



A Biotech Company
Replacing Petrochemicals with Green Chemistry

January 2024

Opportunity



Problem

- More than 2/3 of Fortune 500 companies have carbon reduction goals.
- Renewable energy and biorenewable/recycled waste packaging only gets them so far!

Need

- Product ingredients must also change!

Solution

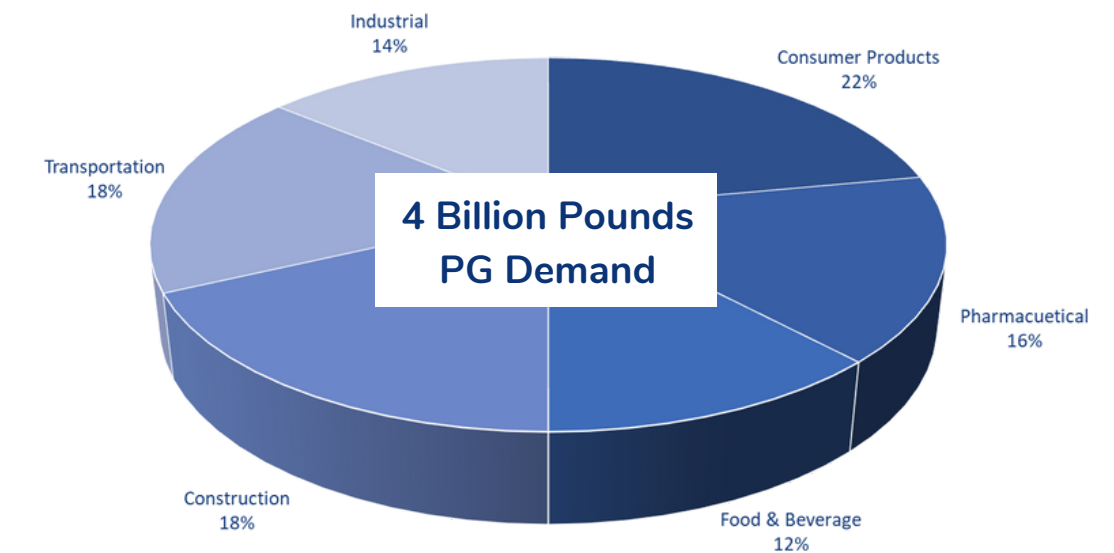
- Sustainable, biorenewable chemicals that are a drop-in replacement for petrochemicals with no increase in cost!

First Product



Biorenewable Propylene Glycol (“Bio-PG”)

- Used as a solvent, humectant, freeze point depressant and more.
- Global market & established demand ~USD \$3.5billion/year
- Everyone has used or consumed propylene glycol.



Feedstock

- Propylene Glycol (“PG”) is traditionally made from petroleum.
- Ayas’ feedstock is glycerin.
- Glycerin is produced when you split a fat (vegetable or animal).
- 60% from biodiesel, 40% from soap manufacturing & oleochemicals.



550M lbs
of glycerin went to
disposable applications in
the USA in 2022.

320M lbs
of Ayas Bio-PG could have
been produced with the
disposed glycerin.



4,000,000,000 pounds

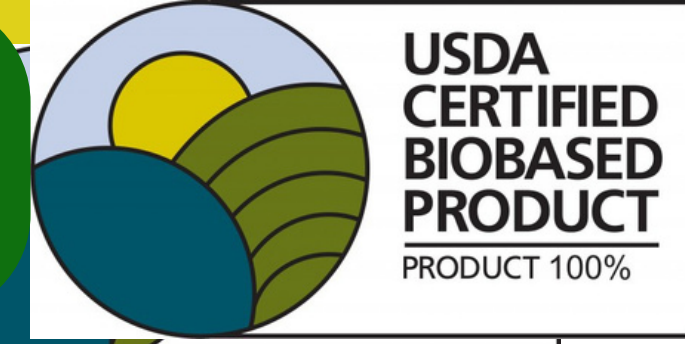
Propylene Glycol, our 1st product to market, is one the world's most versatile chemicals and is traditionally produced from petroleum using outdated and extremely polluting technology.

USP Pharma Grade PG



Industrial Grade PG (< 99.5%)
US Pharma Grade PG (99.5-99.8%)
Ayas Bio-PG @ 99.9% purity

Industrial Grade PG



Industrial Grade PG (< 99.5%)
US Pharma Grade PG (99.5-99.8%)
Ayas Bio-PG @ 99.9% purity

Competitive Advantage



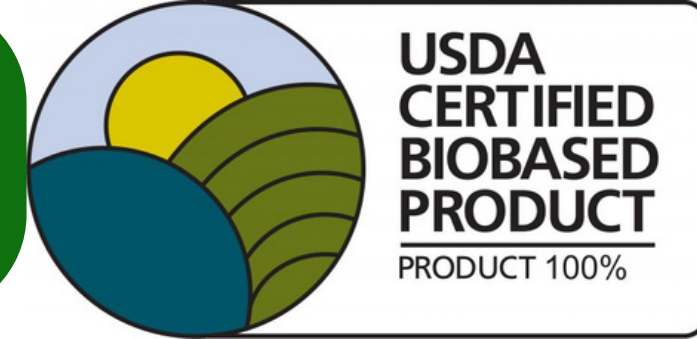
Proprietary Process

- 2nd Generation Proprietary Vapor Process
- Co-Founder, Dr. William Sutterlin, invented and won US Presidential Green Chemistry Award

Advantages

- True Drop-in Replacement for Petrochemical
- 100% USDA Certified Biobased Products
- Leading Market Purity @ 99.9%
- Sustainable Carbon Reduction
 - 79% Base Carbon Reduction
 - 92% Reduction with Renewable Natural Gas & Green Hydrogen
- Green Alternative at Cost Parity with Petroleum Propylene Glycol ("Petro-PG")
 - Does not require carbon credit or green premium to match Petro-PG price!
 - We of course expect to realize carbon credit and green premium value. We just do not depend on it!

**Ayas 1st Plant
(<3% of market)
to reduce carbon
by a minimum
332,000 tons/year!**



“

Ayas offers the FIRST renewable product that we've found that does not require a change in our process or cost more!

Fortune 500 CTO

Bio-PG Process



1

Clean and Vaporize

We take a variety of crude glycerin types, recover saleable coproducts, remove contaminants and vaporize it.

2

Proprietary Reaction

In a single step, the vapor phase glycerin is fed into our multi-tube-in-shell reactor which converts glycerin into Bio-PG.

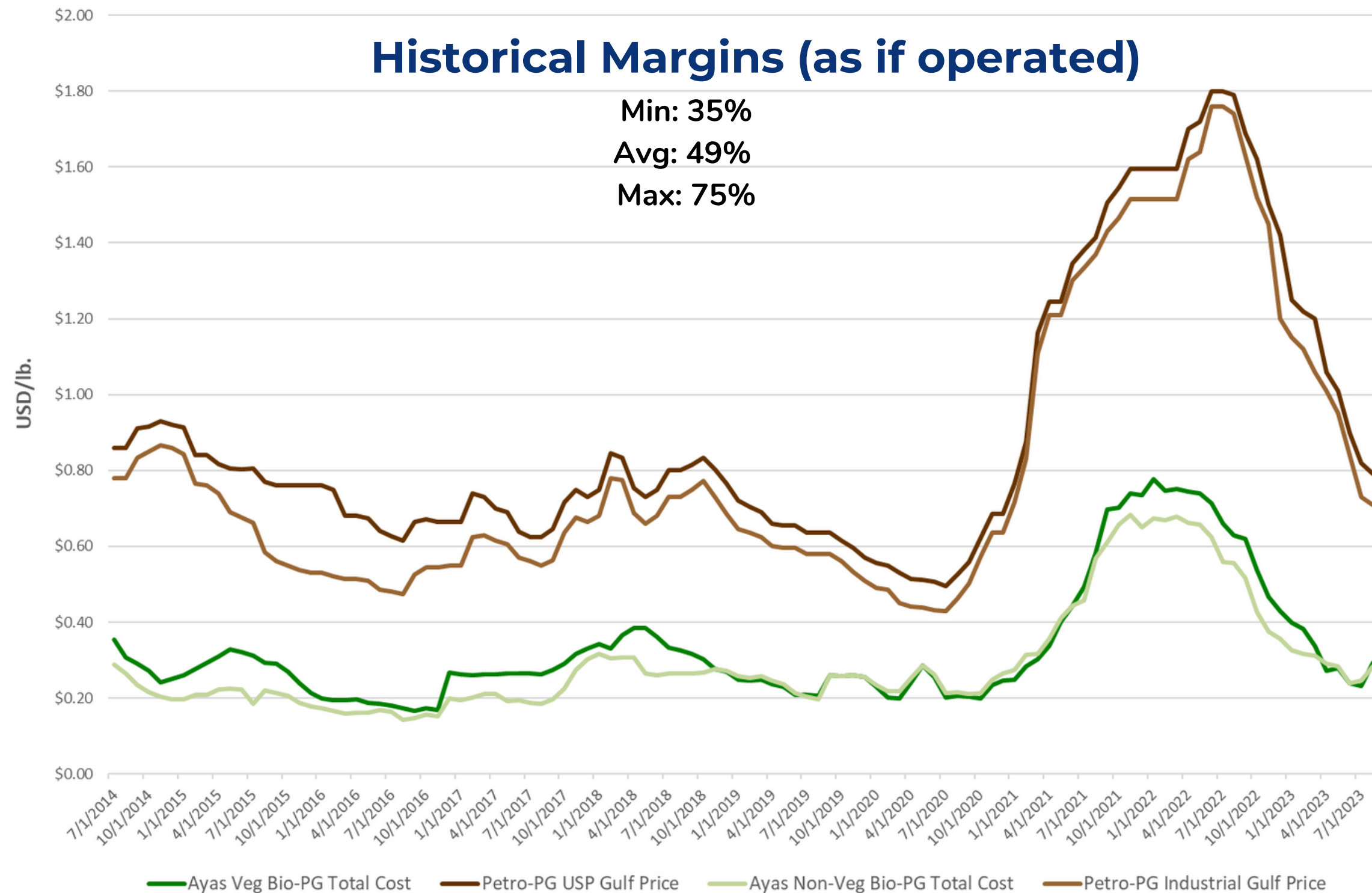
Distillation

We distill our reactor product to remove residual glycerin and water resulting in a 99.9% Pharma Grade PG.

Ayas Process Advantages

- **Low Scale-Up Risk**
To increase capacity, we just add tubes
- **Low CAPEX**
Off the shelf materials, No exotic catalyst
- **Low OPEX**
Efficient single-step low pressure, low temp
- **Low Clean-up**
Vapor phase for high selectivity/conversion.

Stress Tested



May 2020 was Black Swan Event & Greatest Test of Our Model

- Negative Oil Price
- Glycerin used in hand sanitizers
- Glycerin producers shut down

Graph uses Ayas' process mass balances and “month-to-month” third party reported values for glycerin, petro-propylene glycol, process inputs (gas, electricity, etc.), utility agreements (H2), site lease, shared services, and labor and other costs adjusted for inflation as reported and available through September 30, 2023.

September 2023

\$1654 Avg. Petro-PG \$/mt (FOB Gulf)

\$665 Ayas Bio-PG Cost \$/mt (FOB Gulf)

Additional Products



Biorenewable Chemicals

- Biorenewable Hydroxyacetone (dying agent)
- Biorenewable Dihydroxyacetone (self tanning active ingredient)
- Biorenewable Dipropylene Glycol (deoderants, lotions, etc.)

Downstream

- Sustainable Aircraft Deicing Fluid (“ADF”)
 - Our CEO, Joe McGrail, previously built largest ADF company in USA.
 - ADF is up to 88% PG
 - Planes cannot fly in the winter without it!
 - ADF is 2nd largest opportunity for airlines to reduce carbon.
- Sustainable Heat Transfer Fluids (“HTF”) - Up to 99% PG.
- Sustainable Electric Vehicle Fluids (“EVF”) - Can replace ethylene glycol around EV battery.
- Glycerin Removal for HVO Processes (“GRT”) - Can improve SAF economics!



Team



Joe McGrail

Bought and sold billions of pounds of PG



David Malone

Serial Entrepreneur with private equity experience



Rusty Sutterlin, Ph.D.

Won the US Presidential Green Chemistry Award for our technology



Mark Tegen

Co-founder with oleochemical and patent expertise



Ryan Long

Experienced Chemical Engineer R&D from pilot to commercial



Juan C Chedrauy

Biodiesel and feedstock experience with career in LATAM

We're industry experts, geeks, closers and hustlers. We're passionate about chemistry, climate change and about building things.

We founded Ayas knowing that there would be unsurmountable challenges, but we've done this before and have succeeded.

Billions of pounds of chemicals... made from oil.

We are about to change that!

Next Steps



Bio-PG Commercial Ready

- Demo Plant running
- Samples available
- Independent engineering reviewed
- FEL-2 engineering completed
- >\$100 million in signed purchase orders with Fortune 500
- Marathon Capital, Piper Sandler & Baker McKenzie Engaged

Paths to Commercialization

- License technology
- Build and operate plant



Grow Business

- New hires to work on additional products (including HA, DHA, DPG, ADF, HTF, EVF, GRT)
- Apply for ADF certification or JV/acquire ADF company
- Marketing & business development

Series A Raise

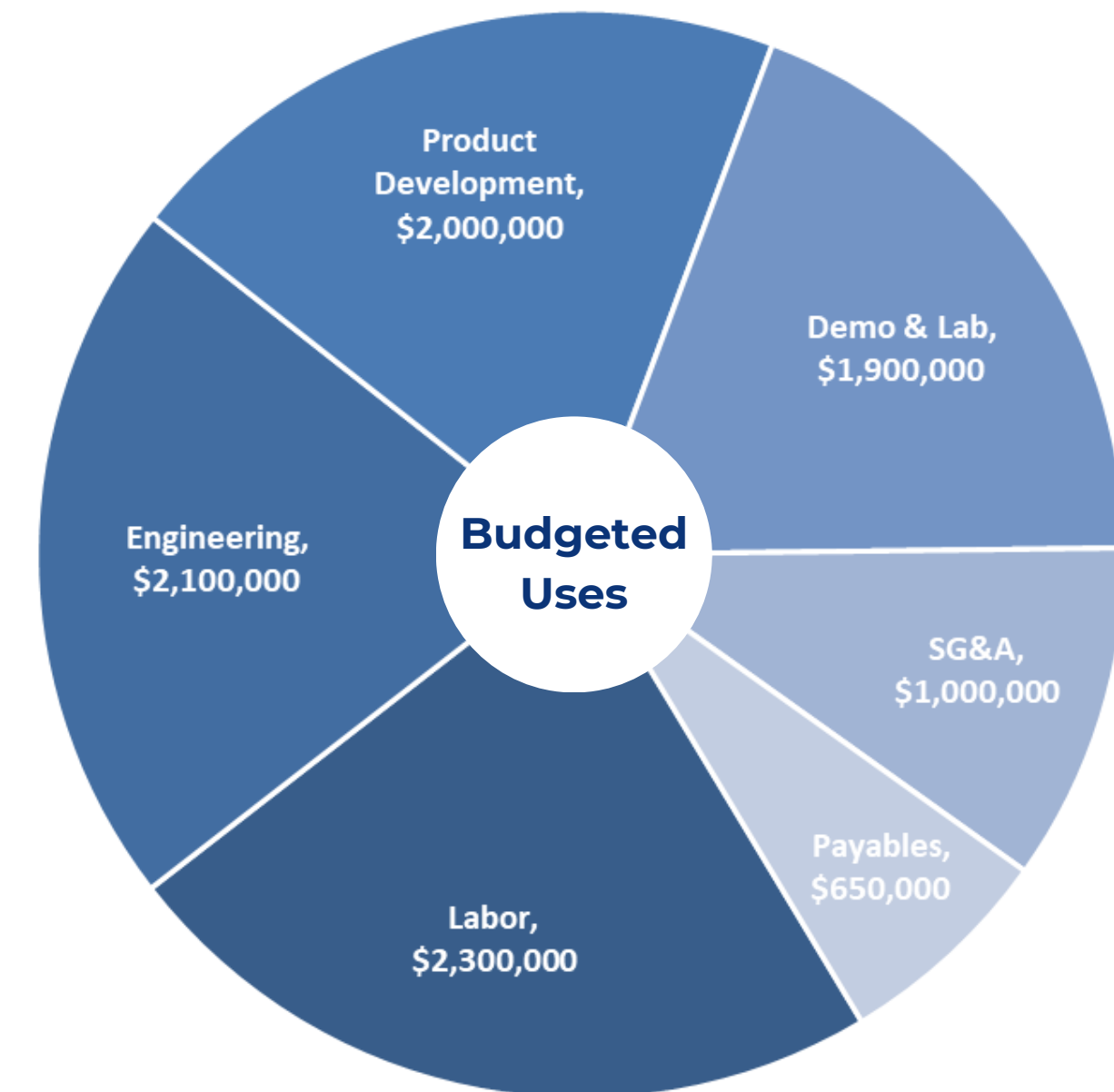


Preferred Equity Offering: \$10 million

- Founders and management hold common stock
- Fully Diluted Pre-Money Valuation:
 - \$30.3 million excluding convertible notes
 - Approximately \$45mil including convertible notes
- \$8.5 million raised to date in form of convertible notes
 - Convert into preferred equity at first close of Series A
- Possibly only equity offering at Ayas Renewables, Inc.
- Plant project finance to be at Plant Co. (SPV)
- Marathon Capital, Piper Sandler & Baker McKenzie engaged

Strategic Anchor Investors Receive

- Drop-in Biorenewable Chemicals
- Advancement toward Carbon Zero Goals
- Competitive Prices with No Green Premium
- Security of Supply
- First Right of Refusal



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