

Frequently asked questions and answers

1. What is ethanol?

- Fuel ethanol (ethyl alcohol) is a high octane water-free alcohol produced from the fermentation of sugar or converted starch. It is traditionally used as a blending ingredient at 5 to 10% concentrations in gasoline. Ethanol is made primarily from grains or other renewable agricultural products. Ethanol also has a variety of food and industrial uses.

2. What co-products (by-products) will you produce?

- Ethanol production yields large quantities of distiller's grains (DDGS or WDGS). This grain is used both wet and dry, and is used as a high protein feed suitable for livestock.
- Carbon Dioxide is also produced in roughly equal quantities to the ethanol and DDGS. The Carbon Dioxide can be captured, liquefied, and sold to the food and beverage industry

3. What will you do with the co-products?

- The Distillers grains will be sold to local and regional dairy farms, feedlots, poultry, and swine producers. Additionally, demand for this material overseas is also an option.
- Carbon Dioxide can be captured, liquefied, and sold to the food & beverage industries.

4. Why build an ethanol plant?

- The production of fuel ethanol is a way for farmers to add value to their crops (particularly corn) as a raw material. It is also an opportunity to participate in the fuel industry, which is a growth industry, versus producing a basic farm commodity. Further, ethanol is made from renewable resources, reduces harmful emissions in gasoline, and creates jobs and economic activity in the local community.

5. Why choose corn as a feedstock?

- Grain corn is readily available on the world market and the infrastructure or transportation and handling systems are in place to move large quantities of corn. Corn yields are increasing at a rapid rate because of the considerable research that is done on corn, the introduction of new corn varieties and more efficient farming practices. In addition, the technology to produce fuel ethanol from grain corn has been researched and well developed over the past 10 to 15 years, making it possible to take advantage of the latest technologies.

6. What other grains can your facility utilize besides corn?

- The new generation ethanol facility such as the one being proposed by E85 has the capability to easily switch between high starch content grains such as corn, wheat, and maize or milo.
- This flexibility allows E85 to take advantage of local markets throughout the country providing maximum support for the local agricultural community while minimizing production costs

7. Will you be buying U.S. corn?

- An ethanol processing plant needs to operate 24 hours a day. 7 days per week, 350 days per year. It needs a constant and reliable supply of feedstock. The E85 plants will require about 41 million bushels of corn per year each. Because of this, it is imperative that the corn be purchased locally as much as possible resulting in reduction in transportation costs. There will be every attempt made to purchase as much corn locally as possible. However, given the large quantity of grain required and the number ethanol plants in operation or being constructed in the region, it may become necessary to import grain from other regions.

8. How does an ethanol plant help the farmers?

- Increasing corn processing capacity will increase the demand for corn. Economic impact studies have shown that the basis for corn increases by 5 to 10 cents per bushel within a 50 mile radius of a fuel ethanol plant. Of more significance, is the opportunity for farmers to participate directly in a major value added opportunity and expanding industry.

9. Why did E85 choose the site it did?

- The site has easy access to Highways, has rail access, and is a serviced site for water, sewer, electricity, and natural gas. The property further can be zoned for industrial use.
- It is located close to its markets--close to livestock to sell distillers grains, close to corn production areas, and close to ethanol markets.

10. What markets will you consider regarding ethanol marketing and distribution?

- Currently in the U.S., the market for ethanol is very robust in terms of the relative amounts of ethanol that can be utilized by all automobiles not to mention the number of FFV's that are on the road and being built (over 6,000,000 on the road today).
- As the volume of ethanol increases over the next several years, a global market will most certainly be generated as more and more technologies are developed that can economically produce ethanol such as biomass & cellulose.
- This opportunity to reduce automobile emissions while utilizing technology to reduce dependency on petroleum-based fuels will continue to drive the industry for the next several years to decades.

11. Will E85 utilize local labor in the construction of the proposed facility?

- Every attempt will be made to utilize any and all qualified labor that is locally available before resources outside the region are brought in for the construction of the facility.
- Utilization of local labor is both beneficial to E85 in reducing construction labor costs and also beneficial to the community from an economic standpoint.

12. What about odors?

- E85 wants to make sure that the project will have no unintended adverse environmental impact in the community. We have certainly heard concerns expressed about the possible odors associated with some of the older ethanol plants. For this reason, before deciding to proceed with the construction of an ethanol facility, we have carefully investigated the different technologies available to mitigate possible emissions which may cause odor.
- Ethanol plants have advanced considerably since the first plants were built. The emission control systems are designed to recover dust and recycle it back into the process stream. Volatile organic compounds (VOC's), which are responsible for any possible odors, are captured and routed through a thermal oxidizer where VOC's are combusted at a temperature between 1470 and 1560 degrees Fahrenheit. Through that process, VOC's are converted to carbon dioxide and water vapor.
- E85 is diligently going through the regulatory process set out by the U.S. EPA and the state EPA agencies which will require E85 to demonstrate that any possible emissions from the ethanol plant are below the threshold levels established by the EPA. We are currently finalizing our design plans and will shortly file comprehensive permit applications with the proper authorities.
- Modern ethanol plants do not pose an odor problem. This is because virtually all odor-generating emissions from the plant are captured and controlled.
- Fermentation and the distiller grain drying operations are typically the main contributors to odor at ethanol facilities. Prior to the implementation of VOC emission controls at ethanol facilities, odor was a potentially significant issue for surrounding landowners. Off-gases generated during fermentation will be scrubbed and E85 Inc. will install two dryers with integral thermal oxidizers to manage odors emitted as a result of the drying process. The scrubbers and thermal oxidizers will destroy 95 percent of organic compounds believed to be the source of odors from the plant. Wet cake has a limited "shelf life" and, as such, is shipped to the receiver quickly, within seven days of production. Due to the temporary storage time and storage enclosure, no offensive odor is anticipated.
- Tours of operating ethanol plants in other States that we undertook with City officials did not reveal any odor concerns and we did not encounter noticeable odors on the plant sites.

13. What about dust?

- Dust would be generated from the construction site throughout the construction period. Consequently, E85 Inc. would incorporate BMPs for dust management, including, but not limited to, spraying bare soils with water to control dust. Where possible, existing vegetation would be allowed to remain in place to minimize generation of dust from construction activities. Once construction is complete and final site stabilization has been carried out, the land outside the immediate facility would be returned to agricultural production and dust levels at these locations should closely resemble preexisting levels.
- Dust generated from Plant operations will not be a problem. State-of-the-art technologies such as bag houses, cyclones and scrubbers will be used to minimize particulate matter (dust) emissions generated during grain handling and milling operations. Ohio EPA, through an air permit, will require that our control equipment be tested upon installation, and monitored daily to ensure that they are functioning properly. Likewise, all primary truck traffic roadways will be paved to minimize dust generation from vehicular traffic.

14. How much water will you use?

- E85 will use about 1,180 gallons of water per minute. All process water remains in the process. The water not in contact with production streams such as boiler and cooling tower water will be discharged as set forth by federal and local agencies.

15. How will you ensure that water is free of contaminants?

- Process water is recycled internally. Any discharge from the plant will be storm water and water that does not come into contact with production.

16. What type and quantity of chemicals will be stored on site (rough estimates)?

- Ethanol: 2,800,000 gallons
- Gasoline: 105,000 gallons
- Sulfuric acid: ~150,000 Lbs
- Sodium Hydroxide (caustic): 50,000 Lbs as 50% solution
- Enzymes (amylase and gluco-amylase): 70,000 Lbs
- Phosphoric acid: 11,000 Lbs
- Urea: 190,000 Lbs as 42% solution
- Ammonia: 98,000 Lbs as 20% solution
- Corn: 1,500,000 bushels
- Sodium Bisulfite Solution: 9,000 Lbs as 40% solution

17. At what distance from the plant are people at risk if an explosion happens to the primary fuel storage tanks at the plant?

- Spills are not hazardous since ethanol is not a hazardous substance.
- Response planning would begin on commitment from E85. Site safety plans would begin prior to breaking ground on the facility and this would continue until completion at which point emergency response plans would be finalized and these plans would include all Hazards associated with the plant; Fire, EMS, Hazmat, and any other pertinent hazards.

18. Will there be a lot of noise?

- Noise levels are regulated by OSHA and will meet or exceed all regulatory standards.
- E85 is working our engineering design firm to help us establish baseline noise levels, quantify the noise levels from our equipment, and develop the appropriate controls.

19. What are you doing to control light at the site?

- E85 needs to have outdoor lighting for the safety and security of our employees. At the same time, we recognize the need to be neighbor friendly. We will ensure that any outdoor lighting is positioned so that it is directed internally onto the site.

20. How many jobs will be created?

- Approximately 40-50 skilled positions will be required for the normal day to day operation of the facility. In addition, hundreds of construction jobs will be generated initially prior to start-up.

21. What are the benefits to the local community?

- A Texas A&M University study said an 80 million-gallon ethanol plant could produce 1,400 associated jobs over time. The overall economic boost provided by that size of a plant could reach \$400 million, including \$41 million in increased household income annually once the plant begins operation.

22. Will my vehicle run on ethanol-blended fuel?

- All vehicles are “ethanol-capable” and can use a blend of up to 10% ethanol. This “E10” is a blend of 10% ethanol / 90% unleaded gasoline and is the most common way ethanol is sold to motorists.
- Today in the U.S., 46% of gasoline is blended with ethanol – most in this E10 blend. Since the 1980s, all automakers have covered the use of up to 10% ethanol under warranty, and no engine modifications are necessary to use E10. E10 is a cleaner burning fuel than straight gasoline.

23. Can ethanol blends be used in small engines, such as boats, lawnmowers, or chainsaws?

- Yes. Manufacturers of small engines realize that up to a 10% blend of ethanol is very common in gasoline, so they make their engines compatible with this fuel.

24. What is E85? How do I know if my vehicle can use it?

- E85 is not gasoline, but rather an alternative fuel comprised of 85% ethanol / 15% unleaded gasoline for use in Flexible Fuel Vehicles (FFVs). These vehicles are truly “flexible” in that their owners have a choice whether to use E85, any blend of ethanol up to that 85% level, or straight unleaded gasoline.
- On some models this comes as an option, and on some it is a standard feature.
- To identify whether a vehicle is flexible fuel, check the owners manual and inside the gas cap. Also, visit www.ethanol.org/e85.html to link to a complete list of FFVs, including the new '07 model year vehicles.

25. Can my vehicle run on E85 even if it's not an FFV?

- If your vehicle is not an FFV, use of any higher ethanol percentage than 10% is not covered by warranty. People have reported that they blend higher percentages of ethanol in regular, unmodified vehicles.
- A pilot study conducted earlier last year suggests that up to 30% ethanol could be used in a non-flex fuel vehicle, but more research is required on this subject and we as an organization do not endorse this practice until further study is done.

26. Can I convert my vehicle to use E85?

- In theory, it is possible; in reality, it is difficult. A vehicle could be converted to operate on E85, but the challenge would be converting it to be a truly flexible fuel vehicle, one that could operate on any blend of fuel up to the 85% ethanol.
- There are no companies in the U.S. that sell conversion kits for vehicles to operate on E85. The good news is that automakers are increasing their lineups of FFVs each model year, so whether you're looking for a new or used vehicle, they are available.

27. Where can I buy E85 in my area?

- A link to a complete list of gas stations offering E85 can be found online at www.ethanol.org/e85.html. This site has a searchable map that gives E85 pump locations by state. The number of stations offering E85 is increasing at a rapid pace. Today in the U.S. there are 1,000 gas stations offering E85.

28. If gas contains ethanol, is it labeled that way on the pump?

- An 85% blend of ethanol is always labeled at the pump because it is an alternative fuel for use only in flexible fuel vehicles.
- Because up to a 10% blend of ethanol can be used in any vehicle, in some areas it is labeled and in some it is not. Each state legislates whether labeling is mandatory, voluntary, or not required when gasoline contains ethanol.
- Many states have moved away from labeling ethanol, so it is not always possible to tell if you're getting ethanol-blended fuel at the pump.
- The American Coalition for Ethanol supports the consumer's right to know if gasoline contains ethanol, but we don't favor labels that appear more like a warning label or a poison sticker. This can be detrimental because people will shy away from purchasing something they are not familiar with or something that looks potentially harmful.
- If ethanol-blended fuel is labeled at the pump, it should be done in an attractive way that shows consumers all of the benefits that ethanol offers.
- A good analogy is the labeling of cigarettes. Labeling gasoline that it contains ethanol is like labeling cigarettes that they contain paper – ethanol is the only part of gasoline that would not hurt you.

29. What is the ethanol "subsidy"?

- Many are misinformed, believing that ethanol producers receive a huge government subsidy. That is a myth. In fact, ethanol's "subsidy" is really a federal tax credit that goes to oil companies as an incentive to blend ethanol with gasoline. This blender's tax credit totals 51 cents per gallon of ethanol or 5.1 cents per gallon on E10.
- This benefit is a lower tax which not only serves as an incentive for oil companies to blend ethanol with gasoline, but it also enables ethanol to compete with gasoline, even if it is higher priced.
- The benefit to petroleum marketers is that they can offer a higher-quality, higher-octane fuel containing ethanol at a competitive price.
- The benefit to taxpayers is that this tax credit is usually passed all the way back to the consumer in the form of lower pump prices for higher octane ethanol enriched fuel.

30. What impact does ethanol have on gasoline prices?

- Ethanol adds to the overall supply of motor fuel in the U.S. and helps keep pump prices competitive and affordable.
- The blender's tax credit is usually passed down to consumers in the form of more competitive prices at the pump.
- According to the Consumer Federation of America, consumers who purchase gasoline blended with 10 percent ethanol could be saving as much as 8 cents per gallon compared to straight gasoline.

31. Does ethanol help reduce air pollution?

- Yes. There is a significant reduction in both carbon monoxide and hydrocarbon tailpipe emissions when ethanol is blended and used with gasoline in automobiles.
- Many cities and states across the nation take advantage of the environmental benefits of ethanol, including Chicago, Denver, Milwaukee, Minneapolis, New York, and Los Angeles.
- According to the Department of Energy's Argonne National Laboratory, ethanol-blended fuels reduced CO₂ equivalent greenhouse gas emissions by 7.8 million tons in 2005, which has the effect of removing the annual greenhouse gas emissions of over 1 million automobiles from the road.

32. What about ethanol's impact on fuel economy?

- Critics of ethanol often allege that because ethanol contains fewer British Thermal Units (BTUs) of energy, ethanol-blended fuel has a negative impact on gas mileage. In reality, variables such as speed, stop-and-go driving, tire pressure, and the weather's effect on driving conditions have a much greater impact on fuel economy than what fuel you use in your engine.
- In 2005, ACE conducted a study comparing gas mileage between unleaded and E10, E20, and E30. On average, the difference between straight unleaded and E10 was only 1.5% - a negligible amount.
- Some believe that lower BTU value has a one-to-one impact on fuel economy – this research proves that is not the case.
- In light of this finding, more research is underway to examine the fuel economy of E85.

33. How many gallons of ethanol can be made from a bushel of corn?

- With today's technology, one bushel of corn yields 2.8 gallons of ethanol. And that number is constantly increasing.
- Just a few years ago, that number was closer to 2.5 gallons per bushel of corn.

34. How many bushels of corn are needed for a typical ethanol plant? How many acres of corn would be needed to satisfy that demand?

- The proposed E85 facility would produce approximately 100 million gallons of ethanol annually. A plant this size would require approximately 41 million bushels of corn.
- At the 2004 national corn crop average yield of 140 bushels per acre, approximately 257,000 acres of corn would be needed to supply the ethanol plant.

35. Exactly how much extra traffic (train or road) will be produced due to this plant's operations, and what time of day will this traffic be occurring?

- Corn is expected to be delivered by truck and rail. If all com is delivered by truck, this will amount to 136 trucks per day. If all com is delivered by rail, this will amount to about 30 rail cars per day.
- E85 plans to acquire as much corn locally as possible to benefit the local economy. This could conservatively account for 1/4 of the corn being delivered via truck or 34 trucks per day with the remainder being delivered via rail
- The distillers grains produced would be shipped via rail predominately resulting in about 9 railcars per day
- Ethanol will be shipped via rail resulting in about 11 railcars per day

36. How much of the nation's corn crop is used for ethanol production?

- In 2004, 1.26 billion bushels of corn went to ethanol production – about 12% of the nation's total crop. That figure rose to 14% for the '05 corn crop – about 1.6 billion bushels of an 11.1 billion bushel crop.
- As the nation's ethanol production climbs, some bushels from the export category will likely shift over into ethanol production.
- It is expected that 20% of the '06 corn crop will be made into ethanol.
- Also, about 11% of the nation's sorghum crop was used as a feedstock for ethanol production in '04. Grain sorghum is used as a feedstock for ethanol production, mainly in areas on the periphery of the Corn Belt such as Kansas and western Nebraska.

37. Why should we use grain such as corn for fuel when people are hungry throughout the world?

- Corn used for ethanol production would otherwise be fed to livestock or used for export markets, yet some suggest that it is immoral to use corn for fuel instead of food. Clearly there is a world hunger problem, but it is not appropriate to fix blame for world hunger on farmers and U.S. ethanol producers.
- The world produces ample crops containing the proteins and nutrients needed to feed the world's population. However, there are distribution bottlenecks that hamper these supplies of food from reaching those in need.
- Additionally, corrupt governments and wars cause havoc and disrupt the otherwise safe, efficient, and peaceful provision of food to hungry people.
- Using the '05 crop as an example, only 9% of U.S. corn was used for human consumption (i.e. used to produce sweeteners, cereals, etc.)

38. How would shipping corn in from other regions help the local economy?

- Typically, shipping of materials, whether it be over the road by trucks or by the use of rail does effect the local economy via increased fuel sales, consumption of food & beverage stuffs, and increases in population via establishment of local transportation firms to handle the logistics associated with the movement of goods and services.
- When rail is preferentially utilized, major railroad firms such as Santa Fe, Union Pacific, & Burlington Northern will transfer rail cars to local short line railroads for delivery to specific locations. In doing so, the local short line firms increase their economic status and this in turn directly and indirectly effects community economic status.

39. What is cellulosic ethanol?

- Cellulosic biomass, dubbed the most abundant material on earth, holds tremendous promise as a feedstock for ethanol production due to its widespread availability and potential for high fuel yields.
- Examples of sources for cellulosic ethanol include corn stover (the stalks and husks left over after harvest), wheat and barley straw, sugarcane or rice bagasse, sawdust, paper pulp, small diameter trees, and dedicated energy crops such as switchgrass and other fast-growing grasses.

40. How is cellulosic ethanol made?

- As with producing ethanol from grain, processing cellulosic sources extracts the fermentable sugars from the feedstock for distillation into alcohol. Unlike in grain, the sugars in cellulose are locked in complex carbohydrates called polysaccharides, or long chains of simple sugars. Separating these complex structures into fermentable sugars is essential to the efficient and economical production of cellulosic ethanol.

41. Is the ethanol from corn and cellulose the same?

- Yes, the ethanol produced from corn or sorghum and the ethanol produced from cellulose are chemically identical.

42. How close is cellulosic ethanol to being commercialized?

- The technology to create cellulosic ethanol is available today, and is in the early stages of commercialization. Though most of the pieces are in place, the key is to continue to make it more cost-effective and economically competitive.
- Some estimate the technology is within 2 to 10 years of being fully commercialized.

43. What does a typical ethanol plant offer in terms of economic benefits?

- An ethanol plant will have a large positive impact on the area's economy. A study conducted in 2002 found that an average sized ethanol plant (a 40 million gallon per year plant) would:
- Cost of approximately \$60 million to build with construction taking about a year; the construction generates a one-time boost of \$142 million as spending circulates throughout the economy.
- Spend more than \$56 million annually on goods and services, ranging from corn to labor to utilities.
- Expand the economic base of the local economy by \$110.2 million.
- Generate an additional \$19.6 million in household income.
- Support the creation of as many as 694 new permanent jobs.
- Generate at least \$1.2 million in new tax revenue for state and local governments.
- Generate additional revenue for local farmers by increasing demand, which in most cases results in increasing the average local basis by at least 5-10 cents per bushel.

44. What does "net energy balance" mean? What is ethanol's energy balance?

- Net energy balance is a term used to describe how much energy is needed to produce a product versus how much energy that product provides.
- Scientific study after study has proven ethanol's energy balance to clearly be positive. The latest USDA figures show that ethanol made from the dry mill process provides at least 77% more energy as a fuel than the process it takes to make it.
- The bottom line is that it takes about 35,000 BTUs (British Thermal Units) of energy to create a gallon of ethanol, and that gallon of ethanol contains at least 77,000 BTUs of energy.

45. How much oil can ethanol really displace?

- Research has determined that 1 barrel of ethanol (1 barrel = 42 gallons) can displace 1.2 barrels of petroleum at the refinery.
- In 2005 the U.S. produced 4 billion gallons of ethanol, which equates to about 3% of the country's total gasoline consumption (140 billion gallons per year). This is a small percentage, but a critically important one.
- Every gallon of ethanol we can make and use means we are less dependent upon oil and more dependent upon clean, renewable, homegrown energy sources.

46. Some additional facts about the U.S. ethanol industry:

- Ethanol plants currently operating: 111
- Total annual capacity: 5.15 billion gallons
- States with ethanol production: 18
- Ethanol plants currently under construction: 72
- States with plants under construction: 19
- % of American gasoline that already contains ethanol: 46
- % of total U.S. gas consumption that is ethanol: 3.5
- Number of gallons currently made into E85 fuel: 50 million
- Number of locations E85 is currently available: 1,000
- Number of Flex Fuel Vehicles (FFV's) currently on the road: 6 million
- % of farmer and locally owned ethanol plants: 40
- Largest producer of ethanol in the U.S. ADM with 25%
- Other major companies producing ethanol today: VeraSun, Aventine, Cargill, U.S. Bioenergy, ADM, Pacific Ethanol, Alcodis (largest internationally)
- Number of plants operating today with Vogelbusch technology: 17 in operation, 3 under construction, and 12 proposed
- % of U.S. corn crop used for ethanol production in 2005: 14
- % of U.S. corn crop expected to be used for ethanol production in 2006: 20