American Petroleum Institute

Renewable Fuels

CHARTER BROKERAGE

Norwalk Connecticut	Katy Texas	New York New York	Miami Florida	Ontario Canada

Disclaimer

Colorful and complicated charts are credited to Patrick Kelly, API

Boring material credited to various Environmental Regulatory Agencies

The rest is mine.

CHARTER BROKERAGE

Agenda

- Definitions
- Renewable Fuels Primer
- RINS Overview
- Low Carbon Fuel Standard in California
- HTSUS Issues for Renewable Fuels
- TD 66.16 & Renewable Fuels
- Recent News

CHARTER BROKERAGE

Definitions

According to EPA:

Biomass-Based Diesel: Biodiesel, renewable diesel if fats and oils not co-processed with petroleum

Cellulosic Biofuel: Renewable fuel produced from cellulose, hemicellulose, or lignin E.g., cellulosic ethanol, Biomass to Liquid ("BTL") diesel, green gasoline, etc.

Advanced Biofuel: Can be essentially anything except corn starch ethanol
Includes cellulosic biofuels and biomass-based diesel

Renewable Biofuel: Ethanol derived from corn starch – or any other qualifying renewable fuel

CHARTER BROKERAGE

Definitions

According to Industry:

Biodiesel – diesel derived from fats and oils. Can be co-processed with petroleum and is designated as such (B100, B99, etc.)

Green Diesel - chemically the same as petroleum diesel, but it is made from recently living biomass. Unlike biodiesel, which is an ester and has different chemical properties from petroleum diesel, green diesel is composed of long-chain hydrocarbons, and can be mixed with petroleum diesel in any proportion for use as transportation fuel. Green diesel technology is frequently referred to as second-generation renewable diesel technology.

Ethanol – traditionally an alcohol-based fuel made by fermenting and distilling starch crops, such as corn or sugar cane.

Anhydrous Ethanol – ethanol that has gone through the dehydration process, can also be called dry ethanol.

What does this mean? Definitions are not clear cut and depend on many things – make sure you understand what the product is.

CHARTER BROKERAGE

Renewable Fuels Primer

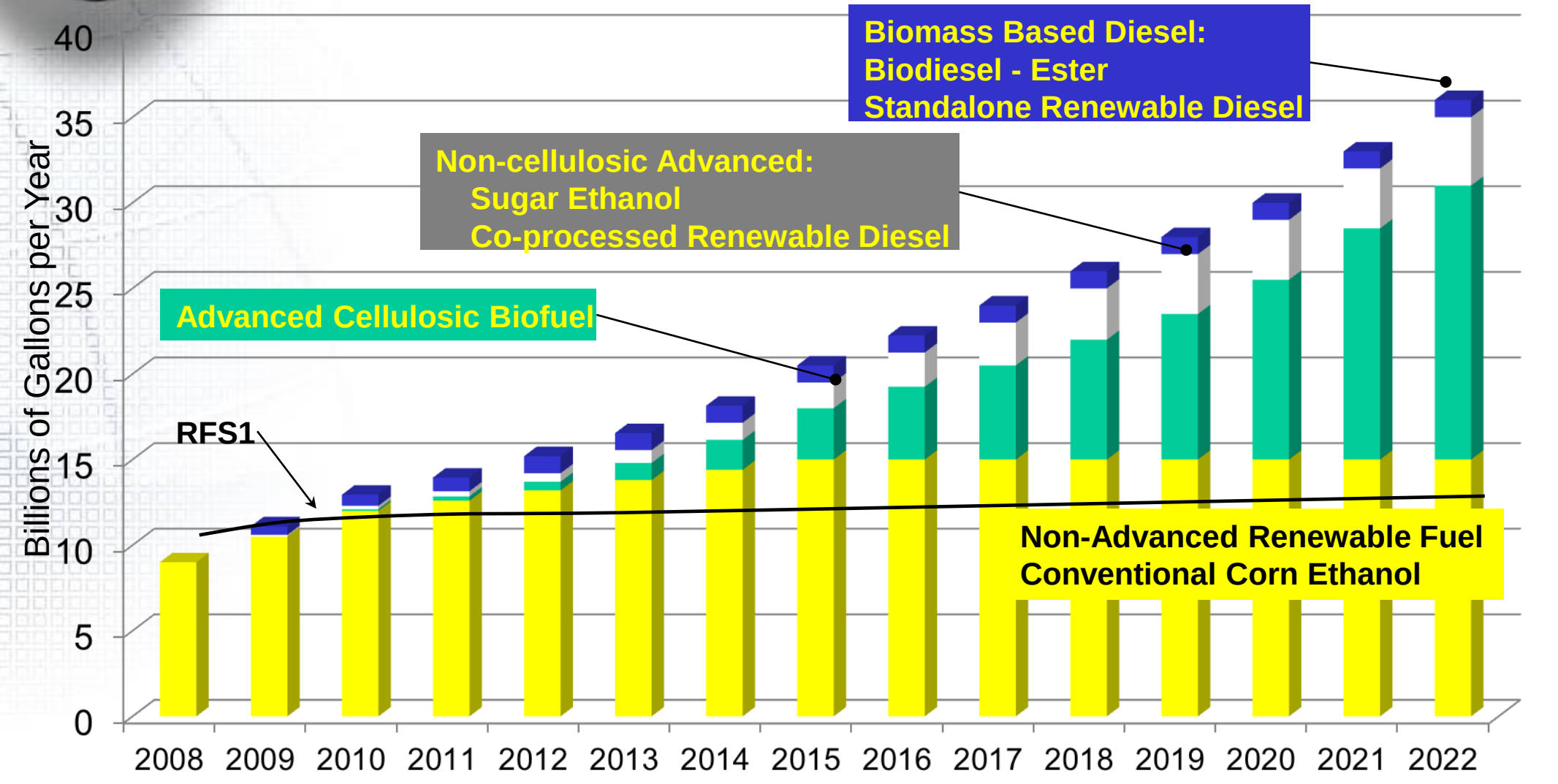
"Congress first established an RFS with the enactment of the Energy Policy Act of 2005 (EPAct, P.L. 109-58). This initial RFS (referred to as RFS1) mandated that a minimum of 4 billion gallons be used in 2006, and that this minimum usage volume rise to 7.5 billion gallons by 2012. Two years later, the Energy Independence and Security Act of 2007 (EISA, P.L. 110-140) superseded and greatly expanded the biofuels blending mandate. The expanded RFS (referred to as RFS2) required the annual use of 9 billion gallons of biofuels in 2008 and expanded the mandate to 36 billion gallons annually in 2022, of which no more than 15 billion gallons can be ethanol from corn starch, and no less than 16 billion must be from cellulosic biofuels. In addition, EISA carved out specific requirements for "other advanced biofuels" and biomass-based biodiesel."[1]

- RFS is enforced by the EPA
- RFS1 created the tracking system based on RINS
- RFS2 builds on RFS1 but adds:
  - Mandated volumes are greatly increased and the time frame is expanded
  - Total RFS requirements are divided into four categories (total renewable fuels, advanced biofuels, biomass-based diesel, and cellulosic ethanol) each with its own volume requirement
  - Biofules qualifying under each category must meet minimum lifecycle GHG emission reductions
  - All renewable fuels must be made from feedstocks that meet a new defition of renewable biomass

[1]CRS – Renewable Fuels Standard (RFS): Overview and issues report by Reandy Schnepf and Brent Yacobucci, dated January 23, 2012

CHARTER BROKERAGE

EISA Renewable Fuel Standard 2007-2022



50% GHG Reduction

50% GHG Reduction

60% GHG Reduction

20% GHG Reduction (For new construction only. Existing corn facilities have no reduction requirement.)

Chart provided by API, Patrick Kelly

CHARTER BROKERAGE

Cellulosic Mandate vs. Reality

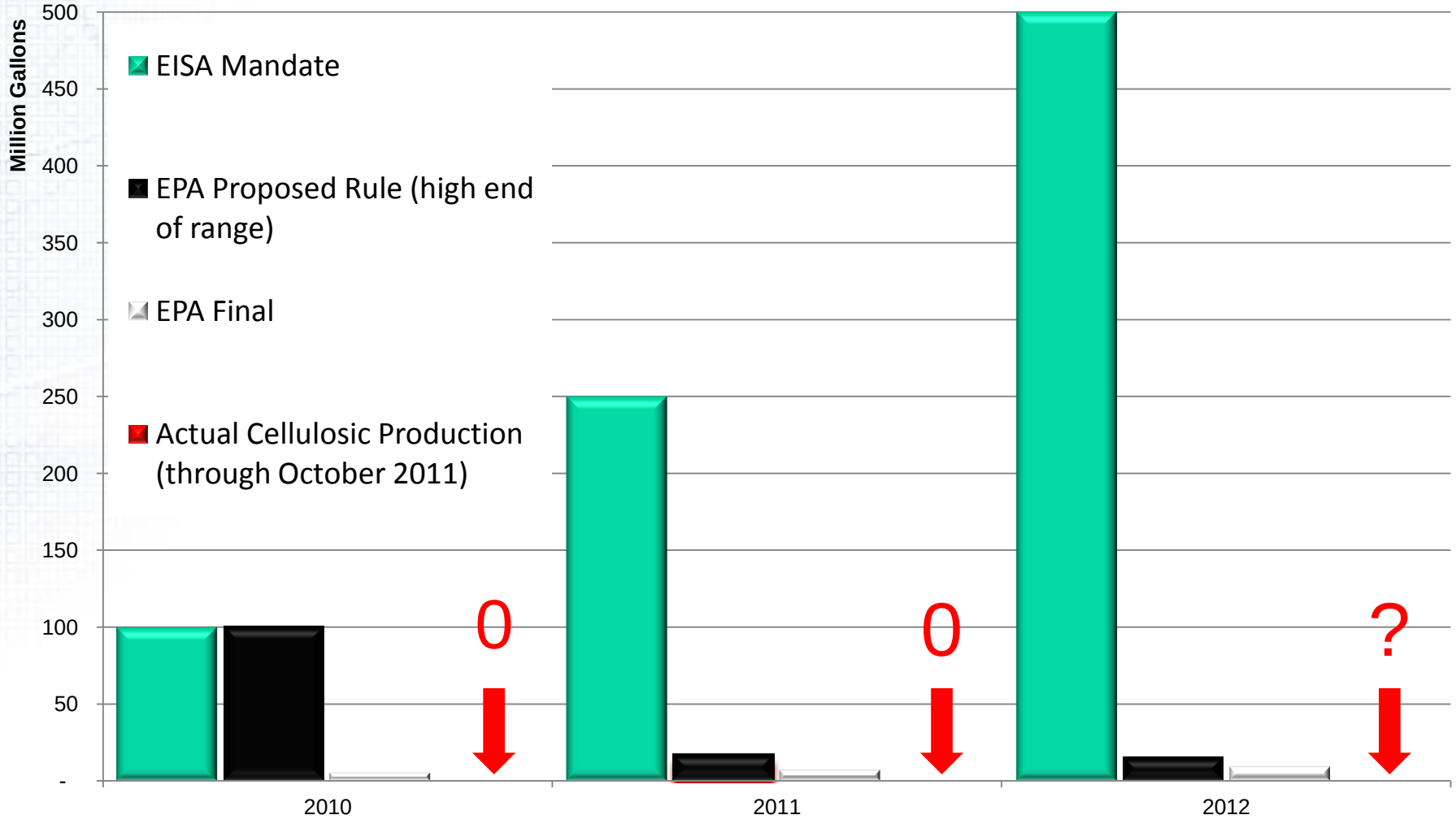


Chart provided by API, Patrick Kelly

CHARTER BROKERAGE

Rulemakings to Set Standards

- By November 30th each year, EPA is to determine the cellulosic biofuel volume "projected to be sold or introduced into commerce in the United States"
  - EPA feels it may project higher levels to "provide an incentive for developing cellulosic biofuel facilities to come on line as expeditiously as possible"
- Requirements for 2012:
  - Cellulosic Biofuel: 0.006%
  - Biomass-based Diesel: 0.91%
  - Advanced Biofuel: 1.21%
  - Renewable Fuel: 9.23%
- Petition for Reconsideration of the 2011 Standard
  - EPA Required to respond, but no timeline established
- EPA to set the 2013 biomass based diesel standard 14 months in advance

CHARTER BROKERAGE

EPA Registration

- Biofuel Producers and Importers:
  - Third party engineering review
  - Determine lifecycle GHG score
- Obligated Parties - Refiners and importers of gasoline & diesel
- Gasoline and diesel exporters (incur an obligation according to their export volumes)
- Any other entity that handles RINs
  - Companies not registered with EPA may not buy or sell RINs

RINS Overview

Parties: Who is subject to RFS and RINS?

Obligated parties include:

- Importers
- Exporters
- Producers

Transactions: What transactions impact RINS

- An import creates a RIN
- Production of renewable fuel creates a RIN
- Purchasing and selling renewable fuel can transfer a RIN
- An export exhausts a RIN

CHARTER BROKERAGE

Equivalency Values

- Regular vs. Advanced RINS
- Based on a renewable fuel's energy content in comparison to ethanol where ethanol = 1.0
  - Biodiesel (alkyl esters): 1.5
  - Renewable diesel: 1.7
  - Butanol: 1.3
  - One biodiesel gallon generates 1.5 RINs
  - The biomass-based diesel obligation is increased to reflect the higher equivalency value:
    - 1.0 billion gallon requirement to be met with 1.5 billion RINs

CHARTER BROKERAGE

RIN Codes

KYYYYCCCCFFFFFBBBBBRR KYYYYCCCCFFFFFBBBBBRRDSSSSSSSSEEEEEEEE

- K = RIN assignment code (1=assigned, 2=unassigned)
- YYYY = Year batch is produced/imported (when it leaves the facility)
- CCCC = Company registration ID
- FFFFF = Facility registration ID
- BBBBB = Producer assigned batch number
- RR = Equivalence Value for the renewable fuel
- D = 1 for cellulosic biomass ethanol under RFS1 regulations
  - = 2 for all other renewable fuels under RFS1 regulations
  - = 3 for cellulosic biofuel
  - = 4 for biomass-based diesel
  - = 5 for advanced biofuel
  - = 6 for other renewable fuel
  - = 7 for cellulosic diesel
- SSSSSSSS = RIN Block Starting Number
- EEEEEEEE = RIN Block Ending Number

CHARTER BROKERAGE

RIN Lifecycle

- RINs are generated by biofuel producers or importers
  - RINs are “attached” to the biofuel volumes
  - Certain limitations allow producers to detach a limited number of RINs
- Obligated Parties may “detach” RINs
  - Biofuel marketer or other intermediaries may not detach RINs
- Non-obligated parties that physically blend biofuel may detach RINs
- Detached RINs are openly traded
  - No limitation on parties that may participate
  - Must register with EPA to use EMTS
- RINs are submitted for compliance by Obligated Parties
  - 1 year life (may be used for current or subsequent year’s compliance)
  - No more than 20% of an obligation may be met with prior year RINs
  - Cellulosic shortfalls may be met with EPA generated RINs
    - Price determined in EISA legislation (2012 = $0.78 per gallon)
- Issues with RINs
  - Accounting
  - Illegal or improper RINS

CHARTER BROKERAGE

EPA Moderated Transaction System ("EMTS")

- All RIN transactions are handled in EMTS
- Transactions entered within 5 days of title transfer
- What EMTS does:
  - Reduces risk of transposition and other errors in transactions
  - Tracks all RIN transactions
    - Generate RINS
    - Purchase RINs
    - Sell RINs
    - Separate RINs
    - Retire RINs
- What EMTS does not do:
  - Match buyer and seller
  - Handle contracts, pricing, invoicing, etc.
  - Show counterparty positions or other entity's RIN activity

CHARTER BROKERAGE

RINS in the News

CHARTER BROKERAGE

California Low Carbon Fuel Standard

- Requires 10% reduction in GHG between 2010 and 2020
- The program is not on an absolute basis, rather it is done a per gallon of fuel
- Not tied to demand, in other words fuel efficiencies of cars does not count in the reduction
- The life cycle of the fuel is the basis . The program follows the fuel from the production, transport, and consumption to determine the total GHG impact
- Producers and importers are required to register at certain carbon intensity level
- Primary means for meeting these goals, use of biodiesel and ethanol
  - The value in ascending order from a GHG reduction perspective is: Corn ethanol, regular biodiesel, soy oil, sugar ethanol, Biodiesel from waste grease
- Other manners of offsetting GHGs are limited for industry; ex: land fill gas recover
- There is a wall in 2014 which will require huge amounts of sugar based ethanol to meet the requirements
- The entire program is currently under legal challenge. The lower court ruling held that CA is regulating beyond its borders and issued an injunction against CARB. This ruling is being appealed by CARB at the 9th Circuit.
  - Will CARB be able to continue to enforce?
- Infrastructure issues?

What do we do: Wait and see

CHARTER BROKERAGE

HTSUS Issues for Renewable Fuels

- Biodiesel:
  - US Statistical Note 1 from CH 38 “For the purposes of heading 3824, the term “biodiesel” means fatty acid esters of a kind used as fuel, derived from animal or vegetable fats and oils, whether or not used.

3826.00		Biodiesel and mixtures thereof, not containing or containing less than 70 percent by weight of petroleum oils or oils obtained from bituminous materials:		
3826.00.10	00	Biodiesel not containing petroleum oils or oils obtained from bituminous materials (B100).	kg.	4.6% 1/
3826.00.30	00	Other.	kg.	6.5% 1/

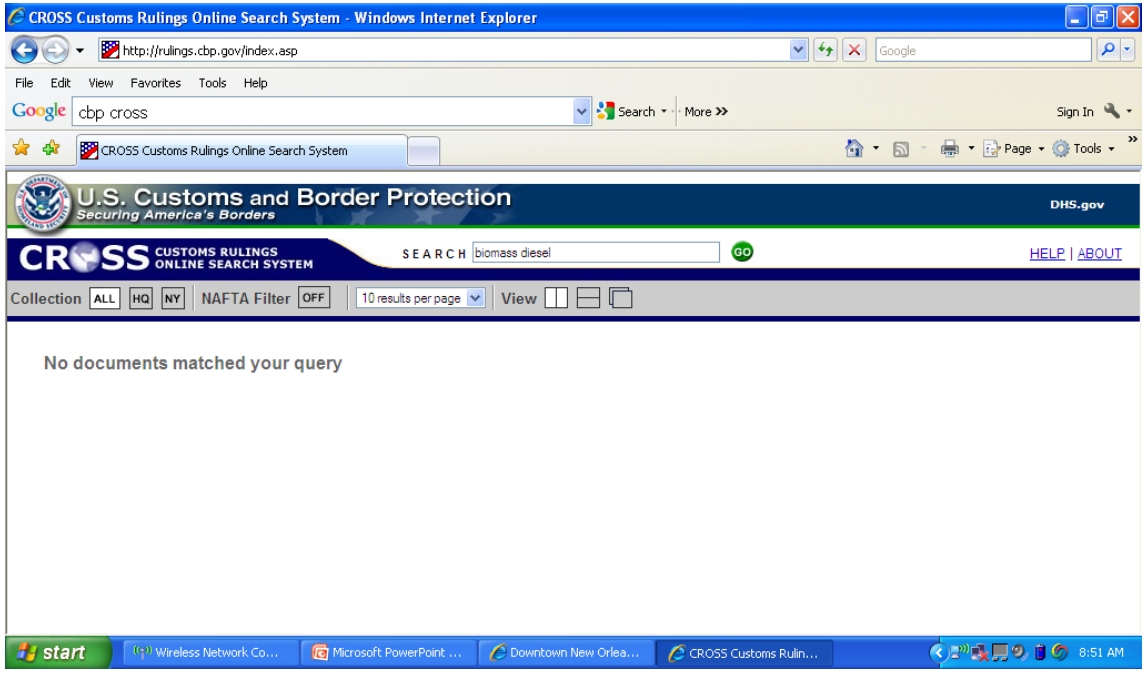
  - Covers B100 to B30 if it is a fatty acid ester

CHARTER BROKERAGE

HTSUS Issues for Renewable Fuels

Where does biodiesel belong under the HTSUS?

No fatty acid esters?



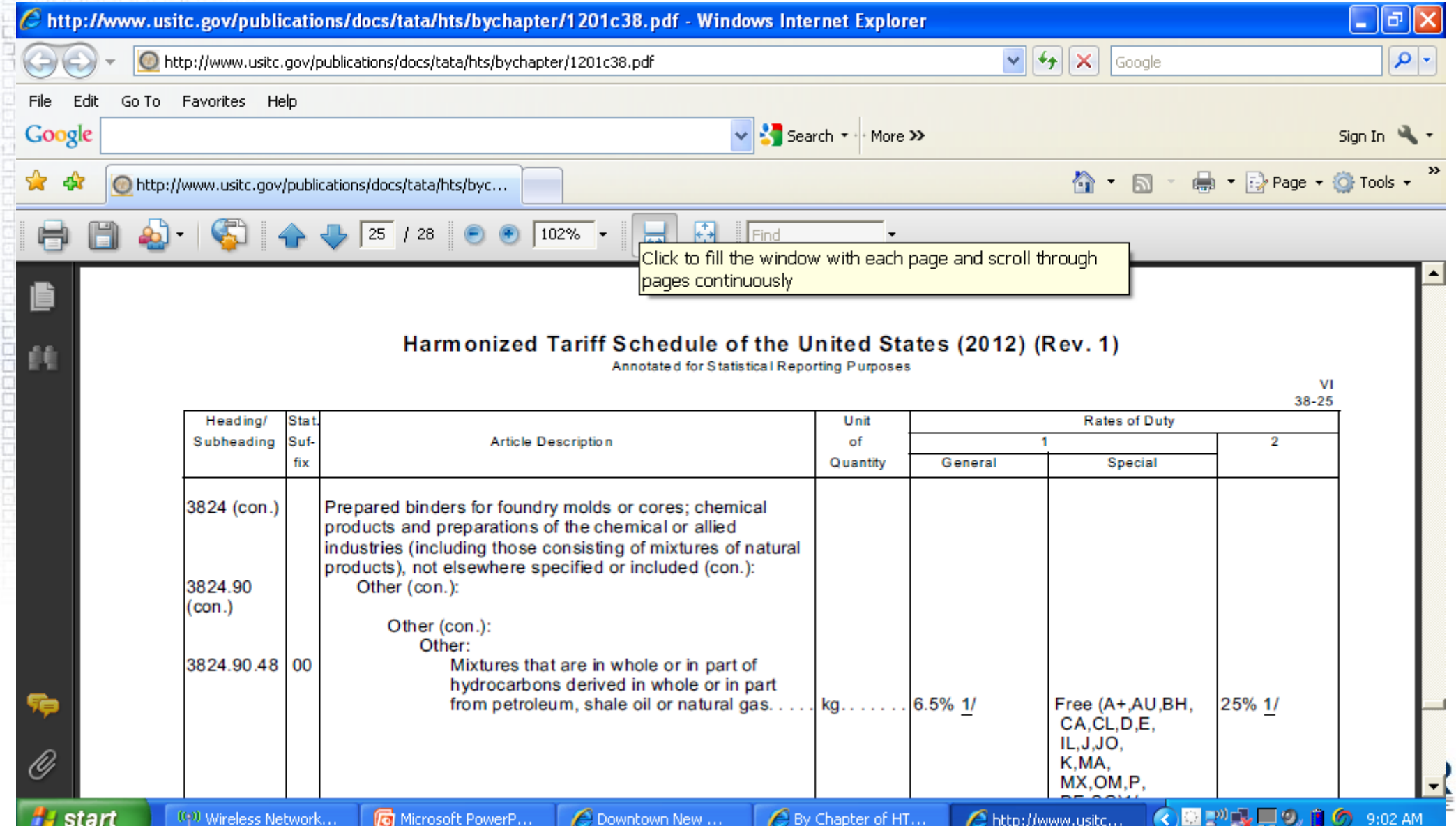
Does not apply

Heading/ Subheading	Stat. Suf-fix	Article Description	Unit of Quantity
1518.00		Animal or vegetable fats and oils and their fractions, boiled, oxidized, dehydrated, sulfurized, blown, polymerized by heat in vacuum or in inert gas or otherwise chemically modified, excluding those of heading 1516; inedible mixtures or preparations of animal or vegetable fats or oils or of fractions of different fats or oils of this chapter, not elsewhere specified or included:	

CHARTER BROKERAGE

HTSUS Issues for Renewable Fuels

Where does biodiesel with no fatty esters belong under the HTSUS?
Chemically the same as diesel?



Harmonized Tariff Schedule of the United States (2012) (Rev. 1)
Annotated for Statistical Reporting Purposes

VI
38-25

Heading/ Subheading	Stat. Suf-fix	Article Description	Unit of Quantity	Rates of Duty 1 General	Rates of Duty 1 Special	Rates of Duty 2
3824 (con.)		Prepared binders for foundry molds or cores; chemical products and preparations of the chemical or allied industries (including those consisting of mixtures of natural products), not elsewhere specified or included (con.):				
3824.90 (con.)		Other (con.):				
		Other (con.):				
		Other:				
3824.90.48	00	Mixtures that are in whole or in part of hydrocarbons derived in whole or in part from petroleum, shale oil or natural gas.	kg.	6.5% 1/	Free (A+,AU,BH, CA,CL,D,E, IL,J,JO, K,MA, MX,OM,P,	25% 1/

HTSUS Issues for Renewable Fuels

Where does biodiesel with no fatty esters belong under the HTSUS?

Chemically the same as diesel?

2710 (con.)		Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 percent or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations; waste oils (con.):		
		Petroleum oils and oils obtained from bituminous minerals (other than crude) and preparations not elsewhere specified or included, containing by weight 70 percent or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations, other than those containing biodiesel and other than waste oils (con.):		
2710.19 (con.)		Other (con.):		
		Distillate and residual fuel oils (including blended fuel oils) (con.):		
2710.19.11		Testing 25 degrees A.P.I. or more.		10.5¢/bbl 1/

Other Considerations

- TSCA – is the new product subject to TSCA? Is it on the TSCA inventory.
- Drawback – classification will impact the ability to claim drawback
  - Outside 1313(p) can be difficult to match imports and exports
- FDA – could be subject to FDA and prior notice requirements
- Exporting a renewable fuel – licensing, classification
- Valuation – RINS value separately invoiced from the seller

CHARTER BROKERAGE

TD 66.16 Implications

Receipt Category	TD 66-16 Feedstock / Class
1	Crude / I
2	Crude / II
3	Crude / III
4	Crude / IV
5	Residual Fuel Stock / II
6	Wax Distillate / II
7	Wax Distillate / III
8	Cracking Stock / II
9	Cracking Stock / III
10	Catalytic Naphtha / IV
11	Unfinished Naphtha / IV
12	Crude Tops / IV
13	Topped Crude / II
14	Unfinished Kerosene Distillate / IV
15	Gasoline for Further Processing/ IV
16	Butane / IV

Raised by CBP Laboratory and Scientific Services ("LSS") at the FTZ gulf coast forum

- Considerations
  - Inputs/Receipts for blending
    - Ex: biodiesel for blending
  - Outputs/Shipments
    - Ex: Shipment of biodiesel
- Different names – does this impact?
- Some products are chemically identical and are used in the same manner vs. chemically differently

CHARTER BROKERAGE

News

A Fine for Not Using a Biofuel That Doesn't Exist

David Eggen for The New York Times

Refiners are required to blend motor fuel with cellulosic biofuel made from wood chips or the inedible parts of plants like corn cobs.

By MATTHEW L. WALD
Published: January 9, 2012

WASHINGTON — When the companies that supply motor fuel close the books on 2011, they will pay about $6.8 million in penalties to the [illegible] to mix a special type of biofuel into their [illegible]d by law.

RECOMMEND
TWITTER
LINKEDIN
SIGN IN TO E-MAIL

Friday, March 23, 2012

Web Site Search

Hawai`i Free Press

Front Page | Search Articles | About HFP

Current Articles | Archives | Search

Wednesday, January 11, 2012

The Renewable Fuels Disaster

By NCPA :: 273 Views :: National News, National Politics

From NCPA

Deficit hawks, environmentalists and food processors are celebrating the expiration of the ethanol tax credit. This corporate handout gave $0.45 to ethanol producers for every gallon they produced and cost taxpayers $6 billion in 2011. However, the continuation of the Renewable Fuel Standard (RFS), which creates government-guaranteed demand for corn, will limit the effectiveness of the tax break expiration and continue to distort the market for corn, says Aaron Smith, an associate professor at the University of California, Davis.

LINKS:

TEXT "follow HawaiiFreePress" to 40404

JOIN OUR EMAIL LIST

RSS FEED Latest 25 articles

TWITTER Hawai`i Free Press

2aHawaii

CHARTER BROKERAGE

News

OPIS NET : Brad Addington
***PERPLEXING NEW EXPORT CODES ASIDE, U.S. ETHANOL EXPORTS DROPPED IN JANUARY

US Navy sails 1,200 miles on algae biofuel

Posted on March 21, 2012 - 10:06 by **Pete Danko, EarthTechling**

Newt Gingrich may **mock** algae as a source of clean fuel, but the U.S. Navy's got no problen the Navy is extending - literally - its use of biofuels derived from the stuff.

Last November, a remotely controlled destroyer using a 50-50 blend of algae-derived, hydr and a standard petroleum fuel made a 17-hour trek 150 or so miles up the California coast fi to the Naval Surface Warfare Center Port Hueneme.

That was the Navy's **lar fuel demo** - until now. **According to Solazyme**, the U.S. Navy Frigate fleet ship USS Ford just sailed from its homeport in Everett, Wash., down to San Diego using 25,000 gallons of the company's Soladiesel blended in even proportions with F-76 military diesel.

Solazyme didn't say exactly how far the trip was, but charts from the National Oceanic and Atmospheric Administration [**PDF**] peg the distance from Seattle (about 30 miles south of

The New York Times

Science

WORLD | U.S. | N.Y. / REGION | BUSINESS | TECHNOLOGY | SCIENCE | HEALTH | SPORTS | OPINION
ENVIRONMENT | SPACE & COSMOS

Butter Holds the Secret to the Latest Biodiesel Fuel

By KENNETH CHANG
Published: August 9, 2010

Butter is not the fuel of the future, but it is possible to churn perfectly good diesel fuel out of it.

Enlarge This Image

Wesley Bedrosian

"It was something we wanted to show could be done," said Michael J. Haas, a research biochemist at the United States Department of Agriculture.

"It's quirky," he acknowledged of the dairy-to-diesel research, which was published in June in the Journal of Agricultural and Food Chemistry.

News

WSJ Article by Alessandro Torello.

Summary:

1. Huge investments by companies to meet biodiesel requirements (ex: Neste Oil $850 million) other company's investments cited in the billions.
2. EU law requires that by 2020 that 10% of transport come from renewable sources
3. Backlash has started – Friends of the Earth Europe urged EU to drop target citing consumer costs of €126b
4. Scientific panel questioning whether biofuels are really carbon neutral

As EU Ramps Up Biofuels, Climate Debate Intensifies

By Alessandro Torello

ROTTERDAM, Netherlands—At the tip of the 30-mile-long peninsula that hosts one of the busiest ports in the world, Finland's **Neste Oil** has just finished converting a plot of land reclaimed from the sea into the biggest biodiesel refinery in Europe.

The €670 million ($850 million) investment by the state-controlled company in the plant, which is already transforming vegetable oil and waste animal fat into diesel, aims at benefiting from European Union policies that seek to cut greenhouse-gas emissions from cars and trucks.

But this plant, with a capacity of 800,000 metric tons a year, and others built by different companies around Europe face a new challenge: a possible shift in EU policy that could undermine their profitability.

"Europe. Europe is the key" in terms of markets, in important part because of EU regulation, said Matti Lievonen, Neste Oil's chief executive, in an interview on the day the company announced the start-up of production here in September.

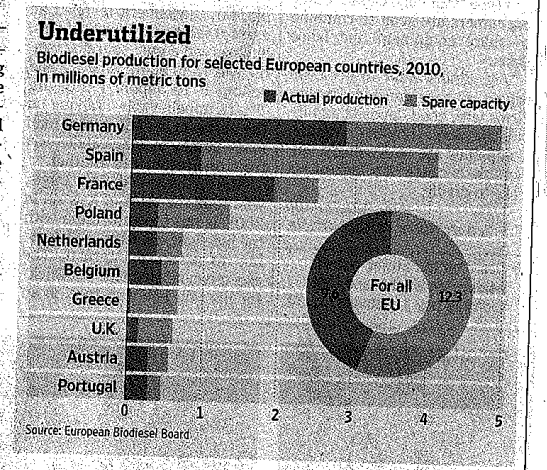
However, less than three years after adopting a key law—which mandates that by 2020, 10% of the total energy used in transport will have to come from renewable sources such as biofuels—a tough debate has begun in the EU on whether biofuels really are better for the climate than conventional fuels.

On Thursday, the environmental organization Friends of the Earth Europe urged the EU to scrap its 2020 target, saying it would cost consumers as much as €126 billion without helping the climate.

"Europe's squeezed consumers and taxpayers are paying the price for a flawed green policy that delivers no environmental benefits," said Robbie Blake, a campaigner with the group.

If policy makers judge biofuels' touted benefits to the climate to be illusory, officials say changes in regulation could result. That would likely cause the demand for biofuels to drop, consequently calling into question many investments.

The majority of European cars run on diesel engines, and companies like **Cargill**, **Sofiprotéol** in France or **Abengoa** in Spain have all together invested billions of euros in building up biodiesel production capacity. But current capacity would already almost be enough to cover the EU 2020 targets, while regulatory uncertainty is doing its part in lowering interest in new investments, experts say.



Biofuels are usually more expensive than regular gasoline or diesel. Europe diesel prices have been around $1,000 per ton, while biodiesel prices range from $1,200 to $1,400 per ton, said Matti Lehmus, responsible for oil products and renewable business at Neste Oil.

A liter of biofuel emits roughly the same carbon dioxide as a liter of fossil fuel when used in a car engine. But biofuels made from refining vegetable oils have been considered virtually carbon neutral because the plants from which the fuel is made has previously absorbed the carbon dioxide that is emitted by burning it.

By setting a target for 2020, the EU is effectively encouraging farmers to grow biofuel crops. But that potentially incentivizes farmers to cut down forests and move into peat lands, both of which absorb high levels of carbon dioxide in their natural states. Even if these lands aren't claimed directly to grow crops for biofuels, biofuel crops could displace food crops that would then be forced to move there. This process is called indirect land use change, or ILUC.

The debate has intensified since a panel of scientists from the European Environmental Agency, a body that provides scientific background to the EU for its policy decisions, began to question whether biofuels are really carbon neutral.

"If bioenergy production replaces forests, reduces forest stocks or reduces forest growth, which would otherwise sequester more carbon, it can increase the atmospheric carbon concentration. If bioenergy crops displace food crops, this may lead to more hunger if crops are not replaced and lead to emissions from land-use change if they are," the 19 scientists said in their report.

"The potential consequences of this bioenergy accounting error are immense," they said.

In 2008, EU governments and the European Parliament left for later the highly controversial issue of how to account for the full impact of higher demand for biofuels on the global use of land. The issue is so controversial that the European Commission, the EU's executive body, is already a year late in coming up with a way to account for ILUC in certifying biofuels.

Neste Oil says it isn't worried about policy change. In Rotterdam, the company mainly produces NExTBL—40% of whose ingredients are waste products, like animal fat from the food industry. NExTBL has the potential to replace other biodiesels because it can be used in higher percentages when mixed with regular fuel, has a higher energy content and can stand lower temperatures, Mr. Lievonen said.

Recent News

- The WSJ article cited the Neste NExTBL:

NExBTL renewable diesel is based on Neste Oil's proprietary technology, which can use a wide range of raw materials. In its plant in Finland, the company currently uses a mix of palm oil, rapeseed oil, and animal fat to produce renewable diesel. Offering excellent product quality - even better than fossil diesel - NExBTL can be used in all diesel engines.

Turning the reactor overboard

From Fracht Netherlands presentation Sept. 3, 2009

CHARTER BROKERAGE

Question & Answer

CHARTER BROKERAGE