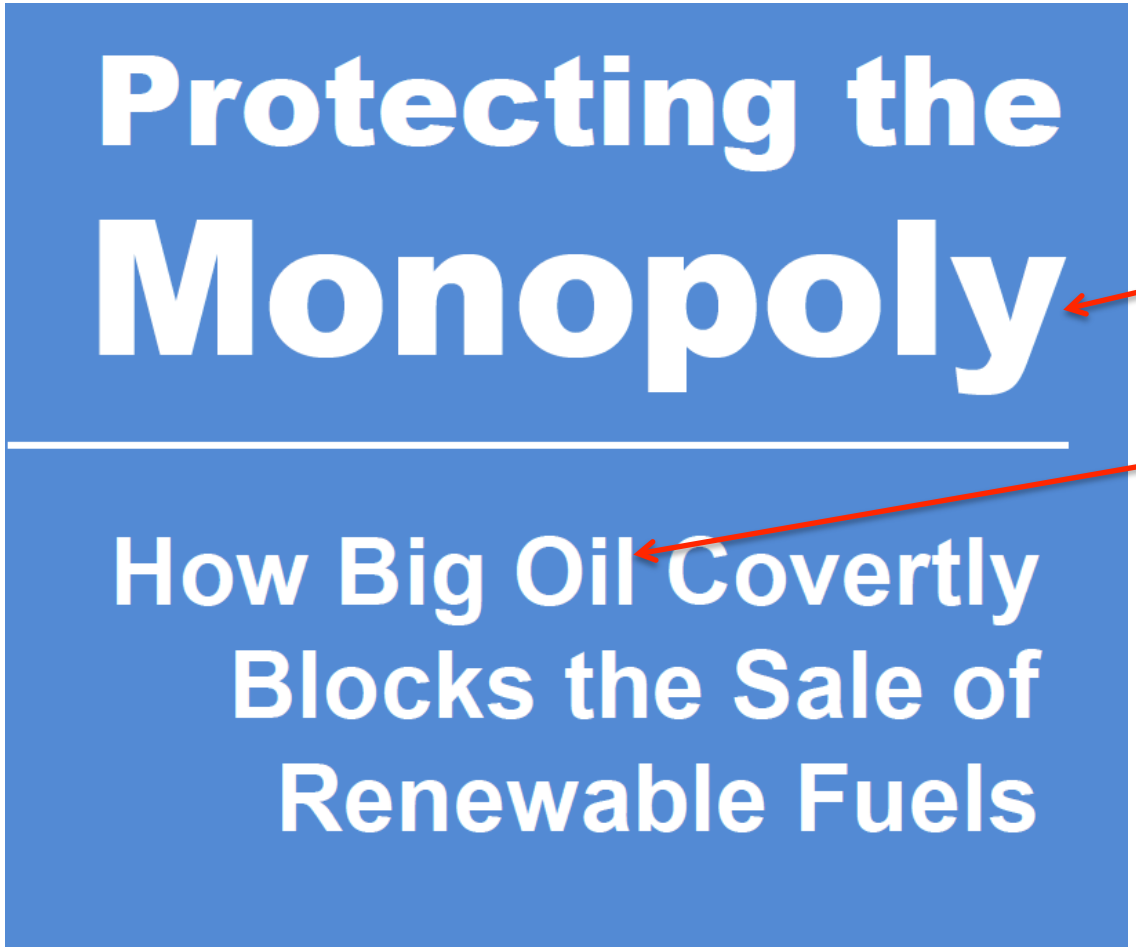
Why is everyone yakking about E85?

A Digest illustrated guide to the controversy over freedom at the pump.

July 2014

BiofuelsDigest
The world's most widely read biofuels daily



If you saw this cover page from a report by the Renewable Fuels Association, you might have become immediately alarmed.

Terminology like “monopoly”, “Big Oil”, “covertly” and “blocks the sale” is designed to get your attention.

- Of the nearly **48,000 retail gas stations** carrying a "Big Five" oil company brand, **less than 300 (0.6%) offer E85 or E15.**
- Of the approximately **34,300 retail gas stations** displaying other oil refiner brands, **less than 475 (1.4%) sell E85 or E15.** And just two brands—Cenex (CHS) and Speedway/ SuperAmerica (Marathon)—account for more than half of the refiner-branded stations offering these fuels.
- Of the remaining 74,000 independently-branded stations, between 1,700 and 2,600 stations (2.3%-3.5%) sell E85 or E15.

Here's the anomaly the Renewable Fuels Association noticed, and headlined in their report.

They saw that an independently-branded station was four times as likely to sell E85 ethanol fuel than one of the Big Five majors.

- Fuel contracts require supplier exclusivity and allow distributors to sell only those fuels made available by the supplier.
- Contracts typically require minimum sales volumes of branded fuels, meaning increased sales of E85 or E15 could jeopardize the retailer's ability to meet minimum volume quotas for fossil-based fuels.
- Contracts often require multiple grades of branded gasoline to be sold at all times, which typically eliminates the retailer's ability to store E85 or E15.
- Many franchise and branding agreements require retailers to post intimidating warning labels on E85 and E15 dispensers.
- Some agreements require costly and unnecessary equipment to be installed before a retailer can sell E85 or E15.
- Some contracts require E85 dispensers to be isolated from other dispensers.
- Branding agreements discourage or prohibit retailers from promoting or advertising the availability of E85.
- Contracts include substantial penalties for violating the terms.

After investigating, here's what RFA alleges — a carefully-designed 8-point scheme to keep higher ethanol blends out of the hands of consumers.

Methods alleged include setting contract minimums, labeling requirements, display limits, advertising restrictions, and infrastructure burdens.

The practical result, says RFA, is a big differential in a retailer's willingness to carry E15 or E85.

Who Sells E85 and E15? Oil-Branded Stations vs. Independent-Branded Stations

	Branded Stations	Stations Offering E85	Stations Offering E15*	% Offering E85/E15
"Big Five" Branded Stations				
Shell	14,000	99	0	0.71%
BP	11,300	60	0	0.53%
Chevron	8,000	44	0	0.55%
ExxonMobil	7,753	56	0	0.72%
ConocoPhillips	6,875	29	1	0.42%
Sub-Total "Big Five"	***47,928***	***288***	***1***	***0.60%***
Oil Refiner Branded Stations				
Citgo	5,900	38	0	0.64%
Marathon	5,046	38	0	0.75%
Valero	5,000	54	1	1.08%
Sunoco	4,933	42	0	0.85%
Sinclair	2,700	10	2	0.37%
Gulf Oil	2,000	7	0	0.35%
Texaco	2,000	6	0	0.30%
CHS (Cenex)	1,600	93	24	5.81%
Speedway/SuperAmerica (Marathon)	1,371	173	0	12.62%
Hess	1,360	-	0	0.00%
Murphy USA	1,128	9	8	0.80%
Alon	900	-	0	0.00%
Tesoro	377	2	0	0.53%
Sub-Total Oil Refiner	***34,315***	***472***	***35***	***1.38%***
Unbranded/Independent Stations				
Sub-Total (DOE E85 Data/RFA E15 Data)	***73,822***	***1,713***	***42***	***2.32%***
Sub-Total (E85Prices.com/RFA E15 Data)	***73,822***	***2,573***	***42***	***3.49%***
Grand Total				
Grand Total (DOE E85 Data/RFA E15 Data)	**156,065**	**2,473**	**78**	**1.58%**
Grand Total (E85Prices.com /RFA E15 Data)	**156,065**	**3,333**	**78**	**2.14%**

So, what can be done to enhance competition and consumer choice in the marketplace? Big Oil's stranglehold on the retail fuel market could be substantially loosened through a combination of policy and market-based solutions, including:

- A Federal investigation into anti-competitive practices
- Enforcement of the Petroleum Marketing Practices Act and Gasohol Competition Act
- Enforcement of the statutory Renewable Fuel Standard (RFS) requirements
- Investment in infrastructure
- Consumer education about the economic and environmental benefits of biofuels
- Incentivize the continued production of FFVs

Can the problem be remedied? RFA says yes. But they call for Federal investigations as well as further investment in education and infrastructure to remedy the access problem.

Sens. Klobuchar and Grassley want FTC to look at anti-competitive oil practices

Meghan Sapp | July 10, 2014

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In Washington, U.S. Senators Amy Klobuchar (D-MN) and Chuck Grassley (R-IA) said that a new report on anti-competitive practices by oil companies to block biofuels underscores the need for action to protect consumers. The report from the Renewable Fuels Association (RFA) found that unbranded or independent stations are roughly four to six times more likely to offer E85 and 40 times more likely to offer E15 than stations carrying a "Big Five" oil brand. Klobuchar and Grassley have called on the Federal Trade Commission to evaluate concerns that oil companies may be engaging in anti-competitive practices. Klobuchar is the chair of the Antitrust Subcommittee and Grassley is the ranking member of the Judiciary Committee.

Meanwhile, powerful allies on Capitol Hill have already started the ball rolling, vis-a-vis investigations by the Federal Trade Commission.

FTC agrees to investigate whether oil companies limit ethanol sales at the pump

Meghan Sapp | August 26, 2013

In Washington, the Federal Trade Commission has agreed to investigate whether or not oil companies are pressuring gas stations to limit the amount of ethanol they sell by forcing them to sell premium gasoline. The investigation is in response to a request from Senators Chuck Grassley and Amy Klobuchar.

More background on the story from the Digest

FTC report says ethanol industry not concentrated
FTC proposing changes to labeling requirements for higher than E10
FTC extends comment period on labeling pumps above E10

You might ask – "How much of this is political grandstanding?" After all, the FTC already agreed last summer to start an investigation into anti-competitive practices at gasoline stations.

Senators want Justice Department and FTC to investigate oil industry

Meghan Sapp | August 22, 2013

In Washington, U.S. Senators Amy Klobuchar (D, MN) and Chuck Grassley (R-IA) called on the Justice Department and Federal Trade Commission (FTC) to investigate possible anticompetitive practices by oil companies that limit consumers access to homegrown renewable fuels. In a letter to Attorney General Eric Holder and FTC Chairwoman Edith Ramirez, Klobuchar, the Chair of the Antitrust Subcommittee, and Grassley, the Ranking Member of the Judiciary Committee, urged the Administration to take action to address recent reports indicating that oil companies may be undermining efforts to distribute renewable fuels, including higher ethanol gasoline blends, that help boost our nation's energy security and lower the price of gas for consumers.

In case you are wondering, the FTC didn't exactly sit on the request. Only four days elapsed from the original request until the FTC announcement.

E85: A Tale of Two Markets

A look at disparate price and availability according to retail station brand

Since RIN prices began to rise in 2013, the nationwide average discount for E85 (vs. E10) at independent stations has been 14% or greater for all but one month. During the same period, the nationwide average discount for E85 at major-branded stations reached 14% only once.

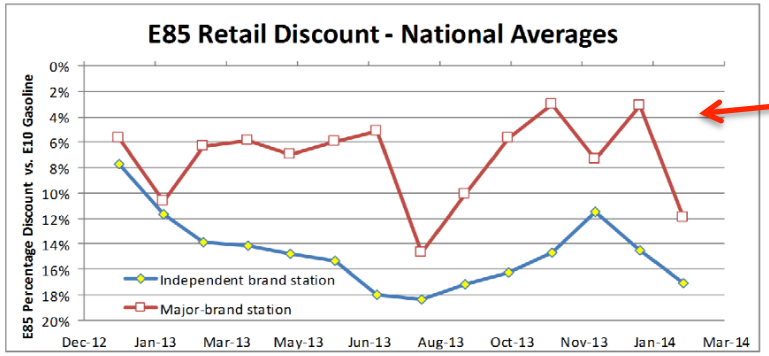


Fig. 2: Discounts for E85 Are Consistently Steeper at Independent Retail Stations

Rising RIN prices tend to coincide with lower E85 prices only at independent-brand retail stations.

RFA got a lot of inspiration for this current wave of activity from an influential report by AJW that circulated around the industry this spring, titled "E85: A Tale of Two Markets" — which uncovered the disparity between oilco-branded and independent-station E85 adoption.

Perhaps most alarmingly, AJW found that rising RIN prices, which are supposed to incentivize lower E85 prices and renewable fuel adoption, were only doing so at independents.

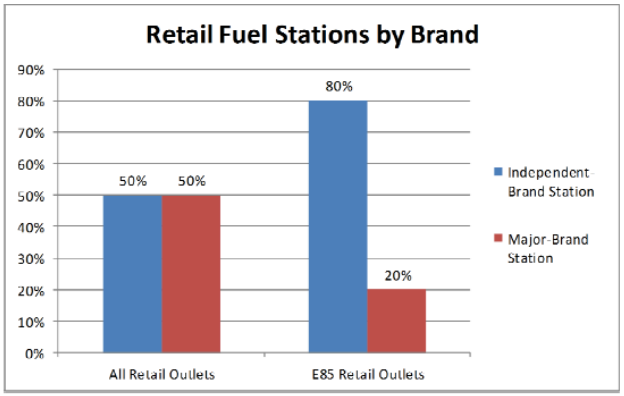
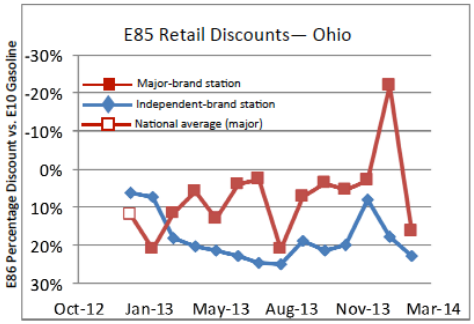


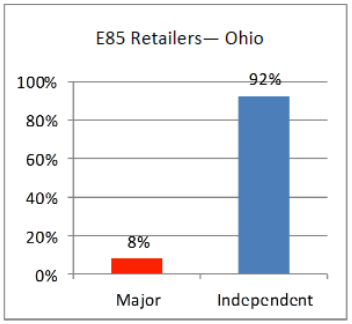
Fig. 1: E85 Is More Likely to Be Found at an Independent Retail Outlet

AJW found that 80% of E85 outlets were independents, though independents represent only 50% of the retail market.

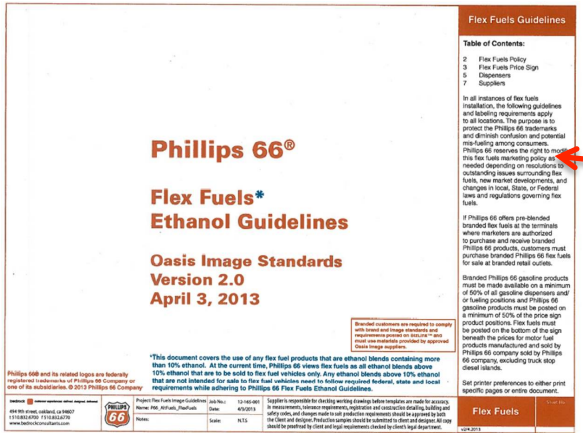
OHIO

The gap in discounts offered in Ohio was truly stark at times. Major-branded stations offered *almost no discount* for E85 on several occasions when the independent stations were selling E85 at more than a *20 percent discount* to their prices for E10.





The state by state gap could be dramatic. In Ohio, AJW found that 92% of E85 retailers were independents, and they were selling E85 at nearly a 20% discount to major oilco brands.



Phillips 66®

Flex Fuels*
Ethanol Guidelines

Oasis Image Standards
Version 2.0
April 3, 2013

*This document covers the use of any flex fuel products that are ethanol blends containing more than 10% ethanol. At the current time, Phillips 66 views flex fuels as all ethanol blends above 10% ethanol that are to be sold to flex fuel vehicles only. Any ethanol blends above 10% ethanol that are not intended for sale to flex fuel vehicles need to follow required federal, state and local requirements while adhering to Phillips 66 Flex Fuels Ethanol Guidelines.

Flex Fuels Guidelines

Table of Contents:

2 Flex Fuels Policy
3 Flex Fuels Price Sign
5 Dispensers
7 Suppliers

In all instances of flex fuels installation, the following guidelines and labeling requirements apply to all locations. The purpose is to protect the Phillips 66 trademarks and diminish confusion and potential mis-fueling among consumers. Phillips 66 reserves the right to modify this flex fuels marketing policy as needed depending on resolutions to outstanding issues surrounding flex fuels, new market developments, and changes in local, State, or Federal laws and regulations governing flex fuels.

If Phillips 66 offers pre-blended branded flex fuels at the terminals where marketers are authorized to purchase and receive branded Phillips 66 products, customers must purchase branded Phillips 66 flex fuels for sale at branded retail outlets.

Branded Phillips 66 gasoline products must be made available on a minimum of 50% of all gasoline dispensers and/or fueling positions and Phillips 66 gasoline products must be posted on a minimum of 50% of the price sign product positions. Flex fuels must be posted on the bottom of the sign beneath the prices for motor fuel products manufactured and sold by Phillips 66 company sold by Phillips 66 company, excluding truck stop diesel islands.

Set printer preferences to either print specific pages or entire document.

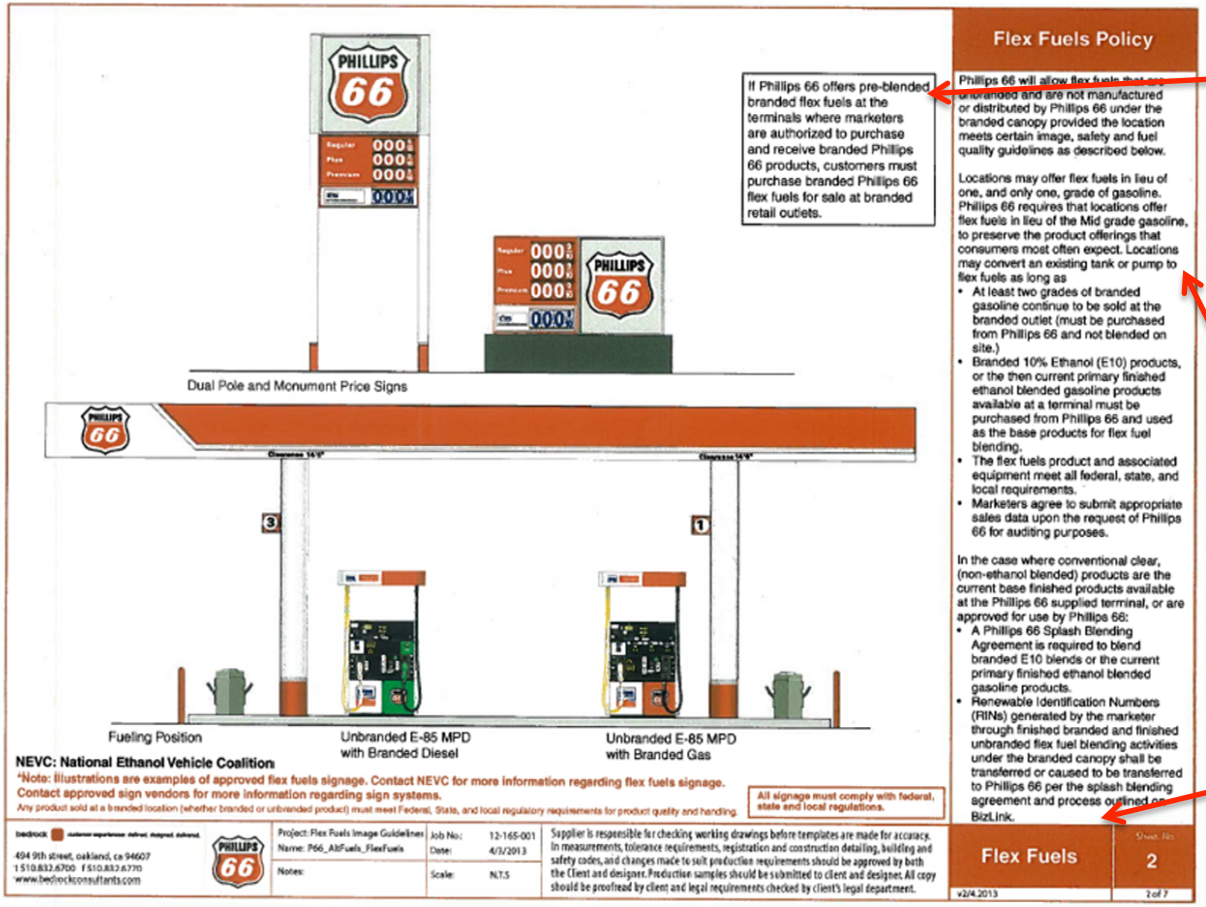
Flex Fuels

In its report, RFA based some of its allegations around restrictions imposed by petroleum marketing agreements — and we see some of the mechanisms in this Phillips 66 ethanol guideline document released last year.

If Phillips 66 makes flex-fuels, the retailer is obligated to buy them from Phillips – ensuring that Phillips 66 has a throttle to apply on demand, by setting the wholesale price.

The retailer can only substitute a higher-ethanol blend such as E85 for mid-grade gasoline, not premium. E85, at 105 octane, is generally most competitive with 91-octane premium fuels that typically cost 20 cents more per gallon at retail.

The retailer cannot keep and sell RINs. Those go back to Phillips 66.



Flex Fuels Guidelines

E85 Wholesale Prices

July 14, 2014 Prices. Posted July 15, 2014.

Supplier Name	Location	Contact Info.	Price*	Ethanol Content	Source
Absolute Energy	St. Ansgar, Iowa	Don Burns Absolute Energy 641-326-2220	$ 1.71	83%	DTN
Hartland Fuel Products	Des Moines Terminal		$ 2.11	75%	OPIS
Hartland Fuel Products	Des Moines Terminal		$ 2.16	70%	OPIS
HollyFrontier	Des Moines Terminal		$ 2.41	70%	OPIS
Quad County Corn Processors	Galva, Iowa	Matt Carter EcoEnergy 615-786-0404	$ 1.88	85%	Company Website
RPMG	Des Moines Terminal	Emily Black RPMG 952-465-3239	$ 2.00	70%	OPIS
Siouxland Energy Cooperative	Sioux Center, Iowa	Tom Miller Siouxland Energy 712-722-4904	$ 1.85	80%	Company Website
The Andersons-Denison	Denison, Iowa	John DiMartini The Andersons 419-891-6491	$ 1.92	85%	DTN
Valero Corp.	Des Moines Terminal		$ 2.14	70%	OPIS

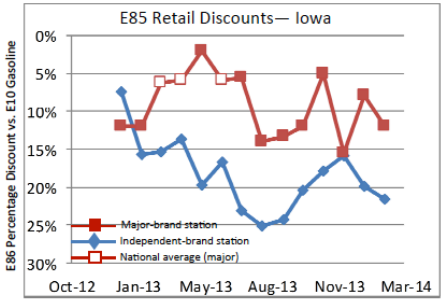
*Prices rounded to nearest penny.

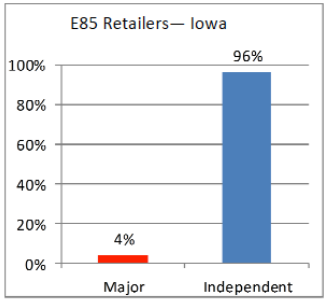
Comparative Price Information

Des Moines Rack Average Clear Regular Gasoline (for comparison)	$ 2.98	OPIS

IOWA

At times, the discount for E85 at Iowa's independent stations was *three times* that offered at its major-branded stations. The discounts offered at major-branded and independent stations converged only one time since RIN prices began to rise in 2013, and at no time since January 2013 was E85 less expensive at major-branded stations.





Are major oilcos taking the RINs in order to provide discounts to retailers and consumers?

Apparently not. As this chart from the Iowa Renewable Fuels Association shows, E85 blends vary tremendously from wholesaler to wholesaler, despite the same basic commodity costs for all.

AJW found that — despite more than a 40% difference between the price of wholesale E85 and wholesale gasoline in Iowa, major oilcos were offering less than 15% discounts on E85 prices in Iowa this past spring, compared to E10 gasoline.

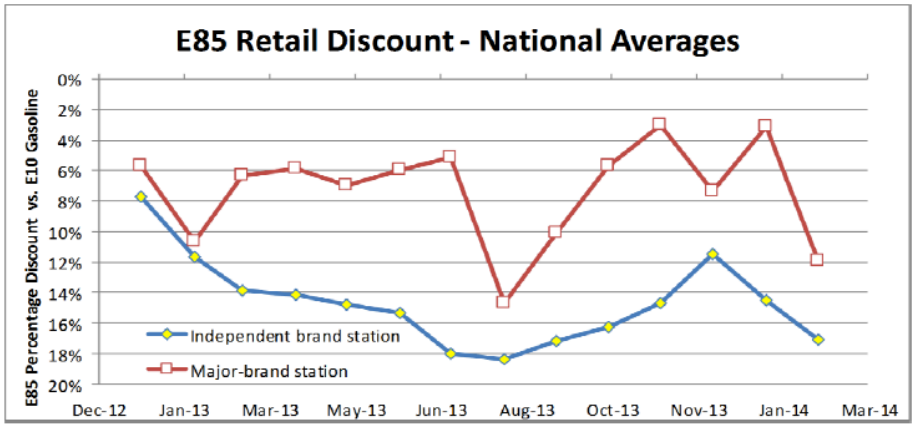


Fig. 2: Discounts for E85 Are Consistently Steeper at Independent Retail Stations

Are refiners paying for RINs and blenders pocketing them? Leaving the consumer with more expensive fuel, and little or no parity-priced E85 available to drive renewable fuel adoption?

If I was a conspiracy guy I would say that the majors have no incentive to make E85 work because that would demonstrate that it is feasible to move beyond the E10 blend wall. If it is feasible then EPA will mandate it and then they would lose market share.

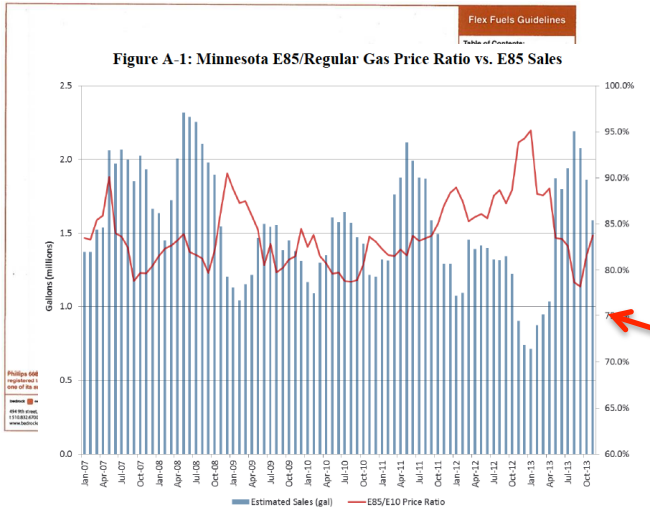
An alternative explanation is that there really is little "need" to generate additional RINs beyond E10 levels of ethanol consumption until EPA mandates increase beyond 13 BG and the beyond-E10 RINs are needed for compliance. There likely is a bit of both going on. But the fact that retailers in the Southeast, East, and West cannot find E85 priced much below E10 says that there is little incentive right now for competitive pricing of E85.

And yes, all the data suggest that most of the RIN value is being pocketed by blenders and paid by refineries. Of course this is a net zero game if a blender is also a refinery. It is a losing game for the "merchant refiners" who are not blenders. They pay a high RIN price--which is supposed to incentivize investment in E85 infrastructure--with no benefit of the investment.

It seems like it is a good strategy to emasculate the RFS but those opposed to it.

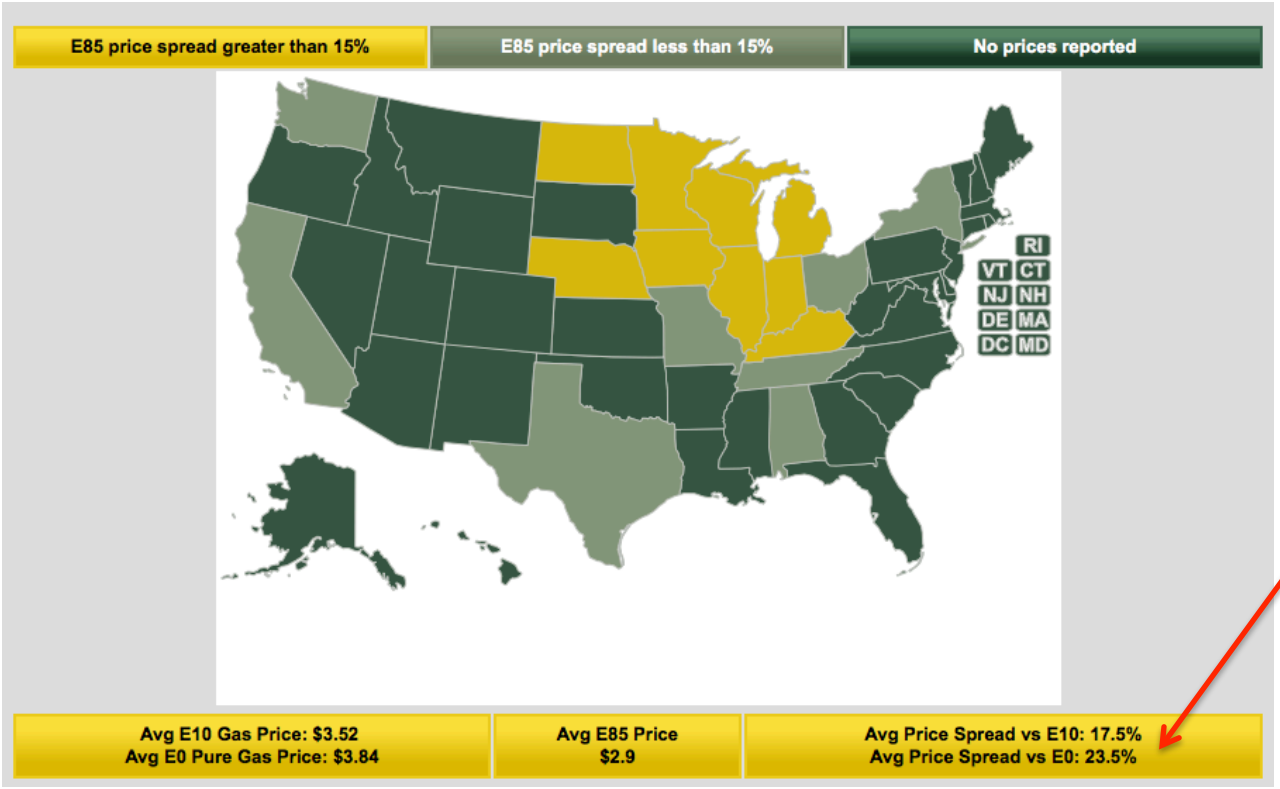
Iowa State professor Bruce Babcock thinks so. In explaining the data to the Digest, he noted that “It seems like it is a good strategy to emasculate the RFS but those opposed to it.”

But, he notes there is “little incentive right now for competitive pricing of E85.”



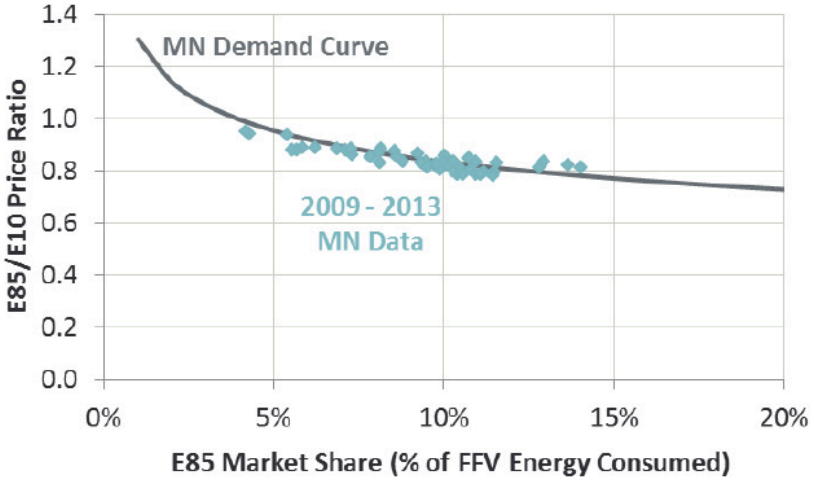
Is it simply the case that E85 is a "failed fuel" and "consumers don't want it", or is price at the heart of it? Evidence from Minnesota offered by the state government and charted by noted economist Phil Verlager suggests that there is a strong correlation between E85 price and demand.

Despite the elastic demand, the Minnesota price forE85 never drops to the point where E85 (which has a lower energy density than gasoline) reaches the 25% discount to gasoline that equates to the same cost-per-mile.



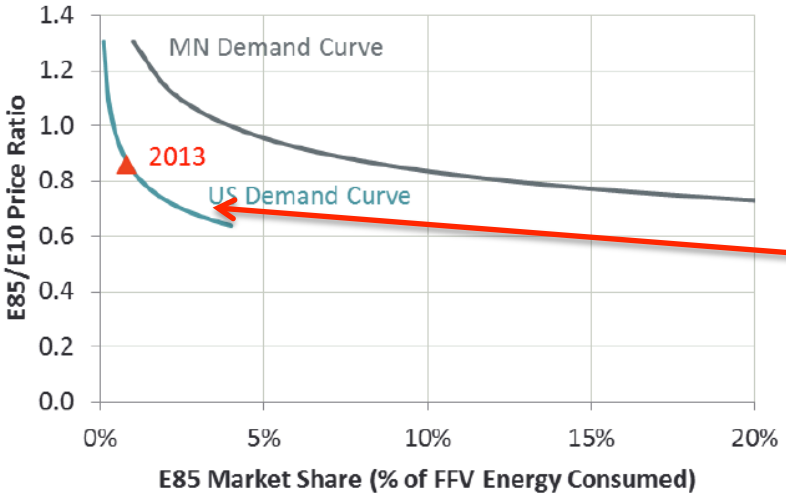
Does E85 get a fair shot in the US market based on wholesale prices for ethanol and gasoline? Not really. Despite a 30% discount between the wholesale price of ethanol and gasoline, E85 averages a 17.5% price discount across the US, according to E85prices.com.

Figure 14: Minnesota E85 Demand Curve



According to economist Phil Verleger, the share could go from less to 5% to 20% in Minnesota if the E85/E10 price ratio fell to around 0.75. That's in line with the current differential between wholesale ethanol and gasoline prices.

Figure 16: US E85 Demand Curve



But Minnesota does not equate to the US.

Still Verlager projects that national E85 demand would reach between 3-4% market share if it were priced based on today's actual wholesale ethanol and gasoline costs. That equates to almost 5 billion gallons of renewable fuels — more than $10B in sales.

Murphy USA Stations opens first of 7 planned E15/E85 additions in Iowa

Jim Lane | June 26, 2014

In Iowa, Murphy USA is now offering E15 and E85 at its Indianola, Iowa location. The fueling site is the first of seven Murphy USA locations in Iowa to begin offering these higher ethanol blends. By the end of summer, E15 and E85 will also be available at Murphy USA locations in Clinton, Davenport, Fort Dodge, Mason City, Newton, and Sioux City, Iowa.

In accordance with summertime fuel regulations, E15 will initially be sold to flex-fuel vehicles throughout the summer driving season at Murphy USA locations. However, Murphy USA will offer E15 as a registered fuel to 2001 and newer vehicles starting in mid-September. In addition, Iowa motorists will soon have greater access to biodiesel at Murphy USA's Clinton, Davenport, Fort Dodge, Mason City, and Sioux City locations.

The Murphy USA Indianola fueling site is located at 1502 N. Jefferson Street. Of Murphy USA's 1,200 stations in 23 states, the Indianola location will be the second Murphy USA station to offer E15, and the third Murphy USA station to offer E85. In addition to higher ethanol blends, Murphy USA's Iowa locations will offer three grades of gasoline blended with 10 percent ethanol.

Independents see an opportunity where the majors see marketing hell.

Murphy USA is now offering E15 and E85 at its Indianola, Iowa location. The fueling site is the first of seven Murphy USA locations in Iowa to begin offering these higher ethanol blends. By the end of summer, E15 and E85 will also be available at Murphy USA locations in Clinton, Davenport, Fort Dodge, Mason City, Newton, and Sioux City, Iowa.

ECONOMICAL, HIGH-EFFICIENCY ENGINE TECHNOLOGIES FOR ALCOHOL FUELS

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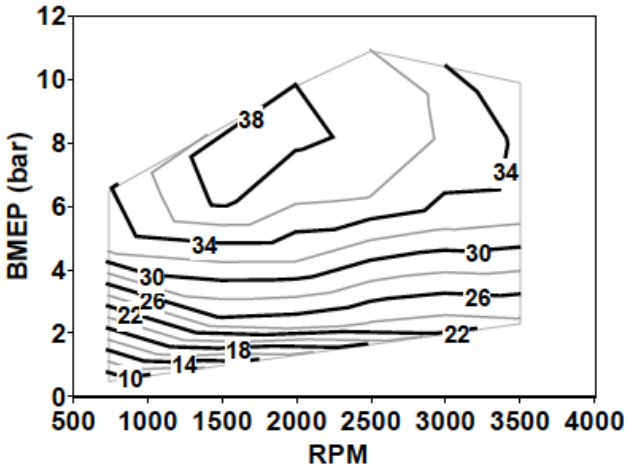

Figure 6. Brake thermal efficiency as a function of engine load and speed for E30 (30% Ethanol-70% gasoline).

What about other high ethanol blends? A 2005 EPA report found that 30% ethanol blends, in engines optimized for ethanol's properties, would gain 10-12% in engine efficiency — more than offsetting the 8% loss in energy density that E30 would have compared to gasoline. The engine they tested was a 1.9 liter, 4-cylinder (modified) diesel engine with 19.5:1 compression ratio.

Standard gasoline, at that high compression, would start to detonate prematurely and cause engine knock. But ethanol's high octane rating means that it easily tolerates the conditions.

What would that mean for consumers driving flex-fuel vehicles? If real-world results equated the lab tests, E30 would cost 26 cents less per gallon at the pump (if priced according to wholesale costs), and do 2-4% better on cost-per-mile.

Are E85-optimzed engines just R&D playtoys? Hardly.

Cummins this week announced the ETHOS 2.8L engine over the past two-and-a-half years, demonstrating that this technology is capable of far exceeding the 50-80 percent CO2 reductions.

The Cummins ETHOS 2.8L is designed specifically to use E-85, a clean-burning blend of 85 percent ethanol and 15 percent gasoline. To take full advantage of the favorable combustion attributes and potential of E-85, the engine operates at diesel-like cylinder pressures and incorporates advanced spark-ignition technology. It delivers the power (up to 250 hp) and peak torque (up to 450 lb-ft) of gasoline and diesel engines nearly twice its 2.8-liter displacement.

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