Superior Fuels & Chemicals

VIA's synthetic drop-in fuels and chemicals are like-for-like replacements for over 100 billion gallons of today's fossil sourced compounds in the U.S. alone.

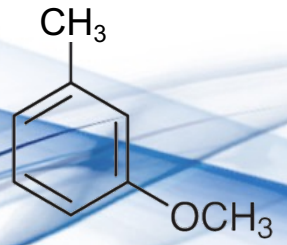
Lewis J. Dutel
CEO & Cofounder

Our Product Suite

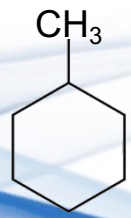
VIA 1 3-Methylanisole (3-MA)

VIA 2 Methylcyclohexane (MCH)

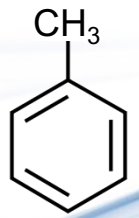
VIA 3 Toluene



VIA 1
(3-MA)



VIA 2
(MCH)



VIA 3
(Toluene)

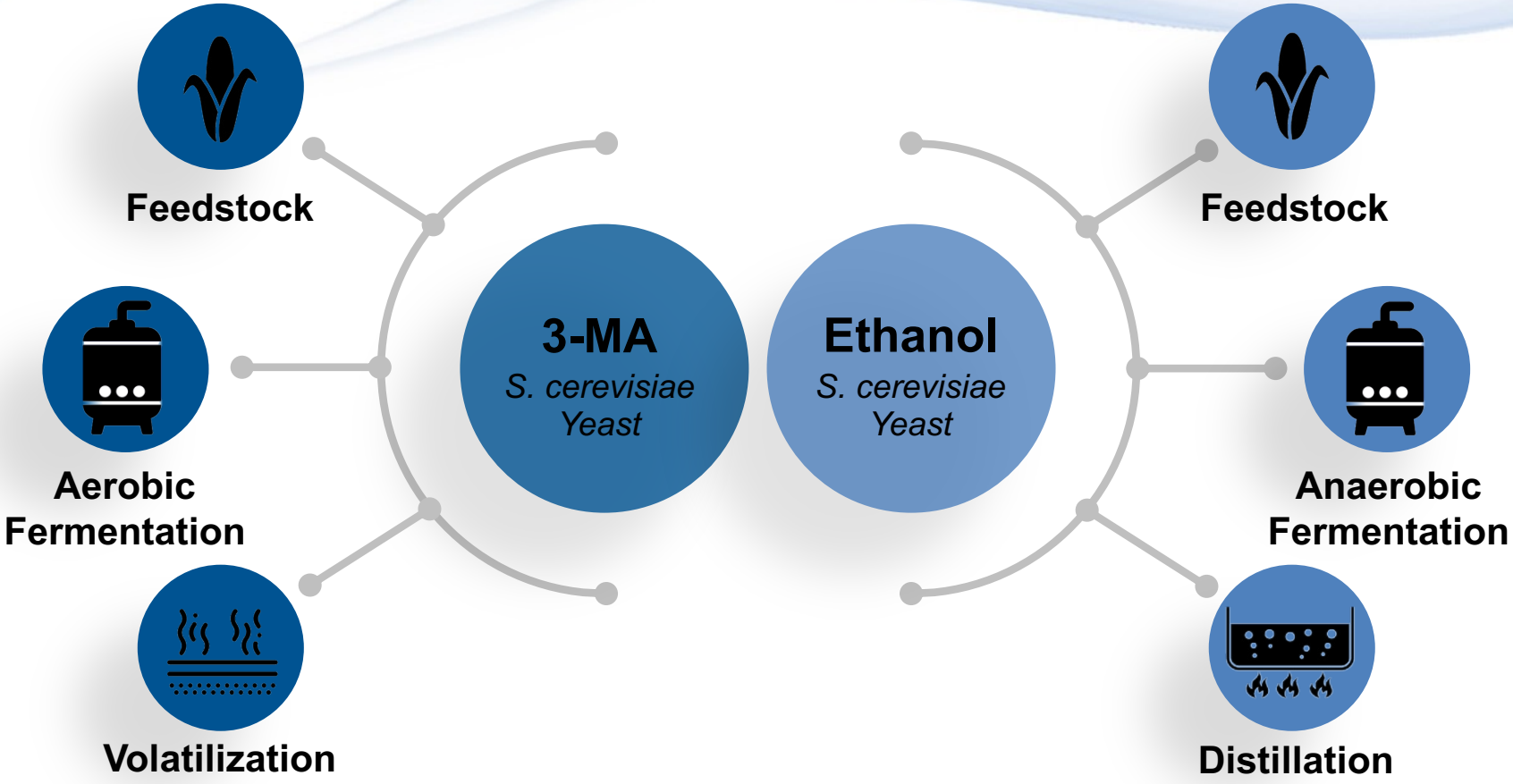
VIA Process Overview

3-MA Fermentation
S. cerevisiae

MCH
3-MA + H_2

Toluene
MCH - H_2

3-MA vs Ethanol



3-MA Fermentation Differentiation

3-MA Volatilization – Unique Differentiator

- 3-MA is produced one molecule at a time by VIA's yeast
- 3-MA is hydrophobic and is driven out of the water-based broth
- Volatilization eliminates toxicity effects
- Volatilization eliminates down stream processing & separation

- 3-MA volatilization from the fermentation broth is a unique characteristic to past biofuels and biochemical production technologies

- 3-MA is a liquid at room temperature
- 3-MA Boiling Point is 175°C / 347°F

POW.BIO

HOW WE TRANSFORM SUCCESS

Pow.bio solves for Scale-Up Speed + Cost

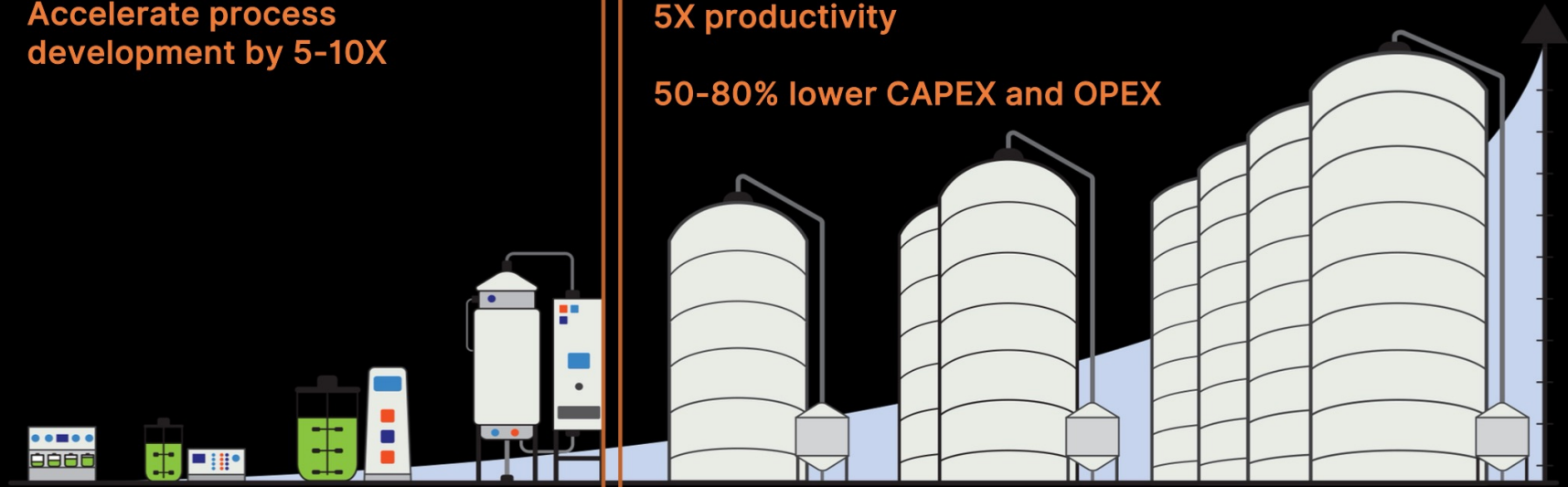
Scale–up FASTER

Accelerate process development by 5-10X

Produce MORE Product for Less $

5X productivity

50-80% lower CAPEX and OPEX



Small Scale 500mL | Bench Scale 1-10L | Pilot Scale 100 -1000L | Demo Scale 10,000L | Commercial Small 250,000L | Commercial Large 600,000L +

HOW BIG IS OUR IMPACT?

POW.BIO

Our platform has an unfair competitive advantage for every product at every scale.

Unit cost reduction to produce using Pow.bio's platform vs traditional fed-batch

	FOOD PROTEIN	SPECIALTY CHEMICAL
Pilot Scale **10,000 - 20,000L**	-59%	-83%
Demonstration Scale **20,000 - 50,000L**	-61%	-84%
Commercial Scale **100,000L +**	-43%	-65%

SOURCE: Independently contracted Techno Economic Analysis May 2022

Cauldron

Unique hyper-fermentation technology

That unlocks a more costs-effective, scalable manufacturing solution and is built on 35 years of formulation and 10+ years operating experience at scale

Proprietary media for a variety of host organisms

Novel bioreactor design and configuration

Continuous fermentation know-how and operational excellence

+5x output and lower COGs

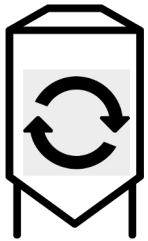
We can build capacity at a fraction of the cost

Cauldron's technology allows us to scale out with 100kL hyper-fermentation lines that are 20% more productive than 500kL batch fermentation facilities.

CAULDRON

Technology

100kL Hyper

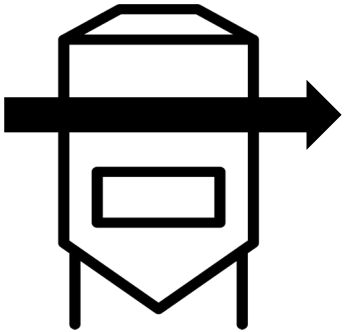


527 tons annual production$_1$

Capex
$25M$_2$

Conventional Technology

500kL Batch



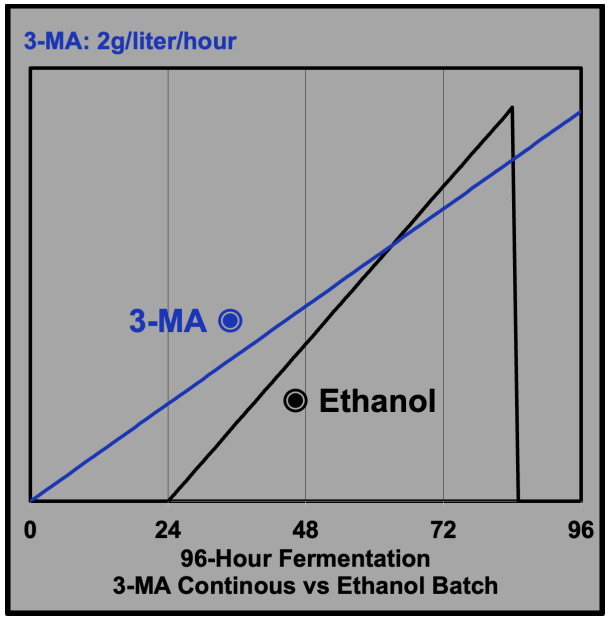
442 tons annual production$_1$

Capex
$80M$_2$

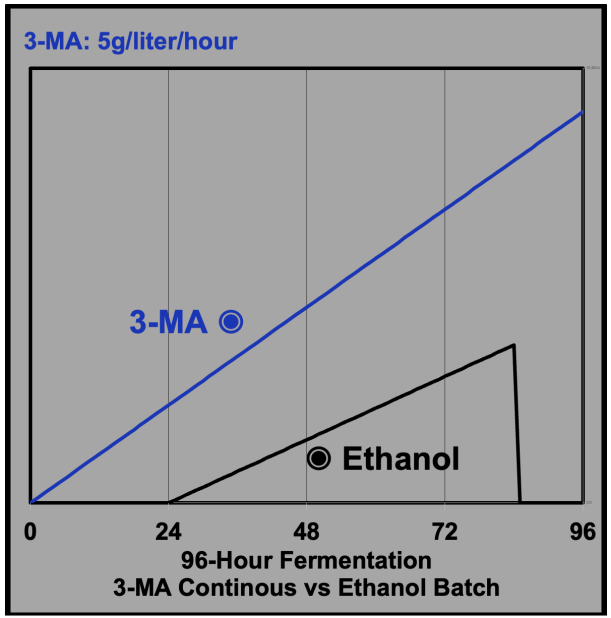
1. Based on 30 g/L and 75% recovery rate. 2. Estimate

Yeast Optimization Effects

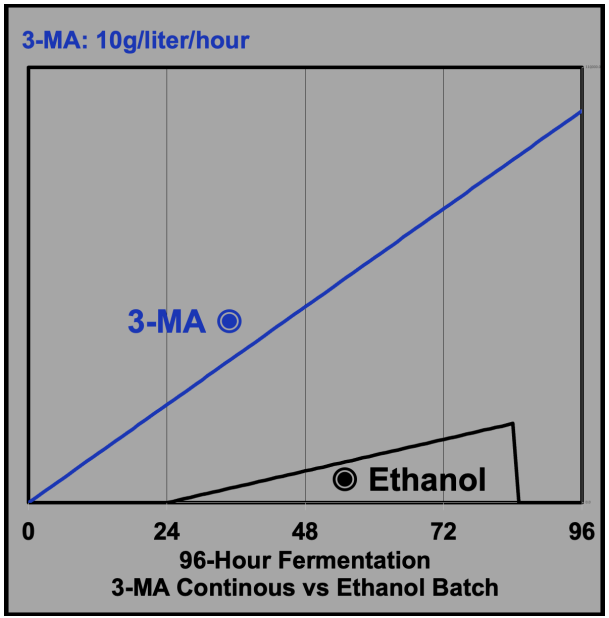
3-MA: 2g/liter/hour 1x



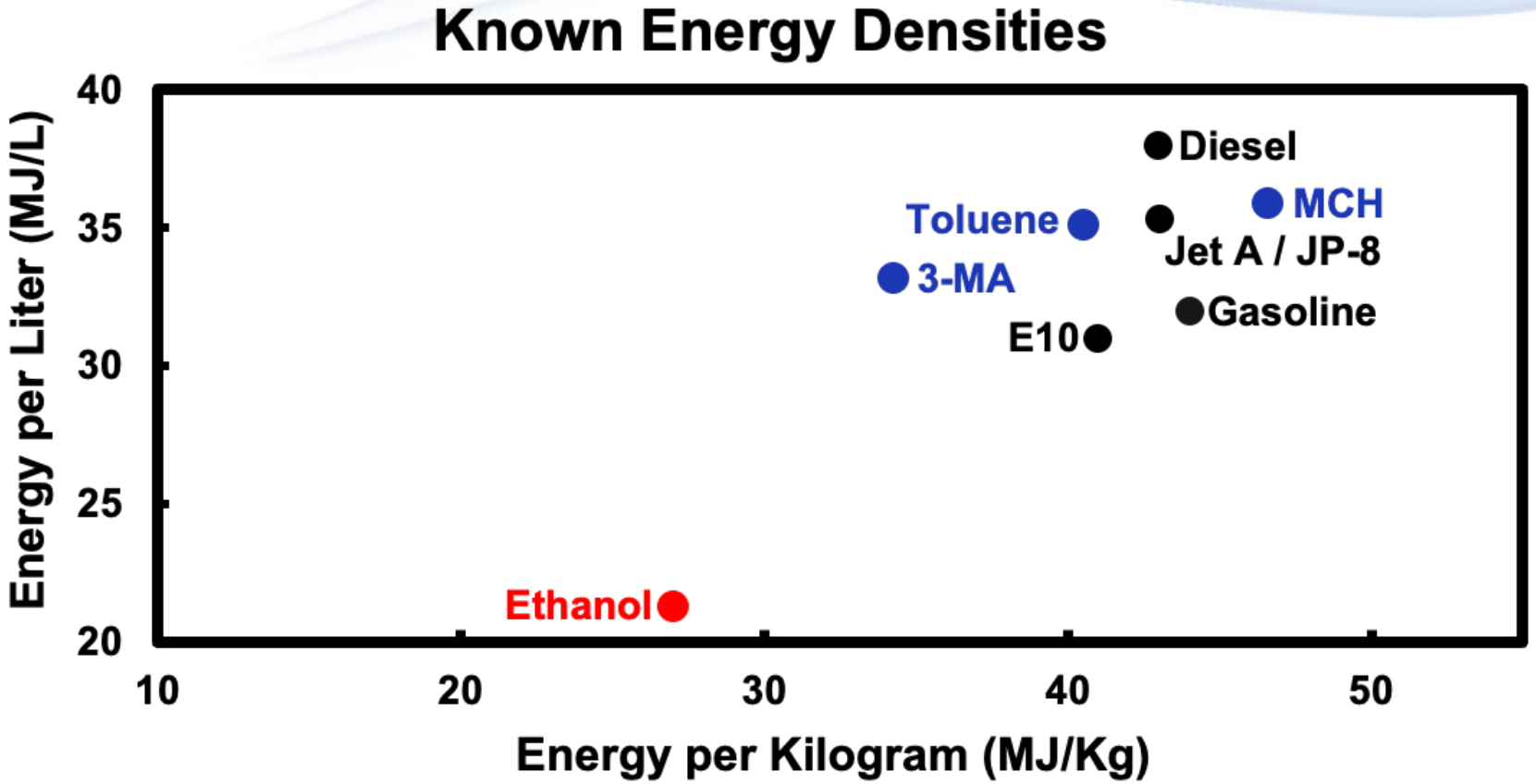
3-MA: 5g/liter/hour 2.5x



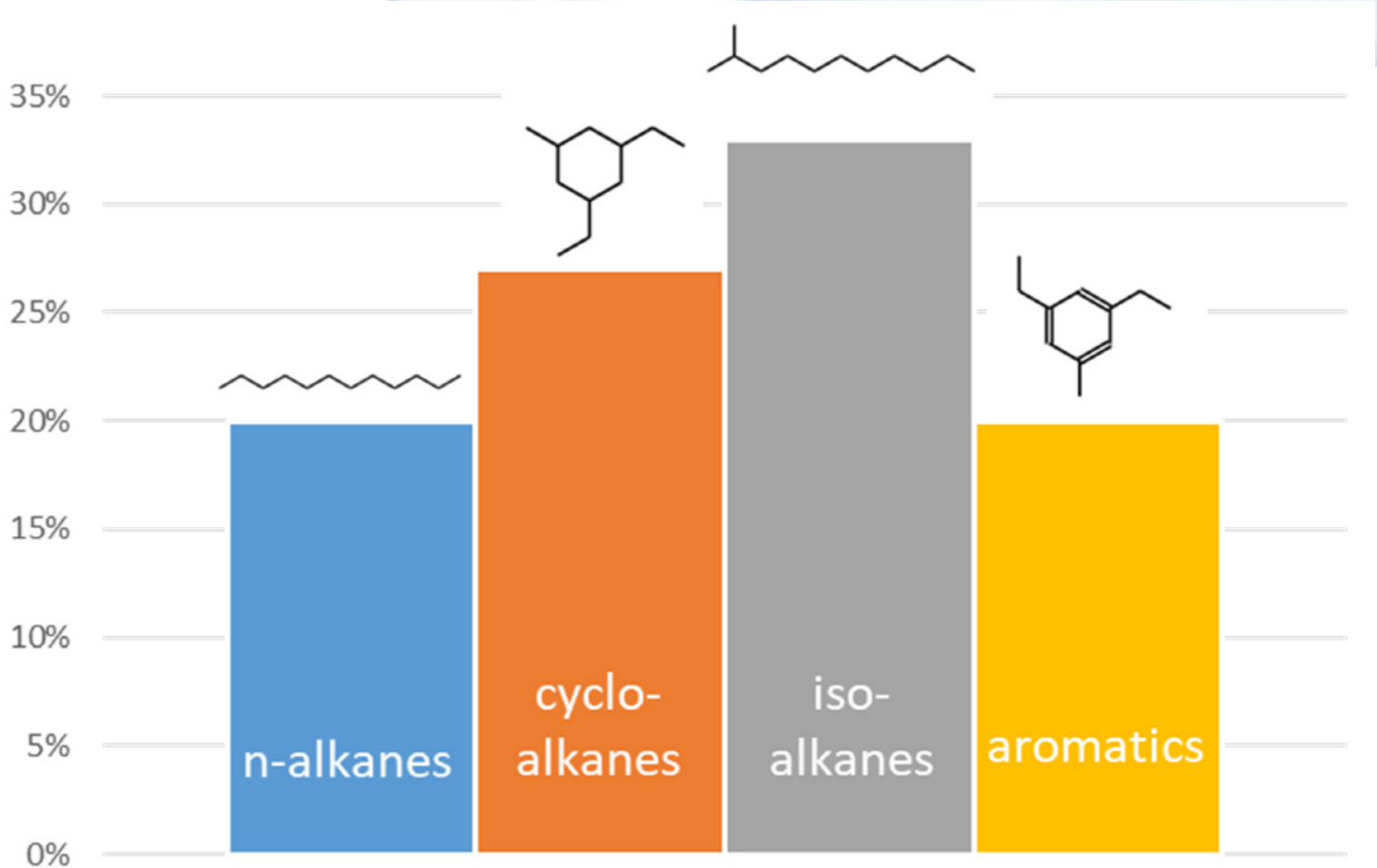
3-MA: 10g/liter/hour 5x



Key Fuel Differentiators



Jet Fuel: Four Hydrocarbon Families



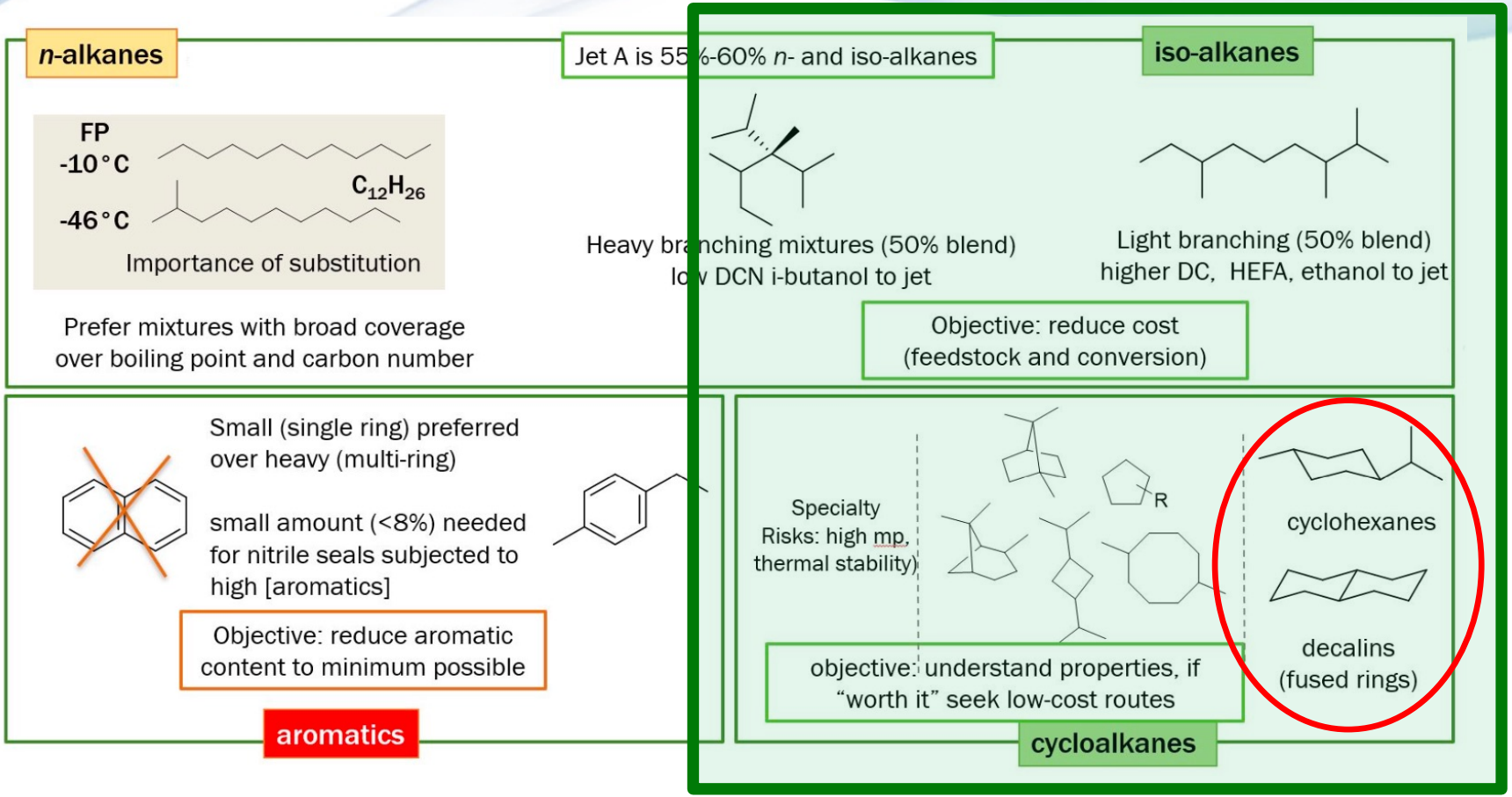
Future SAF: BETO & DoE

From a bulk-property perspective, jet fuel only requires iso-alkanes and cycloalkanes to meet ASTM D1655 specifications. A jet fuel containing cycloalkanes (mono- and dicyclic) and iso-alkanes could increase energy density and specific energy; meet freeze point, flash point, and O-ring swelling demands; and burn much cleaner. Improvements to the specific energy result in a weight reduction for a flight, which for long ranges enables more passengers and cargo. Ninety-eight percent of flights do not operate with a payload range restriction; hence the weight savings would correlate to a modest fuel weight reduction. BETO has current work that seeks to understand the possible impact of fuel weight savings.

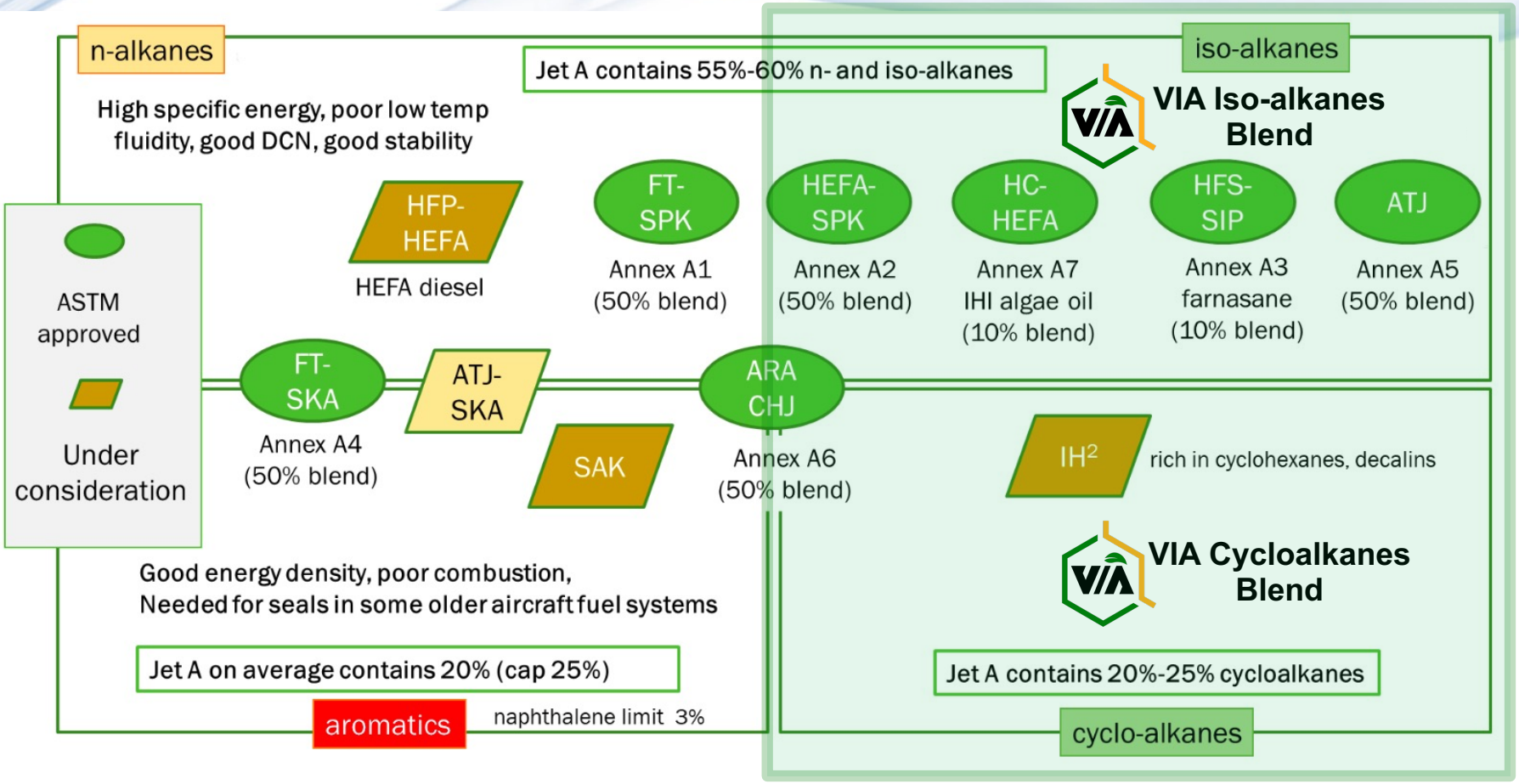
US Department of Energy – BETO, “Sustainable Aviation Fuel – Review of Technical Pathways”, September 2020
https://www.energy.gov/sites/default/files/2020/09/f78/beto-sust-aviation-fuel-sep-2020.pdf

VIA BioFuels 3MA to Jet Primer
https://drive.google.com/file/d/14ZXIrZeJXI0w3Bazxg65R26Yfe13nr5z/view?usp=sharing

SAF Targets: Iso-alkanes & Cycloalkanes



VIA SAF: 50% Iso-alkanes 50% Cycloalkanes

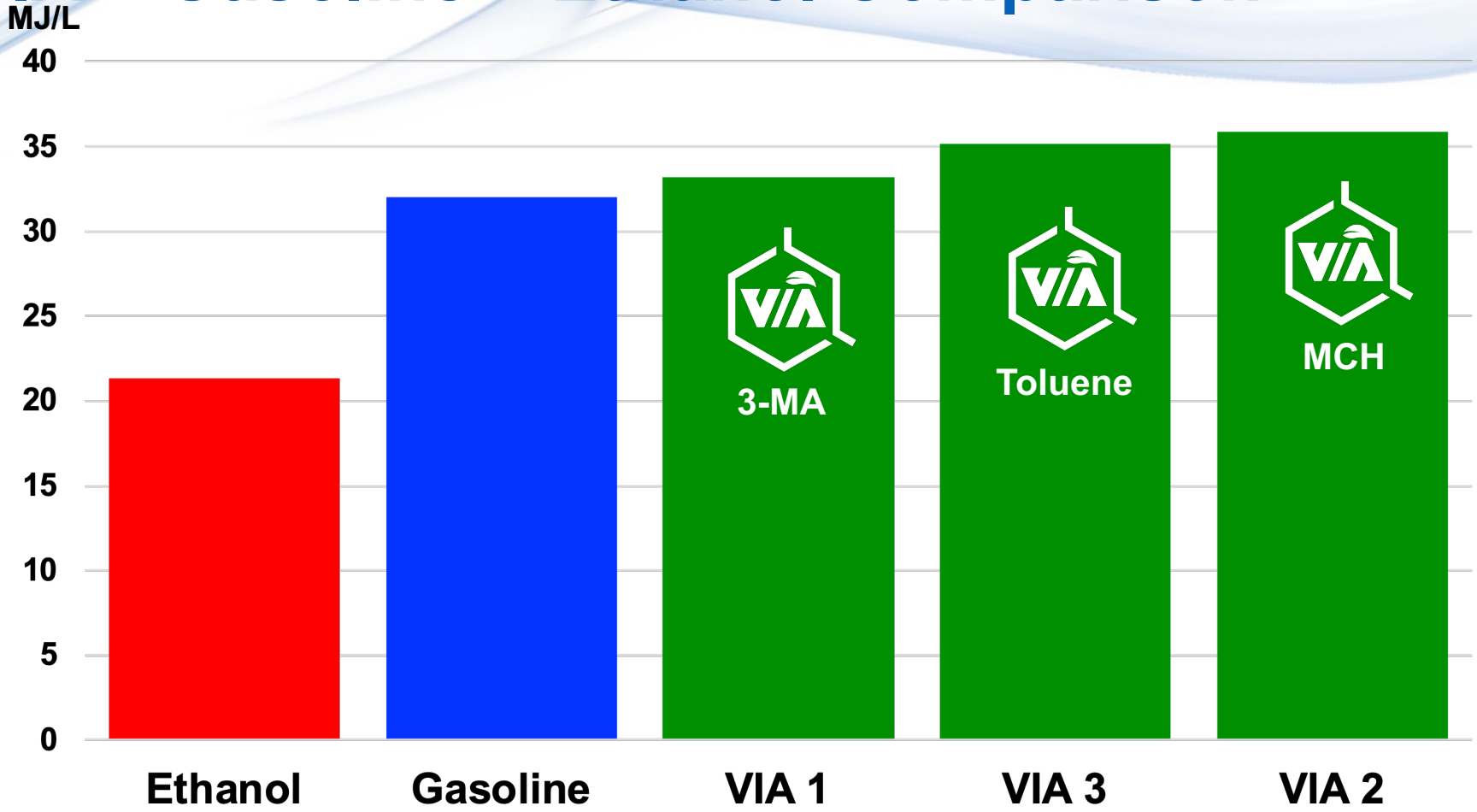


VIA SAF Regulatory Timing

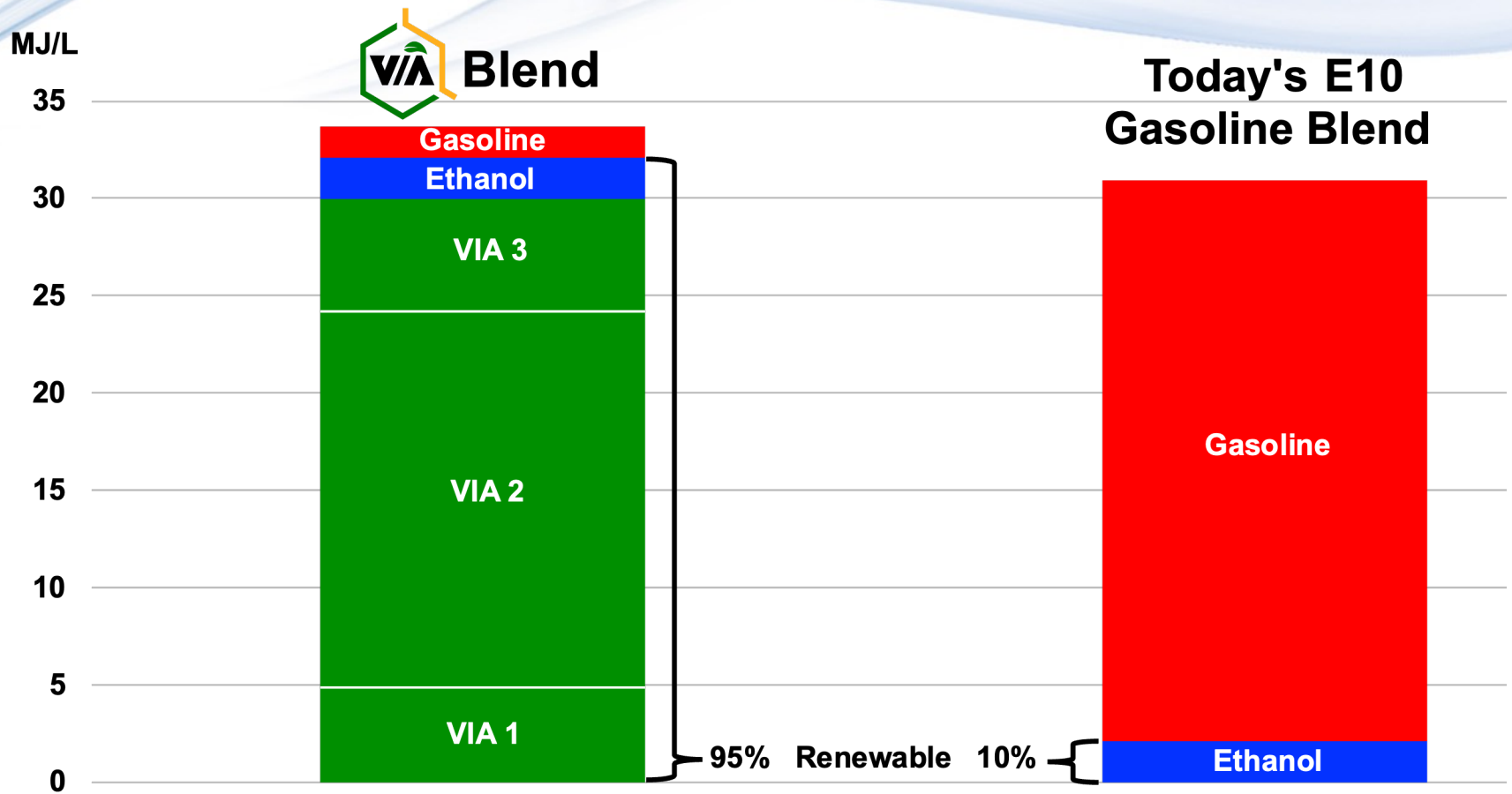
Tier	Approximate Fuel Volume in Gallons (Liters)	Approximate Time in Months	Approximate Cost in U.S. Dollars
Tier 1 – Fuel specification properties	10 (40)	6 months	$50,000 (testing cost)
Tier 2 – Fit-for-purpose properties	10–100 (40–400)		
OEM Review		6–12 months	$350,000 (OEM cost)
Tier 3 – Component and rig testing	250–10,000 (950–40,000)	24–36 months	~$4 million (testing cost)
Tier 4 – Aircraft and engine testing	Up to 225,000 (850,000)		
OEM Review and Approval		6–12 months	~$1 million (OEM cost)

VIA will pursue Tier 1 & Tier 2 tasks early in the Seed Phase

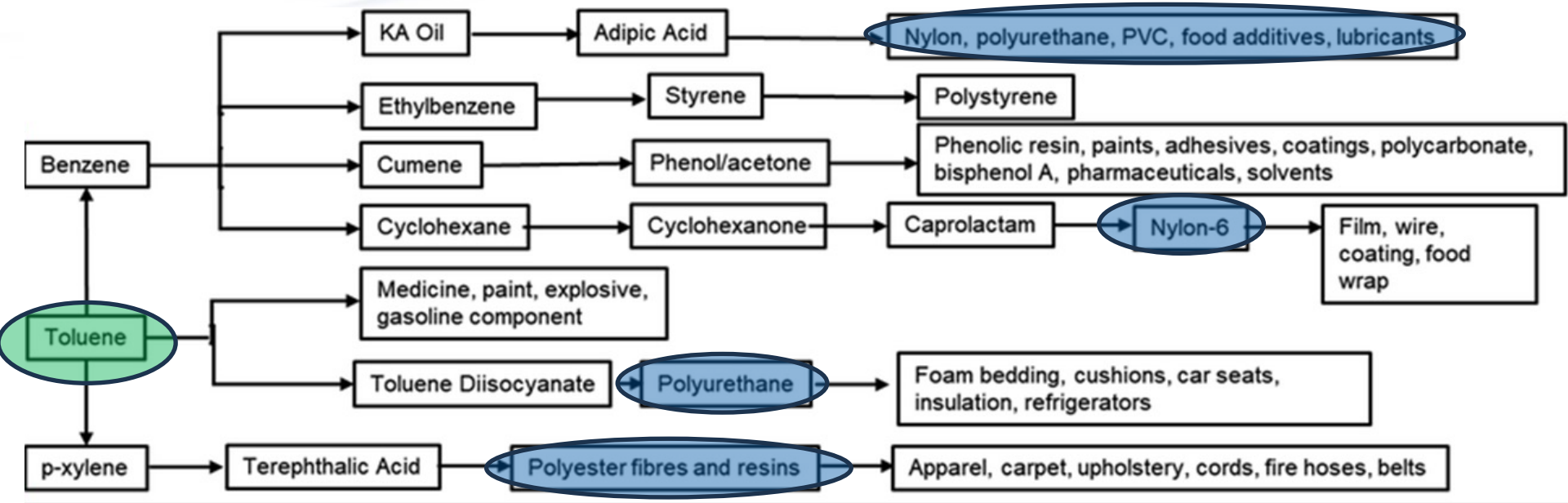
VIA – Gasoline – Ethanol Comparison



95% Renewable Blend



VIA 3 Bio-feedstock to transform fossil-based BTX…

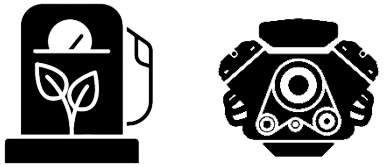


…and all the familiar products produced from BTX

Drop-In Fossil Replacements - Today

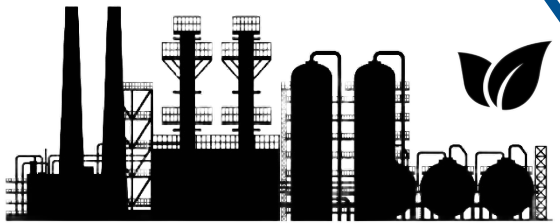
Aviation Fuel

Transportation Fuel

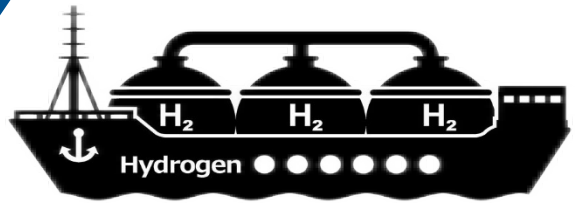


VIA 1 (3-MA)
VIA 2 (MCH)
VIA 3 (Toluene)

Chemicals



Hydrogen Transport



US Drop-in Market Overview

- **US Aviation Fuel 10% – MCH**
  1.4 Billion Gallons
- **US Gasoline Fuel 85% - 3-MA, Toluene & MCH**
  115 Billion Gallons
- **US Toluene Chemicals 100% - Toluene**
  1.3 Billion Gallons

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Thank You

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