



Sapphire Energy™

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Sapphire Energy Inc.

July 10, 2012

SAPPHIRE PROPRIETARY

World-scale, high-margin production of the most valuable commodity: crude oil

Sapphire creates crude oil from CO₂ and sunlight

- Addressable markets are **over \$3 trillion** and span multiple product segments
- Sapphire has developed a fully-integrated, proven, high-yield, scalable, **outdoor, open pond algae oil production system**
- Sapphire has **raised over \$340 million** from private investors and non-dilutive U.S. Government funding

Sapphire corporate and technological advantages

- **Proven quality of algae fuels** via use in aircraft and automobiles
- **Advanced technology**, deployed in the field
- **Fully-integrated R&D asset pipeline**, including a pilot facility and an integrated algal oil production facility
- **Most extensive experience** in cultivating algae and operating algal oil production systems, with over 180,000 hours of piloting large ponds
- Ability to produce **genetic traits for use in crops**, enabling high-margin, scalable, unique alternative revenue streams
- **Partnership with Monsanto** for enhanced crops
- **Partnership with Linde** for CO₂ systems
- **Industry-leading patent portfolio**
- **World class management team**



San Diego R&D facility



Las Cruces pilot facility

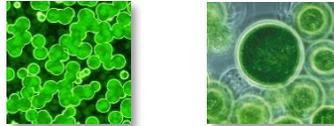


Commercial demonstration facility

Sapphire has developed processes and expertise in each part of the value chain to produce algae oil reliably and at low cost

Sapphire advantages

Strain creation



- High speed screening and selection: millions of organisms
- Protected by Sapphire patents
- Advanced strains that are fit-for-purpose

Cultivation



- Low cost and scalable open pond system
- Robust crop protection methods to maximize algae biomass yield

Harvesting



- Low cost and scalable harvest system using existing world-scale technology
- Concentrates the algae biomass solids for extraction

Extraction & processing



- Low cost and scalable extraction system
- Protected by Sapphire patents
- Greatly increases oil yield and improves oil quality
- Technology enables additional strains to be used, including some previously not thought to be viable

Sapphire has the most experience with large-scale production of photosynthetic algae

Pilot technology facility

- **22-acre pilot facility** operated since 2009
- Over **180,000 hours** of large pond cultivation piloting

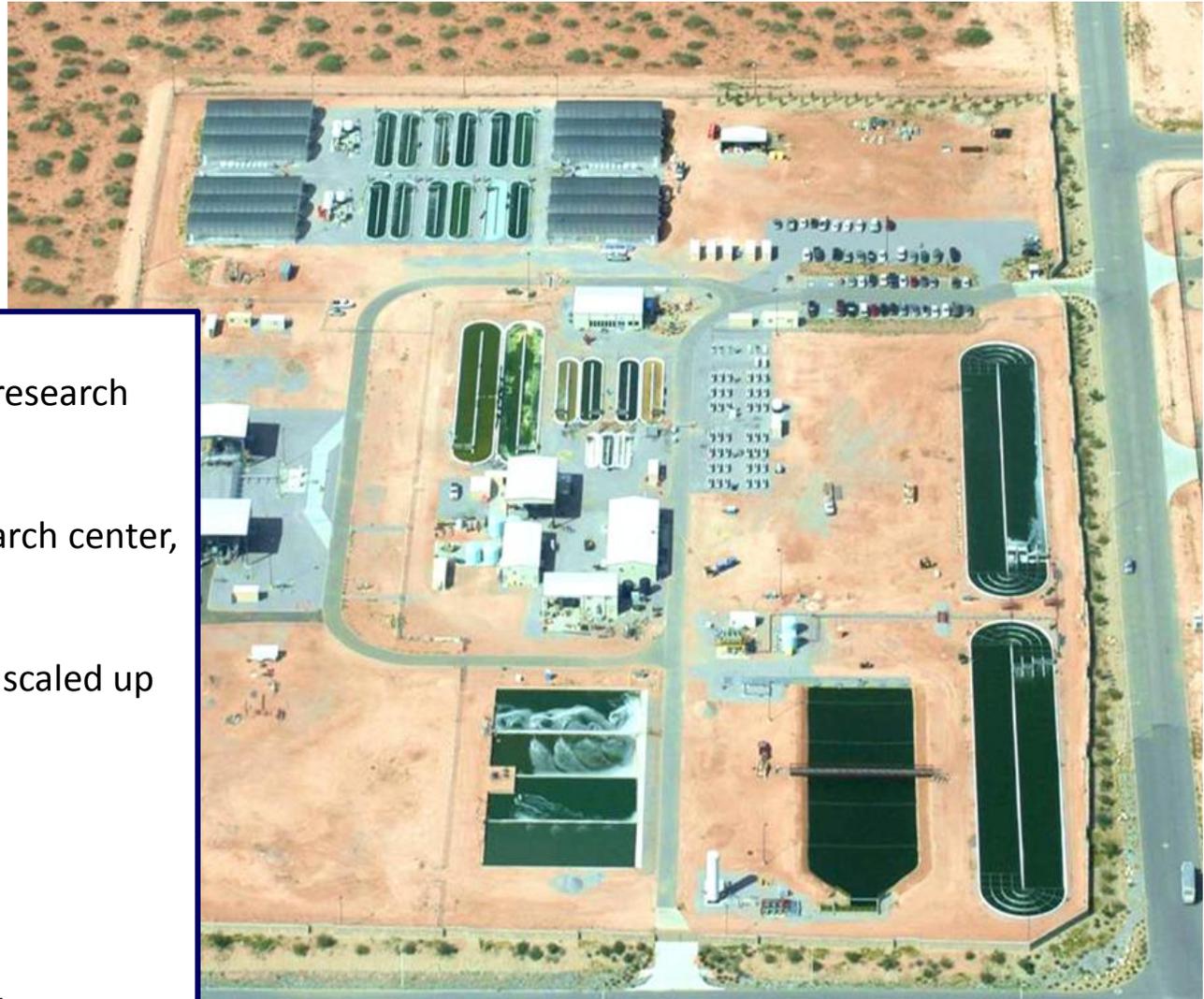


Commercial demonstration facility

- Sapphire is currently finishing construction of the **world's first integrated algal-oil production facility**
- Operations will begin in Q2/Q3 2012
- First Commercial design complete in 2015/ construction begins 2016



Las Cruces Test and Development Center



Las Cruces, NM

- Most sophisticated algae research center of its kind
- Developed a 22 acre research center, akin to an algae plot farm
- All unit operations can be scaled up
 - Biology
 - Cultivation
 - Harvest
 - DAF
 - Extraction PDU
- Permit requirements and Issues

Las Cruces Test and Development Center

Columbus, NM

- IABR – USDOE IBR EERE and USDA RD
- Phase 1
 - Started on June 1 2011
 - Completed Construction June 8, 2012
- Milestones
 - 100 acres of 1.1 and 2.2 acre ponds
 - 20 acres in production during 6 month shakedown
 - Fall strain transition to almost 100 acres
- Permit requirements and Issues



Sapphire's oil is refinable into drop-in fuels using conventional refining technology, requiring no change in infrastructure

Jet fuel

Two test flights: Continental Airlines 737-800 (Houston) and Japan Airlines 747-300 (Tokyo)

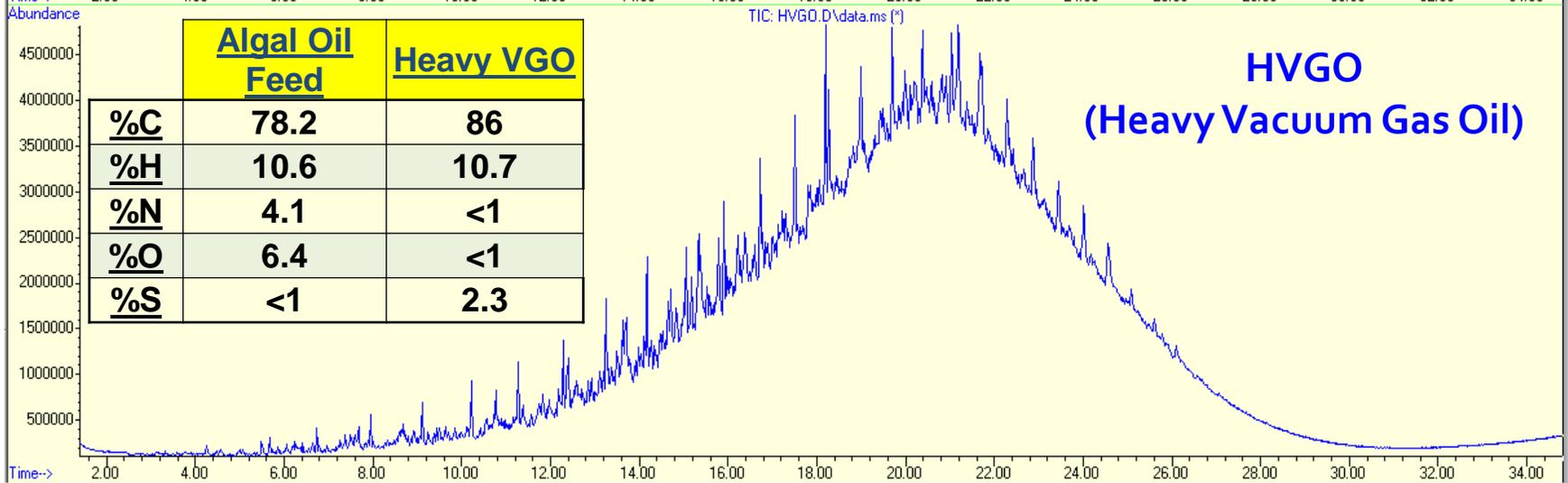
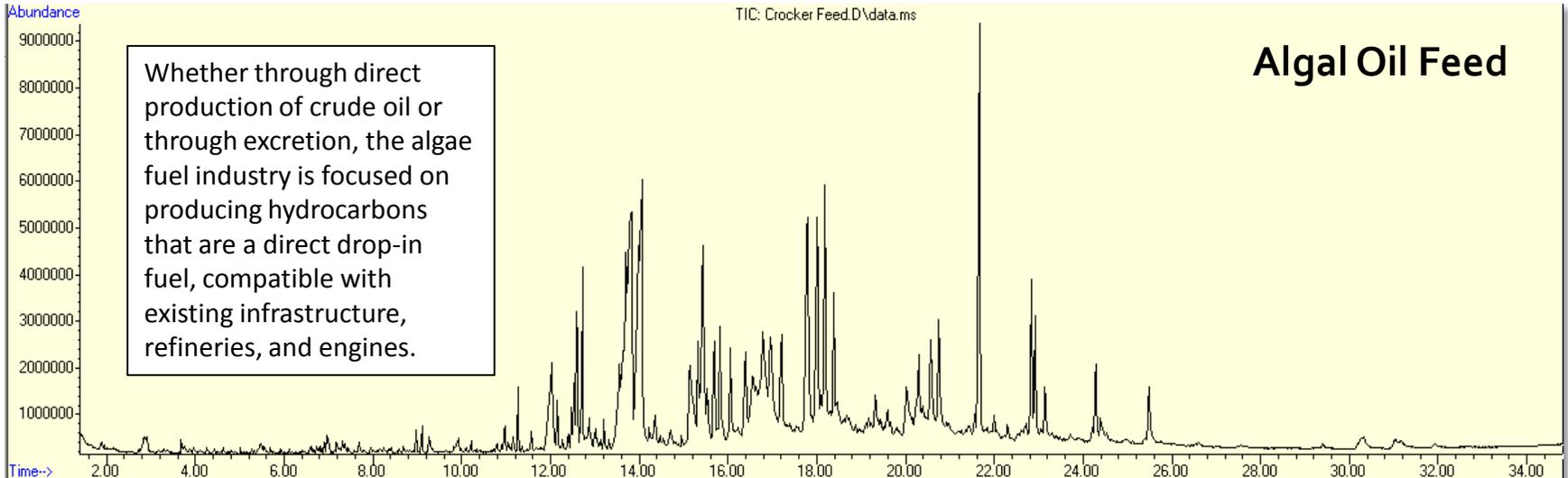


Gasoline and diesel

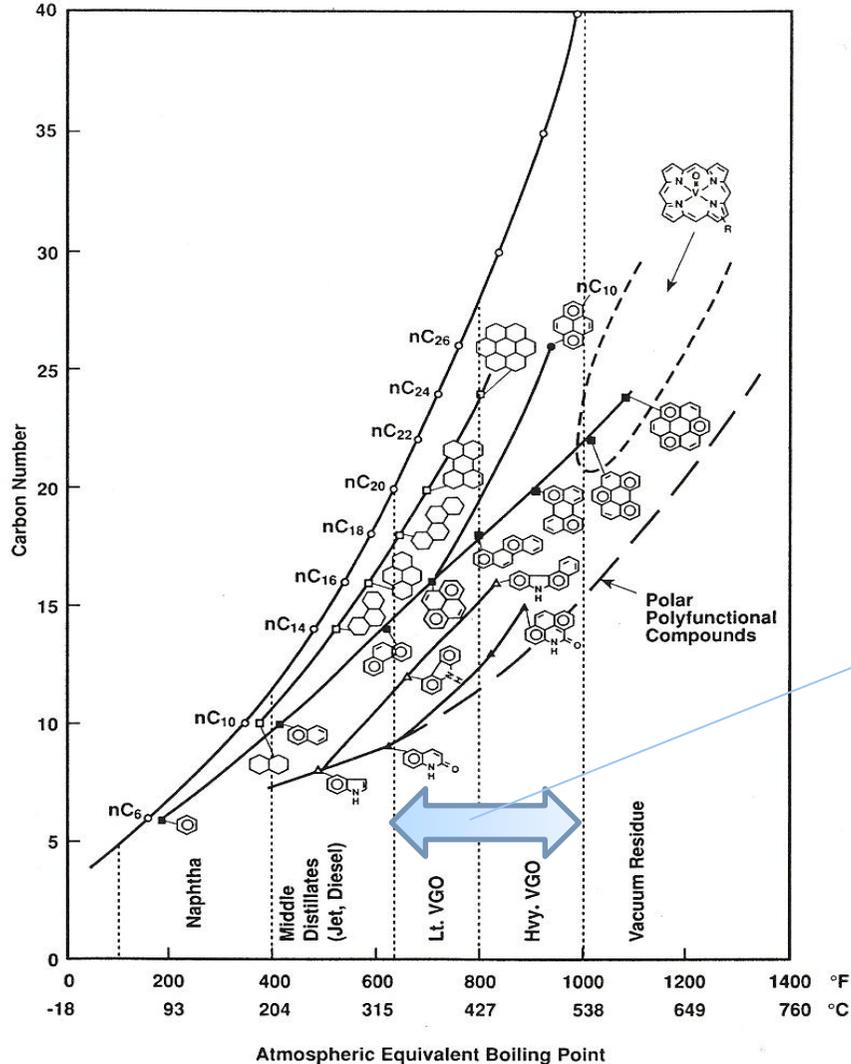
10-day cross-country tour of plug-in Toyota Prius



Refiner's Perspective: Algae Oil Feed versus HVGO



The Boduszynski Plot: C# vs. AEBP



Algae Oil Feed

Commercial scale systems benefit from Co-Processing of algae

- Co-processing results in:
 - Maximum efficiency of both renewable crude oils and other crude oils
 - Reduced Cap-Ex on refined product
 - Eliminates the need for additional and expensive refining technologies
- No prohibition against co-processing biomass based feeds
 - Preamble to the RFS regulations stating
 - RFS limits RIN's generated from co-processed material
- Does not qualify as biomass based diesel Sec 211(o)(1)(D) of the Clean Air Act
- Qualifies for RIN's in the advanced pool
 - RIN's are generated for the renewable portion of the fuel

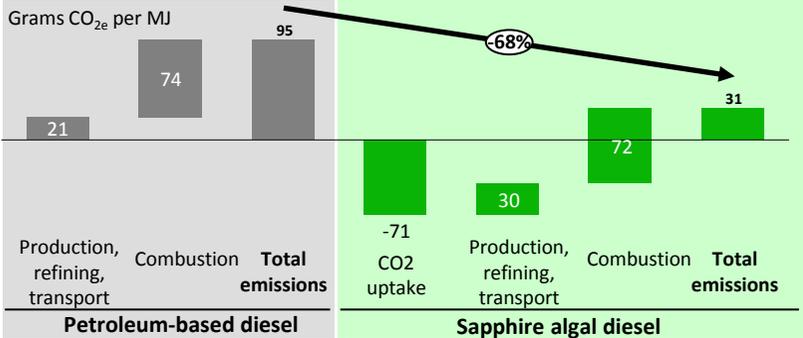
THANK YOU



Appendix

Algae is superior to other renewable feedstocks

- Superior attributes of algae**
- Scalable to millions of barrels per day
 - Cost competitive with marginal crude oil production
 - Completely fungible with infrastructure and fleet
 - Favorable life cycle with respect to CO₂
 - Does not compete with agricultural products, land, or water



Algae fuel can be grown on marginal land with saline water



Oil supply marginal cost curve for 2008 WTI equivalent

