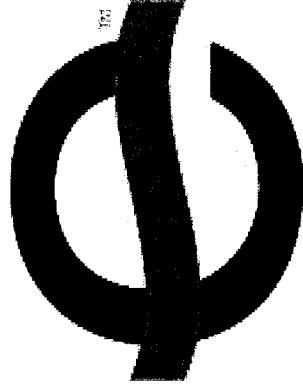


Kansas Association of Ethanol Processors (KAEP)

Kansas Ethanol 101

January 21, 2014



ethanol

Put a little Kansas in your tank.



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ethanol

Put a little Kansas in your tank.

 ethanol

ethanol-enriched fuel



- good for your car
- good for the environment
- good for Kansas

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ethanol facts:

What is Ethanol?

- A renewable, domestically-produced, alcohol fuel created by fermenting grain or plant materials such as corn, milo, grass, biomass
- One bushel of corn produces up to 2.9 gallons of ethanol

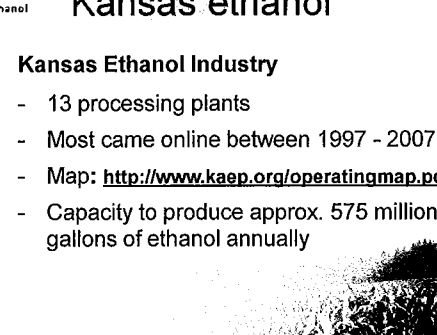


ethanol facts:

Dried Distillers Grains (DDGs)

As an ethanol co-product, each bushel of corn also produces about 17 pounds of dried distillers grains (DDGs) feed meal – less if the oil is removed for biodiesel

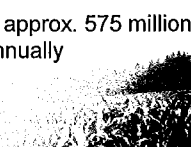
DDGs provide Kansas feed yards and dairies with a consistent and readily available feed source rich in protein, fiber and minerals

[illegible]

 **Kansas ethanol**

Kansas Ethanol Industry

- 13 processing plants
- Most came online between 1997 - 2007
- Map: <http://www.kaep.org/operatingmap.pdf>
- Capacity to produce approx. 575 million gallons of ethanol annually





Kansas ethanol

Kansas Ethanol Plants – see handout map

1. Conestoga Energy Partners, Arkalon
2. Conestoga Energy Partners, Bonanza/Garden City
3. Reeve Agri-Energy, Garden City
4. Kansas Ethanol, Lyons
5. White Energy, Russell
6. Western Plains Energy, Oakley
7. Prairie Horizon Agri Energy, Phillipsburg
8. East Kansas Agri-Energy, Garnett
9. NESIKA, Scandia
10. Pratt Energy, LLC, Pratt
11. MGP Ingredients, Atchison (food grade alcohol)
12. ESE Alcohol, Leoti
13. Abengoa BioEnergy (Cellulosic), Hugoton



E10 and your car



- E10: 10% ethanol, 90% gasoline
- Most available ethanol-blend fuel today
- All cars/trucks manufactured in the last 15 years are built and warranted for E10
- No harm to tanks, lines, pumps or filter
- Saves motorists on fuel prices
- Approved for use in most small engines



E15 and your car

- E15: 15% ethanol, 85% gasoline
- Approved for use in all 2001 and newer cars and trucks
- Approved for use in 80% of the cars on the road today, and over 95% by 2020
- E15 is a fuel choice, not a mandate
- Slightly less fuel economy than E10
- Not approved for 2-stroke engines



E85 and your car



- E85: 85% ethanol, 15% gasoline
- Used only in **Flex-Fuel** vehicles (FFVs)
- Cleanest burning U.S. motor fuel
- Historically 20-30 cents cheaper than gasoline
- Less fuel economy than E10 or E15
- Approx. 65 E85 fueling stations in Kansas
- 16 million FFVs in the U.S. today



Ethanol powers IndyCar® and NASCAR

- IndyCar® switched to 100% ethanol in 2007
- NASCAR began racing with E15 in 2011
- More than 6 million NASCAR miles have been driven using E15, with no fuel related mechanical issues reported



Good for the environment

- Ethanol reduces ozone-forming pollutants
- 30% less tailpipe emissions than gasoline
- Decreases green-house gas emissions by **38 million metric tons:**
 - a **reduction of 57%** compared to regular gasoline
 - equivalent to removing **8 million cars** from the road



Good for America

- Corn ethanol benefits farmers and rural economies
- Without ethanol, corn would struggle to maintain its current price of \$4.00/bu
- Current survey results show that \$4.00/bu is very close to the current cost of production
- Sub-\$3.00/bu corn would devastate farmers, rural communities, land value, ag lenders, local taxing authorities, and state revenues



Good for America

- In 2013, ethanol **displaced 476 million barrels of oil** used for gasoline in the U.S.
- ethanol represents about 10% of the domestic vehicle fuel market
- ethanol, along with fracking and domestic production, has reduced U.S. dependence on foreign oil - 33% foreign oil in 2013



Good for America

In 2013, the ethanol industry:

- Sustained nearly **400,000 jobs**
- Contributed **\$44 billion** to the US GDP
- Added **\$31 billion** to household incomes



Good for Kansas

Kansas ethanol production annually provides:

- over \$2 million in real property taxes*
- \$100,000 in personal property taxes*
- \$53 million in trucking fees
- 384 direct jobs, average salary of \$49,000

**Stands to increase as plants continue to roll off local property tax abatements.*

(2010 Kansas Legislative Research Dept. Report)



Good for Kansas

Each ethanol plant enhances rural Kansas:

- Annually purchases average of 14.5 million bushels of grain from local farmers (valued at over \$680 million in 2008)
- Produces ready access to wet and dry distillers grains feed for Kansas livestock producers, dairies, and feed yards – a KEY synergy in the Kansas cattle industry

(2010 Kansas Legislative Research Dept. Report)



Good for Kansas

***Construction of each 100 mg ethanol plant results in:**

- \$150 million in capital investments
- \$68 million on construction, start-up
- \$70 million to the local economy
- \$233 million expansion of economic base
- \$3.2 million per year in tax revenues
- 45 direct jobs and 101 local indirect jobs

(2010 Kansas Legislative Research Dept. Report)



Future of Ethanol

New technologies:

- improved energy/production efficiencies
- more efficient use of water
- extract more from each kernel of grain

USDA report shows:

- ethanol processing is a net-positive system
- each Btu input has a **2.3 Btu return**
- *more energy efficient to produce than gasoline*



Future of Ethanol

Cellulosic ethanol:

- The U.S. contains more than 1 billion tons of cellulosic biomass that can be converted into 80 billion gallons of ethanol
- US Dept. of Energy estimates that there is enough U.S. biomass to replace 1/3 of U.S. gasoline with renewable fuel by 2030
- Expected to reduce greenhouse gas emissions by **100%**



Future of Ethanol

Export Market: Setting records

- Future of the ethanol industry
- 2014 US ethanol exports were **829 million gallons**
 - India, Canada and Brazil
- 2014 US DDGs exports were nearly **11 million metric tons**
 - China, Canada, Mexico



Ethanol Challenges

- Increasing the Kansas ethanol market through promotion of E15 and Flex Fuels
- Increasing ethanol availability for travelers on Kansas interstates
- Market access is key to future of ethanol and all biofuels



Ethanol Opportunities

Ethanol Opportunities:

- Strong export opportunities for domestically produced ethanol
- Providing the lowest cost liquid fuel option
- Provide a healthier fuel oxygenate substitute for hazardous compounds used in gasoline (benzene and toluene)
- Lowers toxic emissions in vehicle exhaust



For Additional Information:

www.ethanolfacts.com

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