SUPPLEMENTAL INFORMATION
No. 6

For Planning Commission Agenda of:
November 21, 2019

Item No. F-1

Re: Applicant: Humboldt Wind
Case Numbers: CUP-18-002

Attached for the Planning Commission's consideration is the following information and corrections:

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Recommended Changes to the Resolution Certifying the EIR

Finding 6, Evidence c) (Regarding Marbled Murrelet Mitigation)

The County is not requiring curtailment as an additional avoidance measure, above and beyond the avoidance achieved by eliminating high-risk turbines, because it would render the project economically infeasible. A project such as this is expected to have a rate of return of 7.5 percent as shown in the Financial Feasibility Analysis of Proposed Humboldt Wind Energy Project prepared for the applicant by Economic and Planning Systems. This feasibility analysis identified three different price points for Power Purchase Agreement scenarios (low: $45/MWH; Mid: $50/MWH, and High: $55/MWH.) At the High PPA the project would produce a 7.55 percent rate of return. The 2019 pricing for power is equivalent to the Mid PPA studied. Because it is likely that any PPA will be in the mid-range and not a high PPA, the rate of return is expected to be below 7.0 percent which renders the project marginal with respect to financial feasibility. Curtailment would reduce the number of hours the project has to produce electricity which would reduce revenue and thus adversely affect the rate of return making the project financially infeasible. The applicant has provided evidence that the loss of three hours of energy production per day from the beginning of May through the end of August. Terra-Gen estimated that this would result in loss of energy production of 23,732 mega-watt hours (mWh) annually, about 4.6 of the expected annual energy production. This reduces average annual energy production from about 515,400 mWh to about 491,700 mWh. This reduction in energy production results in a loss of Project revenues of about $38.6 million in nominal dollar terms over the 25-year period, including $31.4 million in lost energy sales revenues and $7.2 million in lost production tax credits. This revenue loss reduces the After-Tax IRRs by about 0.75 percent, pushing the Proposed Project further below the hurdle rate. The loss of 0.75% IRR would be a significant reduction in revenue and make the project financially infeasible. (Financial Feasibility Analysis of Humboldt Wind Energy Project with Additional Mitigation Options; EPS #191085, 2019).

Finding 7, Evidence c), Alternative 3

Alternative 3 would not go as far as the proposed project toward meeting the project objectives because it would not be capable of generating 155 MW of energy. Alternative 3 would likely result in greater use of nonrenewable energy than the proposed project. At 23 turbines the alternative was also found to be financially infeasible to construct and operate. (Please see financial feasibility discussion above under Marbled Murrelet.) This alternative would result in a 3.88 percent rate of return which is below the 7.5 discussed above in the Marbled Murrelet discussion (Humboldt Wind Energy Project EIR Alternatives Financial Feasibility Analysis; EPS #191085, 2019). For this reason the alternative is found to not be technically or financially feasible.

Finding 7, Evidence d) , Alternative 4

Alternative 4 would not go as far as the proposed project toward meeting the project objectives because it would not be capable of generating 155 MW of energy. Alternative 4 would likely result in greater use of nonrenewable energy than the proposed project. At 31 turbines the alternative was also found to be financially infeasible to construct and operate. (Please see financial feasibility discussion above under Marbled Murrelet.) This alternative would result in a 5.09 percent rate of return which is below the 7.5 discussed above in the Marbled Murrelet discussion (Humboldt Wind Energy Project EIR Alternatives Financial Feasibility Analysis; EPS #191085, 2019). For this reason, the alternative is found to not be technically or financially feasible.

Finding 7, Evidence e), Alternative 5

Alternative 5 would not go as far as the proposed project toward meeting the project objectives because it would not be capable of generating 155 MW of energy. Alternative 5 would likely result in greater use of nonrenewable energy than the proposed project. At 37 turbines the alternative was also found to be financially infeasible to construct and operate. (Please see financial feasibility discussion above under Marbled Murrelet.) This alternative would result in a 4.56 percent rate of return which is below the 7.5 discussed above in the Marbled Murrelet discussion (Humboldt Wind Energy Project EIR Alternatives Financial Feasibility Analysis; EPS #191085, 2019). For this reason, the alternative is found to not be technically or financially feasible.

3.4-1	**Use Current-Phase Equipment for all Construction Off-Road Vehicles and Equipment.** The construction contractor shall use current-phase off-road construction vehicles and equipment (currently Tier 4 final) for construction activities. In addition, the following operational NOX and Diesel PM Emissions Reduction Measures for Construction Equipment shall be implemented: • All construction equipment shall be maintained in proper tune according to manufacturer's specifications; • All off-road and portable diesel powered equipment shall be fueled with ARB certified motor vehicle diesel fuel (non-taxed version suitable for use off-road); • On- and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the 5-minute idling limit; • Use of electrically-powered equipment shall be used when feasible; • Gasoline-powered equipment shall be substituted in place of diesel-powered equipment, where feasible; and • If available, use of alternatively fueled construction equipment on-site, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel. ~~This~~ These requirements shall be shown in all construction plans and implemented through the issuance of construction permits. Alternatively, if there is insufficient availability of equipment that meets or exceeds ARB's standard (currently Tier 4) for heavy-duty diesel engines, an emissions reduction plan shall be prepared to identify other emission reduction measures to reduce NO_X emissions equivalent to what would be achieved through using current-phase equipment. The plan shall identify requirements to be implemented during construction, such as limiting the simultaneous operation of construction equipment on any given day to reduce maximum daily emissions, and shall quantify the maximum daily and total annual emissions with implementation of the identified measures. This plan shall be approved by NCUAQMD before any construction permits are issued.	During construction.	Project applicant; construction contractor.	Humboldt County Planning & Building Department.	

Recommended Conditions of Approval

17. Prior to the issuance of construction permits, the applicant shall provide to the County Financial Assurances in a form and amount the County deems sufficient to guarantee the faithful performance of the decommissioning and restoration of the facility at the conclusion of the 30 year permit term, or in the event of facility abandonment, considered to be the discontinuance of operations for a period of one year ~~or longer~~. <u>If operations cease for a one year period, an application for remediation and removal must be submitted within 6 months of abandonment. Decommissioning of the site must be complete within 3 years of cessation of operations.</u> The Financial Assurance Cost Estimate shall be prepared by California Licensed Professional Engineer and shall cover the work as described in the Draft EIR Section 2.5, Project Decommissioning and Restoration, to include the following elements: removal of all above grade structures and facilities from the project site(excepting the addition to the Bridgeville substation); the decompaction and recontouring to return the site to preconstruction and operational condition; and revegetation commensurate with the vegetative cover, composition and diversity of the ecological setting, pre-development.

The Financial Assurances shall:

a. take the form of surety bonds, irrevocable letter of credit, trust funds, certificates of deposit, or other mechanisms determined acceptable by the Planning Director;
b. remain in effect for the duration of the permit term and any additional period until decommissioning and restoration is completed;
c. <u>be sufficient to account for inflation over the 30-year life of the project be</u> ~~be adjusted annually to account for to account for changes in the costs of decommission and restoration due to~~;
d. based on standard time and material current construction costs adjusted to reflect state prevailing wages, be adequate for the purposes of performing all decommissioning and restoration in accordance with the approved decommissioning and restoration plans; and
e. be made payable to the County of Humboldt.

21. <u>Prior to issuance of any permits or initiating construction activities the applicant shall submit evidence that the Humboldt Redwood Company NPDES permit has been renewed to include best management practices to reduce or eliminate potential impacts to surface and ground water.</u>

SUPPLEMENTAL INFORMATION
No. 4~~2~~

For Planning Commission Agenda of:
November 21~~14~~, 2019

Item No. F-1~~D-1~~

Re:	Applicant:	Humboldt Wind
	Case Numbers:	CUP-18-002

Attached for the Planning Commission's consideration are the following comments:

Comments submitted at PC 11.14.19

1. Michael Winkler
2. Genevieve Rozhon of CANCC-The Wildlife Society
3. Lori Gill
4. Ken Miller
5. Diane Ryerson
6. Ruth Allen
7. Rick Pelren
8. Jeff Hedin – Piercy Protection District
9. Joseph L. James – Yurok Tribe
10. David Chang
11. Beverly Chang
12. Anon – Unsigned
13. Harriet Hill
14. Barbara Guest
15. Jennifer Olson – CDFW
16. Ellin Zanzi
17. James Zoellick
18. (2) Letters from the City of Rio Dell dated 11.12.19 and 6.5.19
19. Ellin Beltz

Emailed comments since PC Supplemental #3

1. Anita Homer fwd: email comments of Jesse Noell
2. Mark Wolfe Associates
3. Ernie De Graff
4. Ken Mierzwa
5. Richard Engel
6. Greg King of Siskiyou Land Conservancy
7. Jere and Carol Bowden
8. Robie Tenoria
9. Judy Haggard
10. Ken Miller
11. Scott Greacen of Friends of the Eel River
12. Angelina Lasko
13. Valentia Dimas
14. Lauren Kurth
15. Angelina Lasko_2
16. Maria Brichetto
17. Sean Casement

MEMORANDUM

To: John Ford, Director, Humboldt County Planning & Building Department

From: Economic & Planning Systems, Inc.

Subject: Financial Feasibility Analysis of Humboldt Wind Energy Project with Additional Mitigation Options; EPS #191085

Date: November 20, 2019

Humboldt Wind, LLC has proposed a 47-turbine wind energy project in Humboldt County. In previous memoranda, Economic & Planning Systems, Inc. (EPS) evaluated the development feasibility of the proposed 47-turbine project (Proposed Project) and three Environmental Impact Report (EIR) alternatives under a range of potential pricing conditions.[1] As requested by the County, this memorandum conducts a similar feasibility analysis for the Proposed Project under three different additional mitigation scenarios. These additional mitigation scenarios include:

- Curtailment of Wind Turbine Operation for Marbled Murrelet.
- Investment in and maintenance of an IdentiFlight system (aerial detection technology).
- Investment in a Radar Detection System (aircraft detection).

To assess development feasibility, EPS prepared development cashflow pro formas for the Proposed Project under these three additional mitigation scenarios. The After-Tax Internal Rates of Return (IRR) were compared to those under the Proposed Project (without the additional mitigation scenarios) as well as to the identified hurdle After-Tax IRR of 7.5 percent.

This hurdle rate of return was set by considering the weighted average cost of capital for these types of investments, a level that the expected after-tax rate of return would need to meet for a project to move forward. For California utilities, the "return on original cost" provided in recent utility rate cases provides a proxy for the cost of capital and indicated returns of between 7.34 percent and 7.69 percent.[2]

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[1] See "Financial Feasibility Analysis of Proposed Humboldt Wind Energy Project", November 11, 2019 and "Humboldt Wind Energy Project EIR Alternatives Financial Feasibility Analysis", October 22, 2019.

[2] Based on six (6) past rate cases in 2016/ 2017 with reported "return on original cost rate" for California utilities, including Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric. Pending 2018/ 2019 rates cases suggest potential increases in the returns for these cases.

The Economics of Land Use

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In addition, using a standard Capital Asset Pricing Model (CAPM) model, Terra Gen has indicated that its weighted cost of capital is about 7.5 percent.

This memorandum is divided into two sections. The first provides the summary of findings and the second describes the three, additional mitigations scenarios and their financial effects. More detailed information on the specific components of the pro forma analysis can be found in EPS' previous memoranda.

Key Findings

All three mitigation scenarios decrease the expected IRR of the Proposed Project further below the hurdle rate of return creating further challenges to the Project's financial feasibility.

As shown in **Table 1**, the Proposed Project (without the additional mitigation measures) is forecast to achieve After-Tax IRRs ranging from 5.3 percent to 7.55 percent under the range of PPA pricing evaluated. With a hurdle rate of return of 7.5 percent, the Proposed Project only meets this hurdle rate under the highest PPA pricing scenario. Each of the additional mitigation scenarios results in a loss of revenues or an addition of costs, thereby reducing the After-Tax IRRs (under all pricing scenarios) to below the hurdle IRR.

Table 1. Internal Rates of Return for Proposed Project and Mitigation Scenarios

Alternative	(Lost Revenues)/ Increased Costs (1)	After-Tax IRR (2)		
		Low PPA	Mid PPA	High PPA
Proposed Project	na	5.30%	6.47%	7.55%
Curtailment	($38,600,000)	4.53%	5.70%	6.77%
Identiflight	$19,950,000	4.75%	5.93%	7.02%
Radar Detection	$2,000,000	5.21%	6.38%	7.45%

(1) Lost Revenues or Increased Costs relative to Proposed Project (over 25 years; nominal dollars; rounded).

(2) Low, Mid, and High PPA pricing reflects $45, $50, and $55 per megawatt hour respectively.

As shown in **Table 1**, each of the additional mitigation scenarios either reduces Proposed Project revenues or increases costs of a project that is already economically marginal. Curtailment of the wind turbines for three hours each day over a four-month period results in an overall reduction in wind energy production of 4.6 percent and a resulting loss in revenues from energy sales and production tax credits that sum to about $38.6 million in nominal dollar terms over the 25-year period. This reduces the After-Tax IRR significantly under all pricing scenarios, including from 6.47 percent to 5.70 percent under the mid-pricing scenario. Investment in the IdentiFlight system involves upfront investment in all units, periodic replacement of a portion of the units, and annual maintenance, which together increase project costs by about $20 million and substantially reduced the After-Tax IRR. Investment in the radar detection system for aircraft deduction is estimated to result in an upfront investment of $2.0 million, which modestly reduces the After-Tax IRRs under all pricing scenarios.

Additional Mitigation Scenarios and Financial Effects

The financial feasibility model and base assumptions were described in detailed in the prior EPS memoranda. For the purposes of this additional analysis, EPS incorporated the additional mitigation scenarios into the financial feasibility analysis of the Proposed Project to determine the effects on the flow of Project revenues and costs over the course of the 25-year analysis and the resulting effect on the Project returns (After-Tax IRRs). Similar to all the prior analyses, analyses were run under three PPA pricing scenarios (low, mid, and high) and After-Tax IRRs were compared to the identified hurdle rate of 7.5 percent.

Tables 2, **3**, and **4** show annual pro forma cashflow analyses for the Proposed Project and each of the three mitigation alternatives under the Mid-PPA pricing scenario (**Table 5** shows the Proposed Project under the Mid-PPA pricing scenario without the additional mitigation for comparison purposes). A brief description of each additional mitigation scenario is provided below along with its effect on revenues/ costs and After-Tax IRRs.

- **Curtailment.** This scenario involves the curtailment (reduction in electricity generation below a system's capability). The specific scenario entails the loss of three hours of energy production per day from the beginning of May through the end of August. Terra-Gen estimated that this would result in loss of energy production of 23,732 mega-watt hours (mWh) annually, about 4.6 of the expected annual energy production. As shown in **Table 2**, this reduces average annual energy production from about 515,400 mWh to about 491,700 mWh. This reduction in energy production results in a loss of Project revenues of about $38.6 million in nominal dollar terms over the 25-year period, including $31.4 million in lost energy sales revenues and $7.2 million in lost production tax credits. This revenue loss reduces the After-Tax IRRs by about 0.75 percent, pushing the Proposed Project further below the hurdle rate.

- **IdentiFlight.** This scenario involves the installation of an IdentiFlight system, an experimental aerial detection technology. Terra-Gen estimates that that this will involve the upfront expenditure of about $6.45 million (43 units at $150,000 per unit), along with replacement of about 10 percent of the units (four units) every 10 years (at the same unit cost inflated), and an annual maintenance cost of $344,000, or $8,000 per unit (inflated over time). As shown in **Table 3**, these investments increase Project costs by about $19.95 million (nominal dollars), including $8.2 million in equipment costs and $11.75 million in maintenance costs over the 25-year period. This increase in costs reduces the After-Tax IRRs by about 0.55 percent, pushing the Proposed Project further below the hurdle rate.

- **Radar Detection Alternative.** This scenario involves the integration of radar detection of aircrafts to control FAA lighting. Terra-Gen estimates this would require upfront costs of $2.0 million, including installation costs of $1.5 million and an upfront, one-time maintenance payment of $500,000. As shown in **Table 4**, this additional cost is included under the Project Development Costs, increasing the total project development costs to $310.2 million (up from $308.2 million). This increase in costs reduces the After-Tax IRR by 0.1 percent, reducing the After-Tax IRRs under all pricing scenarios.

The feasibility of the Proposed Project, even without these additional mitigation measures, is marginal. The additional measures all worsen the expected project economics, reduce the expected IRRs relative to the identified hurdle rate of return, and are likely to render the project financially infeasible.

Table 2
Humboldt Wind Energy Project Financial Analysis - Proposed Project with Curtailment (Mid PPA Pricing)
Turbines: 47
MW: 147

Item	Total	0	1	2	3	4	5	6	7	8	9	10	11	12
OVERALL PROJECT ECONOMICS														
Energy Production														
Potential Annual Energy Production (mWh)		0	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441
Lost Production from Curtailment (mWh)		0	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)
Annual Net Energy Production (mWh)		0	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709
Energy Sales Revenue														
PPA revenue	$368,781,600	$0	$24,585,440	$24,585,440	$24,585,440	$24,585,440	$24,585,440	$24,585,440	$24,585,440	$24,585,440	$24,585,440	$24,585,440	$24,585,440	$24,585,440
Merchant Revenue	$282,326,072	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Annual Revenues	**$651,107,672**	**$0**	**$24,585,440**	**$24,585,440**	**$24,585,440**	**$24,585,440**	**$24,585,440**	**$24,585,440**	**$24,585,440**	**$24,585,440**	**$24,585,440**	**$24,585,440**	**$24,585,440**	**$24,585,440**
Annual Operating Costs														
General & Administrative (G&A)														
Land Leases	$68,366,306	$0	$2,581,471	$2,581,471	$2,581,471	$2,581,471	$2,581,471	$2,581,471	$2,581,471	$2,581,471	$2,581,471	$2,581,471	$2,581,471	$2,581,471
PTAX	$52,500,000	$0	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000
Insurance	$25,959,901	$0	$760,000	$779,000	$798,475	$818,437	$838,898	$859,870	$881,367	$903,401	$925,986	$949,136	$972,864	$997,186
Other G&A	$18,103,615	$0	$530,000	$543,250	$556,831	$570,752	$585,021	$599,646	$614,638	$630,003	$645,754	$661,897	$678,445	$695,406
Subtotal G&A	$164,929,821	$0	$5,971,471	$6,003,721	$6,036,777	$6,070,660	$6,105,390	$6,140,988	$6,177,476	$6,214,876	$6,253,211	$6,292,504	$6,332,780	$6,374,063
Operating & Maintenance (O&M)														
Turbine Maintenance	$109,059,599	$0	$2,800,000	$2,898,000	$2,999,430	$3,104,410	$3,213,064	$3,325,522	$3,441,915	$3,562,382	$3,687,065	$3,816,113	$3,949,677	$4,087,915
Non-Turbine Maintenance	$26,643,056	$0	$780,000	$799,500	$819,488	$839,975	$860,974	$882,498	$904,561	$927,175	$950,354	$974,113	$998,466	$1,023,428
Subtotal O&M	$135,702,655	$0	$3,580,000	$3,697,500	$3,818,918	$3,944,385	$4,074,038	$4,208,020	$4,346,476	$4,489,557	$4,637,420	$4,790,226	$4,948,142	$5,111,343
Total Operating Costs	**$300,632,476**	**$0**	**$9,551,471**	**$9,701,221**	**$9,855,695**	**$10,015,045**	**$10,179,428**	**$10,349,008**	**$10,523,951**	**$10,704,433**	**$10,890,631**	**$11,082,730**	**$11,280,923**	**$11,485,406**
	46.2% of annual revenues													
Project Development Costs														
5 Year MACRS Fixed	$19,089,600	$19,089,600												
5 Year MACRS Variable	$161,289,408	$161,289,408												
12 Year Straight Line Fixed/Variable	$94,518,600	$94,518,600												
15 Year MACRS Fixed	$33,254,000	$33,254,000												
Total Development Costs	**$308,151,608**	**$308,151,608**												
Total Development Cost per Turbine	$6,556,417													
Earnings (EBITDA) (1)	**$42,323,588**	**($308,151,608)**	**$15,033,969**	**$14,884,219**	**$14,729,745**	**$14,570,395**	**$14,406,012**	**$14,236,432**	**$14,061,489**	**$13,881,007**	**$13,694,809**	**$13,502,710**	**$13,304,517**	**$13,100,034**
Depreciation			**($83,328,192)**	**($54,145,068)**	**($36,535,441)**	**($29,783,182)**	**($29,523,856)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,183,786)**
5 Years MACRS (2)			40%	24%	14%	11%	11%							
12 Years SL (2)			8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
15 Year MACRS (2)			10%	9%	8%	7%	7%	6%	6%	6%	6%	6%	6%	6%
Taxable Income			**($68,294,223)**	**($39,260,850)**	**($21,805,696)**	**($15,212,787)**	**($15,117,844)**	**$4,396,267**	**$4,221,323**	**$4,040,842**	**$3,854,644**	**$3,662,544**	**$3,464,352**	**$3,916,248**
Tax Benefits/ Costs (3)	**21% ($9,039,563)**		**$14,341,787**	**$8,244,778**	**$4,579,196**	**$3,194,685**	**$3,174,747**	**($923,216)**	**($886,478)**	**($848,577)**	**($809,475)**	**($769,134)**	**($727,514)**	**($822,412)**
Energy Credit Revenues	**$148,737,638**		**$13,276,138**	**$13,608,041**	**$13,948,242**	**$14,296,948**	**$14,654,372**	**$15,020,731**	**$15,396,249**	**$15,781,156**	**$16,175,685**	**$16,580,077**		
Net Income After Tax (4)	**$182,021,663**	**($308,151,608)**	**$42,651,893**	**$36,737,038**	**$33,257,183**	**$32,062,029**	**$32,235,131**	**$28,333,947**	**$28,571,260**	**$28,813,586**	**$29,061,019**	**$29,313,652**	**$12,577,003**	**$12,277,622**
Unlevered After Tax IRR	**5.70%**													

Item	13	14	15	16	17	18	19	20	21	22	23	24	25
OVERALL PROJECT ECONOMICS													
Energy Production													
Potential Annual Energy Production (mWh)	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441
Lost Production from Curtailment (mWh)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)	(23,732)
Annual Net Energy Production (mWh)	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709	491,709
Energy Sales Revenue													
PPA revenue	$24,585,440	$24,585,440	$24,585,440	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Merchant Revenue	$0	$0	$0	$25,200,076	$25,830,078	$26,475,830	$27,137,726	$27,816,169	$28,511,573	$29,224,362	$29,954,971	$30,703,846	$31,471,442
Annual Revenues	**$24,585,440**	**$24,585,440**	**$24,585,440**	**$25,200,076**	**$25,830,078**	**$26,475,830**	**$27,137,726**	**$27,816,169**	**$28,511,573**	**$29,224,362**	**$29,954,971**	**$30,703,846**	**$31,471,442**
Annual Operating Costs													
General & Administrative (G&A)													
Land Leases	$2,581,471	$2,581,471	$2,581,471	$2,646,008	$2,712,158	$2,779,962	$2,849,461	$2,920,698	$2,993,715	$3,068,558	$3,145,272	$3,223,904	$3,304,501
PTAX	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000
Insurance	$1,022,116	$1,047,668	$1,073,860	$1,100,707	$1,128,224	$1,156,430	$1,185,341	$1,214,974	$1,245,348	$1,276,482	$1,308,394	$1,341,104	$1,374,632
Other G&A	$712,791	$730,611	$748,876	$767,598	$786,788	$806,458	$826,619	$847,285	$868,467	$890,178	$912,433	$935,244	$958,625
Subtotal G&A	$6,416,378	$6,459,750	$6,504,207	$6,614,313	$6,727,170	$6,842,850	$6,961,421	$7,082,956	$7,207,530	$7,335,219	$7,466,099	$7,600,252	$7,737,758
Operating & Maintenance (O&M)													
Turbine Maintenance	$4,230,992	$4,379,077	$4,532,345	$4,690,977	$4,855,161	$5,025,092	$5,200,970	$5,383,004	$5,571,409	$5,766,408	$5,968,232	$6,177,121	$6,393,320
Non-Turbine Maintenance	$1,049,013	$1,075,239	$1,102,120	$1,129,673	$1,157,914	$1,186,862	$1,216,534	$1,246,947	$1,278,121	$1,310,074	$1,342,826	$1,376,396	$1,410,806
Subtotal O&M	$5,280,006	$5,454,316	$5,634,464	$5,820,649	$6,013,075	$6,211,954	$6,417,504	$6,629,951	$6,849,530	$7,076,482	$7,311,058	$7,553,517	$7,804,126
Total Operating Costs	**$11,696,383**	**$11,914,066**	**$12,138,672**	**$12,434,962**	**$12,740,246**	**$13,054,803**	**$13,378,924**	**$13,712,907**	**$14,057,060**	**$14,411,701**	**$14,777,157**	**$15,153,768**	**$15,541,884**
Earnings (EBITDA) (1)	**$12,889,057**	**$12,671,374**	**$12,446,768**	**$12,765,114**	**$13,089,832**	**$13,421,026**	**$13,758,801**	**$14,103,261**	**$14,454,513**	**$14,812,662**	**$15,177,814**	**$15,550,077**	**$15,929,558**
Depreciation	**($1,963,615)**	**($1,963,615)**	**($1,961,910)**										
5 Years MACRS (2)													
12 Years SL (2)													
15 Year MACRS (2)	6%	6%	6%										
Taxable Income	**$10,925,441**	**$10,707,759**	**$10,484,859**	**$12,765,114**	**$13,089,832**	**$13,421,026**	**$13,758,801**	**$14,103,261**	**$14,454,513**	**$14,812,662**	**$15,177,814**	**$15,550,077**	**$15,929,558**
Tax Benefits/ Costs (3)	**($2,294,343)**	**($2,248,629)**	**($2,201,820)**	**($2,680,674)**	**($2,748,865)**	**($2,818,416)**	**($2,889,348)**	**($2,961,685)**	**($3,035,448)**	**($3,110,659)**	**($3,187,341)**	**($3,265,516)**	**($3,345,207)**
Energy Credit Revenues													
Net Income After Tax (4)	**$10,594,714**	**$10,422,745**	**$10,244,948**	**$10,084,440**	**$10,340,967**	**$10,602,611**	**$10,869,453**	**$11,141,577**	**$11,419,065**	**$11,702,003**	**$11,990,473**	**$12,284,561**	**$12,584,351**
Unlevered After Tax IRR													

(1) EBITDA = Earnings before taxes, depreciation, and amortization. Total Revenues minus Operating Costs minus Project Development Costs
(2) IRS-established depreciation rates.
(3) Potential tax benefits/ costs equal federal corporate tax multiplied by taxable income. When postive, the owner of the wind farm can offset other tax liabilities, thereby obtaining a positive tax benefit.
(4) Net After Tax Income = Earnings (EBITA) plus Tax Savings plus Energy Credit Revenues.

Sources: Terra-Gen; Economic & Planning Systems, Inc.

Table 3

Humboldt Wind Energy Project Financial Analysis - Proposed Project with Identiflight (Mid PPA Pricing)

Turbines: 47
MW: 147
Identiflight Units: 43

Item	Total	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
OVERALL PROJECT ECONOMICS																											
Energy Production																											
Annual Net Energy Production (mWh)		0	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441
Energy Sales Revenue																											
PPA revenue	$386,580,600	$0	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Merchant Revenue	$295,952,353	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$26,416,341	$27,076,750	$27,753,668	$28,447,510	$29,158,698	$29,887,665	$30,634,857	$31,400,728	$32,185,746	$32,990,390
Annual Revenues	**$682,532,953**	**$0**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$26,416,341**	**$27,076,750**	**$27,753,668**	**$28,447,510**	**$29,158,698**	**$29,887,665**	**$30,634,857**	**$31,400,728**	**$32,185,746**	**$32,990,390**
Annual Operating Costs																											
General & Administrative (G&A)																											
Land Leases	$71,665,960	$0	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,773,716	$2,843,059	$2,914,135	$2,986,989	$3,061,663	$3,138,205	$3,216,660	$3,297,076	$3,379,503	$3,463,991
PTAX	$52,500,000	$0	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000
Insurance	$25,959,901	$0	$760,000	$779,000	$798,475	$818,437	$838,898	$859,870	$881,367	$903,401	$925,986	$949,136	$972,864	$997,186	$1,022,116	$1,047,668	$1,073,860	$1,100,707	$1,128,224	$1,156,430	$1,185,341	$1,214,974	$1,245,348	$1,276,482	$1,308,394	$1,341,104	$1,374,632
Other G&A	$18,103,615	$0	$530,000	$543,250	$556,831	$570,752	$585,021	$599,646	$614,638	$630,003	$645,754	$661,897	$678,445	$695,406	$712,791	$730,611	$748,876	$767,598	$786,788	$806,458	$826,619	$847,285	$868,467	$890,178	$912,433	$935,244	$958,625
Subtotal G&A	$168,229,476	$0	$6,096,064	$6,128,314	$6,161,370	$6,195,253	$6,229,983	$6,265,581	$6,302,069	$6,339,469	$6,377,804	$6,417,097	$6,457,373	$6,498,656	$6,540,971	$6,584,343	$6,628,800	$6,742,020	$6,858,071	$6,977,023	$7,098,948	$7,223,922	$7,352,020	$7,483,321	$7,617,904	$7,755,851	$7,897,247
Operating & Maintenance (O&M)																											
Turbine Maintenance	$109,059,599	$0	$2,800,000	$2,898,000	$2,999,430	$3,104,410	$3,213,064	$3,325,522	$3,441,915	$3,562,382	$3,687,065	$3,816,113	$3,949,677	$4,087,915	$4,230,992	$4,379,077	$4,532,345	$4,690,977	$4,855,161	$5,025,092	$5,200,970	$5,383,004	$5,571,409	$5,766,408	$5,968,232	$6,177,121	$6,393,320
Non-Turbine Maintenance	$26,643,056	$0	$780,000	$799,500	$819,488	$839,975	$860,974	$882,498	$904,561	$927,175	$950,354	$974,113	$998,466	$1,023,428	$1,049,013	$1,075,239	$1,102,120	$1,129,673	$1,157,914	$1,186,862	$1,216,534	$1,246,947	$1,278,121	$1,310,074	$1,342,826	$1,376,396	$1,410,806
Identiflight Maintenance	$11,750,271	$0	$344,000	$352,600	$361,415	$370,450	$379,712	$389,204	$398,935	$408,908	$419,131	$429,609	$440,349	$451,358	$462,642	$474,208	$486,063	$498,215	$510,670	$523,437	$536,523	$549,936	$563,684	$577,776	$592,221	$607,026	$622,202
Subtotal O&M	$147,452,925	$0	$3,924,000	$4,050,100	$4,180,333	$4,314,835	$4,453,750	$4,597,224	$4,745,410	$4,898,465	$5,056,550	$5,219,835	$5,388,492	$5,562,701	$5,742,647	$5,928,523	$6,120,527	$6,318,864	$6,523,745	$6,735,390	$6,954,026	$7,179,886	$7,413,214	$7,654,258	$7,903,279	$8,160,543	$8,426,328
Total Operating Costs	**$315,682,401**	**$0**	**$10,020,064**	**$10,178,414**	**$10,341,703**	**$10,510,088**	**$10,683,733**	**$10,862,805**	**$11,047,479**	**$11,237,934**	**$11,434,354**	**$11,636,932**	**$11,845,865**	**$12,061,357**	**$12,283,618**	**$12,512,867**	**$12,749,328**	**$13,060,884**	**$13,381,816**	**$13,712,413**	**$14,052,974**	**$14,403,808**	**$14,765,234**	**$15,137,579**	**$15,521,182**	**$15,916,394**	**$16,323,575**
	46.3% of annual revenues																										
Project Development Costs																											
5 Year MACRS Fixed	$19,089,600	$19,089,600																									
5 Year MACRS Variable	$161,289,408	$161,289,408																									
12 Year Straight Line Fixed/Variable	$94,518,600	$94,518,600																									
15 Year MACRS Fixed	$33,254,000	$33,254,000																									
Identiflight Equipment	$8,201,221	$6,450,000										$768,051										$983,170					
Total Development Costs	**$316,352,829**	**$314,601,608**										$768,051										$983,170					
Total Development Cost per Turbine	$6,730,911																										
Earnings (EBITDA) (1)	**$50,497,723**	**($314,601,608)**	**$15,751,976**	**$15,593,626**	**$15,430,337**	**$15,261,952**	**$15,088,307**	**$14,909,235**	**$14,724,561**	**$14,534,106**	**$14,337,686**	**$13,367,057**	**$13,926,175**	**$13,710,683**	**$13,488,422**	**$13,259,173**	**$13,022,712**	**$13,355,457**	**$13,694,933**	**$14,041,255**	**$14,394,536**	**$13,771,719**	**$15,122,431**	**$15,497,278**	**$15,879,546**	**$16,269,352**	**$16,666,815**
Depreciation			**($83,328,192)**	**($54,145,068)**	**($36,535,441)**	**($29,783,182)**	**($29,523,856)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,183,786)**	**($1,963,615)**	**($1,963,615)**	**($1,961,910)**										
5 Years MACRS (2)			40%	24%	14%	11%	11%																				
12 Years SL (2)			8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%													
15 Year MACRS (2)			10%	9%	8%	7%	7%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%										
Taxable Income			**($67,576,216)**	**($38,551,443)**	**($21,105,104)**	**($14,521,230)**	**($14,435,549)**	**$5,069,069**	**$4,884,396**	**$4,693,941**	**$4,497,520**	**$3,526,892**	**$4,086,010**	**$4,526,897**	**$11,524,806**	**$11,295,558**	**$11,060,803**	**$13,355,457**	**$13,694,933**	**$14,041,255**	**$14,394,536**	**$13,771,719**	**$15,122,431**	**$15,497,278**	**$15,879,546**	**$16,269,352**	**$16,666,815**
Tax Benefits/ Costs (3)	**21% ($12,110,631)**		**$14,191,005**	**$8,095,803**	**$4,432,072**	**$3,049,458**	**$3,031,465**	**($1,064,505)**	**($1,025,723)**	**($985,728)**	**($944,479)**	**($740,647)**	**($858,062)**	**($950,648)**	**($2,420,209)**	**($2,372,067)**	**($2,322,769)**	**($2,804,646)**	**($2,875,936)**	**($2,948,664)**	**($3,022,852)**	**($2,892,061)**	**($3,175,711)**	**($3,254,428)**	**($3,334,705)**	**($3,416,564)**	**($3,500,031)**
Energy Credit Revenues	**$155,916,362**		**$13,916,902**	**$14,264,824**	**$14,621,445**	**$14,986,981**	**$15,361,655**	**$15,745,697**	**$16,139,339**	**$16,542,823**	**$16,956,393**	**$17,380,303**															
Net Income After Tax (4)	**$194,303,454**	**($314,601,608)**	**$43,859,883**	**$37,954,253**	**$34,483,854**	**$33,298,391**	**$33,481,428**	**$29,590,427**	**$29,838,177**	**$30,091,202**	**$30,349,600**	**$30,006,713**	**$13,068,113**	**$12,760,035**	**$11,068,213**	**$10,887,106**	**$10,699,944**	**$10,550,811**	**$10,818,997**	**$11,092,592**	**$11,371,683**	**$10,879,658**	**$11,946,721**	**$12,242,850**	**$12,544,841**	**$12,852,788**	**$13,166,784**
Unlevered After Tax IRR	**5.93%**																										

(1) EBITDA = Earnings before taxes, depreciation, and amortization. Total Revenues minus Operating Costs minus Project Development Costs
(2) IRS-established depreciation rates.
(3) Potential tax benefits/ costs equal federal corporate tax multiplied by taxable income. When postive, the owner of the wind farm can offset other tax liabilities, thereby obtaining a positive tax benefit.
(4) Net After Tax Income = Earnings (EBITA) plus Tax Savings plus Energy Credit Revenues.

Sources: Terra-Gen; Economic & Planning Systems, Inc.

Table 4
Humboldt Wind Energy Project Financial Analysis - Proposed Project with Radar Detection (Mid PPA Pricing)
Turbines: 47
MW: 147

Item		Total	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
OVERALL PROJECT ECONOMICS																												
Energy Production																												
Annual Net Energy Production (mWh)			0	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441
Energy Sales Revenue																												
PPA revenue		$386,580,600	$0	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Merchant Revenue		$295,952,353	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$26,416,341	$27,076,750	$27,753,668	$28,447,510	$29,158,698	$29,887,665	$30,634,857	$31,400,728	$32,185,746	$32,990,390
Annual Revenues		**$682,532,953**	**$0**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$26,416,341**	**$27,076,750**	**$27,753,668**	**$28,447,510**	**$29,158,698**	**$29,887,665**	**$30,634,857**	**$31,400,728**	**$32,185,746**	**$32,990,390**
Annual Operating Costs																												
General & Administrative (G&A)																												
Land Leases		$71,665,960	$0	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,773,716	$2,843,059	$2,914,135	$2,986,989	$3,061,663	$3,138,205	$3,216,660	$3,297,076	$3,379,503	$3,463,991
PTAX		$52,500,000	$0	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000
Insurance		$25,959,901	$0	$760,000	$779,000	$798,475	$818,437	$838,898	$859,870	$881,367	$903,401	$925,986	$949,136	$972,864	$997,186	$1,022,116	$1,047,668	$1,073,860	$1,100,707	$1,128,224	$1,156,430	$1,185,341	$1,214,974	$1,245,348	$1,276,482	$1,308,394	$1,341,104	$1,374,632
Other G&A		$18,103,615	$0	$530,000	$543,250	$556,831	$570,752	$585,021	$599,646	$614,638	$630,003	$645,754	$661,897	$678,445	$695,406	$712,791	$730,611	$748,876	$767,598	$786,788	$806,458	$826,619	$847,285	$868,467	$890,178	$912,433	$935,244	$958,625
Subtotal G&A		$168,229,476	$0	$6,096,064	$6,128,314	$6,161,370	$6,195,253	$6,229,983	$6,265,581	$6,302,069	$6,339,469	$6,377,804	$6,417,097	$6,457,373	$6,498,656	$6,540,971	$6,584,343	$6,628,800	$6,742,020	$6,858,071	$6,977,023	$7,098,948	$7,223,922	$7,352,020	$7,483,321	$7,617,904	$7,755,851	$7,897,247
Operating & Maintenance (O&M)																												
Turbine Maintenance		$109,059,599	$0	$2,800,000	$2,898,000	$2,999,430	$3,104,410	$3,213,064	$3,325,522	$3,441,915	$3,562,382	$3,687,065	$3,816,113	$3,949,677	$4,087,915	$4,230,992	$4,379,077	$4,532,345	$4,690,977	$4,855,161	$5,025,092	$5,200,970	$5,383,004	$5,571,409	$5,766,408	$5,968,232	$6,177,121	$6,393,320
Non-Turbine Maintenance		$26,643,056	$0	$780,000	$799,500	$819,488	$839,975	$860,974	$882,498	$904,561	$927,175	$950,354	$974,113	$998,466	$1,023,428	$1,049,013	$1,075,239	$1,102,120	$1,129,673	$1,157,914	$1,186,862	$1,216,534	$1,246,947	$1,278,121	$1,310,074	$1,342,826	$1,376,396	$1,410,806
Subtotal O&M		$135,702,655	$0	$3,580,000	$3,697,500	$3,818,918	$3,944,385	$4,074,038	$4,208,020	$4,346,476	$4,489,557	$4,637,420	$4,790,226	$4,948,142	$5,111,343	$5,280,006	$5,454,316	$5,634,464	$5,820,649	$6,013,075	$6,211,954	$6,417,504	$6,629,951	$6,849,530	$7,076,482	$7,311,058	$7,553,517	$7,804,126
Total Operating Costs		**$303,932,130**	**$0**	**$9,676,064**	**$9,825,814**	**$9,980,288**	**$10,139,638**	**$10,304,021**	**$10,473,601**	**$10,648,544**	**$10,829,026**	**$11,015,224**	**$11,207,323**	**$11,405,516**	**$11,609,999**	**$11,820,976**	**$12,038,659**	**$12,263,265**	**$12,562,670**	**$12,871,146**	**$13,188,977**	**$13,516,452**	**$13,853,873**	**$14,201,550**	**$14,559,803**	**$14,928,962**	**$15,309,368**	**$15,701,373**
		44.5% of annual revenues																										
Project Development Costs																												
5 Year MACRS Fixed		$19,089,600	$19,089,600																									
5 Year MACRS Variable		$161,289,408	$161,289,408																									
12 Year Straight Line Fixed/Variable		$94,518,600	$94,518,600																									
15 Year MACRS Fixed		$33,254,000	$33,254,000																									
Radar Mitigation Installation and Maintenance		$2,000,000	$2,000,000																									
Total Development Costs		**$310,151,608**	**$310,151,608**																									
Total Development Cost per Turbine		$6,598,970																										
Earnings (EBITDA) (1)		**$68,449,215**	**($310,151,608)**	**$16,095,976**	**$15,946,226**	**$15,791,752**	**$15,632,402**	**$15,468,019**	**$15,298,439**	**$15,123,496**	**$14,943,014**	**$14,756,816**	**$14,564,717**	**$14,366,524**	**$14,162,041**	**$13,951,064**	**$13,733,381**	**$13,508,775**	**$13,853,671**	**$14,205,603**	**$14,564,692**	**$14,931,058**	**$15,304,825**	**$15,686,115**	**$16,075,054**	**$16,471,767**	**$16,876,378**	**$17,289,017**
Depreciation				**($83,328,192)**	**($54,145,068)**	**($36,535,441)**	**($29,783,182)**	**($29,523,856)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,183,786)**	**($1,963,615)**	**($1,963,615)**	**($1,961,910)**										
5 Years MACRS (2)				40%	24%	14%	11%	11%																				
12 Years SL (2)				8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%													
15 Year MACRS (2)				10%	9%	8%	7%	7%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%										
Taxable Income				**($67,232,216)**	**($38,198,843)**	**($20,743,689)**	**($14,150,780)**	**($14,055,837)**	**$5,458,274**	**$5,283,330**	**$5,102,849**	**$4,916,651**	**$4,724,551**	**$4,526,359**	**$4,978,255**	**$11,987,448**	**$11,769,766**	**$11,546,866**	**$13,853,671**	**$14,205,603**	**$14,564,692**	**$14,931,058**	**$15,304,825**	**$15,686,115**	**$16,075,054**	**$16,471,767**	**$16,876,378**	**$17,289,017**
Tax Benefits/ Costs (3)	**21%**	**($14,945,945)**		**$14,118,765**	**$8,021,757**	**$4,356,175**	**$2,971,664**	**$2,951,726**	**($1,146,237)**	**($1,109,499)**	**($1,071,598)**	**($1,032,497)**	**($992,156)**	**($950,535)**	**($1,045,434)**	**($2,517,364)**	**($2,471,651)**	**($2,424,842)**	**($2,909,271)**	**($2,983,177)**	**($3,058,585)**	**($3,135,522)**	**($3,214,013)**	**($3,294,084)**	**($3,375,761)**	**($3,459,071)**	**($3,544,039)**	**($3,630,693)**
Energy Credit Revenues		**$155,916,362**		**$13,916,902**	**$14,264,824**	**$14,621,445**	**$14,986,981**	**$15,361,655**	**$15,745,697**	**$16,139,339**	**$16,542,823**	**$16,956,393**	**$17,380,303**															
Net Income After Tax (4)		**$209,419,632**	**($310,151,608)**	**$44,131,643**	**$38,232,807**	**$34,769,371**	**$33,591,047**	**$33,781,400**	**$29,897,898**	**$30,153,335**	**$30,414,239**	**$30,680,713**	**$30,952,864**	**$13,415,989**	**$13,116,608**	**$11,433,700**	**$11,261,730**	**$11,083,934**	**$10,944,400**	**$11,222,427**	**$11,506,106**	**$11,795,536**	**$12,090,812**	**$12,392,031**	**$12,699,293**	**$13,012,696**	**$13,332,339**	**$13,658,323**
Unlevered After Tax IRR	**6.38%**																											

(1) EBITDA = Earnings before taxes, depreciation, and amortization. Total Revenues minus Operating Costs minus Project Development Costs
(2) IRS-established depreciation rates.
(3) Potential tax benefits/ costs equal federal corporate tax multiplied by taxable income. When postive, the owner of the wind farm can offset other tax liabilities, thereby obtaining a positive tax benefit.
(4) Net After Tax Income = Earnings (EBITA) plus Tax Savings plus Energy Credit Revenues.

Sources: Terra-Gen; Economic & Planning Systems, Inc.

Table 5
Humboldt Wind Energy Project Financial Analysis - Proposed Project (Mid PPA Pricing) (no additional mitigations)
Turbines: 47
MW: 147

Item		Total	0	1	2	3	4	5	6	7	8	9
OVERALL PROJECT ECONOMICS												
Energy Production												
Annual Net Energy Production (mWh)			0	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441
Energy Sales Revenue												
PPA revenue		$386,580,600	$0	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040
Merchant Revenue		$295,952,353	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Annual Revenues		**$682,532,953**	**$0**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**
Annual Operating Costs												
General & Administrative (G&A)												
Land Leases		$71,665,960	$0	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064
PTAX		$52,500,000	$0	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000
Insurance		$25,959,901	$0	$760,000	$779,000	$798,475	$818,437	$838,898	$859,870	$881,367	$903,401	$925,986
Other G&A		$18,103,615	$0	$530,000	$543,250	$556,831	$570,752	$585,021	$599,646	$614,638	$630,003	$645,754
Subtotal G&A		$168,229,476	$0	$6,096,064	$6,128,314	$6,161,370	$6,195,253	$6,229,983	$6,265,581	$6,302,069	$6,339,469	$6,377,804
Operating & Maintenance (O&M)												
Turbine Maintenance		$109,059,599	$0	$2,800,000	$2,898,000	$2,999,430	$3,104,410	$3,213,064	$3,325,522	$3,441,915	$3,562,382	$3,687,065
Non-Turbine Maintenance		$26,643,056	$0	$780,000	$799,500	$819,488	$839,975	$860,974	$882,498	$904,561	$927,175	$950,354
Subtotal O&M		$135,702,655	$0	$3,580,000	$3,697,500	$3,818,918	$3,944,385	$4,074,038	$4,208,020	$4,346,476	$4,489,557	$4,637,420
Total Operating Costs		**$303,932,130**	**$0**	**$9,676,064**	**$9,825,814**	**$9,980,288**	**$10,139,638**	**$10,304,021**	**$10,473,601**	**$10,648,544**	**$10,829,026**	**$11,015,224**
		44.5% of annual revenues										
Project Development Costs												
5 Year MACRS Fixed		$19,089,600	$19,089,600									
5 Year MACRS Variable		$161,289,408	$161,289,408									
12 Year Straight Line Fixed/Variable		$94,518,600	$94,518,600									
15 Year MACRS Fixed		$33,254,000	$33,254,000									
Total Development Costs		**$308,151,608**	**$308,151,608**									
Total Development Cost per Turbine		$6,556,417										
Earnings (EBITDA) (1)		**$70,449,215**	**($308,151,608)**	**$16,095,976**	**$15,946,226**	**$15,791,752**	**$15,632,402**	**$15,468,019**	**$15,298,439**	**$15,123,496**	**$14,943,014**	**$14,756,816**
Depreciation				**($83,328,192)**	**($54,145,068)**	**($36,535,441)**	**($29,783,182)**	**($29,523,856)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**	**($9,840,165)**
5 Years MACRS (2)				40%	24%	14%	11%	11%				
12 Years SL (2)				8%	8%	8%	8%	8%	8%	8%	8%	8%
15 Year MACRS (2)				10%	9%	8%	7%	7%	6%	6%	6%	6%
Taxable Income				**($67,232,216)**	**($38,198,843)**	**($20,743,689)**	**($14,150,780)**	**($14,055,837)**	**$5,458,274**	**$5,283,330**	**$5,102,849**	**$4,916,651**
Tax Benefits/ Costs (3)	**21%**	**($14,945,945)**		**$14,118,765**	**$8,021,757**	**$4,356,175**	**$2,971,664**	**$2,951,726**	**($1,146,237)**	**($1,109,499)**	**($1,071,598)**	**($1,032,497)**
Energy Credit Revenues		**$155,916,362**		**$13,916,902**	**$14,264,824**	**$14,621,445**	**$14,986,981**	**$15,361,655**	**$15,745,697**	**$16,139,339**	**$16,542,823**	**$16,956,393**
Net Income After Tax (4)		**$211,419,632**	**($308,151,608)**	**$44,131,643**	**$38,232,807**	**$34,769,371**	**$33,591,047**	**$33,781,400**	**$29,897,898**	**$30,153,335**	**$30,414,239**	**$30,680,713**
Unlevered After Tax IRR	**6.47%**											

Item	10	11	12	13	14	15	16	17
OVERALL PROJECT ECONOMICS								
Energy Production								
Annual Net Energy Production (mWh)	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441
Energy Sales Revenue								
PPA revenue	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$25,772,040	$0	$0
Merchant Revenue	$0	$0	$0	$0	$0	$0	$26,416,341	$27,076,750
Annual Revenues	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$25,772,040**	**$26,416,341**	**$27,076,750**
Annual Operating Costs								
General & Administrative (G&A)								
Land Leases	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,706,064	$2,773,716	$2,843,059
PTAX	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000
Insurance	$949,136	$972,864	$997,186	$1,022,116	$1,047,668	$1,073,860	$1,100,707	$1,128,224
Other G&A	$661,897	$678,445	$695,406	$712,791	$730,611	$748,876	$767,598	$786,788
Subtotal G&A	$6,417,097	$6,457,373	$6,498,656	$6,540,971	$6,584,343	$6,628,800	$6,742,020	$6,858,071
Operating & Maintenance (O&M)								
Turbine Maintenance	$3,816,113	$3,949,677	$4,087,915	$4,230,992	$4,379,077	$4,532,345	$4,690,977	$4,855,161
Non-Turbine Maintenance	$974,113	$998,466	$1,023,428	$1,049,013	$1,075,239	$1,102,120	$1,129,673	$1,157,914
Subtotal O&M	$4,790,226	$4,948,142	$5,111,343	$5,280,006	$5,454,316	$5,634,464	$5,820,649	$6,013,075
Total Operating Costs	**$11,207,323**	**$11,405,516**	**$11,609,999**	**$11,820,976**	**$12,038,659**	**$12,263,265**	**$12,562,670**	**$12,871,146**
Earnings (EBITDA) (1)	**$14,564,717**	**$14,366,524**	**$14,162,041**	**$13,951,064**	**$13,733,381**	**$13,508,775**	**$13,853,671**	**$14,205,603**
Depreciation	**($9,840,165)**	**($9,840,165)**	**($9,183,786)**	**($1,963,615)**	**($1,963,615)**	**($1,961,910)**		
5 Years MACRS (2)								
12 Years SL (2)	8%	8%	8%					
15 Year MACRS (2)	6%	6%	6%	6%	6%	6%		
Taxable Income	**$4,724,551**	**$4,526,359**	**$4,978,255**	**$11,987,448**	**$11,769,766**	**$11,546,866**	**$13,853,671**	**$14,205,603**
Tax Benefits/ Costs (3)	**($992,156)**	**($950,535)**	**($1,045,434)**	**($2,517,364)**	**($2,471,651)**	**($2,424,842)**	**($2,909,271)**	**($2,983,177)**
Energy Credit Revenues	**$17,380,303**							
Net Income After Tax (4)	**$30,952,864**	**$13,415,989**	**$13,116,608**	**$11,433,700**	**$11,261,730**	**$11,083,934**	**$10,944,400**	**$11,222,427**

Item	18	19	20	21	22	23	24	25
OVERALL PROJECT ECONOMICS								
Energy Production								
Annual Net Energy Production (mWh)	515,441	515,441	515,441	515,441	515,441	515,441	515,441	515,441
Energy Sales Revenue								
PPA revenue	$0	$0	$0	$0	$0	$0	$0	$0
Merchant Revenue	$27,753,668	$28,447,510	$29,158,698	$29,887,665	$30,634,857	$31,400,728	$32,185,746	$32,990,390
Annual Revenues	**$27,753,668**	**$28,447,510**	**$29,158,698**	**$29,887,665**	**$30,634,857**	**$31,400,728**	**$32,185,746**	**$32,990,390**
Annual Operating Costs								
General & Administrative (G&A)								
Land Leases	$2,914,135	$2,986,989	$3,061,663	$3,138,205	$3,216,660	$3,297,076	$3,379,503	$3,463,991
PTAX	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000	$2,100,000
Insurance	$1,156,430	$1,185,341	$1,214,974	$1,245,348	$1,276,482	$1,308,394	$1,341,104	$1,374,632
Other G&A	$806,458	$826,619	$847,285	$868,467	$890,178	$912,433	$935,244	$958,625
Subtotal G&A	$6,977,023	$7,098,948	$7,223,922	$7,352,020	$7,483,321	$7,617,904	$7,755,851	$7,897,247
Operating & Maintenance (O&M)								
Turbine Maintenance	$5,025,092	$5,200,970	$5,383,004	$5,571,409	$5,766,408	$5,968,232	$6,177,121	$6,393,320
Non-Turbine Maintenance	$1,186,862	$1,216,534	$1,246,947	$1,278,121	$1,310,074	$1,342,826	$1,376,396	$1,410,806
Subtotal O&M	$6,211,954	$6,417,504	$6,629,951	$6,849,530	$7,076,482	$7,311,058	$7,553,517	$7,804,126
Total Operating Costs	**$13,188,977**	**$13,516,452**	**$13,853,873**	**$14,201,550**	**$14,559,803**	**$14,928,962**	**$15,309,368**	**$15,701,373**
Earnings (EBITDA) (1)	**$14,564,692**	**$14,931,058**	**$15,304,825**	**$15,686,115**	**$16,075,054**	**$16,471,767**	**$16,876,378**	**$17,289,017**
Taxable Income	**$14,564,692**	**$14,931,058**	**$15,304,825**	**$15,686,115**	**$16,075,054**	**$16,471,767**	**$16,876,378**	**$17,289,017**
Tax Benefits/ Costs (3)	**($3,058,585)**	**($3,135,522)**	**($3,214,013)**	**($3,294,084)**	**($3,375,761)**	**($3,459,071)**	**($3,544,039)**	**($3,630,693)**
Net Income After Tax (4)	**$11,506,106**	**$11,795,536**	**$12,090,812**	**$12,392,031**	**$12,699,293**	**$13,012,696**	**$13,332,339**	**$13,658,323**

(1) EBITDA = Earnings before taxes, depreciation, and amortization. Total Revenues minus Operating Costs minus Project Development Costs
(2) IRS-established depreciation rates.
(3) Potential tax benefits/ costs equal federal corporate tax multiplied by taxable income. When postive, the owner of the wind farm can offset other tax liabilities, thereby obtaining a positive tax benefit.
(4) Net After Tax Income = Earnings (EBITA) plus Tax Savings plus Energy Credit Revenues.

Sources: Terra-Gen; Economic & Planning Systems, Inc.

North Coast Regional Water Quality Control Board

November 21, 2019

Mr. Michael Richardson
Director of Scotia Cogeneration Operations
Humboldt Redwood Company
P.O. Box 37
Scotia, CA 95565
MRichardson@hrcllc.com

Dear Mr. Richardson:

The Humboldt Sawmill Company (HSC) is currently regulated by the North Coast Regional Water Quality Control Board (Regional Water Board) under Waste Discharge Requirements, Order No. R1-2012-0065 (2012 Permit). The 2012 Permit also serves as a National Pollutant Discharge Elimination System (NPDES) permit (NPDES No. CA0006017). The 2012 Permit includes Discharge Prohibitions and Reclamation Specifications (Recycled Water). The 2012 Permit is set to be renewed in 2020. Re-use of industrial process water for the uses described in the Humboldt Wind Energy Project EIR documents was not indicated in the in submitted application for renewal of the 2012 Permit receive by Regional Water Board staff.

Regional Water Board staff have reviewed the Final Environmental Impact Report (FEIR) for the Humboldt Wind Energy Project and we have concerns regarding the proposed use of industrial process water from the Scotia Cogeneration Plant, which is part of the HSC facility, for "dust suppression, backfill compaction, and cement mixing."

Section 2.3.16 (Water Supply and Usage) of the Humboldt Wind Energy Project FEIR, Revisions to the Draft Environmental Impact Report (DEIR), states, *"Most of the project's water use would occur during the construction phase for dust suppression, backfill compaction, and cement mixing. These activities are expected to require 62 acre-feet of water over the duration of construction. This water demand would be met by the use of water sourced from the nearby Scotia Community Services District's ~~wastewater treatment and cogeneration facilities~~ and from HRC <u>who would sell the water before</u> it discharges into the "Log Pond" located in the town of Scotia. Potable water required at the O&M building would be provided by a groundwater well."*

Section 3.8 of the DEIR has been revised in the Final EIR to state, *"An estimated 62 acre-feet of water would be required for construction-related activities. Most of this water would be used during construction of wind turbines, transmission lines, the project substation, and related facilities; for dust suppression; for compaction of soil backfill;*

and for manufacture of concrete. Construction-related water demands would be met by water ~~treated wastewater discharged from the Scotia Community Services District's wastewater treatment facility to~~ Humboldt Redwood Company's purchased by HRC from the Scotia potable water supply for use in the HRC cooling towers of the cogeneration plant. HRC discharges this water into the Log Pond. Under an arrangement with HRC, the applicant will collect water before it is discharged into the Log Pond. This water, prior to discharge into the Log Pond, is the property of HRC who has rights to the use of this water and can sell the water for use in the proposed project. (Pers. communication, Dennis Thibeault, Humboldt Redwood Company, L.L.C., June 25, 2019). ~~Treated effluent~~ Water would be delivered to the project site via water truck. The use of water to meet the demands for project construction, therefore, would not constitute a groundwater extraction or a surface water diversion."

Although the 2012 Permit authorizes the use of secondary treated effluent from the Log Pond for use on HRC Sawmill property for dust suppression, there is no authorization for the use of untreated industrial process water for the proposed uses listed in the Humboldt Wind Energy Project (dust suppression, backfill compactions, and cement mixing). The 2012 Permit also includes prohibitions (Discharge Prohibitions III.E, III.I and III.J) that would prohibit the proposed uses listed above.

As a technical matter, the proposed uses of untreated industrial process water raise a number of water quality concerns related to the presence and potential discharge of metals such as chromium, zinc and chlorine. The water quality concerns are related to threats to surface water from potential process water runoff, threats to soil contamination and ground water impacts from the percolation of process water. It also raises regulatory issues as recycled water use requires that the water is first treated to the equivalent of tertiary treatment and must be properly permitted and monitored to evaluate impacts to surface and ground water.

Thank you for your consideration of these comments. If you have any questions, please contact Justin McSmith at 707-576-2082 or at Justin.McSmith@waterboards.ca.gov.

Sincerely,

Justin McSmith

Justin McSmith
Water Resource Control Engineer

191121_JM_er_Humboldt Wind Energy Project Use of Cooling Tower Water

Certified-Return Receipt Requested

cc: Frank Bacik, Town of Scotia, fbacik@townofscotia.com
Leslie Marshall, General Manager Scotia CSD, infoscotiacsd@gmail.com
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From: Matthew Marshall <MMarshall@redwoodenergy.org>

Sent: Thursday, November 21, 2019 11:32:55 AM

To: Ford, John <JFord@co.humboldt.ca.us>; noah@landwaterconsulting.com <noah@landwaterconsulting.com>

Cc: Richard Engel <REngel@redwoodenergy.org>

Subject: Terra-Gen power price with RCEA

Hello John and Noah,

I wanted to address an items related to RCEA that as I understand it has come up in the discussions about the Terra Gen project, the idea of RCEA paying for increased environmental mitigation, which would have to be in the form of an increase to the power purchase agreement (PPA) price we would be paying Terra-Gen.

We conducted a competitive RFP process and have spent many months negotiating the PPA, and that processes is now wrapping up and the PPA is scheduled to go to the RCEA Board for their final consideration on December 19th -- reopening the PPA and adjusting the price at this stage would not be ideal. If the cost increase for additional mitigation are reasonable then it wouldn't be a big deal to adjust the price slightly, but if that is the case it seems like Terra-Gen should cover it at the price we've agreed to -- I'm confident an experienced developer such as Terra-Gen has built contingencies into the price they bid to have some wiggle room for this sort of thing. My understanding is that Terra-Gen believes it can implement adequate environmental mitigations at the price they bid.

Conversely if the cost/price increase would have to be significant, that would mean we are making a significant adjustment to one of the fundamental factors that resulted in Terra-Gen's selection through our RFP process. The project will meet a major part of the county's electricity load, and the current price results in tangible cost savings compared to what RCEA is currently paying for non-local renewable energy--changing the PPA price would impact that cost savings (even an increase of couple dollars equates to an RCEA cost increase of over half a million dollars per year for 15 years, which is not trivial). We are also not going to be the only off-taker buying power from the project, so their pricing for the project overall will need to remain cost-competitive in the larger market regardless of what RCEA may be will to pay. But that said, while "moving the goal" on the PPA now would be problematic, we would want the project to move forward in the best possible way and if the County determines that (now or in the future) additional mitigations are required that are not economically feasible within the current PPA terms we would want to have a chance to revisit those terms and see what we could potentially make work.

Hopefully this is helpful background on this topic; please just let me know if I can provide any additional information.

Thank you,
Matthew

Matthew Marshall
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