

McNamara, Cade

From: jcschaef@igc.org
Sent: Thursday, February 17, 2022 10:53 AM
To: CEQAResponses
Subject: commets on Nordic Aquafarms Land-Based Aquaculture Project
Attachments: comments on Nordic Aquafarms.docx

The attachment is my set of formal comments. They are copied below.

1734 Roberts Way, Arcata CA 95521
February 17, 2022
Planning Director John Ford
Humboldt County Planning & Building Department
3015 H Street
Eureka, CA 95501
CEQAResponses@co.humboldt.ca.us

Dear Planning Director Ford:

I am pleased to submit for your consideration the following commentary on Nordic Aquafarm's (NA's) Draft Environmental Impact Statement (DEIR).

After a lifetime of work in energy, I believe my background is appropriate to comment. I have over four decades of engineering experience, including since 1976 renewable energy and electric power. Clients and employers include utilities (Nevada Power Company, City of Palo Alto Utilities, Bolivian National Electric Company, PG&E, Cleveland Electric Illuminating Company), equipment and power plant developers (Cummins Power Generation, Aisin Seiki, and Stirling Energy Systems), government agencies (Minnesota Legislature, Nevada Legislature, State of Hawaii, United Nations, and Interamerican Development Bank), and the Electric Power Research Institute. I have taught engineering at the University of El Salvador, San Jose State, and Stanford, and I hold degrees from Stanford, MIT, and Oberlin.

I see no insoluble issues in the DEIR, and I think NA is an excellent opportunity for Humboldt.

I support comments from the team of Northcoast Environmental Center, CRTP, Baykeepers, EPIC, and Humboldt 350. But beyond their comments I want to expand somewhat and suggest a broader perspective than normal practice in DEIR commentary.

The enormity of the climate problem in the world and in the county requires such a broader perspective. Albert Einstein is quoted, "We cannot solve our problems with the same kind of thinking we used when we created them." That certainly applies to the climate and as it turns out, equally to Humboldt County's energy situation.

The bottom line is that the county can help both itself and Nordic Aquafarms (NA) to meet future electricity needs if it is willing to seriously address its own energy needs. That is, if we address the county's problem which we must do, then we can certainly support NA's energy needs too. I realize this consideration is beyond what the Planning Department normally does.

NA's energy demands are substantial. Observers note that the PV array proposed for the facility can supply only a small portion of NA's anticipated daytime energy needs, and none of its nighttime needs. Most of its electricity will come from the grid. If NA purchases its electricity from RCEA, which is committed to 100% renewable energy by 2025, then in theory all its needs would be provided from renewable sources.

Thus, I hope that NA will commit to 100% renewable electricity from RCEA.

However, there is a caveat that presents a win-win opportunity. NA's total electricity requirements are estimated to be 195 GWh per year by 2030, an increase of about a quarter beyond the county's current electricity consumption. As of 2020 PG&E's diesel plant, Humboldt Bay Generating Station (HBGS), generated about 484 GWh per year, virtually all of which is physically delivered to Humboldt County loads; hardly any is exported from the county.

To reduce greenhouse gases, many California cities, including Arcata, plan to shift natural gas usage to electricity. Over the next decade, this will require additional electric generating capacity.

Absent other local sources, the shift away from natural gas and NA's usage will cause HBGS's generation level to increase, even if in theory RCEA provides "all renewable electricity" because:

There is currently insufficient renewable electric capacity within the county to supply all of RCEA's existing or future loads; Transmission capacity from the Central Valley is insufficient to provide imports to supply all the county's needs, whether renewable or not; and The only other major Humboldt County generation sources so far are HBGS and Humboldt Redwood, along with an unknown but insufficient amount of solar.

Thus, Humboldt County will burn more fossil fuel even if NA commits to 100% renewable electricity from RCEA. Moreover, as cities and the county shift to electricity for energy demands now met with natural gas, more of that electricity will be supplied by HBGS. Humboldt's gas consumption of 29.3 million therms is the equivalent of 879 GWh, more than four times NA's consumption.

Looking forward, Humboldt needs to supply at least 879+195 additional GWh by the time all household consumption is electric, not counting additional electricity to charge electric cars.

With a broader perspective, the win-win solution to this dilemma can only be facilitated by the county and not by NA. NA doesn't generate electricity; they raise fish. The win-win solution is to provide the county's needs with RCEA, which can address NA's needs too.

Within perhaps five years proven wind technology could be installed, but only if the county is willing to accept wind turbines close to shore—or perhaps on the peninsula itself. Given the Terra-Gen history this is the major challenge to being electrically self-sufficient.

RCEA has suggested the use of floating offshore wind, which would be mostly out of sight from Humboldt shores. European tests are now under way to determine whether this largely unproven technology is economically and technically feasible. Perhaps it will be, but it'll be years before feasibility can be proven, and at least a decade before it could be implemented here. Moreover, even if feasible there are offshore sites in Monterey and San Luis Obispo counties that are more economic because they already have transmission capacity that Humboldt does not.

Fixed bottom offshore wind, as opposed to floating offshore wind, is proven economic and feasible in thousands of European installations. Because our shore drops off precipitously fixed bottom turbines could be installed only within a mile or so from shore. There are even a few new installations off the coast of New England, where objections about how they'd change the ocean view have finally been overcome.

In summary, I hope the county will consider a broader win-win broader perspective with wind turbines that provide pollution-free electricity to NA and to the rest of the county as well.

Sincerely,

John Schaefer PhD

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The bottom line is that the county can help both itself and Nordic Aquafarms (NA) to meet future electricity needs if it is willing to seriously address its own energy needs. That is, if we address the county's problem which we must do, then we can certainly support NA's energy needs too. I realize this consideration is beyond what the Planning Department normally does.

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Absent other local sources, the shift away from natural gas and NA's usage will cause HBGS's generation level to increase, even if in theory RCEA provides "all renewable electricity"¹ because:

1. There is currently insufficient renewable electric capacity within the county to supply all of RCEA's existing or future loads;
2. Transmission capacity from the Central Valley is insufficient to provide imports to supply all the county's needs, whether renewable or not; and
3. The only other major Humboldt County generation sources so far are HBGS and Humboldt Redwood, along with an unknown but insufficient amount of solar.

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¹ Much of RCEA's renewable electricity is generated outside the county and can't be delivered physically to us because of limited transmission. Those sources do reduce California's natural fossil powered electricity.

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