughout California including the North Coast.

The North Coast is blessed and burdened with highly productive forest and plant growth. However, all living vegetation is part of the carbon cycle and its fate is eventual carbon release either through decomposition or wildfire. The question is when and how? Management of this growth in the form of forest fuels reduction and the reduction of stand densities are important steps to creating fire resilient forests and reducing uncontrolled emissions of greenhouse forcing gasses and black carbon during wildfires. Over the coming decade California will see an enhanced level of fuel reduction through mechanical and prescribed fire techniques and a broader level of incentives to manage fuel backlogs and improve forest health. Bioenergy utilization with emission-

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[3] Governor's Executive Order N-05-19 https://www.gov.ca.gov/wp-content/uploads/2019/01/1.8.19-EO-N-05-19.pdf and the state emergency declaration http://www.fire.ca.gov/general/downloads/45-DayReportPlans/3.22.19-Wildfire-State-of-Emergency.pdf

[4] Parsons and DeBenittie (1979) Impact of fire suppression on a mixed-conifer forest. Forest Ecology and Management 21: 21–33.

[5] CAL FIRE 45 Day Report. http://www.fire.ca.gov/downloads/45-Day%20Report-FINAL.pdf

controlled technologies is an important part of the solution and provides an alternative to open-pile burning[6] of forest fuels and prescribed fire.

Ambitious climate change mitigation

Biomass utilization produces important carbon sequestration benefits, which can help support California's ambitious climate change mitigation goals. In particular, Executive Order B-55-18 To Achieve Carbon Neutrality, issued by Governor Brown on September 10, 2018, places California on a path to net-neutral economywide emissions by 2045[7]. Carbon sequestration from biomass will be essential to achieving this goal, as carbon stored in living trees or wood-based lumber products can help to offset emissions from hard-to-decarbonize sectors such as aviation, long-distance trucking, and agriculture. Further, biomass supports removal of forest fuels that are otherwise placing these carbon stores at risk.

Furthermore, biomass has an important role to play in carbon sequestration. In the near-term, maintenance of bioenergy markets will help reduce forest fuels thereby helping California's forests become more resilient to wildfire or other disturbances. In the future, RCEA and other energy consumers may be able to procure net carbon-negative electricity from biomass, which permanently removes CO_2 from the atmosphere. For instance, numerous scientists and policymakers recognize that biomass utilization combined with carbon sequestration (commonly referred to as BECCS—Bio-Energy with Carbon Capture and Storage) will be necessary if we are to keep global warming significantly below 2 degrees Celsius. Supporting biomass energy through power purchase agreements and other procurement mechanisms can help drive the deployment of BECCS technologies in California as they become commercially viable.

Finally, many recognize that a "portfolio" approach to fighting climate change produces large economic benefits in comparison to those that rely solely on a limited number of energy sources[8,9]. Biomass, alongside other renewable energy sources, can play an important role in achieving cost-effective climate change mitigation.

Rural job creation

Biomass creates economic opportunities locally. Forest management and restoration activities cannot be outsourced and produce many living wage jobs in our local communities. These jobs include forest management, forest operations, trucking, processing, and other value-added operations. The many steps involved in bioenergy production require that workers be employed to operate each link of the supply chain.

Smart biomass utilization will help protect and enhance forest health while creating economic opportunities. We urge RCEA to sustain their commitments to bioenergy produced electricity and to Humboldt County for both the near-term and long-term benefits.

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[6] Springsteen B, Christofk T, York R, Mason T, Baker S, Lincoln E, Hartsough B, Yoshioka T. 2015. Forest biomass diversion in the Sierra Nevada: Energy, economics and emissions. Calif Agr 69(3):142-149. https://doi.org/10.3733/ca.v069n03p142 http://calag.ucanr.edu/Archive/?article=ca.v069n03p142

[7] https://www.gov.ca.gov/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf

[8] D.L. Sanchez, J.H. Nelson, J. Johnston, A. Mileva, D. Kammen. "Biomass enables the transition to a carbon-negative power system across western North America." *Nature Climate Change*, 5, 230–234 (2015).

[9] S.J. Davis *et al.* (with over 30 authors) "Net-zero emissions energy systems" *Science* (2018). http://science.sciencemag.org/node/711939.full

Sincerely,

Daniel L Sanchez, Ph.D.

Yana Valachovic, RPF #2740

Appendix: FAQs about Biomass in California's North Coast

What is biomass?

The term "biomass" most simply defined is the organic matter in trees, agricultural crops, and other living plant materials. "Woody biomass" refers to trees, shrubs, bushes, or products derived from these woody plants that accumulate to an amount that is a hazard or disposal problem. woody biomass materials can be used for heat, energy, and forest or agricultural products. Woody biomass contrasts with higher value, and typically larger diameter "saw logs" used to produce lumber, panels, veneers, or poles.

In Humboldt, forests provide sources of biomass feedstocks used for bioenergy production. Urban wood waste or agricultural products (e.g. fruit tree prunings, pits or shells) are not used as feedstocks. Currently the largest consumers of low commercial value woody biomass in California are bioenergy power plants.

Before and after photos of a forest restoration project in Humboldt County.

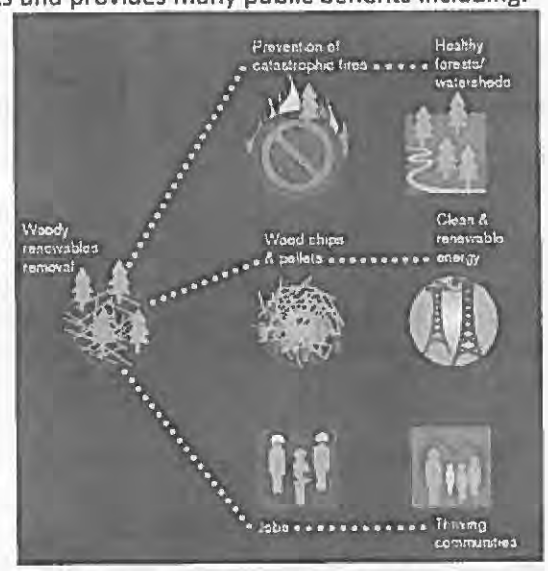
Why is woody biomass the largest local source of power?

Humboldt County has some of the world's most productive forest lands. Forest byproducts are an important locally available resource. Materials, created from thinning forests and the chips and bark produced in sawmills, can be utilized in an emission-controlled power plant to produce energy. In the 1980s Humboldt County's biomass power plants were created to utilize a local resource and to replace tee-pee burners where wood chips had been burned without pollution control technologies.

What are the benefits of using woody biomass?

Woody biomass provides an important source of bioenergy feedstocks and provides many public benefits including:

- ✓ **Delivering flexible or baseload generation.** Woody biomass energy production provides a continuous (24-hour), reliable supply of power, unlike variable renewable energy sources like solar or wind.
- ✓ **Promoting healthy forests and defensible communities.** Woody biomass can be sourced from existing forest management activities, particularly fuels reduction prescriptions, that target diseased, bark beetle-killed, and/or over-crowded forests that contribute to historically uncharacteristic catastrophic wildfires.
- ✓ **Reducing emissions from wildfires** or burn piles. Bioenergy facilities are equipped with modern air quality emission technologies. Woody biomass emissions are far-lower than wood stoves and substantially lower than burn piles or wildfires (currently, the fate of most woody biomass due to facility closures throughout California).



Graphic courtesy of the Sierra Institute for Community and the Environment

- ✓ **Reducing greenhouse gas emissions**. Bioenergy production that uses materials from sustainably managed forests reduces long-term climate impacts by replacing fossil fuels.
- ✓ **Utilizing a local product.** The ability for forest landowners to sell otherwise non-merchantable woody materials provides an economic incentive to steward and conserve local forests. Many powerplants also utilize wood chips and sawdust providing and additional economic return to landowners.
- ✓ **It's renewable.** Unlike coal, oil, and natural gas, which are fossil fuels that bring "new" carbon into the earth's atmosphere, woody biomass is an abundant and renewable source of fuel. The burning of woody biomass and the growth of trees creates a closed-loop system and does not contribute additional carbon. Furthermore, woody biomass operations turn wood waste into electricity without compromising the essential cultural and habitat values that forests provide.

Historic "teepee" burner of wood waste, Carlotta, CA

What infrastructure does biomass support?

Functioning forest bioenergy infrastructure supports restoration and the local economy. Regardless of the forest management goal (e.g. restoration, economic return, fuels reduction, etc.) our region needs skilled laborers, the means for transportation, and the processing and disposal of cut materials in the forest and from the byproducts of milling. If Humboldt County's bioenergy facilities were to close, any forest restoration project would be significantly hindered. The forest products industry and the bioenergy power plants provide many living wage jobs, producing about 4-5 jobs per MW.

Why build with wood?

Building with wood is part of our future climate change solution. Not only does the North Coast produce wood; wood has superior climate benefits over concrete and steel constructed building materials. As trees grow they convert CO_2 into stored carbohydrates. When this carbon is utilized in buildings it provides long-term carbon storage. By contrast, the production of concrete and steel require significant energy input and during the process carbon from fossil fuels are released into the atmosphere. In 2010 the building sector was responsible for 45% of the US CO_2 emissions; better utilizing wood will help reverse these emissions. The production of long-lived lumber building materials from wood, such as cross-laminated timber, provides immediate and long-lasting carbon sequestration, as well as creating important markets for domestic forestry products.

Bioenergy facilities purchase chips, back, and sawdust from sawmills. In Humboldt County more than 100 truckloads of chips are produced a day (or 2500 tons).

What are the challenges to using biomass?

There are many challenges for using woody biomass based on unfavorable economics. Although there is a long list of products that could be produced from woody biomass, there are often competing raw materials to make these products at lower cost. Policymakers can provide more opportunities for woody biomass by encouraging their use in efficient energy conversion facilities, using small diameter trees in their round form instead of trying to produce lumber, supporting the research and development needed to encourage investment in higher value fiber uses for composite materials (such as composite panels and wood fiber/plastic products), and continuing the search for cost-effective chemical processing to biofuels and other organic chemicals.

Is biomass considered clean energy?

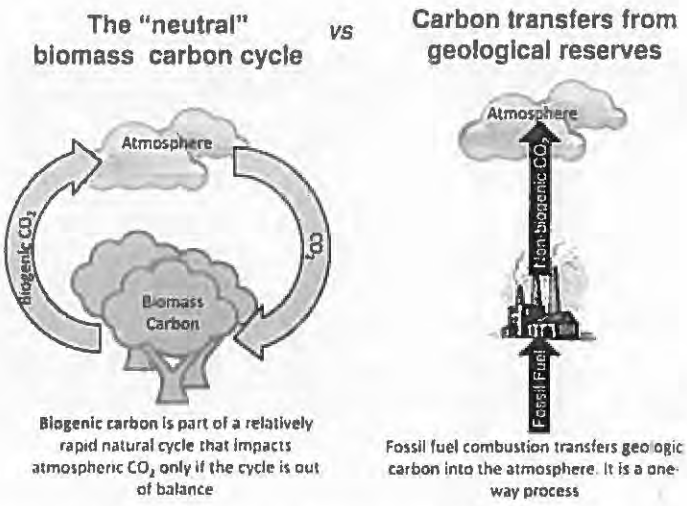
Yes, by most, biomass is "clean". While there is no universally accepted definition of clean energy, most definitions of clean typically encompass renewable energy (i.e. non-fossil fuel) sources alongside sources that produce no new CO_2 emissions. The State of California typically defines renewable energy resources as including solar, wind, geothermal,

biomass, small hydro, renewable methane, ocean wave or thermal, or fuel cells using renewable fuels. Moreover, nearly every state that has a Renewable Portfolio Standard policy includes biomass as an eligible source[10].

Most agree that a "portfolio" approach to fighting climate change produces large economic benefits in comparison to those that rely solely on a limited number of renewable energy sources. Biomass, alongside other renewable energy sources, can play an important role in achieving cost-effective climate change mitigation.

What are the state's policy goals relating to biomass?

Biomass benefits from a multitude of policy incentives in the State of California, including its renewable portfolio standard, tax incentives, supportive regulatory policies, and State-sponsored research.



California has many policies that address carbon sequestration, which uniquely advantages biomass. Biomass utilization produces important carbon sequestration benefits, which can help support California's ambitious climate change mitigation goals. Of note, Executive Order B-55-18 To Achieve Carbon Neutrality, issued by Governor Brown on September 10, 2018, places California on a path to net-neutral economy emissions by 2045. Storage of carbon in forests, wood, and other long-lived products will be essential to achieving this goal. Other strategies include forest carbon offset markets encourage longer-term storage of carbon in living tissue by requiring maintenance of elevated stocking levels and older tree ages. Biomass utilization strategies are focused on capturing the energy stored in fixed carbon and using it to replace energy sourced from fossil fuels. Bioenergy generation is a way to capture energy and carbon that would otherwise be lost to the atmosphere in wildfires (in the case of forest thinning residue) or decomposition (in the case of mill waste).

Numerous opportunities for biomass emerge when examining carbon sequestration. The production of long-lived lumber building materials from wood, such as cross-laminated timber, provides immediate and long-lasting carbon sequestration, as well as creating important markets for domestic forestry products. Carbon sequestration from biomass can extend into the energy sector. A recently released report by the Intergovernmental Panel on Climate Change, Global Warming of 1.5°, recognizes that biomass utilization combined with carbon sequestration (commonly referred to as BECCS—Bio-Energy with Carbon Capture and Storage) will be necessary if we are to keep global warming significantly below 2 degrees Celsius. Supporting biomass energy can help drive the deployment of BECCS technologies in California as they become commercially viable.

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[10] https://www.c2es.org/document/renewable-and-alternate-energy-portfolio-standards/

Humboldt Redwood

March 28, 2019

Redwood Coast Energy Authority
633 3rd Street
Eureka, CA 95501

Re: Resolution # 2019-1

Dear RCEA Board,

It has come to our attention the RCEA Board is considering a 2025 goal of achieving 100% clean and renewable energy. Part of this process will also define "clean" and "renewable". While the board goes through this process we urge the board to continue to include biomass facilities as a clean and renewable source of energy.

The biomass industry in Humboldt County and the state for that matter is about managing waste streams. No one in California harvests trees for a biomass facility. It is the waste from the milling and log processing processes that makes biomass facilities critical to using this material in a beneficial matter. If we find ourselves in a situation where we cannot contract for the sale of biomass energy, we will have to find another home for this waste. There are three options at this point and all of them will have significantly more impact on air and other environmental resources.

The first option is to transport the waste to a landfill. The state has goals to increase landfill diversions to other uses so obviously this will be counter to these goals. The second option is to truck the waste to another biomass facility, likely in the Redding area. This will create diesel exhaust that could be avoided if the waste was used locally. The third option, and the one most likely to be used if a use for the waste is not available, is to pile and burn. This has been shown to drastically increase emissions in particulate matter, carbon monoxide, and other greenhouse gases.

The Placer County Air Pollution Control District sponsored — in cooperation with the UC Berkeley Center for Forestry, United States Forest Service (USFS) Rocky Mountain Research Station Missoula Fire Lab, and UC Davis Biological and Agricultural Engineering — a case study to quantify the energy, air quality and GHG benefits from biomass facilities versus open pile burning. They found 98% to 99% reductions in emissions of particulate matter, carbon monoxide, nonmethane organic compounds, and black carbon when comparing biomass facilities to open pile burning (see attached study, page 6).

The waste from our facility in Scotia comes from trees harvested in Humboldt County under the most stringent forest practice rules in the nation and likely the world. The logs coming from our forestlands are additionally certified by the Forest Stewardship Council as coming from a well managed, sustainable forest. A significant number of landowners who sell logs to us are also FSC certified.

Humboldt Redwood™

It is for these reasons we urge the RCEA Board to include biomass energy as clean and renewable. Not including biomass energy will move this waste stream towards one of the options discussed above and increase emissions.

Sincerely,

John Andersen
Director, Forest Policy
Humboldt Redwood Company
[redacted]

Forest biomass diversion in the Sierra Nevada: Energy, economics and emissions

by Bruce Springsteen, Thomas Christofk, Robert A. York, Tad Mason, Stephen Baker, Emily Lincoln, Bruce Hartsough *and* Takuyuki Yoshioka

As an alternative to open pile burning, use of forest wastes from fuel hazard reduction projects at Blodgett Forest Research Station for electricity production was shown to produce energy and emission benefits: energy (diesel fuel) expended for processing and transport was 2.5% of the biomass fuel (energy equivalent); based on measurements from a large pile burn, air emissions reductions were 98%–99% for $PM_{2.5}$, CO (carbon monoxide), NMOC (nonmethane organic compounds), CH_4 (methane) and BC (black carbon), and 20% for NOx and CO_2-equivalent greenhouse gases. Due to transport challenges and delays, delivered cost was $70 per bone dry ton (BDT) — comprised of collection and processing ($34/BDT) and transport ($36/BDT) for 79 miles one way — which exceeded the biomass plant gate price of $45/BDT. Under typical conditions, the break-even haul distance would be approximately 30 miles one way, with a collection and processing cost of $30/BDT and a transport cost of $16/BDT. Revenue generated from monetization of the reductions in air emissions has the potential to make forest fuel reduction projects more economically viable.

Large regions of Sierra Nevada mixed conifer forests are in need of hazardous fuels reduction treatments to reduce the risk of high severity wildfire and return forests to fire-resilient conditions. Whether as a complement or replacement to prescribed burning, it is highly desirable to increase the pace and scale of these treatments (North 2012; North et al. 2012). Significant quantities of woody biomass wastes are the unavoidable byproduct of these treatments.

Open pile burning in the forest is most commonly used to dispose of woody biomass waste, as fire hazard reduction objectives prevent leaving the material in-field to decompose, and because in many cases it is the most economically viable option. While woody biomass wastes represent a significant renewable energy resource, the cost to process and transport the material for use as fuel to produce electricity (or use for other value-added bioproducts such as biochar, biofuels, polymer precursors or thermal energy) often well-exceeds the combined value at the biomass electricity generation plant, the avoided cost to pile burn, and the potential value of nutrients returned to the soil (which is low due to the localized and limited pile burn location). A significant drawback of open pile burning is that it generates emissions of criteria air pollutants (particulate matter, carbon monoxide, volatile organic compounds and nitrogen oxides), greenhouse gases (GHGs) and air toxics such as polycyclic aromatic hydrocarbons and aldehydes.

The Placer County Air Pollution Control District sponsored — in cooperation with the UC Berkeley Center for Forestry, United States Forest Service (USFS) Rocky Mountain Research Station Missoula Fire Lab, and UC Davis Biological and Agricultural Engineering — a case study to quantify the energy, air quality and GHG benefits, as well as the economics, of utilizing woody biomass

Online: http://californiaagriculture.ucanr.edu/landingpage.cfm?article=ca.v069n03p142&fulltext=yes
doi: 10.3733/ca.v069n03p142

Contractor CTL Forest Management Inc. loads a chip van with woody biomass waste from the Yeti Fuels Reduction Project in the Lake Tahoe Basin Management Unit, Kings Beach, CA. A case study at Blodgett Forest Research Station quantified the air quality and energy benefits of converting biomass waste to electricity as an alternative to open pile burning in the forest.

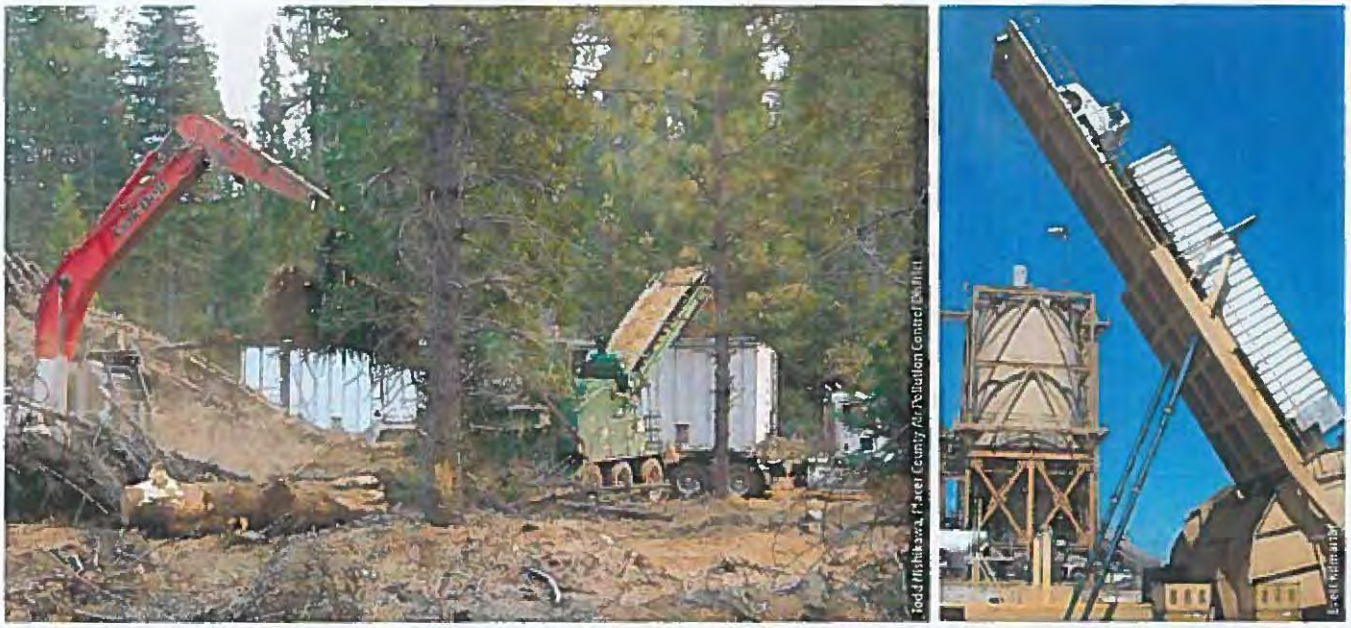

Fig. 1. At Blodgett Forest Research Station, an excavator (left) loads forest slash into a horizontal grinder. Wood chips from the grinder are then conveyed into chip vans (center) for transport to Buena Vista Biomass Power plant (right).

wastes generated at Blodgett Forest Research Station (BFRS) for renewable energy at the Buena Vista Biomass Power (BVBP) facility as an alternative to the status quo of open pile burning.

Turning a waste into a resource

The UC Berkeley Center for Forestry manages BFRS, located east of Georgetown, California. Our research project targeted woody biomass waste piles (slash) from hazardous fuels reduction and timber operations at BFRS that included tree tops, limbs and small trees. The piles were generated from thinning treatments in mixed conifer plantations during the summer of 2012. The treatment objectives were to reduce fire hazard, increase average tree vigor and increase species diversity. Operations were typical of those in the Sierra Nevada, where young and dense forests have developed following wildfires or even-aged harvests. Plantations were thinned to an average of 110 trees per acre from pre-treatment stocking levels of 222 trees per acre. Four plantations were thinned, covering a total of approximately 80 acres. Because smaller trees were preferred for removal, average stem diameter (for residual trees) at breast height (DBH) increased from 11.9 to 13.1 inches. Sawlogs greater than 6 inches diameter on the small end and at least 10 feet long were transported to a sawmill for processing into lumber products. Unmerchantable trees (too small to process into sawlogs) plus the limbs and tops of merchantable trees were piled at roadside landings for disposal by open burning. The overall size of the piles generated were typical of thinning operations in young and mature forests, with bulk volume averaging 63,000 ft^3 per pile.

A forest biomass processing contractor, Brushbusters Inc., was retained to process and transport six woody biomass waste piles for use as fuel in the BVBP generation facility located near Ione, California. BVBP is the nearest biomass plant to BFRS. At each BFRS slash pile, an excavator was used to transfer the waste material into a horizontal grinder (fig. 1). Wood chips from the grinder were conveyed directly into chip vans, and transported to the BVBP facility, typically a 65-mile one-way trip. Due to road construction projects and detours, the actual one-way distance averaged about 79 miles. Equipment used for the chipping and transport operations (detailed in table 1) were sized for scale of operations that a medium or large landowner might consider — projects for which landing piles contain at least 100 green tons (GT) of biomass wastes (the equivalent of four chip vans each holding 25 GT). All biomass received at BVBP had been chipped prior to transport.

Brushbusters' operations (grinder, loader and chip vans) were carefully observed and tracked by our team, including total operating hours, productive operating hours (time when grinding and not including time when idling or waiting), diesel fuel use, biomass production and miles traveled. Engine and equipment air emission factors used to determine processing and transport emissions were taken from the manufacturer for each particular model. The following equipment cost factors were used, based on current contractor bid rates: grinder: $450/hour; excavator: $175/hour; chip van: $90/hour.

TABLE 1. Equipment and engines for biomass processing and transport

Equipment	Vendor, model, year	Engine model, horsepower
Horizontal grinder	Bandit Beast, model 3680, 2008	Caterpillar C18, Tier III, 522 kW
Excavator	Link-Belt, model 290, 2003	Isuzu CC-6BG1TC, 132 kW
Chip van	Kenworth, 1997	Cummins N14, 324 kW
Chip van	Kenworth, 2006	Caterpillar C13, 298 kW

The BVBP facility uses a wood-fired boiler that produces steam for a turbine and generator rated for 18 megawatts (MW) of electricity. The boiler is a Combustion Engineering/Lurgi circulating fluidized bed design fueled by biomass wastes including agricultural wastes (nut shells and orchard removals and prunings), forest slash and urban wood waste (tree trimmings and sorted construction debris). The boiler utilizes selective non-catalytic reduction for nitrogen oxides control, and multiclones and a baghouse for particulate matter control.

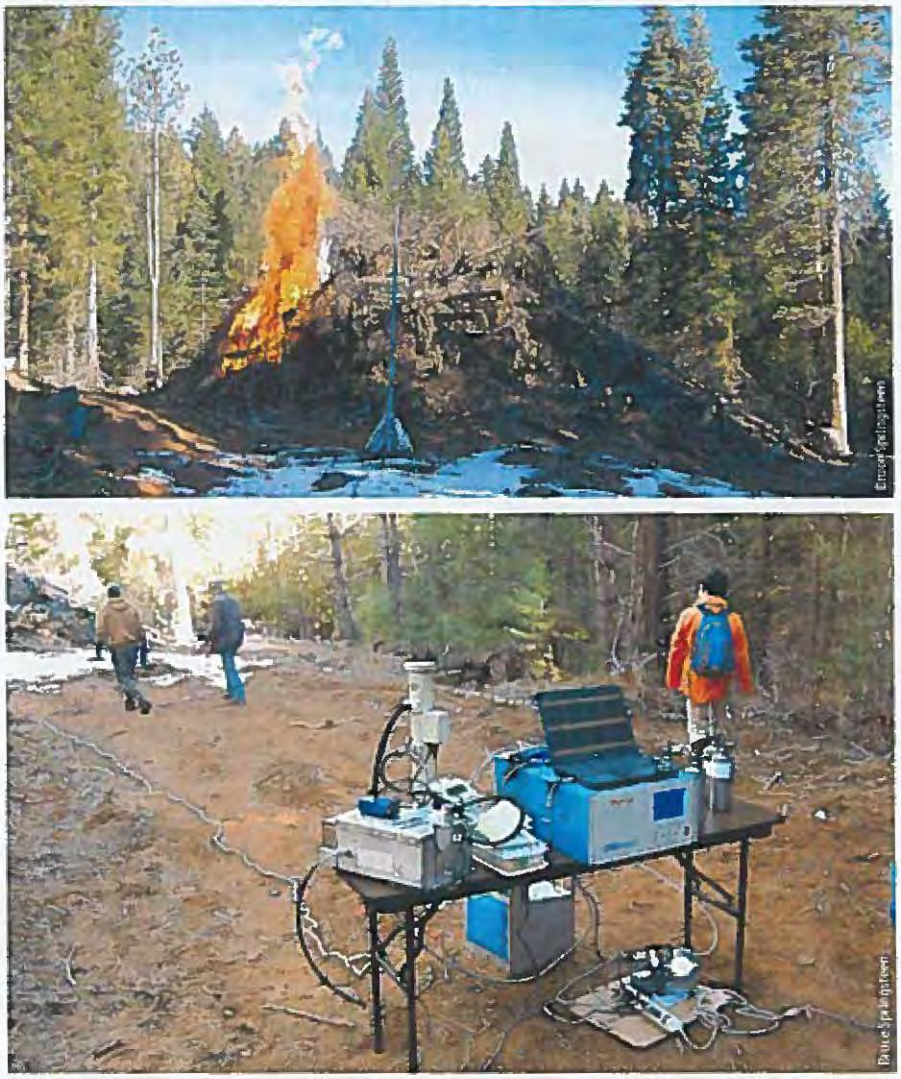

Fig. 2. To sample air emissions from the pile burn, researchers used a 20-foot steel probe at the edge of the pile (top); nitrogen oxides, black carbon and carbon dioxide were measured on site using continuous emissions monitors. Canister samples were collected and sent for offsite analysis for total fine particulate matter, trace hydrocarbons and carbon monoxide.

TABLE 2. Forest slash composition

	Moisture	Carbon	Nitrogen	Ash	Higher heating value
	wet wt %	*dry wt %*	*dry wt %*	*dry wt %*	*Btu/dry lb*
Chips	9.4	52.5	0.14	1.3	8,359
Wood	17.7	48.8	0.58		
Needles	15.3	51.3	1.29		
Branches 1"–3"	8.8	50.2	0.46		
Branches > 3"	17	50	0.48		

BVBP energy production and air emissions from the use of the BFRS forest slash were determined from direct measurements of biomass use and heat content, boiler continuous emissions monitors, air pollution source test (Avogadro 2013) and boiler heat rate. Emissions from electricity displaced by the biomass project were determined from overall California state generation factors (CARB 2010).

Staff from the USFS Rocky Mountain Research Station Missoula Fire Lab conducted field measurements characterizing air pollutant emissions from an open burn of one of the forest slash residue piles at BFRS (for details see Baker et al. 2014). Air emissions from pile combustion were sampled through a 20-foot steel probe angled over the edge of the pile (fig. 2). Real-time continuous nitrogen oxide (NOx) (Thermo Model 42i analyzer), black carbon (BC) (microAeth Model AE51 aethelometer) and carbon dioxide (CO_2) (LICOR LI-820) measurements were conducted on site. Particulate matter less than 2.5 microns ($PM_{2.5}$) was collected on 37-mm Teflon filters at 15-minute intervals. Emissions samples were collected in SUMMA canisters — three during the flaming phase, and 31 at 10-minute intervals during the burn down — and analyzed for carbon monoxide (CO), non-methane organic compounds (NMOC), methane (CH_4) and CO_2 at the Missoula lab using gas chromatography and flame ionization detection. Pile material samples were analyzed at Missoula for moisture, carbon and nitrogen content; Hazen Research Laboratory (Golden, CO) performed ultimate analysis on a representative chip sample. Emission factors were determined using the carbon mass balance method (Hao 1996) for both a "fire average" integrated over the full duration of the flaming and smoldering phase, and a smoldering-only phase.

During the period of August 20, 2013, through September 4, 2013, on eight separate work days, Brushbusters collected, processed and transported 601 bone dry tons (BDT) (928 GT) of forest slash from BFRS to BVBP. This comprised a total of 37 separate chip van loads, with deliveries averaging 16.3 BDT (25.1 GT).

Table 2 shows forest slash biomass waste pile composition — material was relatively dry (9% to 18% moisture) with ash (1.3% dry weight) and heat content (high heating value of 8,359 Btu/dry lb)

comparable to virgin conifer slash, indicating minimal contamination with rock and soil.

Energy tradeoffs

Energy use input requirements and output production for the biomass project are shown in table 3. The energy of the diesel fuel used in collection, grinding and transport is only 2.5% of the available energy of the biomass wastes delivered to BVBP; and 4.6% of the energy of the natural gas (that would be required for producing an equivalent amount of electricity in a combined cycle natural gas–fired generation facility) that is displaced by the BFRS-BVBP bioenergy project. This is consistent with displaced generation found in other studies (e.g., Jones et al. 2010; Pan et al. 2008; Springsteen et al. 2011).

Challenging economics

Biomass project economics are shown in table 4. The total delivered cost of $70/BDT was almost equally split between collection and processing at $34/BDT and transporting to BVBP at $36/BDT.

Production rates were less than expected due to lack of full-time availability of chip vans to the grinder landings. This was due to the following considerations: (1) BVBP was not in commercial operation and curtailed the hours they were accepting fuel deliveries. In many cases, trucks had to be parked loaded overnight rather than complete a one-day round trip; (2) public road contruction activities caused transport delays, resulting in average chip van transport speeds of only 31 mph; and (3) trees and brush from BFRS spur roads and landings needed to be cleared to allow van access.

Three to four chip vans were used each day for hauling. Each chip van averaged only 1.25 delivered loads per day rather than the potential two loads per day for the round-trip distance of 158 miles.

Time-motion evaluation found the grinder to be actively processing material for only 2.5 hours/day, while the grinder engine and excavator actually operated 3.8 and 4.8 hours/day, respectively (including idling and non-processing time). The biomass piles were originally created with pile burning as the planned disposal method, not grinding and removal for use as energy. The low density piles slowed feeding of the biomass wastes into the grinder. There were other delays due to moving equipment, preparing roads to access the piles and waiting for chip vans. All of these are common challenges that should be expected when first introducing biomass operations on forestlands. With improved pile stacking and a reduction in grinder idling, projected processing costs could be reduced to about $30/BDT (table 5).

Project expenditures for processing and transport were close to $70/BDT, while the competitive market value at the time of the project for biomass sourced from timber harvest residual in the central Sierra Nevada region was $45/BDT. The economic cost to dispose of the biomass wastes at the site of generation through open pile burning was less than $5/BDT. Thus, the demonstration project operated with a cost deficit of approximately $20/BDT.

Transport costs are a significant cost driver when collecting, processing and transporting forest biomass. To achieve a market price of $45/BDT for biomass fuel, the projected break-even transport distance would need to average approximately 30 miles one way. As shown in table 5, this estimate assumes

TABLE 3. Energy accounting for BFRS-BVBP bioenergy project

Operation/energy type	Basis	Energy
		Btu/lb dry biomass
Expenditures		
Grinding		
Grinder	411.6 gal diesel* (0.44 gal/wet ton biomass)	47
Excavator	204.2 gal diesel (0.22 gal/wet ton biomass)	23
Water truck	42 gal diesel	5
Transport	1,177 gal diesel (5 miles/gal)	134
Total		209
Production		
Biomass energy content	Hazen lab analysis, high heating value	8,359
BVBP biomass facility electricity	Boiler heat rate: 13,265 $Btu_{heatinput}/kWh_e$	2,134
Avoided/displaced		
Natural gas combined cycle (NGCC)	NGCC heat rate: 7,200 $Btu_{heatinput}/kWh_e$	4,503

* Diesel energy content (higher heating value): 137,000 Btu/gal.

TABLE 4. Economics of biomass processing and transport for BFRS-BVBP project

Equipment	Unit operation cost	Average operating time	Production rate	Total cost
	$/operating hour	*hours/day*	*BDT/machine-day*	*$/BDT*
Grinder (Bandit Beast)	450	3.8	75.1	22.8
Excavator (Link-Belt 290)	175	4.8	75.1	11.2
Chip van	90	8	20.3	35.5
Total				69.4

TABLE 5. Projected economics of biomass processing and transport for 30-mile one-way haul distance

Equipment	Unit operation cost	Average operating time	Production rate	Total cost
	$/operating hour	*hours/day*	*BDT/machine-day*	*$/BDT*
Grinder	400	5	95.0	21.1
Excavator	160	5	95.0	8.4
Chip van (30 miles one way)	85	9	48.9	15.6
Total				45.1

improvements in grinder processing efficiency and transport costs of $15.60/BDT (based on a chip van capacity of 16.3 BDT per load, chip van speed of 30 miles/hour, round trip of 60 miles, van loading and unloading time of 1 hour, and hourly van rate of $85/hour).

Emissions from open pile burning

On the morning of January 20, 2014, one pile at BFRS, roughly 80 feet by 100 feet wide and 15 feet tall, containing approximately 300 BDT, was burned. The pile material composition, size and stacking arrangement was similar to those moved to BVBP. The pile was lit at the edge near the steel sampling probe. Within 5 minutes, a strong convective column with 100-foot-high flames formed. Due to the size and height of the burn it was not possible to sample the main section of the plume during the full flaming combustion mode of the burn. Figure 3 shows the pile as the ignition progressed through flaming and smoldering stages. Flaming phase transitioned to smoldering phase approximately 40 minutes after ignition.

CO is a strong surrogate indicator for other products of incomplete combustion (NMOC and CH_4), as shown in fig. 4 (canister measurements taken throughout the pile burn). Because monitoring CO is comparatively straightforward, it is important to establish its relationship to compounds that are more difficult to monitor (including NMOC and CH_4). The pile burn overall modified combustion efficiency (MCE) value of 94% (table 6) is consistent with the observation of good pile burning conditions — dry material, good air mixing and high burn temperature.

Fig. 3. In 2014, researchers measured air emissions from an open pile burn at BFRS. Due to the size and height of the burn, they were unable to sample the main section of the plume during the full flaming combustion mode (see time interval at 13 minutes). Flaming phase transitioned to smoldering phase approximately 40 minutes after ignition.

Emission factors from the open pile burn at BFRS are shown in table 6, including measurement variability (standard deviation) for both the smoldering phase and the total overall integrated (flaming and smoldering phases) burn. Due to the researchers' inability to sample the primary pile smoke plume, BC results are only presented for the smoldering phase; total overall burn results are reported for the other air pollutants but may not adequately represent the flaming conditions in the main pile burn exhaust plume.

Emissions factors for $PM_{2.5}$, CO and CH_4 were consistent with those reported in the literature (see Springsteen et al. (2011) for a recent compilation of forest residue open pile burn emission factors). Emission factors for NOx and NMOC were 50% to 75% and 0% to 75% lower, respectively, than other studies. The lower NOx may be the result of the large pile size and inability to sample the high temperature locations of the pile plume during the flaming phase. As expected, emission factors for products of incomplete combustion, including CO, NMOC and CH_4, were significantly higher for the smoldering phase.

Emissions comparison. Criteria air pollutant and GHG emissions (per BDT of woody biomass) from BFRS open pile burning and the BVBP biomass energy project alternative are compared in figs. 5 and 6, respectively. GHG emissions are shown as CO_2-equivalent based on Global Warming Potential factors from the Intergovernmental Panel on Climate Change (IPCC 2013). Details of the emission factors used and calculations are in tables 7 and 8.

Reductions of $PM_{2.5}$, CO, NMOC and BC were from 98% to 99%, which is consistent with other findings (Jones et al. 2010; Lee et al. 2010; Springsteen et al. 2011). These results are due to the efficient combustion and controls at the biomass energy facility and engines used for processing and transport. NOx emissions reductions of only 17% result from the lower-than-typical NOx measured from the open pile burn.

GHG CO_2-equivalent reductions of 0.5 tons/BDT of biomass from the BVBP bioenergy project result from reduction in BC, CO, NMOC and CH_4 compared to the pile burn; and renewable electricity that displaces fossil fuels required for equivalent power generation.

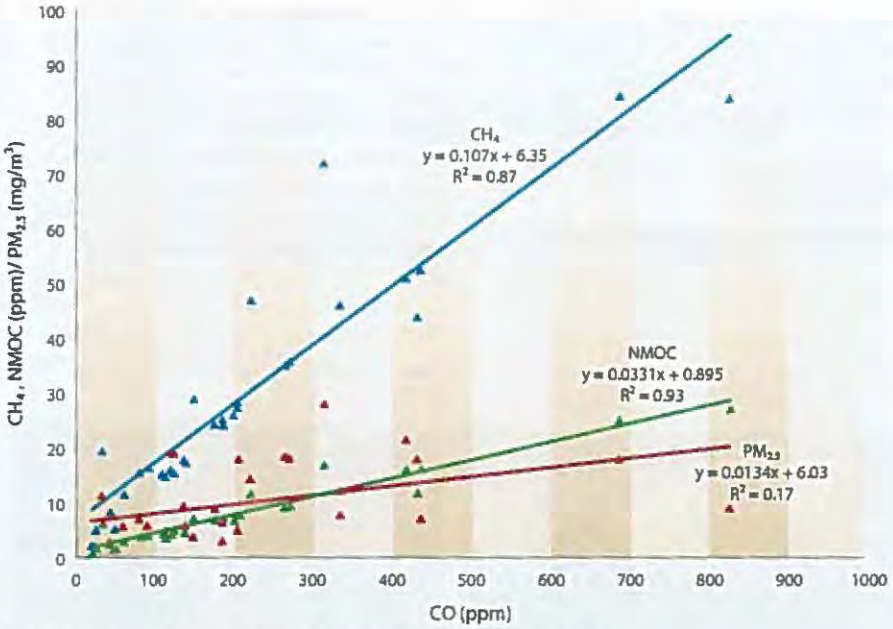

Fig. 4. Relationship between CO and NMOC and CH_4 for open pile burn.

TABLE 6. Open pile burn emission factors (g/dry kg forest slash)

	Total (flaming and smoldering)		Smoldering	
	Average	Standard deviation	Average	Standard deviation
CO_2	1,708.0	89.6	1,511.0	56.7
CO	66.3	45.8	157.6	33.2
CH_4	5.00	4.60	13.50	3.50
NMOC	1.48	2.66	7.39	1.68
NO	0.94	0.41		
NOx	1.03	0.41		
$PM_{2.5}$	5.27	5.31	5.31	5.92
BC			0.32	
MCE (%)	94	4	86	3

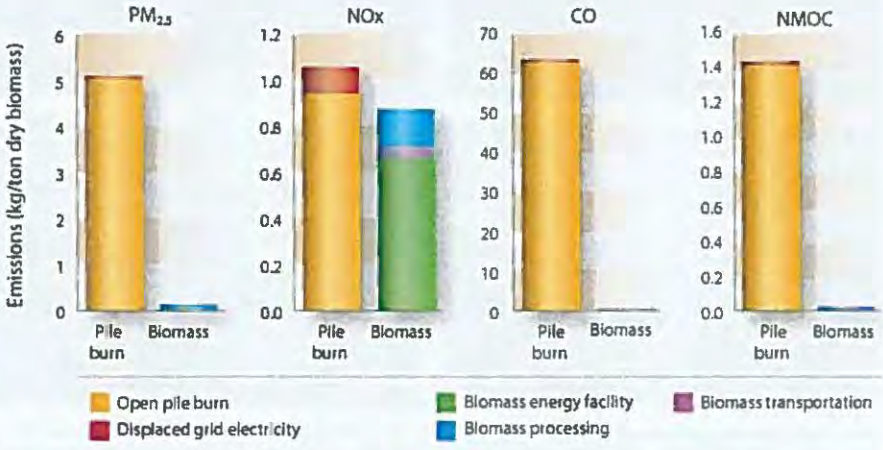

Fig. 5. Criteria air pollutant emissions comparison: pile burn versus biomass energy project.

Sales of greenhouse gas and criteria air pollution reductions as mitigation offsets to meet environmental review requirements would help to make forest biomass projects economically viable.

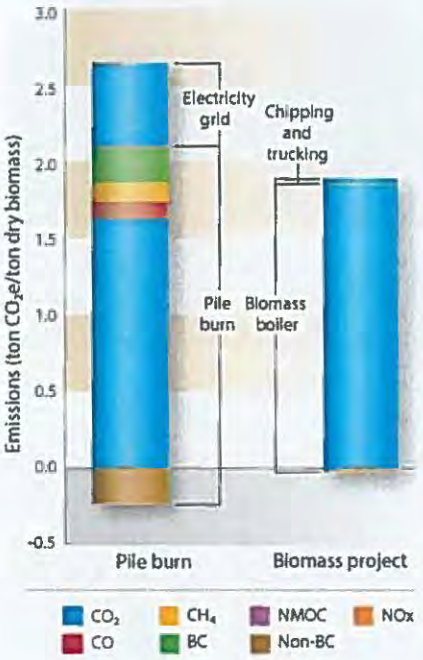

Fig. 6. Greenhouse gas emissions comparison: pile burn versus biomass energy project. (For the biomass energy project, the contribution to the CO_2e total for all of non-CO_2 constituents (CO, CH_4, NMOC, NOx, BC and Non-BC) is included, but the bars are not visible because they are insignificant in comparison to that from CO_2.)

Conclusion

Energy production and reductions in criteria air pollutants and GHG emissions were quantified from utilization of forest woody biomass wastes to fuel electricity generation as an alternative to open pile burning. However, biomass energy project economics were not favorable due to inefficient processing operations and the long transport distance between biomass origin and energy facility. Expected improvements in processing and transport efficiency alone will not bridge the gap. Sales of greenhouse gas and criteria air pollution reductions as mitigation offsets to meet environmental review requirements (such as those under the California Environmental Quality Act) would help to make forest biomass projects economically viable. A potential greenhouse gas value of $20/ton CO_2-equivalent (the approximate rate of credits under South Coast Air Quality Management District Rule 2702, Greenhouse Gas Reduction Program) would add $10/BDT to the biomass value and reduce the BRFS-BVBP project deficit by half. Monetizing criteria air pollutant reduction benefits could fully close the deficit. Under California's Carl Moyer Program, mitigation of NOx, NMOC and $PM_{2.5}$ is valued at up to $16,000 per ton. There is a growing demand for such emissions reductions as air quality standards tighten and economic growth in rural air basins continues. For instance, new businesses and land development projects that generate emissions are often required to mitigate their impact under the California Environmental Quality Act review process or purchase emissions reduction credits to meet New Source Review requirements under the federal Clear Air Act.

A video documenting the BFRS biomass project was produced that includes interviews with a unique and diverse set of resource professionals, researchers, state and federal agency representatives, utility representatives and elected officials. The video can be viewed at http://vimeo.com/89771199.

B. Springsteen is Senior Engineer and T. Christofk is Air Pollution Control Officer, Placer County Air Pollution Control District, Auburn, CA; R. York is Research Stations Manager, UC Center for Forestry, and Adjunct Assistant Professor of Forestry, Department of Environmental Science, Policy, and Management, UC Berkeley; T. Mason is Chief Executive Officer, TSS Consultants, Rancho Cordova, CA; S. Baker is Chemist and E. Lincoln is Chemist, USFS Rocky Mountain Research Station Missoula Fire Lab, Missoula, MT; B. Hartsough is Professor and T. Yoshioka is Research Assistant, UC Davis Biological and Agricultural Engineering.

References

Avogadro Group LLC. 2013. Source Test Report: 2013 Emission Compliance Tests and Relative Accuracy Test Audit, Buena Vista Biomass Power, LLC, Ione, California. April 10, 2013.

Baker S, Lincoln E, Richardson M. 2014. Tracking the Economic Costs and Air Emissions of Forest Biomass Diversion and Allocating the Air Emissions Credits Generated - Emissions Sampling and Determination of Emission Factors. Missoula, MT: USDA Forest Service, RMRS, Fire Sciences Laboratory. March 5, 2014. www.placer.ca.gov/~/media/apc/documents/APCD%20Biomass/BFPileReport.pdf.

[CalEEMod] California Emissions Estimator Model. 2013. Version 2011.1.1. Environ International and California Air Districts. Table 3.5 OFFROAD Emission Factor Based on Engine Tier, Table 3.4 OFFROAD Equipment Emission Factors (g/b-hp-hr). www.caleemod.com/ (accessed July 2013).

[CARB] California Air Resources Board. 1997. Emission Inventory. Section 7.10, Unpaved Road Dust (Non-Farm Roads).

CARB. 2010. Proposed Regulation for a California Renewable Electricity Standard. June 3, 2010.

Chen L, Mosmuller H, Arnott W, et al. 2007. Emissions from laboratory combustion of wildland fuels: emission factors and source profiles. Environ Sci Technol 41:4317–25.

Hao W, Ward DE, Olbu G, Baker SP. 1996. Emissions of CO_2, CO, and hydrocarbons from fires in diverse African savanna ecosystems. J Geophys Res 101:23577–84.

[IPCC] Intergovernmental Panel on Climate Change. 2013. 5th Assessment Report, September 2013.

Jones G, Loeffler D, Calkin D, Chung W. 2010. Forest treatment residues for thermal energy compared with disposal by onsite burning: emissions and energy return. Biomass Bioenerg 34:737–46.

Lee C, Erickson P, Lazarus M, Smith G. 2010. Greenhouse gas and air pollutant emissions of alternatives for woody biomass residues. Seattle, WA: Stockholm Environmental Institute. http://data.orcaa.org/reports/all-reports-entries/woody-biomass-emissions-study/.

McMeeking G, Kreidenweis S, Baker S, et al. 2009. Emissions of trace gases and aerosols during the open combustion of biomass in the laboratory. J Geophys Res 114:D19210.

North M (ed.). 2012. Managing Sierra Nevada forests. Gen. Tech. Rep. PSW-GTR-237. Albany, CA: US Department of Agriculture, Forest Service, Pacific Southwest Research Station. 184 p.

North M, Collins B, Stephens S. 2012. Using fire to increase the scale, benefits and future maintenance of fuels treatments. J Forest 110:392–401.

Pan R, Han U, Johnson L, Elliot W. 2008. Net energy output from harvesting small-diameter trees using a mechanized system. Forest Prod J 58:25–30.

Reid J, Koppmann R, Eck T, Eleuterio D. 2005. A review of biomass burning emissions part II: intensive physical properties of biomass burning particles. Atmos Chem Phys 5:799–825.

Springsteen B, Christofk T, Eubanks S, et al. 2011. Emission reductions from woody biomass waste for energy as an alternative to open burning. J Air Waste Manage 61:63–8.

[US EPA] US Environmental Protection Agency. 1985. Compilation of Air Pollutant Emission Factors. AP-42. 4th edition. Chapter 10, Table 10.3-1, Log sawing and debarking. Research Triangle Park, NC: Office of Air Quality Planning and Standards.

US EPA. 2012. Report to Congress on Black Carbon. Department of the Interior, Environment, and Related Agencies Appropriations Act, 2010. EPA-450/R-12-001.

Buena Vista Biomass Power plant and mound of woody biomass in storage area.

TABLE 7. Emissions comparison between open pile burning and biomass energy project

		NOx	$PM_{2.5}$	BC	Non-BC	NMOC	CH_4	CO	CO_2	CO_2e
Baseline no project										
Open pile burn	tons	0.52	2.7449	0.1372	2.6077	0.7769	2.5896	34.338	884.6	
Electricity grid	tons	0.06	0.0188	0.0019	0.0169	0.0075	0.0038	0.098	288.7	
Biomass project										
Chip van	tons	0.02	0.0139	0.0002	0.0137	0.0009	0.0005	0.003	12.0	
Water truck	tons	0.00	0.0001	0.0000	0.0000	0.0001	0.0000	0.000	0.4	
Grinder	tons	0.05	0.0482	0.0014	0.0469	0.0025	0.0011	0.055	4.2	
Excavator	tons	0.04	0.0015	0.0011	0.0004	0.0038	0.0000	0.010	2.1	
Biomass boiler	tons	0.36	0.0041	0.0004	0.0037	0.0006	0.0003	0.018	1000.3	
Reductions										
	tons	0.10	2.70	0.14	2.56	0.78	2.59	34.3	154	
	kg/dry ton biomass	0.18	4.95	0.25	4.70	1.42	4.75	63.0	283.0	
	%	17.1%	97.5%	97.7%	97.5%	99.0%	99.9%	99.7%	13.1%	
	Global Warming Potential*	−4		900	−46	5	28	1.8	1	
	tons CO_2e†	−0.4	0.0	122.4	−117.8	3.9	72.6	61.8	154.3	296.7
	tons CO_2e/dry ton biomass									0.54

* From IPCC (2013).
† CO_2e = CO_2-equivalent.

TABLE 8. Emission factors used for comparison between open pile burning and biomass energy project

		NOx	$PM_{2.5}$	BC*	Non-BC*	NMOC	CH_4	CO	CO_2	Reference
Open pile burn†	g/kg dry biomass	1	5.3	5%	95%	1.5	5	66.3	1708	Baker et al. (2014)
Electricity grid	kg/MWh_e	0.08	0.025	10%	90%	0.01	0.005	0.13	384	CARB (2010)
Chip van	g/mile	4.17	0.05	75%	25%	0.15	0.08	0.59	10.2‡	CARB (2011)
	lb/mile dirt		0.6	0%	100%					CARB (1997)
Water truck	g/mile	9	0.3	75%	25%	0.4	0.2	1.2	10.2‡	CalEEMod (2013)
Grinder	g/bhp-hr	2.3	0.088	75%	25%	0.12	0.05	2.6	10.2‡	CalEEMod (2013)
	lb/ton wet biomass		0.1	0%	100%					U.S. EPA (1985)
Excavator	g/bhp-hr	7.5	0.28	75%	25%	0.71		1.89	10.2‡	CalEEMod (2013)
Biomass boiler	$lb/MMBtu_{biomass,HHV}$	0.08	0.0009	10%	90%	0.00014	0.00007	0.004	219	Avogadro (2013)

* % of total PM, from Reid et al. (2005), McMeeking et al. (2013), U.S. EPA (2012), Chen (2007).
† Used with a 95% pile burn-out efficiency.
‡ kg CO_2/gal diesel fuel.

YES 100%

Clean Energy

By 2025

Walt Paniak
Diane Ryerson
[redacted]

Solar & Wind

+ Energy Storage

= Clean Energy

Clean Energy ASAP

Walt Paniak
Diane Ryerson
[redacted]
Arcata, CA 95521

Vote YES for Res. No. 2019-1

CAPCOA Policy Statement on Biomass Power Plants

Biomass power plants provide a number of societal benefits including significant air quality benefits. Biomass power plants are a primary alternative to the open burning of agricultural and forest waste and the emissions associated with open pile burning including criteria air pollutants (fine particulate matter (PM), carbon monoxide (CO), volatile organic compounds (VOC), and nitrogen oxides (NOx)), greenhouse gases (carbon dioxide (CO_2) and short lived climate pollutants of methane and black carbon), and organic air toxics. Comprehensive life cycle assessments show reductions of greater than 99% for PM and black carbon, from 95-99% for CO and VOCs, 70% for NOx, and up to 30% for CO_2.[1] [2] In the near term, the lack of biomass plants will undo much of the progress that has been made in reducing open burning and the levels of harmful air pollutants in the air we breathe.

Significant quantities of agricultural wastes are generated throughout California's highly productive valleys and foothills. These include fruit and nut orchard prunings and removals and pits and shells. Biomass power is currently the only economic disposal option.

Reducing fuel loads in the forest is a primary method of mitigating wildfire size and severity. The open burning of forest wastes is contrary to maintaining regional air quality. The biomass power industry provides a multifaceted beneficial alternative for disposing of forest debris and is a desirable part of the solution to the current tree mortality epidemic. By removing forest debris and using it to generate biomass power we can reduce the occurrence of catastrophic wildfires and the attendant damage to public resources and property, protect critical upland watersheds that ensure water quality, quantity, and forest ecosystem wildlife habitat, along with having a positive impact on air quality and energy resources.

Biomass power plants also burn urban woody biomass waste materials that are placed in landfills. Closure of biomass power plants will likely result in detrimental impacts on the state's efforts to reduce methane emissions from landfills and would also shorten the life of landfills. Clearly, biomass plants can and do play a role in meeting the state's landfill diversion requirements and greenhouse gas reductions and yet current state policies do not adequately recognize the societal, environmental, and public health benefits that are provided by these facilities.

The California Air Pollution Control Officers Association supports the following principles to maintain a viable biomass power industry in the California:

Require the purchase of biomass power at a rate that recognizes the other societal benefits of biomass power plants: The biomass industry does not compete

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[1] California Agriculture, *Forest biomass diversion in the Sierra Nevada: Energy, economics and emissions*, Volume 69, Number 3, July-September 2015, available at: http://calag.ucanr.edu/archive/?issue=69_3.

[2] Journal of the Air & Waste Management Association, *Emission Reductions from Woody Biomass Waste for Energy as an Alternative to Open Burning*, Volume 61, January 2011.

well under the current procurement policies of the state's IOUs. Historically, biomass facilities have required 12-13 cents per kilowatt hour to retain economic viability. As the state's favorable policies and biomass power purchase contracts have expired over the past several years, this price point has placed biomass facilities at a competitive disadvantage with other renewable fuels which can be procured at a much lower cost. Under the state's Renewable Portfolio Standard program, pricing information is confidential, yet anecdotal evidence is that, currently, the IOUs are purchasing power from solar and wind facilities at approximately 5-8 cents per kilowatt hour, which is significantly below the actual non-subsidized cost of from 9-20 cents per kilowatt hour.

In order to close the gap between what is being offered to other subsidized renewable power producers (solar and wind), the California Public Utilities Commission (CPUC) has the authority to recognize "societal benefits" that are generated by power producers. In discussions with CPUC staff they have indicated that they take a narrow view of societal benefits and recognize only benefits that accrue directly to ratepayers. They do not monetize benefits such as air quality improvements, wildfire mitigation, landfill diversion, and public health cost savings in their ratemaking activities. The legislature could clarify this and mandate that "societal benefits" of biomass power described above be recognized in the price that is paid for biomass energy.

Provide Cap and Trade revenues to maintain a viable biomass power industry: Not only do biomass power plants reduce criteria pollutant emissions, but they also reduce greenhouse gas emissions by replacing power produced by fossil fuel fired plants. The state could provide revenues from the Cap and Trade program to recognize the greenhouse gas emission reductions associated with biomass power production. CARB should develop standardized methodologies to develop black carbon benefits of these projects, which can be done using information from PM emissions and other factors.

Modernize tipping fees and utilize funds for waste diversion including funding for biomass power: The current cap on the state's integrated waste management fee was established over two decades ago (1993). Since that time waste management facilities have been required to divert 75% of the material that used to end up in landfills. An increase in the state's portion of local waste management fees could help fund the development of landfill alternatives including biomass power plants and other uses for organic waste.

Investigate and develop alternatives to biomass: Current energy dynamics create a difficult environment for biomass power plants to remain viable. While every effort should be taken to save existing biomass power production, resources also need to be devoted to developing other long-term and sustainable alternatives for the disposal of agricultural and forest waste material. The state should provide resources to develop alternative uses for forest and agricultural waste materials. This must include the production of biochar, compost, and wood products, as well as assessments demonstrating the ability of current forest and agricultural practices to support existing biomass power production.

Encourage local use of biomass waste: Biomass plants realize the greatest emissions benefits when they are using waste generated in the local area. The long distance transport of biomass waste, even when not burned in a biomass plant, generates significant emissions by itself and transport of fuels from remote areas to areas with significant air quality concerns should be discouraged. This includes supporting the BioMat program at the CPUC with program constructs and potentially larger allocations of MW for the program, and larger allocations to the California Energy Commission's EPIC program to fund the development of novel technologies that can utilize this waste for energy.

Baseload Power value: It is well known that the huge increase in intermittent renewables has driven up the need for baseload power. As the CPUC's own analysis has shown, integration of intermittent renewables into the grid requires significant additional costs, including backup generation, costs to stabilize the grid and more. The costs of integrating solar and wind will only increase as increasing amounts will have be curtailed. A recent study by Energy and Environmental Economics (E3) made clear that increasing the diversity of California's renewables portfolio will reduce curtailment and provide the lowest cost option to achieve a 50 percent RPS.[3]

The National Renewable Energy Labs (NREL) reached the same conclusion when it considered the feasibility of the United States moving to 80 percent renewables by mid-century. Like E3, NREL found that an 80 percent RPS is feasible, but only if we significantly increase the production of baseload and flexible generation renewables.[4] Specific policies to increase baseload and flexible generation power include:

- A specific requirement or portfolio standard for baseload and flexible generation that ensures that these resources provide at least 3,500 additional megawatts of baseload and flexible generation. This could be similar to the energy storage portfolio standard to ensure that a variety of baseload and flexible generation technologies help to achieve the requirement. It will also help California prepare for the possible closure of the Diablo Canyon nuclear generating facility.
- Allocate a portion of EPIC funding to baseload and flexible generation power to better quantify the grid, economic and environmental benefits of baseload and flexible generation power.

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[3]National Renewable Energy Labs, *Renewable Energy Futures*, available at: http://www.nrel.gov/analysis/re_futures/; Energy and Environmental Economics, *Investigating a Higher Renewables Portfolio Standard in California*, January 2014; Union of Concerned Scientists: *Achieving 50 Percent Renewable Electricity in California*, 2015. Available at: http://www.ucsusa.org/sites/default/files/attach/2015/08/Achieving-50-Percent-Renewable-Electricity-In-California.pdf.

[4] NREL, footnote 3, above.

From: Cena Marino
To: Lori Taketa
Subject: Clean energy by 2025
Date: Saturday, March 30, 2019 10:33:26 AM

I couldn't make the TCEA meeting, but please act ASAP to do everything you can to reduce CO2 emmisions. Save our planet and living 'things' on it!
Cena Marino
Sent from my iPhone

REDWOOD COAST Energy Authority

STAFF REPORT
Agenda Item # 9.1

AGENDA DATE:	March 28, 2019
TO:	Board of Directors
PREPARED BY:	Richard Engel, Director of Power Resources
SUBJECT:	Community Choice Energy Program Update

BACKGROUND

Staff will provide an update on power procurement and rate-setting activities.

Renewable Energy Request for Proposals

With Board approval, RCEA released a renewable energy request for proposals on February 11. On February 25, we held a proposers' conference. We received thirteen notices of intent to propose by the February 28 notice deadline. The deadline for proposals will be March 25, after publication of this staff report. We will report the number of proposals received at the Board meeting. The review team assembled with Board approval will evaluate the proposals over the coming month, with a goal to publish by April 25 a short list of proposals for which to negotiate power purchase agreements (PPAs). We plan to complete negotiations and return to the Board for approval of PPAs by July.

Rate Setting

Normally PG&E sets their generation rates in January of each year. Last year rate-setting was postponed with California Public Utilities Commission approval until March. This year we are again seeing delays in adjustment of customer rates. The E-1 rate under which most residential customers are served was increased by approximately $.005 in March. A more comprehensive generation rate adjustment is expected to be implemented in May, at which time we plan to adjust RCEA's generation rates accordingly. For the time being, our rates remain 3% below PG&E's corresponding generation rates. When we implement the rate change in coordination with PG&E's, we will adopt the 1% discount approved by the Board in January, deemed necessary to maintain RCEA's financial position.

STAFF RECOMMENDATION:

None – this staff report is for the Board's information only.

ATTACHMENTS

None

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REDWOOD COAST EnergyAuthority

STAFF REPORT

Agenda Item # 9.2

AGENDA DATE:	March 28, 2019
TO:	Board of Directors
PREPARED BY:	Dana Boudreau, Director of Operations
SUBJECT:	Update on Building Lease for 633 3rd Street, Eureka CA

SUMMARY

RCEA currently leases a single facility at 633 3rd street as the primary place of business, and the lease expires March 31, 2019. During preliminary discussions with the landlord starting in January, it was agreed that it was in the best interest of both parties to revert to the month-to-month provision for the near term. This provides time to explore short-term building improvements, as well as the potential for long-term building modernization to better align with agency's goals regarding energy efficiency and other benefits.

In the short term, improvements will focus on options to improve building entry, rebalance and maintain the HVAC system, make minor internal modifications to non-load-bearing walls, and add interior daylighting. Long-term improvements could range from extensive remodel of internal spaces to a total "gut rehabilitation."

The current plan is to agree on interim repairs and pursue a short-term (annual) lease. The lease will revert to month-to-month on April 1, and negotiations are expected to take approximately three months. By July a new lease will be finalized depending on decisions and timing of near-term modifications. Opting for a short-term lease provides more time for both parties to explore various long-term options. This is a complex task since extensive changes will likely require relocation to a temporary workspace. Also, although staff find the building location and landlord relationship to be positive and beneficial, it is important for RCEA to evaluate other options in the best financial interest of the agency, such as owning a facility or co-tenancy with other agencies.

FINANCIAL IMPACTS

The current lease monthly rate will remain fixed through June 30, 2019, then will increase July 1st to include a CPI adjustment with a collar of 2.5% (min) and 4.0% (max). Following negotiations with the landlord beginning in April 2019, future lease modification will depend on the degree and timing of building improvements. An update will be provided to the Board once staff completes preliminary negotiations.

RECOMMENDED ACTION:

None.

ATTACHMENT

None.

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