

Name of Co: Bodega Algae LLC

Technology on which company is based: Algal photobioreactors for waste remediation and algal biofuels.

Funding Stage: Seed

Business and Business Model

1. **Inception:** Spring 2007

2. **Value Proposition:** Bodega Algae is the developer of efficient scalable photobioreactors (PBRs) whose patented light-guiding optics address critical pain points in industry and science. The unique optical technology solves three technical challenges that have prevented the realization of the advantages of algae as a feedstock for biofuel and greenhouse gas remediation:

- Culture density
- Light Penetration
- Doubling time

The proprietary low-cost lighting technology developed by Bodega Algae overcomes these problems by delivering solar energy internally within the photobioreactor.

3. **Current Structure:** LLC, ownership is controlled by four founders.

4. **General Description:** Bodega develops and sells photobioreactors for existing algae cultivation markets while improving the company's technology for further sales growth in developing markets of algal waste remediation and algal biofuels. Revenue will come from initial photobioreactor sales, service contracts, licensing, and biomass sales.

Product

1. **Product:** Bodega Algae's primary product is a self-contained algae photo bioreactor. The product utilizes proprietary optics to offer efficient, cost effective cultivation of micro algae on a small footprint. A phased product rollout strategy ensures that the technology responds to the needs of the market.

2. **Function and Benefit:** Bodega serves several existing and future algal cultivation markets. For example, for customers in aquaculture, the Bodega photobioreactor allows more real-estate to be dedicated to aquaculture finfish/shellfish growth than to algal feed cultivation while keeping annual operating costs low. Customers in waste remediation and algal biofuels will see a decrease in land-size and an increase in cultivation volumes with a minimum increase in capital and operating expenses.

3. **Development Stage:** The current photobioreactor is a fully tested prototype that is in preparation for several pilots at the Massachusetts Military Reservation in addition to landfill gas to energy sites in New York and in New Hampshire.

Competitive Position

1. **Competitors:** Bodega faces two distinct sources of competition:

- Market competition with other algae companies with optically enhanced PBRs
- Technology competition from algae companies with comparable technology and applications.

Current competitors include Bionavitas, Origin Oil, and Sapphire.

2. **Edge over competition:** Bodega has several competitive advantages that distinguish the company and will drive it to success:

- Cost & Market
- Technology
- Design Simplicity & Adaptability
- Tools & Complementation to Existing Cultivation Technologies.

3. **Sustainability:** Bodega's competitive position is sustainable due the nature of our market execution and our technology rollout which will include varying sized PBRs that perform best for the given market. Additionally, the team has core expertise in optics, algal bio-chemistry, and large scale manufacturing techniques that allow the company to quickly innovate and address the problems of the industry.

4. **IP Protection:** Our technology is currently under patent protection and we are constantly submitting new provisional patents on continued technology improvements and discoveries.

Markets

1. **Target Market:** Within the pre-existing algae industry there is a readily addressable market for algae cultivation technology that can be exploited by Bodega.

- Aquaculture feed products sold in the US represent over a \$1B market with more than 80% of this feed for food fish and mollusks.
- Nutraceutical products incorporate algae due to the essential fatty acids (EPA and DHA) they contain. The global algae nutraceutical market is estimated to be \$1.25-2.5B.[2]
- Algae as alternative high-grade protein and starch source in animal feed. The world animal feed additives market is estimated to reach \$15B by 2010 with the current US market at \$3.9B.

In the longer term, the development of algae for wastewater treatment (\$1.3B Est. Market), GHG mitigation (\$20B Est. Market) and biofuel (\$25B Est. Market) represent significant market opportunities. These markets are in nascent or very early stages currently but are predicted to increase significantly in the coming years.

2. **Barriers to Entry:** The key market barriers to existing markets will include long term service contracts and intellectual property development. Other key barriers include reduced capital and operational expenditures, plug-and-play installation and service, and technology licenses.

Customers

Customers are the key to strong profits. Who are the specific customers that you are pursuing or will pursue? Specific customers in aquaculture include GreatBay Aquaculture (MA) and Aquacultural Research Corporation (MA). Initial waste remediation customers include Innovative Energy Systems (NY) and Waste Management for landfill gas to energy installations and Energy Management Inc. (MA) for biomass fired power plants.

Do you have any letters of intent to purchase? Yes, we have letters of intent to purchase from a) Bigelow Laboratories (ME), b) Waltham Technologies (MA), and c) Energy Management Inc. (MA)

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