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July 6, 2020

CEC Webmaster

The comments on the Rand Report to the U.S. Congress in January 2010 by Tom Hicks, Deputy Secretary U.S. Navy, through various contemporaneous reporting are an accurate part of the public record. There is no issue whatsoever in placing them on the California Energy website.

There are several renewable distillate fuel projects in Midwest states with strategic intent to ship to the CA LCFS market. The current oil market was destabilized by the Saudi-Russian price war in late 2019, now abated. The industry price projections for Brent crude at year-end 2020 is $57 per barrel, with higher pricing predicted for delivery with project completion in later years, a necessary base for project financing.

For a historical understanding, my first point is that DOE support programs and the Rand report were dead wrong when written a decade ago. Using mostly waste oils, Neste Oil was on track to establish 700 million gals/year of renewable distillate fuels. In 2018 and 2019, Neste shipped 235 million gallons and 260 million gallons to the California LCFS market. With their expansion in Singapore to start up in late 2022, Neste capacity will be one billion gals/year.

In September 2019 Diamond Green Diesel announced that their 275 million gals/year plant in Norco, LA would be expanded to 675 mgpy by late 2021, most of which is shipped to the CA LCFS market. In October 2018, World Energy announced that their Paramount, CA refinery, acquired in March 2018, would be expanded from 40 million gals/year of renewable distillate fuels to 306 mgpy, the only such producer within California.

Extracting from the Rand Report January 2011: “It is highly uncertain whether appreciable amounts of hydrotreated renewable oils can be affordably and cleanly produced within the United States or abroad.” By year-end 2021, about 1.5 billion gals/year of renewable distillate fuels will be consumed in the California LCFS market, confirming its dominant position in U.S. renewable fuels for the next decade.

The promoted cobalt catalyst for the Fischer-Tropsch process was developed 2003 to 2006 at BP’s GTL test facility in Nikisiki, Alaska. By year-end 2020 Fulcrum Bioenergy will be operating their Reno, NV Fischer-Tropsch process converting municipal solid waste to a high-hydrogen gas converted to syncrude using the BP catalyst. The green distillate fuels made from this syncrude have been combustion tested, and approved for aviation use by ballot of ASTM D 1655 closed in April 2020, a decade after the Rand report to U.S. Congress.

Sincerely,

Joseph R. Degenfelder
CEO, Atlantic Greenfuels, LLC
(O) 216-751-5800

Joseph

Regarding your July 1 note on the Rand report I think I'm good. My comments at the time are, through various contemporaneous reporting, part of the public record.

I stand by those comments to this day. I have no issue whatsoever with you placing the attachment on the CA Energy website. I think it characterizes the situation and my comments accurately.

Help me understand what the point of all this is. I don't get it. Is it simply to create an accurate historical record of events from 10 years ago?

Best,

Tom
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Mabus Group
1100 Wythe Street, #1627
Alexandria, VA 22313
703-300-7430

Tom:

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Re historical understanding, my first point is that DOE support programs and the Rand report were dead wrong when written a decade ago. Using mostly waste oils, Neste Oil was on track to establish 700 million gals/year of renewable distillate fuels. In 2018 and 2019, Neste shipped 235 million and 260 Million to the CA LCFS market. With their expansion in Singapore to start up in 2020, their capacity will be one billion gals/year.

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Distillate Fuel Alternatives to Rand Report

The Rand National Defense Research Institute on January 26, 2011 released "Alternative Fuels for Military Applications" see http://www.rand.org/pubs/monographs/MG969.html. Its lead finding: "It is highly uncertain whether appreciable amounts of hydrotreated renewable oils can be affordably and cleanly produced within the United States or abroad." A subset finding: "Producing just 200,000 barrels per day of camelina or jatropha, about 1 percent of U.S. petroleum consumption) would require an area equal to about 10 percent of the croplands currently under cultivation in the United States." U.S. camelina oil production of 5,000 bbls in 2009 was predicted to climb to 35,000 bbl in 2010; actual production dropped in 2010 because of no RIN approval by EPA for biodiesel made from camelina oil.

Deputy Assistant Secretary of the Navy for Energy Tom Hicks, in a chat held just hours after the report's release, countered that "the authors just have not engaged the industry in an adequate way to get a really good sense as to what's happening within the industry," and further, that DoD doesn't "really feel this is up to RAND's standards for this type of work." Hicks views this report as "more of an op-ed than serious research."

This summary is sent following two meetings with staff for U.S. House sub-committees on January 29, 2011. Specific errors in the Rand report are contained in the individual records of those meetings; this summary addresses larger issues. Re growth of camelina, producing 50,000 bbl/day of jet fuel can be accomplished on ~1% of cropland, a majority of which is arid and marginally suitable for wheat. Camelina has been proven convertible via UOP's Ecofining™ process, so can be minor feedstock to Diamond Green Diesel, with $241 million DOE loan guarantee, with startup in January 2013. But camelina will always be a very minor feedstock.

The major finding of the Rand report is preference for Fischer Tropsch fuels, detailed on pp 63-66. But:
- Shell exited German JV for FT Fuels, Choren, in November 2009; FT process invented 1928 in Germany.
- Sasol cancels CTL project in Indonesia January 2011, citing estimate of $10 billion for 80,000 bbl/day.
- Rentech's FT Natchez project announced in 2006 has yet to secure financing for 30,000 bbl/day unit.

Other alternative for distillate fuels are available.
- The Mixalco process; see Prof Mark Holtzapple March 6, 2009 workshop at www.atlanticgreenfuels.com; process commercialization by Terrabon LLC is supported by Valero Energy and Waste Management.
- Conversion of corn oil to reach 500 million gals/yr as presented at World Bank meeting March 10, 2008.
- Neste Oil in June 2008 announced an 800,000 t/a plant to produce NExBTL renewable diesel in Rotterdam. Neste Oil announced its decision to go ahead with a similar-sized plant in Singapore in November 2007.

The common attribute of these distillate fuel projects is that a preferred feedstock is municipal solid waste (MSW), for obvious reasons of low cost and high-volume availability. These projects are producing for the commercial market because Section 526 of the Energy and Security Act (2007) forbids DOD from purchasing renewable fuels made from MSW. If the requirements by authors of the Rand report to deliver to DOD are combined with the criticism by Deputy Secretary Hicks, the only Rand choice was to choose from known alternatives. The net findings of Rand were understood earlier, as shown in AG-NASA workshops Sep 10, 2009 re use of 'Barren Land Palm Oil', and World Bank March 8, 2010 for corn oil as feedstocks for biojet fuel.

A review of Fred Kahn's efforts to deregulate the U.S. airlines in early 1980's, and failure in a 1990-92 effort to advise the former Soviet Union re a free economy, was sent on January 31, 2011. If Prof Kahn could testify in 2011, he might encourage a bipartisan approach to 'deregulating' EISA by voiding Section 526.

Joseph Degenfelder with Richard Kamin, US Navy
Atlantic Greenfuels February 1, 2011

Cc: Gavi Begtrup for Rep Gabrielle Giffords
Tara Rothschild, Ed Feddeman, Andy Zack, Jesse Lashbrook - U.S. House Science & Technology Committee