

RCEA 2016 Biomass Request for Offers Questionnaire

Response Deadline: December 2, 2016

Email questions/comments to: [Biomass RFO Questions@redwoodenergy.org](mailto:Biomass_RFO_Questions@redwoodenergy.org)

Company Information

1. Please describe the corporate ownership structure.

DG Fairhaven owns and operates the (net) 17.25MW biomass fueled electric generator known as DG Fairhaven LLC. Membership interest in Fairhaven is 100% directly owned by EWPRC Biomass Holdings, LLC, which in turn has 20% membership interest and administrative control held by its Manager, EWP Renewable Corporation (“EWPRC”), and 80% membership interest held by Whitehaven Springs Biomass LLC.

EWP Renewable Corporation (EWPRC), the Operator and Manager of the facility, was established in 2002 under previous owners and was purchased September 30, 2010 by (and today remains 100% owned by) EWP America, Inc., a direct, and wholly-owned subsidiary of Korea East-West Power Co. Ltd. (EWP) based in Seoul, South Korea. EWPRC's US management team members each have decades of direct development, acquisition, financing, design, construction and operations experience in cogeneration, biomass and efficient district energy systems. EWPRC today owns and operates three renewable energy biomass plants located in California and New Hampshire, and two natural gas-fired power plants in California. EWPRC currently owns and operates 145 megawatts of efficient and reliable, renewable energy and clean natural gas energy facilities in the US.

Since Korea East-West Power Co. Ltd. spun off from the Korea Electric Power Corporation (KEPCO) in 2001, EWP has worked to become a global leading energy company. Today, EWP's core focus is on providing energy securely and efficiently, which are key driving forces behind our growth. EWP has also strengthened the competitiveness of its workforce through promoting new management initiatives and enhancing management efficiency. EWP presently owns and operates more than 11,100 MWs of power generation projects that include coal-fired plants, LNG fueled combined-cycle gas turbine plants, and renewable energy plants that include wind, solar, biomass and tidal current technologies.

EWP now operates projects in 3 countries with development plans for 4 new projects located in 3 countries.

Credit support for the Applicant will be provided by cash reserves of the Applicant itself, or at the discretion of the Manager (EWPRC) of the Applicant, Letters of Credit from existing major bank facilities.

Korea East West Power Co. Ltd. Experience

1) Total Capacity in Korea: 11,139.5 MW

a) Conventional Energy: 11,072MW

Type	Location	Capacity	Total(MW)	Remarks
Coal-Fired (6,500MW)	Dangjin	500 X 8	4,000	Under construction
		1,000 X 2	2,000	

	Honam	250 X 2	500	
CFBC (400MW)	Donghae	200 X 2	400	
Oil-Fired (1,200MW)	Ulsan	400 X 3	1,200	
Combined Cycle (2,972MW)	Ilsan	GT 100 X 6 ST 200 X 1 ST 100 X 1	900	
	Ulsan	GT 287 X 2 GT 100 X 2 GT 150 X 4 ST 298 X 1 ST 100 X 1 ST 150 X 2	2,072	

b) Renewable Energy: 67.5MW

Type	Location	Capacity	Total(MW)
Mini hydro (8.2MW)	Dangjin	5.0 X 1 3.2 X 1	8.2
Photovoltaic (10.5MW)	Ilsan	1.5 X 1	1.5
	Dangjin	4.0 X 1	4.0
	Ulsan	0.5 X 1	0.5
	Honam	3.5 X 1	3.5
	Donghae	1.0 X 1	1.0
Fuel Cell (10.8MW)	Ilsan	2.4 X 1 2.8 X 2	8.0
	Ulsan	2.8 X 1	2.8
Wind (3.0MW)	Youngkwang	3.0 X 1	3.0
Biomass (2,972MW)	Donghae	30.0 X 1	30.0
	Ilsan	5.0 X 1	5.0

2) Business in US (Except EWPRC)

a) Performing the O&M services for Units 3 and 4 the Gabras Diesel Power(80MW) in Guam

3) Overseas Business

a) Own a 40% share of JPS (Jamaica Public Services Co., Ltd. <http://www.jpsco.com>)

i) Generation Capacity: 644MW

- ii) Sole distributor of electricity in Jamaica
- iii) 8,700 miles (14,000 km) of distribution and transmission lines
- iv) 600,000 customers
- b) Owned a 30% share of 30 MW diesel power plant in Haiti
- c) Performed the O&M services for a 200MW CFBC coal-fired power plant in Cebu, Philippines
- d) Successfully performed commissioning and operation supervising of the 242 MW Nueva Ventanas, 520 MW Angamos, 350MW Santa Maria, and 240MW Campiche Coal-Fired Power Plant in Chile
- e) Under construction kalsel-1 BOT project of 200MW Coal-Fired Power Plant in Indonesia
- f) Developing Kalselteng-3 BOT project of 200MW (100MW/unit x 2 units) coal fired plant in Indonesia
- g) Developing Vung Ang-3 BOT project of 1,200MW (600MW/unit X 2 Units) Coal-Fired Power Plant in Vietnam
- h) Developing BOO project of 190MW LNG fueled Combined-cycle plant in Jamaica.

Resource Information

2. Please provide a high level description of the facility and a summary of its operation.



Fairhaven Power is located approximately five miles from Eureka, California, in Samoa, it started commercial operation in 1986 with more than 30 years of successful operating history. The plant generates power from burning wood-waste in a Riley inclined water-cooled stationary pinhole stoker boiler. The steam generated by the boiler powers an 18.75 (gross) MW Westinghouse non-reheat condensing steam turbine generator that has four extractions for feed water heating. Main steam is about 180,000 lb/hr at full load. Main steam conditions are 625 psig/825°F.

Fairhaven is a Qualifying Facility. The wood waste is obtained from local timber and lumber companies. The timber and lumber company wood waste consists of wood chips and shavings, bark, and sawdust and is stored on-site in piles. Natural gas is also burned at Fairhaven primarily for plant startup, but is also co-fired in the boiler when the wood waste is excessively moist. The boiler is designed to burn wood and wood waste without co-firing provided the moisture content of the fuel is below 60%. Co-firing cannot exceed 20% natural gas for a qualifying facility.

Fairhaven has historically operated at a high availability/ reliability factor. Performance over the past two years is shown below, note that the MW Gen figure shown is a gross generation value before station service and that May is typically a scheduled outage month.

Monthly Totals	Hours (HH:MM)	Steam Flow (KPPH)	MW Gen.
1/31/2014	768.00	131,666.00	13,752.81
2/28/2014	536.83	88,470.00	9,182.98
3/31/2014	737.23	127,864.00	12,677.24
4/30/2014	688.57	124,070.08	12,123.96
5/31/2014	412.88	70,530.00	7,094.13
6/30/2014	630.08	105,337.00	10,867.68
7/31/2014	626.00	108,796.00	11,064.59
8/31/2014	668.00	112,536.41	11,535.32
9/30/2014	665.43	115,160.00	11,856.84
10/31/2014	737.78	125,577.00	13,020.81
11/30/2014	663.97	111,481.00	11,457.20
12/31/2014	744.00	123,124.00	12,697.03
2014 Totals	7,878.8	1,344,611	137,331
1/31/2015	561.37	94,931.13	9,704.10
2/28/2015	559.95	96,482.00	9,730.15
3/31/2015	709.57	121,535.00	12,336.70
4/30/2015	717.57	118,102.00	12,009.97
5/31/2015	395.86	65,624.00	6,675.46
6/30/2015	720.00	126,937.00	13,204.51
7/31/2015	738.48	130,517.00	13,442.37
8/31/2015	592.34	107,676.00	10,734.20
9/30/2015	620.68	109,621.00	10,714.95
10/31/2015	744.00	128,381.00	12,887.70
11/30/2015	612.77	100,742.65	10,203.09
12/31/2015	679.27	110,457.22	10,945.78
2015 Totals	7,651.9	1,311,006	132,589

Fairhaven operated less hours in 2016 due to the expiration of a contract amendment. The legacy PPA has a pricing mechanism that is indexed to the short run avoided cost (SRAC) of the utility. Because SRAC is primarily driven by the cost of natural gas, the resulting energy pricing to the facility was lower than Fairhaven’s cost to generate. As a result, Fairhaven elected to shut down the production of

renewable energy for several months in early 2016. However, the facility retained its full staff throughout and focused on maintenance and repair of the component systems with the expectation that the facility would be restarted again.

In addition to the boiler (including primary air, forced draft and induced draft fans and hog fuel feeders and spreaders, two natural gas Coen low NOx burners), turbine generator and auxiliaries (lube oil system with conditioner, Bently Nevada monitoring system), multiclone particulate collector, electrostatic precipitator ("ESP") and stack, the major plant equipment consists of:

- Two high pressure and two low pressure feed water heaters
- Deaerating feed water heater with an 8000 gallon storage section
- Surface condenser
- Two 100% capacity motor driven Bingham boiler feed pumps (there is also a turbine driven feed pump that is not used; the facility manager stated that the turbine driven pump could not provide the required feed water flow rate)
- Two 100% condensate pumps
- Condenser air removal system comprised of hogging and holding steam ejectors
- Two feed water heater drain pumps
- Marley five cell cross flow wood cooling tower
- Two circulating water pumps
- Demineralized water treatment system comprised of carbon filter and anion and cation exchangers
- 10,000 gallon demineralized water tank
- Primary and back up instrument air systems (compressors, receivers and dryers)
- ABB DCS (originally Bailey Network 90 which was upgraded to ABB Conductor NT in 1999)
- Fire protection system comprised of fire water piping motor driven fire pump, diesel engine fire pump and electric jockey pump
- Emergency diesel generator
- DC battery system
- Hog fuel receiving system comprised of two hydraulic truck lift dumper and a truck scale
- Hog fuel handling system comprised of two hydraulic stackers, reclaim system, scalper, conveyors, hog fuel bins and feeders

Municipal water is used for sanitary purposes and as makeup to the cooling tower and demineralized water treatment system. Clean industrial wastewater is purchased for fire protection make up and for wash-downs of equipment.

The facility's operations are comprised of eight major systems: boiler, steam turbine/generator, fuel handling, water treatment, electrical, instrumentation and controls, and ash/air handling.

Boiler System. The plant's boiler was manufactured by Riley Stoker Corporation and is an outdoor-type that is top supported, with a two-stage superheater, bare tube economizer and tubular air heater. Prior to installing Fairhaven's boiler, Riley Stoker had completed approximately 70 similar installations of this technology. The boiler is optimally designed for wood waste fuel, typically not requiring major clean-up maintenance more than once per year. It is rated to generate 180,000 pounds per hour of superheated steam at 625 pounds-force per square inch gauge ("psig") and 825°F when supplied with 365°F feedwater. The rating is based upon wood waste with a higher heating value ("HHV") of 4,005 BTU per pound and moisture content of 55.0% by weight. That said, the facility's boiler can process wood waste with moisture content as high as 70.0% by weight. The boiler employs pinhole-grate combustion technology for the reliable conversion of wood waste to steam.

Steam Turbine / Generator System. Fairhaven's steam turbine/generator unit converts steam from the boiler into electric energy. Manufactured by Westinghouse, the turbine/generator has been subjected to annual inspections and major overhauls on a regular basis. The main operating parameters of the turbine/generator include:

Power output maximum of 18.75 MW gross at power factor of unity;

Voltage 13.8 kV;

Speed 3,600 rpm; and

Frequency 60 Hz

Fuel Handling Systems. The Fairhaven plant sources both whole logs and wood chips for use as fuel. Whole logs are converted to chips by a wood chipper and blended with the purchased wood chips and hog fuel. Fuel is delivered at two separate points from the fuel supply system. All of these systems intersect at the same fuel bin hopper located atop the boiler structure.

Trucks bring wood waste to the site and are automatically off-loaded into one of the two operational truck dumps. From there the facility's fuel handling system is automated to minimize physical work and to ensure an efficient and reliable fuel flow to the boiler. The nominal fuel rate to the boiler is approximately 30 tons per hour at full load, well within the system's maximum capacity of 36 tons per hour.

Fairhaven uses natural gas for start-up, flame stabilization and operational control. Natural gas usage is limited to no more than 270 million cubic feet or 10.0% of annual capacity.

Water Treatment System. The project's water treatment system processes Humboldt Bay Municipal Water, cooling tower blowdown and boiler blowdown to ensure boiler feedwater

quality. Boiler feedwater is demineralized and treated before being fed to the boiler.

Electrical System. The facility's electrical system handles the delivery of power produced by the generator into PG&E's power transmission system and Fairhaven's auxiliary power bus. The facility has a gross capacity of 18.75 MW and a net capacity of 17.25 MW. The plant is interconnected to the power transmission system via a 60 kV transmission line that runs for approximately 0.4 miles to a local PG&E substation. PG&E owns the transmission interconnection, as well as the substation equipment with the exception of the main power transformer, which is owned by Fairhaven. In November 2012 the facility converted from a CPUC-jurisdictional interconnect to a CAISO interconnect, executing a new Qualifying Facility Participating Generator Agreement and a Meter Service Agreement with the CAISO.

Instrumentation and Control System. The monitoring of all critical operating functions including the fuel handling system, boiler, turbine/generator, water treatment system, switchgear and transformer are handled by a Bailey instrumentation and control system. This allows accurate and rapid identification of changing conditions and ensures optimal safety and operational efficiency. The Bailey control system has been well maintained and upgraded over the term of the plant including new monitoring consoles, network cables and new software for a better graphic operator-machine interface.

Ash Handling System. Fairhaven's ash handling system collects and prepares the ash for disposal. The ash handling system consists of a system of valves and conveyors that remove the ash from the boiler and its auxiliaries. Ash is collected in a dedicated storage area. Char is collected and sold under contract for use by a filtering company. Fly ash is then used as an agricultural amendment on nearby farms under permitted applications independently certified by a local engineering firm. Bottom ash is distributed to local farmers as a non-hazardous fill material.

Air Cleaning and Dispersion System. The plant's air cleaning and dispersion system removes particulates from exhaust gases before dispersion of the gases into the atmosphere. This system has three major components: the dust collector, the electrostatic precipitator and the over fire air system.

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Maintenance Program. The facility typically is shut down for planned maintenance once each

year. The shutdown is typically for 6 or 7 days, plus 12 to 14 hours of natural gas-fired warm-up. During this time, scheduled maintenance services are performed by both Company and third party contractors. Maintenance services performed by Company personnel include, but are not limited to, repacking valves; replacing worn chain, flights and screws; cleaning and inspecting the switchyard; cleaning and inspecting the motor control center; cleaning fans, fill, sump and screens in the cooling tower; inspecting all electrical motors; replacing bearings as needed; checking or changing all gearbox oil and greasing; inspecting and replacing grate blocks; and erecting scaffolding. Maintenance services performed by third party contractors include, but are not limited to, hydro-blasting of the superheater section; vacuuming interior sections of the boiler; washing out the electrostatic precipitator; inspecting and cleaning the Bailey control system; refractory repair; and complete inspection of the water side of the boiler.

3. Please describe the project's fuel supply plans and waste management approach.

Fuel Supply Plan

The Fairhaven facility began commercial operation in February, 1987 and was initially developed to utilize forest products residuals (bark, sawdust, shavings) generated as byproducts from the many sawmill operations located in Humboldt and Del Norte Counties. Affiliates of the current owners purchased Fairhaven Power in April, 2005.

Since the late 1980's, numerous sawmills have closed as a result of significantly reduced timber resources available from publicly-managed forests and public concern over harvest practices on private forest lands in the region. As sawmills have curtailed operations, the once readily available volume of residuals (including hog fuel) has diminished significantly. Due to constrained hog fuel supplies, one of the four biomass power plants that once operated in this region has been closed: Simonson Lumber Company's 10MW plant at Smith River, others are operating sporadically or have transitioned operating objectives.

Fairhaven Power is located in a region that once supported a thriving forest products manufacturing sector. When the plant began commercial operation in 1987, there were almost two dozen commercial-scale forest products manufacturing facilities operating within the Fairhaven Power core fuel supply area. Today only eight facilities are still operating.

The fuel procurement strategy at Fairhaven is to procure wood fuel as it becomes available in the marketplace. Currently, Fairhaven has multiple short term delivery options or spot agreements with regional suppliers. Management has met with numerous local suppliers to assess fuel availability from their operations for the next 5 years. Each supplier has indicated that their waste streams can be made available to DG Fairhaven. Fairhaven will work with these suppliers to pay for the material at a price that will provide economic advantage to the supplier (by eliminating the cost to dispose) and to the RCEA, supporting a low price per MWH for the renewable biomass power provided.

Operating sawmills produce residuals in the form of byproducts that include bark, sawdust, chips and shavings. Traditionally the bark and sawdust residuals have been utilized as hog fuel, with chips having higher value as raw material for pulp/paper and composite panel furnish. Most of the redwood chips generated are now exported.

Over the past several years, Fairhaven Power has been diversifying its fuel stream by purchasing approximately 50,000 GT annually of whole logs. These logs are generally of the species known as tan oak and are considered sub-merchantable compared to the redwood species that is the prime target of forest products producers. These whole logs are purchased seasonally when available and stored on site until they are processed into chips by a third party. The resulting fuel is generally consumed between December and March at Fairhaven Power. These logs assist management in maintaining a high quality fuel mix during the wet season in the Humboldt area.

Waste Management Approach

Air Compliance

Source Tests were most recently performed November 2015. Fairhaven is not affected by any compliance orders or settlements regarding air emissions from operation.

Waste Discharge Permits and Compliance

Water for Fairhaven is purchased from the city water system. The water is used for makeup of cooling tower and boiler water losses. Steam condensate returns help to minimize boiler makeup needs. Water is also used for wash water for the facility and equipment, and for potable and sanitary purposes.

All water used at Fairhaven is supplied from the municipal water system. Fairhaven discharges 150,000 to 180,000 gallons per day into a fully permitted and approved outfall line. Fairhaven has an Outfall Agreement in place with Humboldt Bay Harbor, Recreation and Conservation District, Inc., executed December 14, 2014 that runs through 2030. The Outfall Agreement allows Fairhaven to utilize the line with no restrictions, except to maintain its discharge in accordance with existing permits. Waste from Fairhaven includes; particulates removed from boiler flue gases by a dust collector and ESP, ash from the boiler, blowdown from boilers and cooling towers, fly ash, bottom ash, and drainage from wood fuel storage areas and sanitary sewage from restrooms.

Discharge Permits and Compliance

Fairhaven operates under NPDES Permit No. CA0024571. The permit states boiler blowdown, cooling tower blowdown and demineralizer back flushing is discharged to the Pacific Ocean by ocean outfall, which has an initial dilution of 115:1. This discharge point is described as Serial Number 001 in NPDES Permit No. CA0005894. The average daily flow of wastewater from the permit is 500,000 gallons per day.

All ash from Fairhaven is recycled. It is used by farmers to neutralize the soil and by dairy farmers to stabilize the soil for cattle to prevent hoof diseases and to neutralize cattle urine.

Fairhaven must comply with the State of California Industrial Activities Storm Water Permit (General Permit), Water Quality Control Order No. 97-03-DWQ. This order relates to the NPDES for discharges of

storm water associated with industrial activity. In order to comply with this general permit, Fairhaven must develop and implement a Storm Water Pollution Prevention (“SWPP”) Plan, emphasizing Best Management Practices (“BMP”). The SWPP identifies and addresses sources of pollutants associated with industrial activities that may affect the quality of storm water discharges and authorized non-storm water discharges from Fairhaven, and implements site specific BMPs to reduce and/or eliminate such pollutants.

The facility conforms to a Spill Prevention and Countermeasure Control (“SPCC”) Plan. The SPCC addresses major areas of spill prevention, management, and inspection and reporting requirements as expected.

The 18 aboveground storage tanks and drums listed in the SWPP and the draft SPCC, which include the sulfuric acid and sodium hydroxide tanks, water treatment tanks, diesel oil tank and various lubricating oil tanks all have appropriate containment measures in place.

Fairhaven’s Hazardous Waste generator classification and number is CAL000298444. Hazardous wastes at Fairhaven include waste oil, oily solids, parts cleaners and solvents, paint and fluorescent light bulbs. The facility has been cleared of any presence of PCBs, asbestos or lead paint in the facility. Fairhaven has a Business Plan for Handling Hazardous Materials in place.

Fairhaven holds a number of permits, a summary table has been inserted below.

Figure 2.14: Fairhaven Summary of Permits	
Wastewater Discharge	North Coast Regional Water Quality Control Board (NCRWOCB) Order No. RI-2002-0076; NPDES No: CA0024571; ID NO. IB85026RHUM
NPDES Permit	NCRWQCB No. 96-92; NPDES Permit No. CA0024571; ID NO. IB85026RHUM
Storm water Discharge (Statewide General Permit)	State Water Resources Control Board (SWRCB) No. 97-03-DWQ, (NPDES No. CAS000001) WDID No. IB12S016487
Commercial Fertilizing License	State of California Dept of Food and Agriculture FIRM#1844
Certificate of Registration (Weights and Measures)	County of Humboldt - Department of Agriculture Weights and Measures State of CA No. 33690
Weighmasters License	Department of Food and Agriculture - Division of Measurement Standards I1453
Cal/OSHA Crane Permit	Serial#141477 issued by D&T Crane Certificate
Permit to Operate Steam Boiler	State of CA Dept of Industrial Relations Div of Occupational Safety and Health Serial#B001455-86, N.B.#15455
Permit to Operate Air Pressure Tank	State of CA Dept of Industrial Relations Div of Occupational Safety and Health No. 85154; Tank No. 1458-86; NB 61633
Permit to Operate Air Pressure Tank	State of CA Dept of Industrial Relation Div of Occupational Safety & Health No. 85155; Tank No. 24767-87; NB 67155

4. Please describe any capital spending on the project since January 2013.

Investment in DG Fairhaven preventive maintenance and capital improvements has averaged over \$1M for the past 5 years. Our principles of plant investment go back from the acquisition of DG Fairhaven in 2005 when we shut down the plant and invested approximately \$2.5M to rebuild the boiler and supporting systems to increase plant efficiency and reliability. Since then we have consistently performed preventive maintenance to insure reliability and to increase overall plant operating metrics.

The preventive maintenance and repair practices of Fairhaven are designed to ensure compliance with project agreements and regulatory obligations. The following is a typical list of services performed during scheduled shutdowns. Items with an asterisk are performed by Fairhaven personnel.

- Hydro-blasting of the Superheater section
- Vacuuming interior sections of boiler
- Washing out the ESP
- Bailey Controls: inspection and cleaning
- Refractory repair
- Complete inspection of the water side of boiler
- Repacking valves*
- Replacing worn chain, flights, screws*
- Switchyard cleaning and inspection*
- MCC cleaning and inspection*
- Cooling Tower: cleaning fans, fill, sump, screens*
- Inspection of all electrical motors*
- Bearing replacement as needed*
- Checking or changing all gearbox oil and greasing*
- Grate block inspection and replacement*
- Erecting scaffolding. (Firebox done by contractors)

The chart below provides a 5 year over view of our investments, organized by plant area or major system.

DG Fairhaven					
Capital Cost Spending 2013 to 2016 (Plus 2012)					
	Year				
	2012	2013	2014	2015	2016
General Electrical					
Switchyard Equipment / Maintenance	\$79,916.00	\$91,743.00	\$31,652.00	\$55,535.00	\$24,531.00
Replace Turbine Exciter System			\$222,111.00		
Electrical Maintenance	\$12,080.00	\$950.00			
General Mechanical					
Fuel Handling System Replacement	\$625,302.00				
Fuel System Maintenance	\$32,318.00	\$66,494.00			
Turbine oil purification system		\$55,000.00	\$29,025.00		
New Fuel Distributor Fan	\$24,000.00				
ID Fan / Motor	\$39,291.00	\$46,566.00	\$26,331.00	\$50,800.00	\$45,529.00
Other					
RIG Certification / Telemetry	\$71,615.00	\$5,800.00	\$5,800.00		
Truck Scale Software		\$48,646.00			
Diesel Generator		\$5,460.00			
Installation of Diesel Storage Tank		\$26,151.00			
Precipitator Upgrades		\$5,641.00	\$188,821.00	\$202,851.00	\$12,628.00
Cooling Tower Maintenance	\$12,385.00	\$354.00	\$14,233.00	\$14,158.00	
Dust Collector Maintenance	\$32,049.00	\$0.00	\$2,594.00	\$55,926.00	
Infrastructure Maintenance	\$11,319.00	\$46,443.00	\$4,749.00	\$10,650.00	
Boiler Repair / Maintenance	\$121,514.00	\$172,317.00	\$93,734.00	\$185,955.00	\$188,627.00
Equipment Repairs	\$59,720.00	\$62,770.00			
Other Supplies / Parts / Small Tools	\$180,104.00	\$174,093.00	\$150,035.00	\$79,004.00	\$17,832.00
Other Repairs / Maintenance	\$5,550.00	\$5,666.00	\$352,820.00	\$307,475.00	\$173,296.00
Other Scheduled Shutdown	\$99,851.00	\$71,078.00	\$24,772.00	\$173,041.00	\$119,140.00
Other Emergency Shutdown	Included above	Included above	\$34,287.00	\$13,230.00	\$0.00
Other Building Expense			\$30,194.00	\$21,467.00	\$4,707.00
Total	\$1,407,014.00	\$885,172.00	\$1,211,158.00	\$1,170,092.00	\$586,290.00

5. Please describe what flexibility the Buyer would have to shape energy deliveries for purposes of bidding into the CAISO day-ahead market.

The facility is designed to operate as a base load renewable resource. This type of facility does not contribute to the resource variability of other renewable technologies, and instead provides consistent energy output and capacity even in times of cold weather or disruption of natural gas deliveries. However, if necessary, the facility output can be curtailed in accordance with agreed upon terms.

6. Please describe the capability of the facility to receive CAISO communications and ability to respond to curtailment instructions from the CAISO for reliability or economic reasons in the real-time market.

The facility is staffed 24x7 with trained Shift Engineers who have several lines of external communications. These Engineers have full control over the output of the facility and can respond to CAISO dispatch instructions within the reasonable parameters of the facilities ability to ramp up or down.

Communication with CAISO from FHP is established via a secure dedicated T1 line and router. In accordance with "CAISO Business Practice Manual for Metering", a dedicated certified CAISO Electrical Revenue Meter sends plant output directly to CAISO via this line. In addition, in accordance with "CAISO Business Practice Manual for Direct Telemetry", a Remote Intelligent Gateway (RIG) installed at FHP provides CAISO with real-time plant telemetry.

7. Please describe any operational limitations on economically bidding the resource in the day-ahead and real-time markets and responding to CAISO dispatch instructions.

There are very few operational limitations on bidding the resource into the CAISO markets, although economically doing so might be difficult as the CAISO market is driven by natural gas pricing and DG Fairhaven is a biomass base load energy plant. There are limitations to the frequency and magnitude of ramping up and down due to the fact this is a biomass resource. We would agree to the following curtailment provisions (with reasonable notice and ramp times as determined by us for this facility's existing controls, communications and shift staffing):

- i. Redwood Coast Energy Authority may lower our maximum paid generation to 10MW net (after our agreed notice and ramp times) for a "curtailment charge" of \$425 per hour (including ramp times) for all hours the plant operates under a curtailment order.
- ii. During such curtailment period, we shall be paid for all metered energy at the regular contract price (up to this ramp-adjusted 10MW energy generation level)
- iii. Surplus generation: we shall use our commercially reasonable efforts to maintain generation at or below this 10MW level. Our failure to restrict generation to this 10MW level shall not be an event of default, however we will provide for a penalty provision whereby we are charged a deduct in current month for MWhrs in excess of this 10MW curtailment level (subject to the ramp schedule) at the current market price up to a maximum price of \$50/MWhr. In other words, we will not bear "make whole to market" risk, but will accept a modest penalty to the extent that our commercially reasonable efforts don't keep us to the temporary 10MW net max. RCEA may initiate this curtailment provision as frequently as once per 24 hour day, and the duration may be as little as 4 hours or as much as 72 hours (in each case excluding Ramps). However, there must be at least 18 hours between re-entering any successive curtailment ramp events (ether to next 10MW or 0MW curtailment events), and not more than 240 hours of such curtailment total per month.
- iv. 10MW Ramp Down Notice: 30 minutes before beginning of Ramp Down;
- v. 10MW Ramp Down Rate: Assumed linear from 16.5MW to 10MW over period of 40minutes;
- vi. 10MW Ramp Up Notice: 30 minutes before beginning of Ramp Up;
- vii. 10MW Ramp Up Rate: Assumed linear from 10MW to 17.25MW over period of 90 minutes ;

- b. RCEA may also lower our paid generation level to **0MW** net (after our agreed notice and ramp times) for a payment of \$1,350 per hour (including ramp times) for all hours the plant operates under a curtailment order.
 - i. Such 0MW period shall be for a period of not less than one hour and not more than four hours (in each case, excluding ramps), unless extended as described below in “Extension”
 - ii. During such curtailment period, we shall be paid for no metered energy (other than as allowed in the ramp periods)
 - iii. Surplus generation: same as above (using commercially reasonable efforts to meet maximum of 0MW net, subject to linear ramp, and with a maximum \$50/MWh penalty as above).
 - iv. RCEA may utilize this curtailment provision as frequently as four times per month, provided that there must be at least 18 hours between re-entering successive curtailment ramp events (excluding ramp periods).
 - v. 0MW Ramp Down Notice: 60 minutes before beginning of Ramp Down;
 - vi. 0MW Ramp Down Rate: Assumed linear from 17.25MW (or, if entering from existing 10MW Curtailment, then assumed linear from 10MW) to 0MW over period of 120 minutes ;
 - vii. 0MW Ramp Up Notice: 240 minutes before beginning of Ramp Up;
 - viii. 0MW Ramp Up Rate: Assumed linear from 0MW to 17.25MW over period of 360 minutes
 - ix. Extension: with notice not later than one hour prior to last possible (and before any) “0MW Ramp Up Notice”, RCEA may elect (not more than once per month nor more than four times per year) to extend a 0MW curtailment event by a period of not less than 24 hours and not more than 120 hours (“Extension Period”). During such Extension Period, the hourly curtailment fee shall be reduced to \$1,000 per hour, plus a one-time payment of \$2,500 per such Extension Period.
 - 1. Extension Period Ramp Up Notice: [12 hours] before beginning of Ramp Up;
 - 2. Extension Period Ramp Up Rate: Assumed linear from 0MW to 17.25MW over period of [12 hours].

Team Experience

8. **Describe relevant technical experience of key personnel, how long they have been with the company and their backgrounds.**

Biographies of the supporting resources;

Lawrence Gardner
President & CEO

Mr. Gardner has over 35 years of experience in the energy, engineering and construction industries, holding numerous management positions and responsibilities for capital investment and overall business line management. Currently President & CEO of EWP Renewable Corporation comprised of 5 utility grade power plants situated across the United States, Mr. Gardner is responsible for all facets of the business from asset acquisition through contract performance. Over the past 12 years at EWP Renewable Corporation, transformed a collection of distressed energy assets to an impressive operating fleet of generating plants with technology ranging from biomass fueled boilers to simple cycle gas turbines and district energy plants.

Prior to assuming the role of President and CEO, Mr. Gardner as Executive Vice President was responsible for coordinating a corporate office consolidation, establishing a new team in New Jersey to handle all accounting, finance, and human resource duties. Mr. Gardner has also been paramount in the success of the California Power Holdings (CPH) peaker plants, modifying them for operation in the California merchant power market. Through modifications to both plant and emission control systems, he enabled these plants to alter normal operating scenarios from traditional peaker plant operation to flexible, fast response merchant plants able to respond to market volatility. Mr. Gardner remains responsible for daily bid obligations and offerings for the California plants into the California ISO.

As Executive Vice President of Technical Operations, Mr. Gardner provided the technical oversight for a varied energy generation fleet, responsible for providing management oversight and execution responsibilities for all capital project investment, asset purchases and asset rehabilitation projects. Working closely and in concert with the company operations team, the technical services group continues to provide ongoing plant engineering support for all types of technical issues as well as assistance with yearly outage planning and scope development.

Mr. Gardner has held numerous executive positions with large, international engineering and construction companies during his career and holds a degree in Business Administration from Temple University in Philadelphia, PA.

Edward T. Kent
Executive Vice President, Operations

Mr. Kent is a broadly-based business executive with over twenty-five years of experience in the Power/Energy and Facilities Management industry. Mr. Kent has achieved a solid record of accomplishment in managing Operations for EWPRC and Marubeni Sustainable Energy, Inc. (formerly DG Energy Solutions). He was one of the original employees to the start-up company that has become EWPRC and now manages 70 employees at various locations. He has a demonstrated record of achieving substantial improvements in operational metrics. Mr. Kent's strengths are focused in operations management, business strategy, contract negotiation, labor relations, predictive and preventive maintenance programs, business development and asset optimization.

As Executive Vice President of Operations, Mr. Kent's is the responsible executive for the day to day operations for EWPRC's generating assets, assuring that operating assets meet the commercial terms of each contract and guaranteeing all contractual obligations are fulfilled. Mr. Kent has implemented countless fuel supply contracts at two 18 MW biomass plants in New Hampshire ensuring that they can meet their Class 1 Renewable Energy Credit obligations and Power Purchase Agreement obligations. With a background in Operations Management and experience maintaining a variety of renewable energy, fossil fueled steam, diesel, and gas turbine power plants, Mr. Kent has established himself as a proven leader in the energy industry and utilizes his abilities to interact effectively at the highest levels with corporate entities.

Prior to his current role, Mr. Kent spent 10 years in various positions of increasing responsibility while employed by Chevron Shipping Company-USA where he was a seagoing marine engineer. He earned a United States Coast Guard License: Chief Engineer, Steam and Motor Vessels, Unlimited Horsepower. Mr. Kent was honorably discharged from the US Naval Reserves.

Mr. Kent provides direct supervision to EWPRC's operating asset Plant Managers and is actively involved in all facets of the individual plant operations and critical operating decisions.

Bob Marino

Plant Manager, DG Whitefield LLC

Mr. Marino has over 30 years of experience in Operations and Management, and has been in his current position as the Plant Manager at DG Fairhaven, LLC since 2003. He joined Fairhaven Power in an entry level position with the original owner, Eel River Sawmills. He has a variety of operations experience, including Fuel Tender, Water Treatment Technician, Control Room Operator, Shift Engineer, and Assistant Plant Manager.

In his current role as Plant Manager, Mr. Marino is responsible for the profit and loss of the facility, and prepares the annual budget and provides cost oversight on all facility expenditures. He maintains communication with all corporate personnel and outside agencies on a regular basis, addressing any business related issues or concerns. Mr. Marino also serves as the representative of DG Fairhaven LLC in any community affairs and has helped to establish sound business policies and guidelines for the facility. He also lectures Humboldt State University students of Forestry, Engineering, and Environmental Sciences in biomass power production.

Additionally he is responsible for facility compliance in state/federal environmental record keeping and reporting. He also conducts planning off-line maintenance periods, including the drafting of bid work packages, procurement of parts/materials and final awarding of contracts; negotiating multi-year pricing agreements with service and product vendors. Mr. Marino is also involved with personnel oversight, conducting personnel scheduling, performance evaluations and disciplinary hearings, and put a great emphasis on safety within the plant, organizing safety programs and employee training, and providing Safety Committee oversight. He also played a major role in engineering control and process improvements to provide for more efficient facility operation. He directs employee teams to maintain capacity and availability factors over 90% annually, while ensuring the safe, efficient, and reliable operation of the facility.

Prior to his power plant experience, Mr. Marino held various positions with North Coast Export Cooperative which exported wood chips to Japan's pulp and paper industry. In his most senior position, Quality Control Analyst, Mr. Marino developed and implemented programs to track and troubleshoot the quality of wood chips being exported. He reported to the Board of Directors and was the liaison between the chip suppliers and the Japanese customers.

Art McMaster Controller

Mr. McMaster is a results-oriented executive accustomed to profit and loss responsibilities with over twenty-five years of experience in several high volume industries, in diversified roles from Financial Manager to President/CEO. Through his various diverse positions, he has proven leadership in Executive Management, Turnaround Management, Fundraising Initiatives, Financial Planning and Analysis, Financial Reporting, Systems Development and Implementation, Business Planning and Contract Development.

In his current position as Controller at EWPRC, Mr. McMaster oversees the financial accounting and reporting for the company. Duties and responsibilities include preparing financial reports, budgets and financial forecasts, managing the company assets, administration, auditing, tax administration, accounting functions, and internal control.

Previously, Mr. McMaster served as the President/CEO of The Miss America Organization, managing 50 state organizations, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands along with an additional 1,200 franchise organizations. In this role, he helped reverse negative television trend and successfully turned the company around after the loss of a major television contract. Mr. McMaster also successfully negotiated a new television contract with ABC television that included four million dollars annually in client provided marketing and advertising. He also assumed the lead role in marketing and re-branding of the organization, leading the charge to bring The Miss America Pageant television show from Atlantic City to Las Vegas. Mr. McMaster played a crucial role in initiating corporate cost reduction plans to meet the changing business environment while also initiating a new market concept for developing corporate sponsors and researching licensing opportunities.

Prior to his role at The Miss America Organization, Mr. McMaster was the Senior Planner and Assistant to the Vice President of the Saudi Arabian Oil Company. He managed a staff of 12 professionals responsible for financial reporting and analysis of support services business segment with 3,200 employees and 7,000 contractor personnel, \$7 billion in assets, \$300 million annual operating budget and \$50 million annual capital work. Mr. McMaster also developed annual budgets, five year business plans, quarterly and mid-year review of operations and was responsible for corporate strategic planning for all utility operations in local communities throughout the Eastern Province of Saudi Arabia.

Previous assignments also include the position of Nuclear Power Division Controller at Day & Zimmermann in Philadelphia. In this role, Mr. McMaster was responsible for daily accounting activities including general ledger, payroll, accounts payable, accounts receivable and job costing, as well as company Profit and Loss reporting and analysis. He also developed computer stand-alone accounting and cost systems to handle multiple companies, divisions and projects. Mr. McMaster was also Field Administration Manager for Raytheon Engineers where he directed staff accounting and administration for 20 construction projects including hiring of all administrative and financial personnel, training, and continuous monitoring of workflow.

Walter Patrick
Project Engineering

Mr. Patrick has 39 years of experience in a number of various power related fields. His experience includes engineering / project management, design engineering, field construction, system startup, plant optimization / efficiency projects, and material procurement / inventory control.

Mr. Patrick's responsibilities included coordination of engineering activities and construction management responsible for ensuring the proper installation and completion of all projects. He also manages commissioning and startup activities for all new facilities.

Mr. Patrick was the responsible manager for over 40 capital projects across the parent company's portfolio of energy assets and interfaces with environmental consulting engineering firms to insure plant compliance with all operating permits.

Mr. Patrick is directly involved with all operating projects within the EWPRC portfolio supporting annual outage planning and overseeing all major inspections and outages. These activities include Turbine Major Inspection and Repair, Electrostatic Precipitator repair, boiler upgrades and plant critical spares program. Mr. Patrick managed the design and boiler/turbine modification necessary to uprate two biomass plants by 12%, working directly with 3rd party engineering professionals and OEM's to insure proper design and installation was provided. He has also managed numerous plant efficiency projects on our existing assets.

Scott Pisarski
Project Manager - Electrical, Instrumentation & Controls, Automation Engineer

Mr. Pisarski has over 33 years of experience in the power industry, with the last 8 years focusing on Biomass Power Generation & Combined Heat & Power (CHP) Generation. As Project Manager at EWP Renewable Corporation, his responsibilities include development of detailed equipment specifications, procurement of major pieces of equipment, bid tab evaluation, development of FRS's (functional requirement specifications), RFP's (request for proposals), electrical one lines, three lines, protective relaying schemes, schematics, wiring and raceway drawings, instrumentation and controls loop diagrams as well as field start-up, testing and commissioning.

Mr. Pisarski is responsible for electrical and controls system design, PLC and HMI programming, network configuration, and startup and testing for all EWPRC operating plants. He also provides continuing engineering support for each plant, providing technical support, troubleshooting, and the execution of capital projects. Mr. Pisarski was responsible for for coordinating with local utilities during two plant uprate projects to ensure that transmission lines could accommodate increased output; responsible for generator evaluation & inspection to ensure generator could support increased output; and responsible for developing scope of work and obtaining proposal, issuing purchase order, and performing on-site construction and start-up manager responsibilities during installation. Additionally, he supports each operating plant working with various vendors to evaluate technology and feasibility for installing fuel moisture content analyzers to determine real time moisture content of hog fuel prior to delivery to the boiler; purchasing, installing and commissioning the new instruments; and OPC programming, maintaining interface servers and plant data historian, network communication and data management and backup for the Plant Data Historian Project.

In addition, Mr. Pisarski has done considerable work in the area of Distributive Control Systems (DCS) with systems such as Foxboro, Bailey Net 90, Emerson DeltaV, ABB Mod 300 Honeywell and others. Rockwell PLC programming experience includes utilizing RSLogix500 & 5000 programming software as well as HMI development software RSView32 and RSStudio. He has extensive computer experience with CAD software packages Intergraph Microstation, Intergraph 3D Plant Design System (PDS), and Autodesk Inc. Autocad.

Fairhaven has a present complement of 22 people onsite as listed below:

Position	
General Manager	1
Asst. Plant Mngr. and Maint. Spv.	1
Shift Engineers	4
Control Room Operators	4
Loader Operators	4
Control Room Operator Trainee	1
Cleanup/Utility	1
Millwright	1
Apprentice Millwright	1
I&E Technician	1
Oiler	1
Utility, Environmental and Safety	1
Administrative Assistant	1
Total Complement	22

Compliance

9. **Has any company, partner, or subsidiary in this venture, or any corporate officer, been the subject of any enforcement action, order, decree, or notice of violation of any environmental laws, regulations, or permits? If an answer is "yes," please explain fully including how the issue was resolved.**

DG Fairhaven has operated under a Title V operating permit since its inception in 1987. Over the course of the past 30 years, DG Fairhaven and its management has taken its environmental responsibilities extremely serious and overall has a tremendous record of compliance with all operating permit considerations. Currently, DG Fairhaven is in discussions with the North Coast Regional Water Quality Control Board (NCRWQCB) regarding administrative reporting failures that have occurred due to changes in the plant’s plumbing and other physical modifications made to enhance overall water quality

control. Due to these omissions, the Water Board has issued an administrative civil liability complaint against DG Fairhaven which we are currently negotiating with the Water Board. DG Fairhaven expects to resolve this ACLC soon and has already made the necessary changes in environmental consultant reporting activities to insure these omissions do not occur in the future.

10. Has your facility been listed by the EPA as a high priority violator at any time during the past 5 years?

No.

11. Safety

12. Please provide information detailing the worker safety record for the past five (5) years for the company and its affiliates in California or other State(s) where it operates.

- 2011 Injury, (Mitch Ellis) 3 Days away from work.
- 2012 Injury, (Mike Burns) 2 Days away from work.
- 2013 Injury, (Mike Burns) 121 Days away from work.
- 2014 No lost days in the workplace.
- 2015 Injury, (Kevin White) 1 Day away from work.
- 2016 No lost days in the workplace.

13. Credit

Please provide available information on responder's financial viability including current annual report(s) and recent financial statement(s).

The financial viability of DG Fairhaven Power, LLC, a wholly owned EWP Renewable Corporation company, is more than adequate for the assumption of this contract and has sufficient income to meet all its operating payments, debt commitments and still allow for growth. The attached Audited Consolidated Financial Statements of EWP Renewable Corporation reflect our financial position.



Adobe Acrobat
Document

Additional Information

14. Please provide any additional company, contract, market or other information responder believes may be useful to RCEA as it investigates the potential for contracting with local biomass facilities.

In addition to these renewable energy and Local RA benefits offered by DG Fairhaven Power, our offering to RCEA could include System RA delivered from our existing 44.8 MW Red Bluff natural gas peaking unit (REDBLF_6_UNIT), located in nearby Tehama County, CA. This plant is an efficiently designed and operated natural gas facility with 16 individual Wartsila reciprocating generator units.

This configuration offers unprecedented flexibility, reliability, and availability, including 100% of RCEA Flexible Capacity RAR requirements, together with virtually all of the remaining System RA requirements (at Red Bluff's 44.8 MW monthly max). When combined with DG Fairhaven's total deliverability, these existing Red Bluff generating units combine to easily provide a significant portion of RCEA's System RA, Flex RAR and Local RAR requirements. EWP Renewable Corporation will likely look to another of its owned and controlled resources (CHWCHL_1_UNIT, 48 MW) within the Greater Fresno Local Control Area as an available candidate source of replacement RA capacity (System, Local, and Flex) if ever needed for unexpected deliverability outages of DG Fairhaven Power or Red Bluff, and this replacement unit could also be looked upon for easily contracting for any additional System RA if so desired by RCEA.

DG Fairhaven represents one of the longest, continuously operating biomass plants in the region having been online since 1987. The plant completed a contract amendment that increased its price to standard biomass requirements with PG&E on January 2, 2011. The company spent the month of January performing maintenance on the facility and then remained offline for 3 additional months due to low SRAC pricing but returned to service in April of 2016 and has continued to operate and maintain its full staff of 22 experienced and reliable plant engineers and maintenance staff.

Over the past 5 years the plant has averaged approximately \$1,000,000 per year in preventive and predictive plant maintenance totaling \$4M+ over this time frame which has allowed the facility to achieve over a 90% capacity factor. The plant has generated (net) approximately 600,000 MWHs of renewable energy over the past five years, an average of 120,000 MWHs per year demonstrating its reliability and the corporate support it receives. In 2016 DG Fairhaven kept its gates open to local saw mills who needed a location to dispose of their mill wastes, avoiding the exceptionally expensive and environmentally unfriendly use of local landfills or open burning.

As one of the most reliable renewable resources in Humboldt County, DG Fairhaven has taken tremendous pride in its record of environmental and operating performance, its long-standing participation in the California biomass industry and its highly trained staff. DG Fairhaven remains a valued corporate citizen of the Humboldt County community with strong relationships with the Harbor District, the local saw mills, vendors and local suppliers that provide ongoing support for the plant and create economic benefits for the local economy. With these valued relationships DG Fairhaven is excited by the opportunity to work with the RCEA and continue to provide Humboldt County with reliable, renewable biomass energy converting the area's largest natural resource into sustainable renewable energy in an environmentally responsible and clean way.