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Seagoing Algae Biorefinery

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Algae is a proven natural resource
Problem: Scarcity

Algae fuels: Solazyme, Neste
Algae bioplastic: Algix Inc
Algae feeds: LiveFuels Inc
Algae fertilizer: IOSI Inc

Terrestrial algae production is currently cost prohibitive for commodities production

- >500% reduction in production cost required for price parity with petroleum-based products
- Cost drivers: fertilizer, land, water, separations
- Algae industry is currently supported by EERE

A larger problem contains the solution

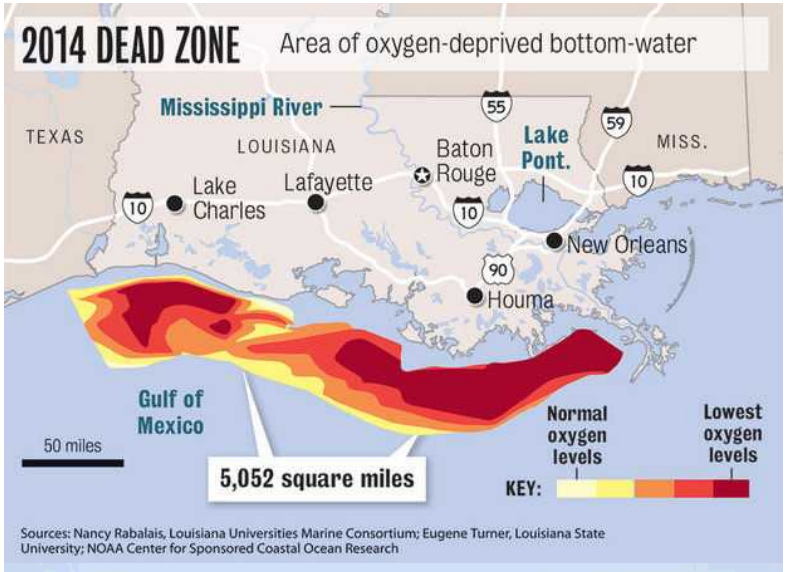
- Algae-induced aquatic Hypoxia: **"Dead Zones"**
  >600 confirmed algal-bloom induced dead zones world-wide, up ~800% since 70's
- Gulf of Mexico dead zone **costs US seafood and tourism industries >$80M annually**
- Cost for prevention: $2.7B annually

Why: Fertilizer Runoff (non-point source ag.)

Algae Bloom

Eutrophication
(algae decomposition)

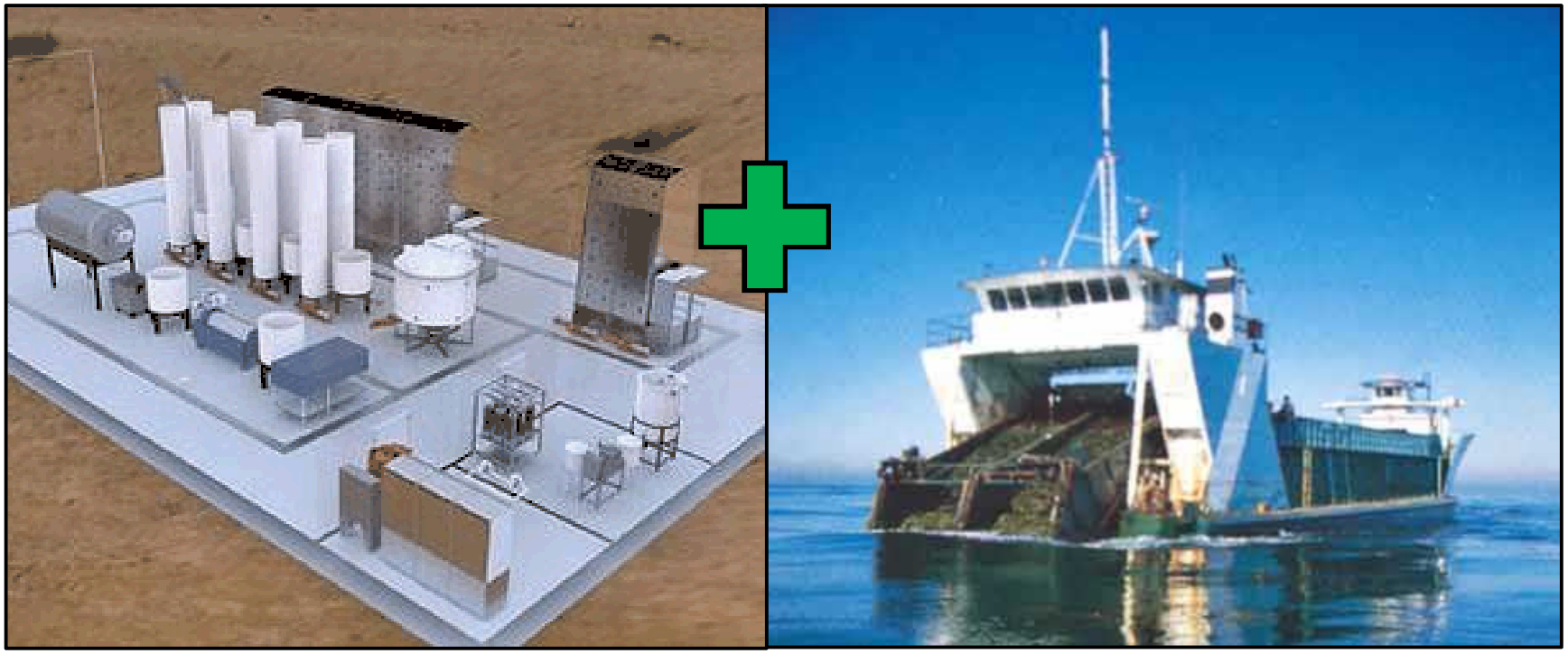
Hypoxia



Customer Segments

- Cost sensitivity of commodities is the major hurdle: follow the course established by the solar/wind industries
- Current algae production & manufacturing are supported by federal sponsors, incl. DOE-EERE, DOD
- Early adopters: "Green" shoppers, entities with sustainability focus
- Reap benefits of emerging carbon trading markets

Solution: Seagoing Algae Biorefinery



Integrated sea-born harvesting & bioprocessing to capture resource viability window at the source

Unique Value Proposition

- Brings manufacturing of algae commodities to the readily-available resource
- Regulatory hurdles are minimal because technology will combat important environmental & ecological problem (Dead Zones)
- No infrastructural modification required: Products are “drop-in” replacements for non-sustainable feedstocks, e.g. petroleum, fish meal, etc.
- Transformative approach for efficient adoption of algae products

PROBLEM

- Resource scarcity
- Resource viability window

Existing alternatives
Non-sustainable, petroleum-based

SOLUTION

Seagoing algae biorefinery

KEY METRICS

Bioproduct yields

Biomass capacity

UNIQUE VALUE PROP

Brings production to the resource

No current competition for resource

Get paid at both ends: take out the trash and make it into gold.

UNFAIR ADVANTAGE

IP for integrated conversion of algae into various products

CHANNELS

Refiners, building materials

CUSTOMER SEGMENTS

List your target customers and users

Early adopters
Sustainability-focused, consumers of home-grown commodities

COST STRUCTURE

Fixed costs: Shipbuilding and processing reactors integration

REVENUE

Bio-based commodities: feeds, fuels, materials
Environmental clean-up credits