

Indiana Retailer Workshop:

Market & Profit Opportunities for Higher Ethanol Blends

Presented by:

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Renewable Fuels Association (RFA)

- Since 1981, the Renewable Fuels Association (RFA) has been the authoritative voice of the U.S. ethanol industry. Our members are committed to helping our country become cleaner, safer, and more energy independent. In creating a forum for ethanol producers and industry stakeholders, RFA has achieved an unequalled record of results through action, advocacy and analysis.
- With the most experienced staff in the industry, RFA is able to provide timely, comprehensive industry information to our members, Congress, federal and state government agencies, fuel marketers and retailers, strategic partners, the media and other opinion-leader audiences.
- RFA has been the industry's most forceful advocate for expanding the market for ethanol. Just as important, we've worked to beat back aggressive challenges to ethanol's progress from special interests seeking to maintain fossil fuel status quo.

Today's Topics

- The Questions.
- Higher Blends.
- Equipment Options.
- Equipment & True Installation Cost.
- Your Rights.
- The Future.
- Misinformation.

The Questions...

The Questions...

- How do I differentiate myself from my competitors?
- What are my options with my existing equipment?
New equipment?
- How are E15 and E85 performing for others?
- How much will it cost to add higher blends?
- Is money available to offset my expenses?
- What happens if my competition offers E15 and/or E85 and I do not?
- If I build it, will they come?

E85

E85

- E85 has changed significantly since its retail debut in 1995.
- There are ~3,200 stations offering E85 today.
- 250+ new stations in 2015.
- More than 18 million flex-fuel vehicles (FFVs) can use it and number grows each day.
- Price point drives increased sales rapidly.

U.S. E85 Market Potential

Total FFVs in U.S.	18,000,000
Avg Miles Traveled	13,476
Total Miles Traveled	242,568,000,000
Avg MPG	25.2
Total Fuel Consumed	9,625,714,286
If used 25%	2,406,428,571
If used 50%	4,812,857,143
If used 75%	7,219,285,714

Indiana E85 Market Potential

Total FFVs in Indiana	443,536
Avg Miles Traveled	13,476
Total Miles Traveled	5,977,091,136
Avg MPG	25.2
Total Fuel Consumed	237,186,156
If used 25%	59,296,539
If used 50%	118,593,078
If used 75%	177,889,617

FFV Concentrations for Indiana

- Indianapolis & Gary: >139 Flex-Fuel Vehicles (FFVs) per every 5 miles (highest ranking calculated).
- Outside of Indianapolis, Fort Wayne and South Bend: 91-139/5 miles.

E15

Performance

- Minneapolis, Atlanta & Florida:
 - E15 sales 13-18%.
 - 2700 to 5406 gallons (12-30 stores).
 - Average 14-15% ethanol overall blend rate.

Who is committed?

- Brands offering E15:
 - Kum & Go
 - Minnoco
 - Sheetz
 - MAPCO Express
 - Murphy USA
 - Cenex
 - Sunoco
 - Circle K
 - And more announcements coming!

Current Predictions

- More than 2,000 new stations will come online by 12/31/16.

E15/E85 Vehicle Stats

Stats - Today's Vehicles

- ~244,000,000 light duty vehicles on the road today.
- ~15,000,000 require premium fuel.
- ~203,000,000 are 2001 & newer and approved by EPA to use E15.
- ~41,000,000 are explicitly warranted for E15.
- ~18,000,000 are FFVs (also warranted for E15 year round).
- ~41,000,000 vehicles are 2000 & older.

Equipment Options

Existing Equip. Options - Conversion

- Gilbarco & Wayne Retrofit Kits:
 - Low Cost.
 - UL Certified.
 - Blends up to E25.
- Davis AirTech E85 Meters for Gilbarco & Wayne:
 - Low Cost.
 - NTEP Approved.
 - Blends up to E85.

New Equipment Options

- Three UL certification levels for equipment:
 - 87: E10 (but, tests up to 15% ethanol).
 - 87A: E25.
 - 87A85: Covers all blends to 85% ethanol.
- Both Gilbarco and Wayne offer several options.
- Standalone dispensers, MPDs and blenders.
- Could have UL rating options, depending on requirement of your local AHJ.
- Contact your local equipment provider, or Gilbarco or Wayne directly, for more information on configuration options.

Blender Pump Calibration

- Blender pumps must be calibrated to deliver the right percentage of ethanol in each blend, especially if blending E10 & E15.
- For example: If your E85 is seasonally adjusted, blend percentages from each tank must be adjusted each time blend changes.
- Octane of finished blends should also be verified, as hydrocarbon portion of E85 can vary.
- It is ultimately the responsibility of the dispenser owner.

Blender Pump Calibration

- Remember:
 - 0.1 to 10.5% ethanol is E10.
 - 10.6 to 15% ethanol is E15.
 - 15+ to 85% ethanol is flex-fuel.
 - 70 to 85% ethanol is E85.
- Consideration being made at DOE and EPA to adjust alternative fuel definition.

State vs Federal

- Make sure that you meet both before offering any new fuel.
- Being “approved” by your state does not mean you are “registered” or “approved” at the federal level.
- We want you to do it right! If you have questions, please contact us, we will help you do it correctly.

Equipment Cost

PEI Report for USDA - Approximate Cost for E15 Readiness

- Five different dispenser scenarios (cost/dispenser):
 - Currently compatible: \$1,167.
 - Not compatible, upgrade to UL87A-25: \$4,192.
 - Not compatible, replace all with new: \$20,437.
 - Stand-alone E15: \$31,775.
 - New site, E85-compatible blender pumps: \$10,901.
 - Add ~\$110,000, if tank needs added/replaced (10,000 gal).
- Cost can be minimal to offer E15, first retailer only had to affix labels.
- There are options to minimize costs, conversions, trade-ins, incentives.
- Report did not include pricing on tank linings, which would lower cost significantly over replacing a tank.

Why now?

- Are your dispensers nearing the end of their useful life?
- Do you need to upgrade for EMV?
- If so, take advantage of the available incentives to lower your cost to purchase new equipment, lower your cost of compliance, and offer more fuels at the same time.

Cost Comparison

- If you are already need to upgrade your dispensers, it may cost you more to NOT offer more ethanol-blended fuel!
- Not a life long commitment, if the customers and additional gallons do not appear, you can always return to original product offering.

Your Rights

Petroleum Marketing Practices Act

No franchise-related document entered into or renewed on or after December 19, 2007, shall contain any provision allowing a franchisor to restrict the franchisee or any affiliate of the franchisee from:

- installing on the marketing premises of the franchisee a renewable fuel pump or tank;
- converting an existing tank or pump on the marketing premises of the franchisee for renewable fuel use;
- advertising (including through the use of signage) the sale of any renewable fuel;

Petroleum Marketing Practices Act -2

- selling renewable fuel in any specified area on the marketing premises of the franchisee (including any area in which a name or logo of a franchisor or any other entity appears);
- purchasing renewable fuel from sources other than the franchisor if the franchisor does not offer its own renewable fuel for sale by the franchisee;
- listing renewable fuel availability or prices, including on service station signs, fuel dispensers, or light poles; or
- allowing for payment of renewable fuel with a credit card,

Petroleum Marketing Practices Act - 3

- Also, exception to 3-grade requirement:
 - No franchise-related document that requires that 3 grades of gasoline be sold by the applicable franchisee shall prevent the franchisee from selling a renewable fuel in lieu of 1, and only 1, grade of gasoline.
- If your franchise agreement states otherwise, and you want to offer E85, it is time to contact your brand rep.

The Future

Advanced ICEs and high-octane fuels as a pathway to CAFE/GHG compliance

- Meeting 2017-2025 CAFE/GHG standards will require revolutionary changes in ICE and vehicle technologies.
- OEMs are pursuing a diverse portfolio of technologies to improve vehicle efficiency and achieve compliance.
- Use of a high-octane fuel in advanced IC engines has emerged as one promising pathway to compliance:
 - *Higher compression.*
 - *Direct injection.*
 - *Engine downsizing.*
 - *Turbocharging.*

Ethanol as a source of octane in high-octane future fuels

- Ethanol has characteristics that make it highly attractive as the source of octane in a high-octane future fuel (20-40% ethanol by volume):
 - Significantly increases RON (95-102).
 - High heat of vaporization/charge cooling effects.
 - Lowers CO2 emissions at part-load.
 - Reduces toxics emissions (benzene & 1,3-butadiene).
 - Reduces PM emissions.
 - Reduces RVP (vs. E10).

See:

1. *Stein et al/SAE Int. J. Engines/Volume 6, Issue 1 (May 2013);*
2. *J.E. Anderson et al. "High Octane Number Ethanol-Gasoline Blends: Quantifying the Potential Benefits in the United States," Fuel 97:585-594, 2012*

Ethanol as a source of octane in high-octane future fuels

- Using ethanol as the source of octane in a high-octane future fuel also offers benefits at the refinery:
 - Reduces crude oil throughput and reformer severity at refinery.
 - Reduces refinery CO2 emissions.
 - Lowers cost of octane production vs. conventional refinery processes.

See:

1. MathPro. "Analysis of the Refining Costs and Associated Economic Effects of Producing 92 AKI Gasoline in the U.S. Refining Sector." Conducted for Air Improvement Resource, Inc. October 2012;
2. MathPro. "Analysis of the Refining Economics of High-RON Gasolines." Conducted for USCAR. December 2012;
3. Jacobs Consultancy. "Refinery Greenhouse Gas Study." Conducted for Illinois Corn Marketing Board. March 2012

Is Gasoline Demand Really Dropping?

- We have heard this for years, but 2014 brought change and the answer is no.
- EIA predicts 2015 will have the highest demand in 7-8 years and will not drop for 2-3 years.
- CAFE actually went down for the first time in over 30 years by 0.5MPG.
- Translates to higher “blend wall”, more opportunities for alternatives like ethanol.

Misinformation

Reality of E15

- 6 million miles of testing before approval – no issues.
- 100+ million miles of consumer testing after approval – no issues.

Reality of E15

- Fuels America Poll Data:
 - After reading a short description of E15, a strong majority (82%) supports having it available at local gas stations, with less than one-in-five (18%) opposing it.
 - More than three-quarters (76%) of Americans would also support higher blends, such as E20 or E30 at their local gas stations.
 - Nearly four-in-five (79%) Americans say the fact that oil companies are attempting to block the availability of E15 to many gas stations across the country is bad for consumers.

API & AAA

- API paid CRC to perform a study on E15.
- Study is widely used, and most believe it is the only study ever performed.
- Study is just 1 of 43 total that cover E15.
- AAA was tricked into using it, now API says, “even AAA doesn’t support it.”

NREL Review

- **Failure to use E10 as a control fuel.** Engines that “failed” on E20 or E15 were subsequently tested on E0, but not on E10 (despite the fact that E10 is the predominant in-use fuel today). This approach presumes that failures were related to ethanol content, rather than any number of other factors that could have caused the failure.
- **One of the engines that “failed” on E15 also failed the test on E0.** Quite obviously, ethanol content had nothing to do with the failure for this engine. Yet, CRC discarded the data from this vehicle for the study’s statistical analysis.
- **Cherry-picked engine sample.** Despite the fact that most modern engines employ technologies that improve valve and valve set performance, CRC chose engines that do not use these technologies and, thus, were “most likely to have valve problems.” According to NREL, the vehicles chosen “...included several engines already known to have durability issues, including one that was subject to a recall involving valve problems when running on E0 and E10.”

NREL Review

- **Lack of transparency in test cycle schematic.** According to NREL, “[t]he durability test cycle schematic published in CRC’s report does not contain enough detail to allow it to be independently reproduced.”
- **Test cycle’s maximum speed limit increased likelihood of valve damage.** The CRC test cycle enforced a low maximum engine speed, which “...had the effect of increasing the likelihood of valve damage, because low speed operation may decrease valve rotation rates...”
- **Faulty leakdown failure criteria.** Most of the “failures” on E15 and E20 were related to engines that did not pass an arbitrary cylinder “leakdown” test. While other tests in the CRC study used established standards from OEMs and EPA, the leakdown test utilized arbitrary criteria with no scientific basis. According to NREL, “CRC selected a 10% leakdown failure limit, more restrictive (50% below) than that of the lowest value specified by OEMs for engines in the study.”
- **Incorrect use of leakage tester tool.** The manufacturer of the leakage tester used states that “no cylinder will maintain 0% leakage” and that “this tool is best used to compare a suspect cylinder to a known good cylinder on the same engine.” However, the CRC test used the tool to measure leakage compared to an arbitrary failure criterion of 10%.
- **Inappropriate statistical analysis.** The CRC study used assumed values (i.e., “dummy data”) for vehicles that were not actually tested. These dummy values demonstrated consistent bias in relation to the question that the analysis was intended to determine.

Conclusion

What's in it for you?

- More product choices for consumers on same footprint.
- Typically uses existing tanks and pipes – huge cost savings.
- Ethanol plants can sell direct – bypass terminal markup.
- Flexibility for future approval of mid-level ethanol blends.
- Pump paid for by sale of all products, not just E85.
- Faster inventory turnover, protection against market swings.
- If right equipment is purchased, E15 ready!
- Potential of RINs.

What's in it for you?

We will help you promote it!

- Multiple websites: E85prices.com; ChooseEthanol.com; EthanolRFA.org and more.
- Garmin & TomTom Points of Interests.
- Mobile App for Android, Apple & Windows devices.
- Promotional Materials & Consumer Education for stations.

Why offer E15 or E85?

- Differentiate your company.
- Increase overall fuel sales.
 - Average RUL sales are 87.2% today, and premium sales are 3-5%. Can you compete with RUL alone?
 - E15 averaging above 20%.
 - E85 averaging above 10%.

Why offer E15 or E85?

- Make more margin while lowering consumer price at the pump.
- Incentives available.
- Increase overall in-store sales.

How will these new fuels perform?

Depends on what you are willing to do:

- Will you feature on price sign?
- Will you have fuel(s) available at every fueling position?
- Will you seek options for fuel supply to reduce consumer cost?

Free Dispenser Labels



Attention:
Before selecting this fuel, please check your vehicle's owner's manual for fuel compatibility or see station attendant.

Atención:
Antes de comprar este combustible lea el manual de su vehículo para determinar compatibilidad de combustible o habla con un empleado o cajero de esta estación.

STOP!
NOT GASOLINE!
This fuel is designed to operate in Flex-Fuel Vehicles (FFVs) only. Please consult your owner's manual before fueling if you are unsure if you are operating an FFV.

STOP!

ATTENTION
E15
Up to 15% ethanol

Use only in

- 2001 and newer passenger vehicles
- Flex-fuel vehicles

Don't use in other vehicles, boats or gasoline-powered equipment. It may cause damage and is **prohibited** by Federal law.

Help Finding Locations

- RFA maintains most accurate E85 database at E85prices.com.
- Feed updates to DOE for AFDC Station Locator.
- Also maintain GPS POIs for download.

Questions?

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