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Advanced
Biofuels
Association

AGRICULTURAL OUTLOOK FORUM 2012
MAKING MARKETS FOR BIOMASS
FEBRUARY 23, 2012

ROBERT M. AMES
SOLAZYME – VP FUELS COMMERCIALIZATION
ADVANCED BIOFUELS ASSOCIATION – CHAIRMAN

- What potential end use markets exist for biomass?
- What factors drive those markets?

- AFBA members cracking the code
- Solazyme's technology platform
- Key policy initiatives needed to seal the deal

1. Technology neutrality
2. Feedstock agnosticity / sustainability
3. Subsidy parity

ABFA REPRESENTS VIRTUALLY ALL ADVANCED BIOFUEL COMPANIES



WIDE VARIETY OF FEEDSTOCKS, TECHNOLOGIES AND OUTPUTS

TECHNOLOGY

- Gasification
- Hydrolysis
- Hydroprocessing
- Synthetic biology
- Fermentation
- Catalyst

FEEDSTOCKS

- Corn
- Sugars
- Wood
- Grasses
- Municipal waste
- Algae

OUTPUTS

- Hydrocarbon
 - Diesel
 - Jet
 - Gasoline
- Triglyceride oils
 - Tailored by chain length and saturation for markets
- Alcohol
 - Ethanol
 - Butanol
- Ether
 - ETBE
 - MTBE
- Ester
 - Biodiesel

PRODUCTS

- Ethanol
- Butanol
- Diesel

- Gasoline
- Jet Fuel

- Oil feedstocks
- Chemicals

ABFA MEMBER COMPANIES

- Osage, GeoSynFuels, DDCE
- Gevo, Butamax
- Solazyme, Amyris, LS9, UOP, Sundrop, Rentech, Neste, Tyson, Elevance, Viesel, Virent, Triton, SGC
- Virent
- Solazyme, Tyson, UOP, LS9, Rentech, Amryis, Virent
- Solazyme, Sapphire, LiveFuels, UOP, KiOR
- All member companies

- Energy Content
- Environmentally Advantaged
- Fungibility (drop in fuels)
- Economically Competitive
- Scalability

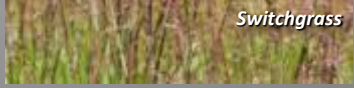
- AFBA members cracking the code
- **Solazyme's technology platform**
- Key policy initiatives needed to seal the deal

WE MAKE OIL

***WE CONVERT LOW COST PLANT SUGARS
TO HIGH VALUE RENEWABLE OILS – FOR FUEL, FOR FOOD, FOR LIFE***

BREAKTHROUGH BIOTECHNOLOGY PLATFORM

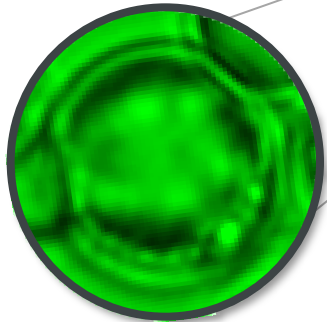
FLEXIBLE INPUT



MULTIPLE HIGH-VALUE MARKETS



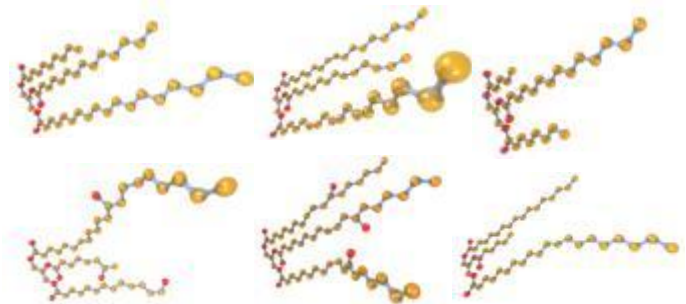
HIGHLY PRODUCTIVE MICROALGAE



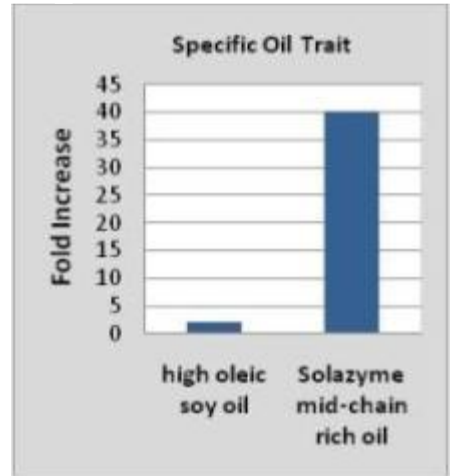
> 80% oil*

**The average wild algae only has a 5-10% oil content*

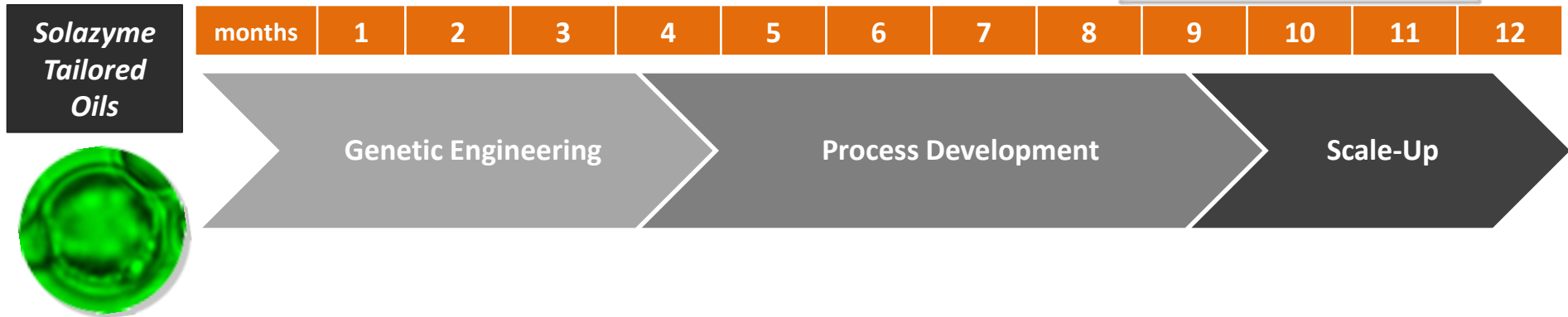
OIL DESIGNED TO SPECIFICATION



TAILORING OUR 'CROP' TAKES MONTHS NOT YEARS



- *Months not years*
- *Orders of magnitude trait enhancement, not incremental*



TAILORING OILS ENHANCE VALUE, MEET CUSTOMER NEEDS, AND REDUCE RISK

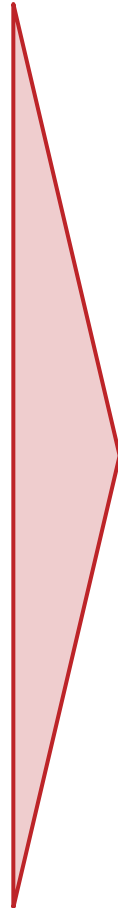
CHAIN LENGTH CONTROL



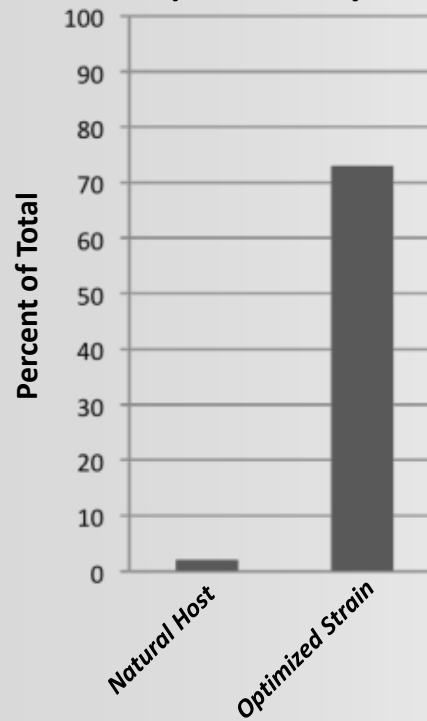
SATURATION LEVEL



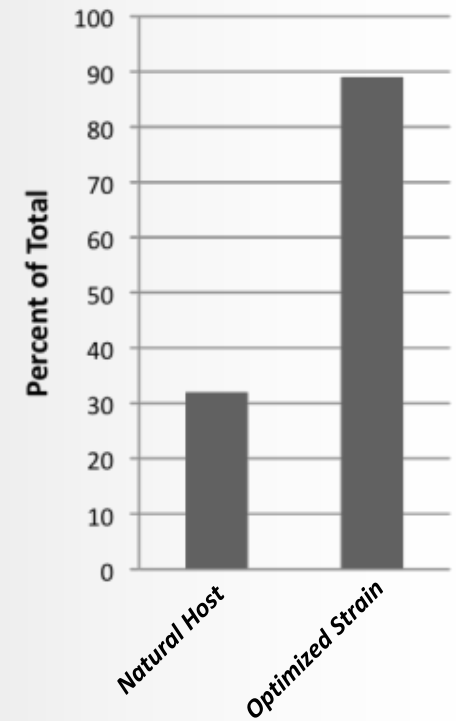
FUNCTIONAL GROUPS



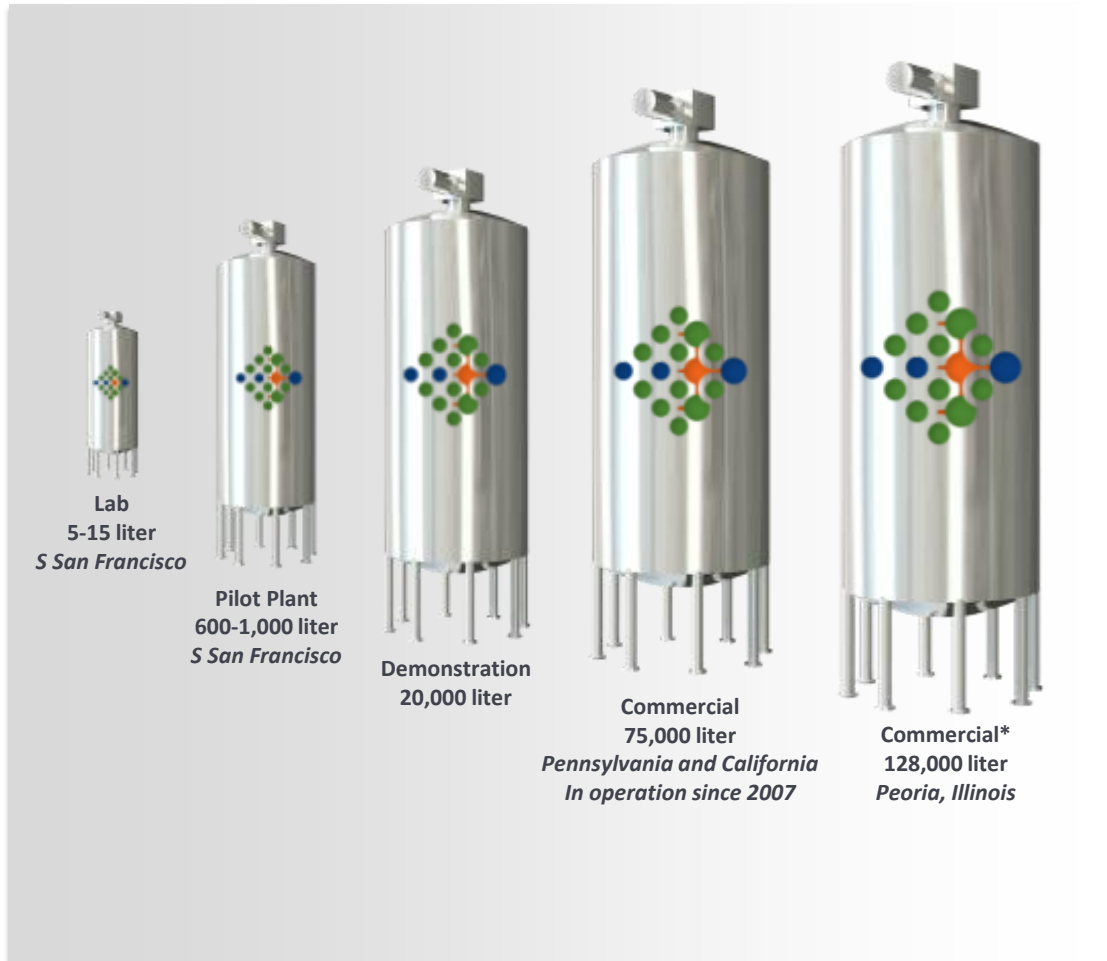
Chain Length Engineering (C10 – C14)



Saturation Engineering



LOW COST PRODUCTION NOW PROVEN AT SCALE



- Commercial scale since 2007
- Linear performance at all scales
- Produced > 500,000 liters of oil (1/10 – 2/11)
- Commercial / commercial-ready process in all markets



Solazyme Peoria

WORLD CLASS COMPANIES THAT HAVE CHOSEN TO PARTNER WITH SOLAZYME



FUELS & CHEMICALS



A Honeywell Company



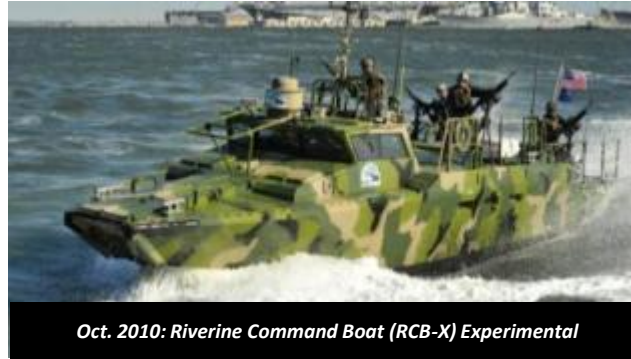
NUTRITIONALS



SKIN & PERSONAL CARE



REPEAT BUSINESS EARNED FROM THE WORLD'S LARGEST FUEL PURCHASER



- Delivered over 360,000 liters of HRD-76 Naval marine diesel fuel and HRJ-5 Naval jet fuel to the U.S. Navy
- Will produce over 280,000 additional liters of fuel for current contract by second half of 2012
- Awarded Greenstrike bid with Dynamic Fuels to >2 M liters of HRD-76 Naval marine diesel fuel and HRJ-5 Naval jet fuel for the U.S. Navy by May 1, 2012

WIDE COMMERCIAL INTEREST IN SOLAZYME'S PLATFORM AND FUELS

November



- SoladieselRD® powered US Navy destroyer in 20 hour trip along California coast
- Largest single advanced biofuel Navy test in history

November



- 1st U.S. Commercial flight on advanced biofuels in November 2011

December



- Maersk tests SoladieselRD® in 6,500 nautical mile commercial voyage

February



- Greenstrike: Navy awards Solazyme a 4th contract for > 2 mm liters of fuel
- 100% of SZYM oil commitments delivered ahead of schedule

PRODUCTION CAPABILITY AND SCALE-UP



South San Francisco Pilot Plant



Peoria



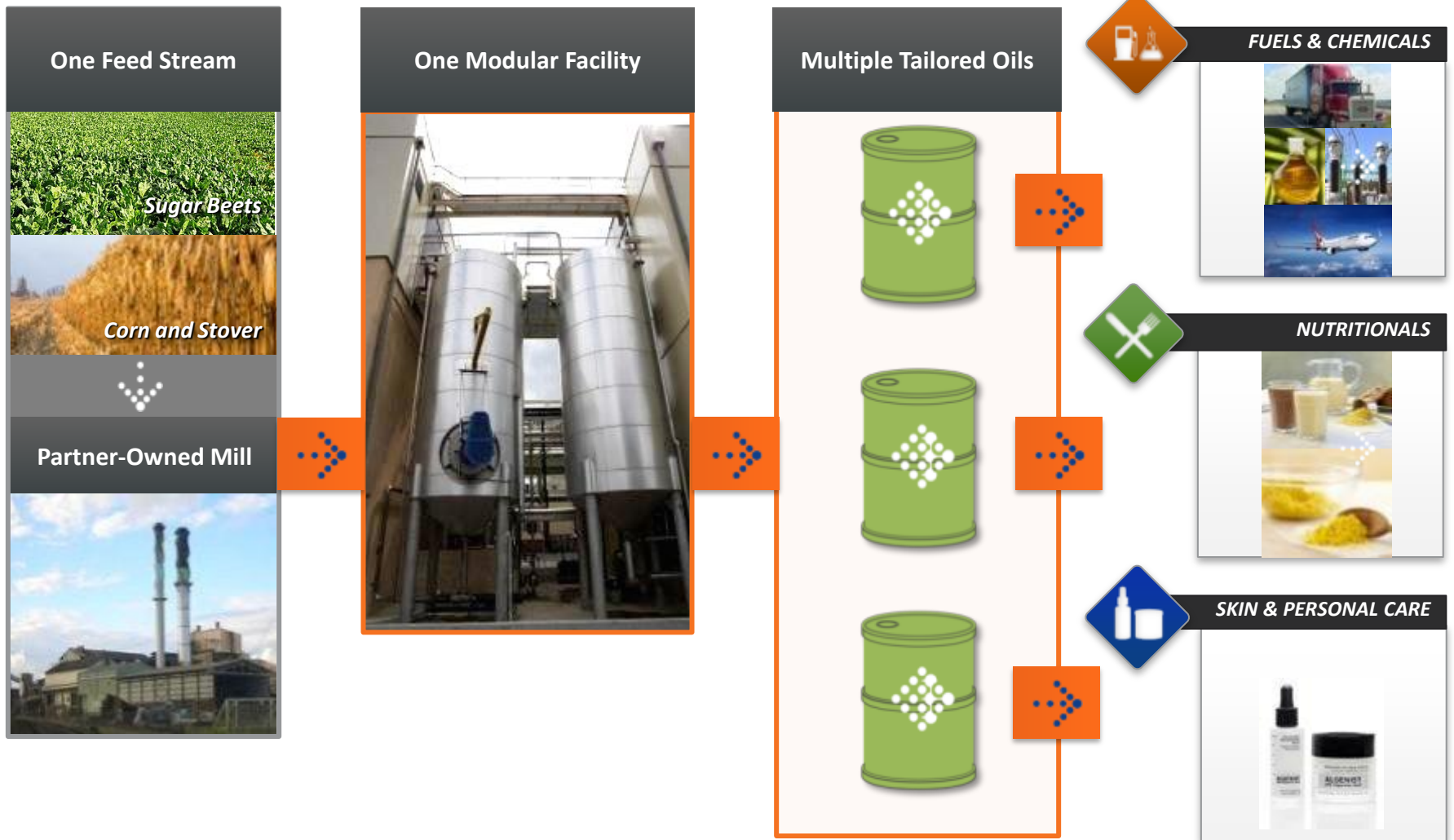
Peoria



Peoria

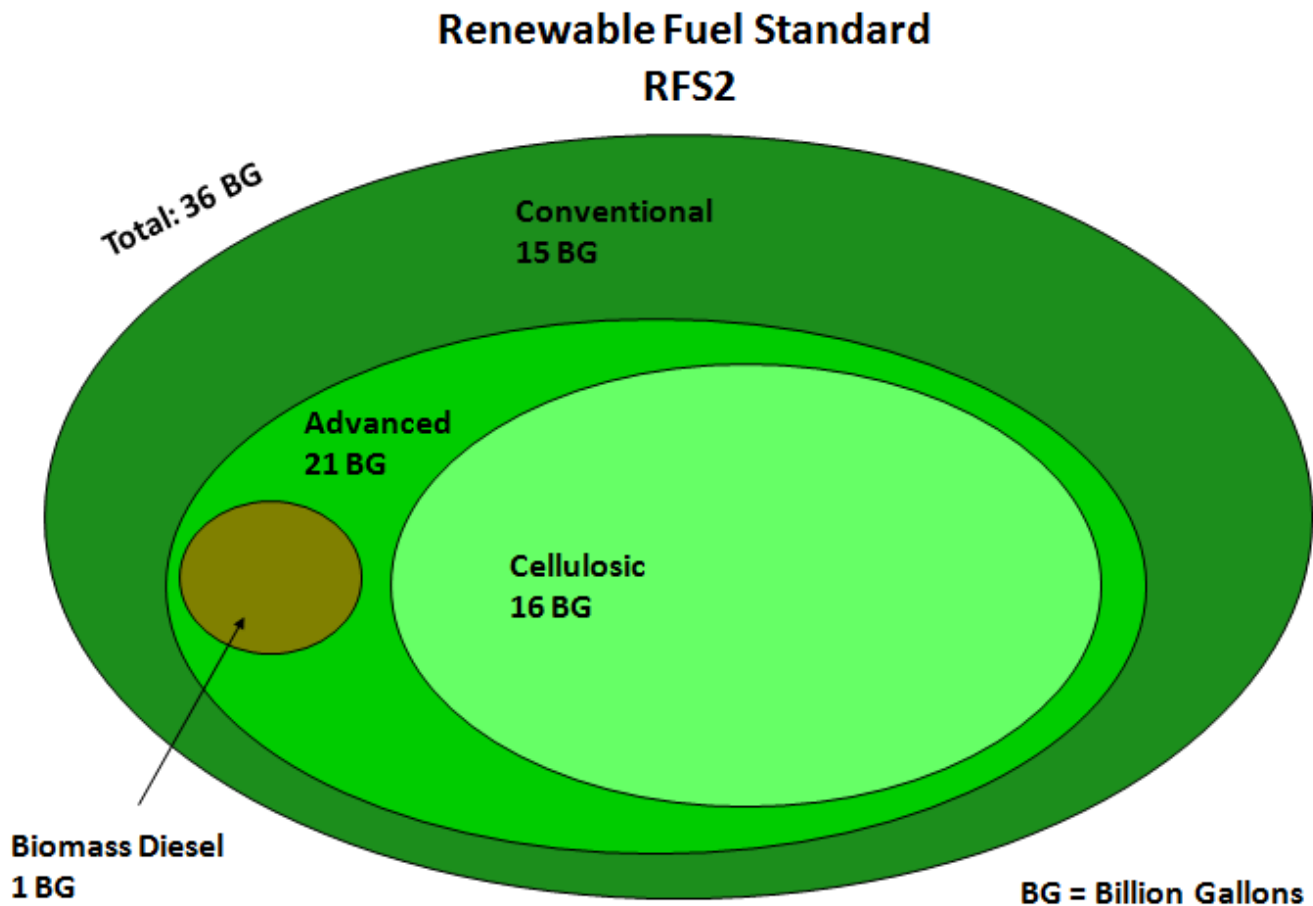
- South San Francisco: Pilot plant fully operational, sampling oils
- Peoria: Demonstration / Commercial facility online within 6 months of acquisition
- Scaled up algal oil production to 75,000 L scale

SITE-SPECIFIC COMMERCIAL STRATEGY



- AFBA members cracking the code
- Solazyme's technology platform
- **Key policy initiatives needed to seal the deal**

RFS2 IS THE SINGLE MOST IMPORTANT POLICY TOOL FOR OUR INDUSTRY



- We need you now more than ever
- We applaud and encourage collaboration
- Policy certainty is vital
- Let American consumers pick winners and losers
- Let's grow it here and make it here!