EXPORTRÅDET
SWEDISH TRADE COUNCIL

RENEWABLE ENERGY IN THE U.S.

ETHANOL

Swedish Trade Council, USA
January, 2008

Co-Sponsors and Collaborating Partners:

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Swedish Energy Agency

SWENTEC
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EXECUTIVE SUMMARY
- Ethanol

- Market conditions and policy incentives have contributed to an unprecedented expansion of the U.S. ethanol industry during the last couple of years. There is a total of 128 ethanol plants in the U.S., most of them located in the Midwest and 77 new plants are under construction
- The federal renewable fuels standard (RFS) fueled a rapid expansion of the U.S. ethanol industry by setting goals for production of renewable fuels made from U.S. agricultural resources. Seven states have also enacted renewable fuels standards that require the use of ethanol-blended fuel
- Corn is the dominating feedstock for ethanol production. Because of a combination of higher corn prices and lower ethanol prices, there has been a halt to expansion during the second half of 2007
- The U.S. Department of Energy granted 385 million dollars in 2007 to six ethanol producers for the construction of cellulosic ethanol biorefineries
- A few companies operate more than half of U.S. production capacity, while farmers' cooperatives also play an important role in the growth of the industry
- The construction process of a new ethanol plant generally involves four industry segments: environmental consultancy firms, EPC-contractors, technology providers and equipment suppliers
- Areas of high industry interest are fractionation, cellulosic ethanol and optimization of the waste stream

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SAMMANFATTNING
- Etanol

- Förändringar på marknaden och politiska åtgärder har resulterat i en stark expansion av USA:s etanolindustri. Det finns för närvarande 128 etanolfabriker i USA med en hög koncentration i mellanvästern. 77 fabriker är under byggnation och åtta fabriker bygger ut sin produktionskapacitet
- Renewable Fuels Standard (RFS), ett federalt program, har bidragit till den starka expansionen av etanolindustrin i USA genom att sätta mål för hur mycket förnybart bränsle som måste produceras från det amerikanska jordbruket
  - Sju delstater har också lagstadgat om egna RFS vilka kräver viss andel av etanol i bränsleblandningen
- USA:s etanolproduktion baseras nästan uteslutande på majs. En kombination av stigande majspriser och fallande etanolpriser har fått expansionen av etanolindustrin att avta under senare halvåret av 2007
- USA:s energidepartement (DOE) tog under 2007 initiativet att stödja utvecklingen av cellulosabaserad etanol. DOE allokerade 385 miljoner dollar i bidrag för byggnation av sex anläggningar avsedda för cellulosabaserad etanol
- Med fokus på miljöteknik kan man identifiera fyra typer av aktörer som deltar i produktionsprocessen av nya etanolfabriker: miljökonsulter, så kallade EPC-entreprenörer, leverantörer av processteknologi och underleverantörer av teknik och maskiner
- Områden som fått mycket uppmärksamhet inom industrin under senare tid är fraktionering, cellulosabaserad etanol och hantering av restprodukter från produktionen

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BACKGROUND

- Sweden is internationally recognized as one of the leading countries when it comes to environmental regulation and a successful private-public partnership. Many Swedish companies decided early on to invest in the development of new technical solutions in order to reduce emissions to air and water. Combined with a strategic approach to environmental issues and many years of experience, Swedish companies have a strong position in a number of environmental sectors
- The U.S. environmental technology market is the world's largest. There is a growing interest in the U.S. for environmental technologies, particularly in the area of renewable energies, among investors, large corporations, policymakers and the public
- The Swedish Embassy in Washington D.C., the Consulates General of Sweden in New York and Los Angeles and the Swedish Energy Agency, have requested the assistance of the Swedish Trade Council (STC) to identify and assess Swedish business opportunities in the renewable energy sector in the U.S. The project should include a comprehensive and concrete analysis of business opportunities for Swedish companies within the areas of waste-to-energy (WTE), biogas, and ethanol
- The direction and outline of this project have been discussed with a number of Swedish organizations, including the Swedish Energy Agency, Swentec and IVL. The project team has taken advantage of this network and the competence and knowledge available in these organizations

OBJECTIVE AND KEY ISSUES

The objective of the project is to evaluate Swedish business opportunities within the U.S. renewable energy sector with a focus on waste-to-energy (WTE), biogas and ethanol

In order to meet the objective the STC will address the following **key issues**:

- What does the U.S. market for WTE, biogas and ethanol look like in terms of market size and structure?
- What are the key trends in the U.S. market and what affects the development?
- What are the key regulations affecting the market?
- What types of promotional activities would be beneficial for Swedish companies?

LIST OF ABBREVIATIONS 1(3)

Abbreviation	Name/ explanation
ACE	Amercian Coalition for Ethanol
APPA	American Public Power Association
BALLE	Business Alliance for Local Living Economies
BR&DI	Biomass Research and Development Initiative
Btu or BTU	British Thermal Unit
CNG	Compressed Natural Gas
CREBs	Clean Renewable Energy Bonds
DOE	Department of Energy
DOE EERE Biomass Program	Department of Energy Efficiency and Renewable Energy Biomass Program
DSIRE	Database of State Incentives for Renewables and Efficiency
EDA	U.S. Department of Commerce Economic Development Administration
EPA	Environmental Protection Agency
EPC-contractor	Engineering, procurement and construction contractor

LIST OF ABBREVIATIONS 2(3)

Abbreviation	Name/ explanation
IDEA	International District Energy Association
IWSA	International Solid Waste Association
LFG	Landfill Gas
LFGE	Landfill Gas Energy
LMOP	EPA's Landfill Methane Outreach Program
LNG	Liquefied Natural Gas
MGY	Million gallons per year
MSW	Municipal Solid Waste
MTBE	Methyl tertiary-butyl ether
NG	Natural Gas
NGVs	Natural Gas Vehicles
NSWMA	National Solid Wastes Management Association

LIST OF ABBREVIATIONS 3(3)

Abbreviation	Name/ explanation
REPI Program	Renewable Energy Production Incentive Program
RFA	Renewable Fuels Association
RFS	Renewable Fuels Standard
RPS	Renewable Portfolio Standard
USDA	U.S. Department of Agriculture
VEETC	Volumetric Ethanol Excise Tax Credit
WTE	Waste-To-Energy

TERMS AND TRANSLATIONS

Term	Translation
Bagasse	Bagass, sockerrörsavfall
Barley	Korn
Biomethane	Uppgraderad och renad biogas med egenskaper som liknar naturgas
Combustible waste	Brännbart avfall - avfall som brinner utan energitillskott efter det att förbränningsprocessen startat
Energy recovery	Energiåtervinning
Grain sorghum	Korndurra
Landfill	Deponi - kontrollerat upplag för avfall som inte avses flyttas
Milo	Milo, durra
Municipal solid waste (MSW)	Hushållsavfall
Waste-to-energy (WTE)	Avfallsförbränning med energiåtervinning
Whey	Vassla
WTE plant	Avfallsförbränningsanläggning

CONVERSION OF WEIGHTS AND MEASURES

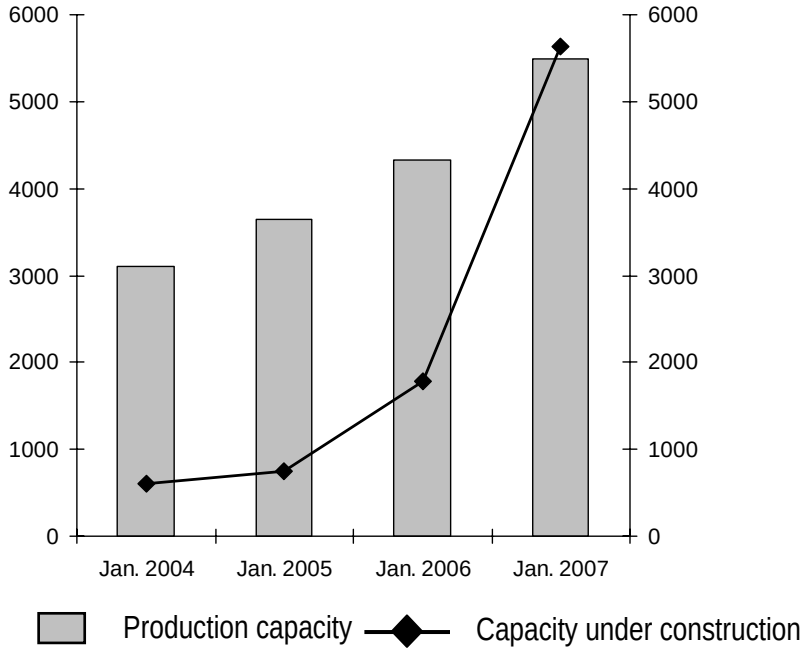
U.S. weights and measures	European conversion
Btu or BTU	1 Btu = 1 055.0559 joule
Bushel	1 bushel = 35,2 liter
Gallon	1 American gallon = 3,785 liter
MBTU = thousand Btu	1 MBTU = 1.055 joule
Miles	1 U.S. mile = 1.609 344 kilometer
MMBTU = million Btu	1 million BTU = 1.055 Giga joule = 28.263682 m^3 of natural gas at defined temperature and pressure
Pounds (lbs)	1 kg = 2,2 pounds

CONTENT

THE ETHANOL INDUSTRY IS EXPANDING AT A FAST PACE

- Both market conditions and policy incentives contribute to development

U.S. ethanol production capacity
Millions of gallons/year (1 gallon = 3,785 liter)

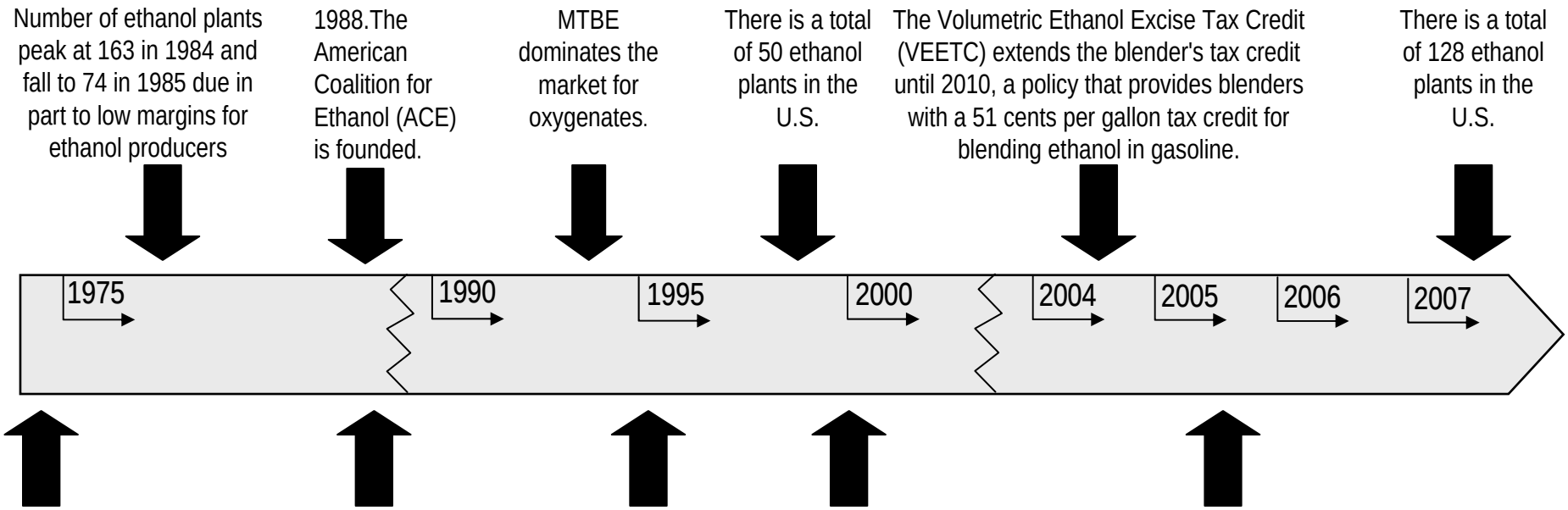


- The Renewable Fuel Program requires increasing amounts of renewable fuels to be blended into gasoline
- Various state biofuel programs aims to stimulate the increased use of biofuels
- Increasing oil prices boost gasoline prices, raising the value of ethanol
- Phase out of MTBE (methyl tertiary-butyl ether) in gasoline for which ethanol is a substitute

Ethanol production will double to more than 12 billion gallons by 2015 according to U.S. Department of Agriculture's 2007 long-term projections

Source: Renewable Fuels Association, U.S. Deptarment of Agriculture, Economic Research Service

ALTHOUGH THE RECENT BOOM IS UNPRECEDENTED, THE U.S. ETHANOL INDUSTRY DATES BACK OVER A CENTURY

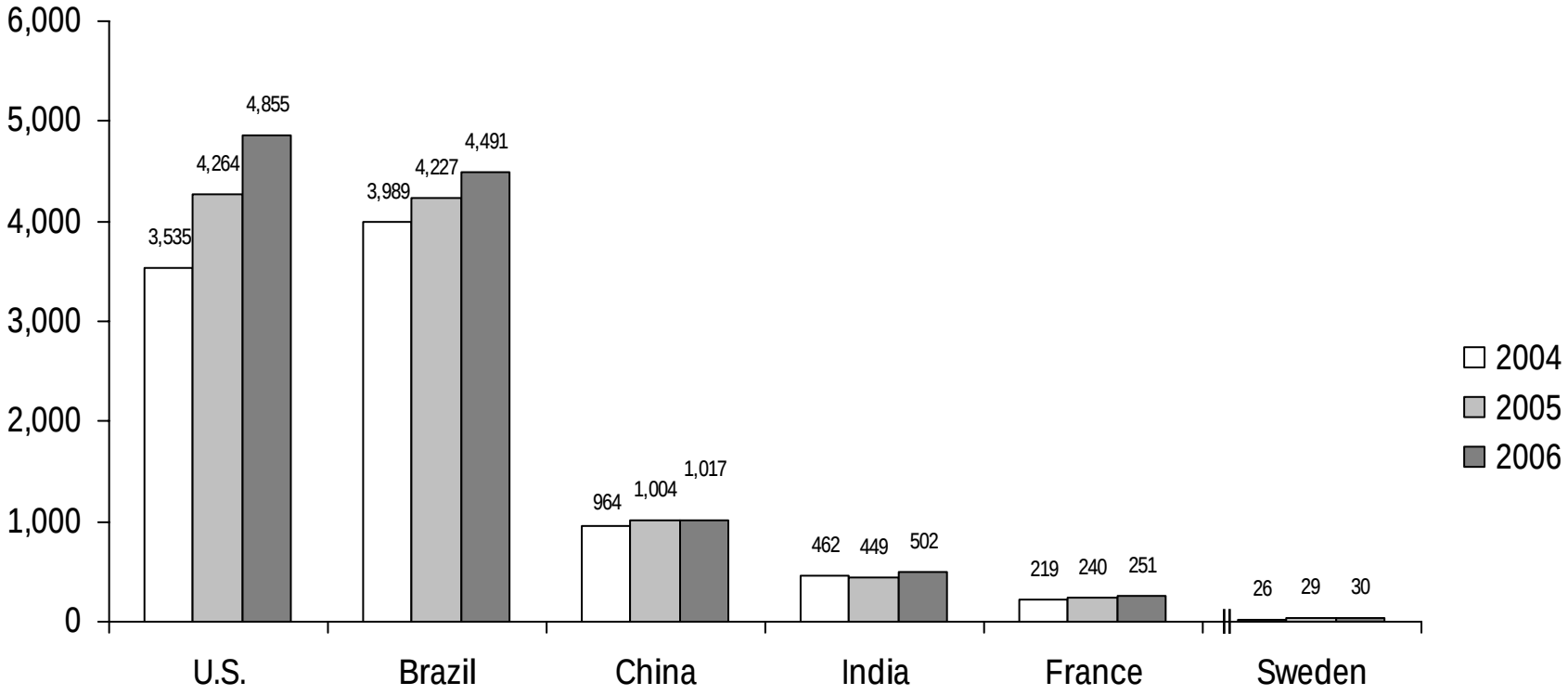


Source: U.S. Department of Energy, Renewable Fuels Association

IN 2005 THE U.S. SURPASSED BRAZIL AS THE LARGEST PRODUCER OF ETHANOL IN THE WORLD

Annual ethanol production

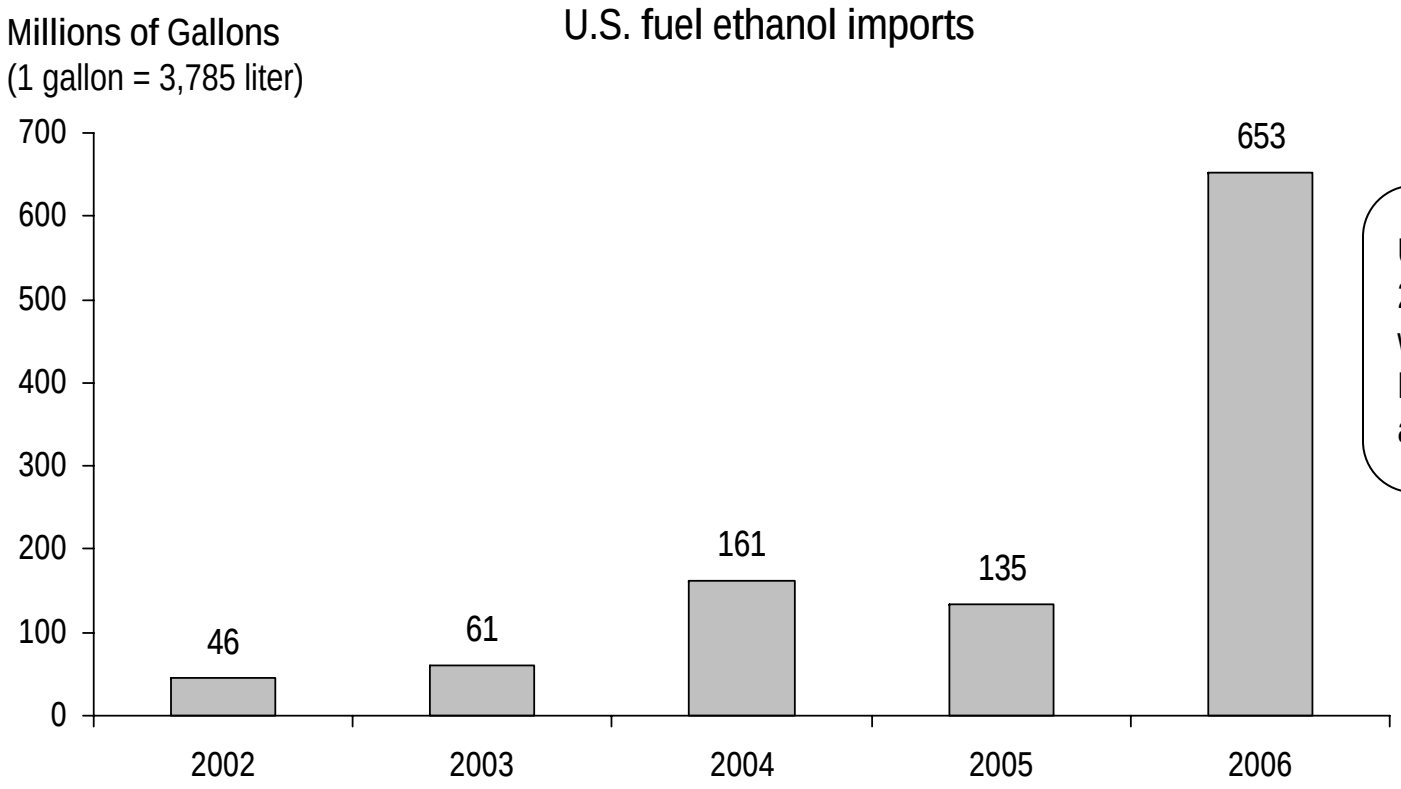
Millions of gallons, all ethanol grades (1 gallon = 3,785 liter)



Source: Renewable Fuels Association

THE U.S. ALSO IMPORTS A SUBSTANTIAL AMOUNT OF ETHANOL

- In 2006, 13 percent of U.S. demand for ethanol was met by imports

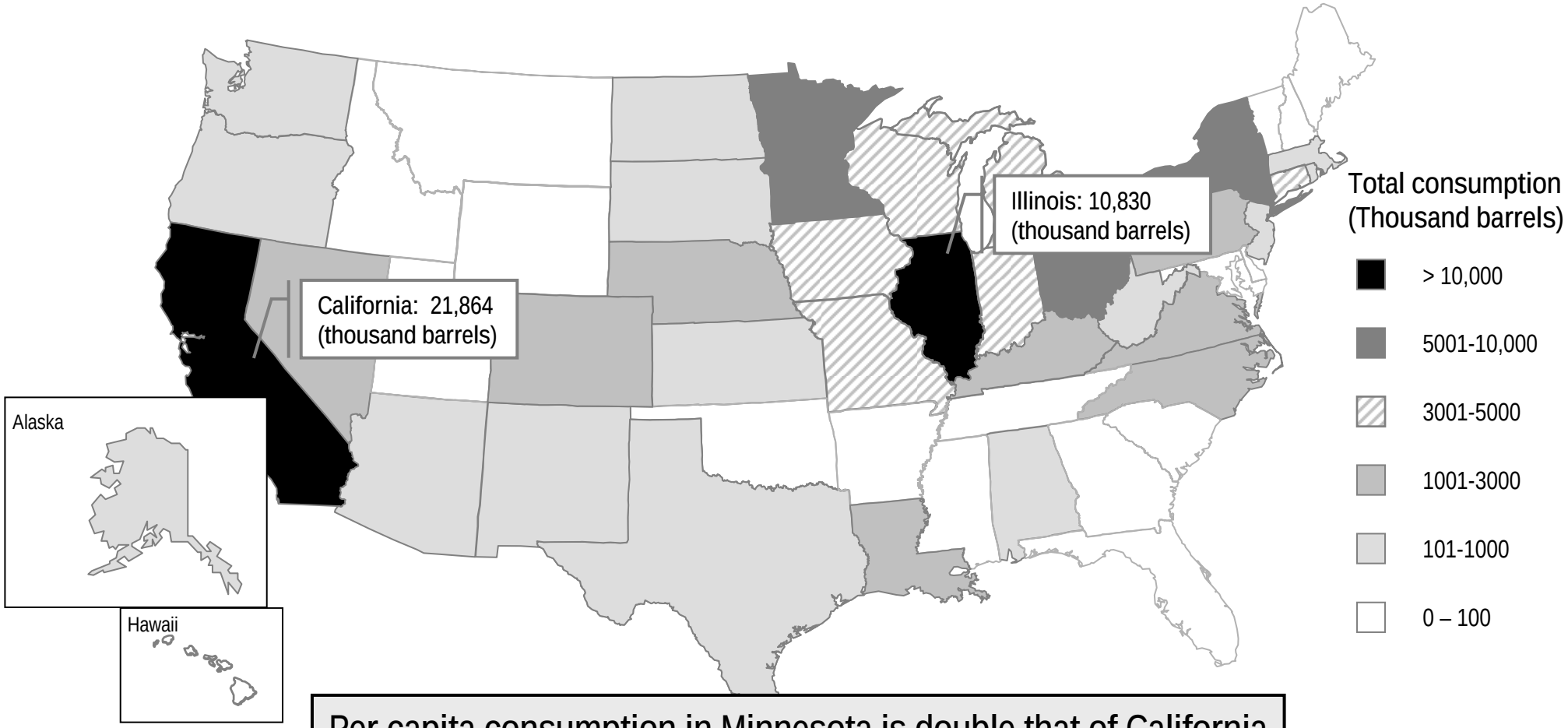


U.S. imports are subject to a 2,5% ad valorem tariff*, which can be compared to Brazil's 20% ad valorem tariff and EU's 0,14 cents per liter

* An ad valorem tariff is based on the value of the product. I.e. a 2,5% ad valorem tariff means a tariff of 2,5% of the ethanols value.
Source: Renewable Fuels Association, AP 2007-09-12

23 PERCENT OF ALL FUEL ETHANOL IS CONSUMED IN CALIFORNIA*

- But per capita consumption is highest in Minnesota, Conneticut and Iowa



Per capita consumption in Minnesota is double that of California

* 2005 Estimates
Source: Energy Information Administration, U.S. Census Bureau

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PRODUCTION IS CONCENTRATED IN THE MIDWEST

- 60% of all plants can be found in Iowa, Nebraska, Minnesota and South Dakota

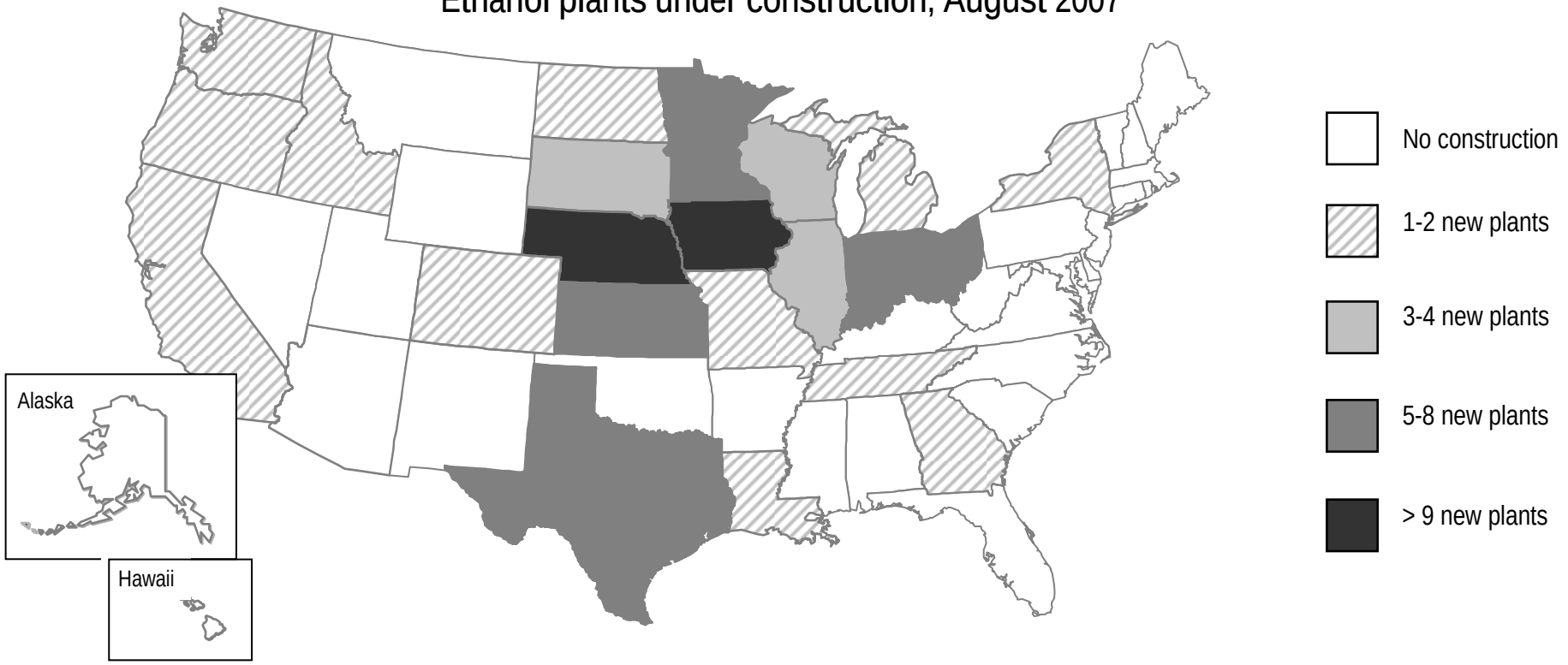
There is a total of 128 ethanol plants in the U.S.

Source: Renewable Fuels Association, 2007-08-29

THE ETHANOL INDUSTRY IS EXPANDING ALL ACROSS THE U.S.

- 77 new ethanol plants and 8 plant expansions will add an additional capacity of 6,7 billion gallons/year

Ethanol plants under construction, August 2007



Iowa tops ranking with 12 new plants under construction

Source: Renewable Fuels Association, 2007-08-29

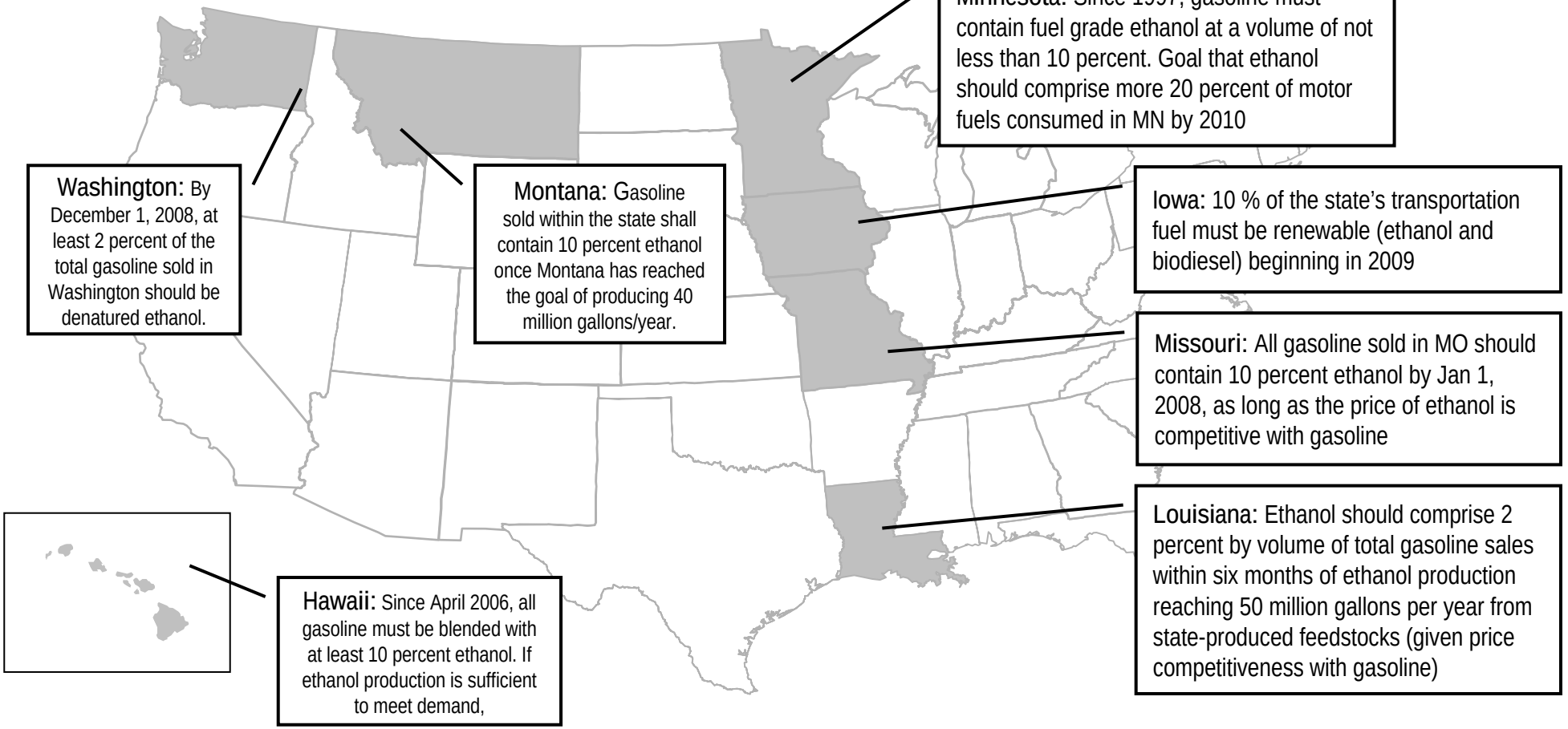
THE RENEWABLE FUELS STANDARD (RFS) FUELED A RAPID EXPANSION OF THE U.S. ETHANOL INDUSTRY

- The Renewable Fuels Standard (RFS) was introduced as a part of the Energy Policy Act of 2005 with the purpose of improving domestic energy security by setting goals for production of renewable fuels made from U.S. agricultural resources.
- Production capacity for ethanol and other renewable fuels has significantly increased since the Energy Policy Act was signed.
- The Renewable Fuels, Consumer Protection, and Energy Efficiency Act of 2007, currently debated in Congress, includes increased goals for the RFS
  - 13,2 billion gallons of ethanol by 2012
  - It also includes goals to be met by advanced biofuels, such as cellulosic ethanol.

RFS Goals for annual volume of renewable fuels additives		
Year	Billion gallons	Billion liters
2006	4	15.1
2007	4.7	17.8
2008	5.4	20.4
2009	6.1	23.1
2010	6.8	25.7
2011	7.4	28
2012	7.5	28.4

Source: U.S. Environmental Protection Agency, Renewable Fuels Association, Inter-American Development Bank

SEVEN STATES HAVE ALSO ENACTED RENEWABLE FUELS STANDARDS THAT REQUIRE THE USE OF ETHANOL-BLENDED FUEL



Minnesota: Since 1997, gasoline must contain fuel grade ethanol at a volume of not less than 10 percent. Goal that ethanol should comprise more 20 percent of motor fuels consumed in MN by 2010

Washington: By December 1, 2008, at least 2 percent of the total gasoline sold in Washington should be denatured ethanol.

Montana: Gasoline sold within the state shall contain 10 percent ethanol once Montana has reached the goal of producing 40 million gallons/year.

Iowa: 10 % of the state's transportation fuel must be renewable (ethanol and biodiesel) beginning in 2009

Missouri: All gasoline sold in MO should contain 10 percent ethanol by Jan 1, 2008, as long as the price of ethanol is competitive with gasoline

Louisiana: Ethanol should comprise 2 percent by volume of total gasoline sales within six months of ethanol production reaching 50 million gallons per year from state-produced feedstocks (given price competitiveness with gasoline)

Hawaii: Since April 2006, all gasoline must be blended with at least 10 percent ethanol. If ethanol production is sufficient to meet demand,

Source:American Coalition for Ethanol

THROUGH INCENTIVES THE FEDERAL GOVERNMENT INTENDS TO STIMULATE INCREASED PRODUCTION AND DEMAND FOR ETHANOL

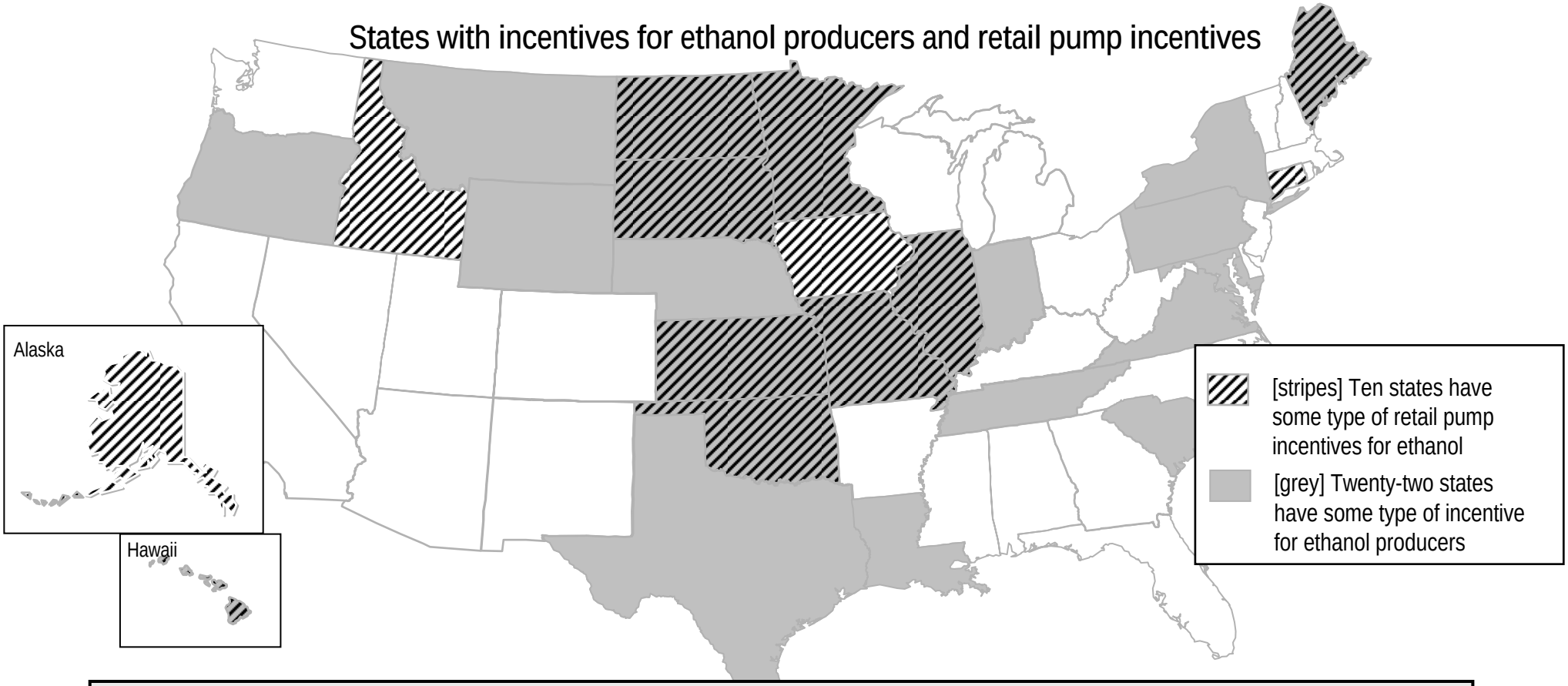
Small Ethanol Producer Tax Credit	The Volumetric Ethanol Excise Tax Credit (VEETC)
Initially introduced in 1990, the Small Producer Credit provides small ethanol production facilities with a production income tax credit of 10 cents per gallon on up to 15 million gallons of ethanol per year. With the Energy Policy Act of 2005, the credit was modified to allow for the $1.5 million credit to be passed through to farmer-owners of ethanol cooperatives and also modernizing the definition of a "small" ethanol to facilities producing from 30 up to 60 million gallons annually.	The VEETC passed in 2004 extended Blender's Tax Credit until 2010, a policy that was set to expire in 2007. The Blender's Credit is the 51 cents per gallon tax credit that goes to the petroleum industry as an incentive to blend ethanol into their gasoline. The 51 cents equates to a 5.1 cent credit on a gallon of E10 fuel.

U.S. Dept. of Energy lists all federal incentives for the ethanol industry on the website:
http://www.eere.energy.gov/afdc/fuels/ethanol_laws_federal.html

Source: Amercian Coalition for Ethanol, Inter-American Development Bank

SEVERAL STATES HAVE ALSO ENACTED VARIOUS INCENTIVE PROGRAMS

States with incentives for ethanol producers and retail pump incentives



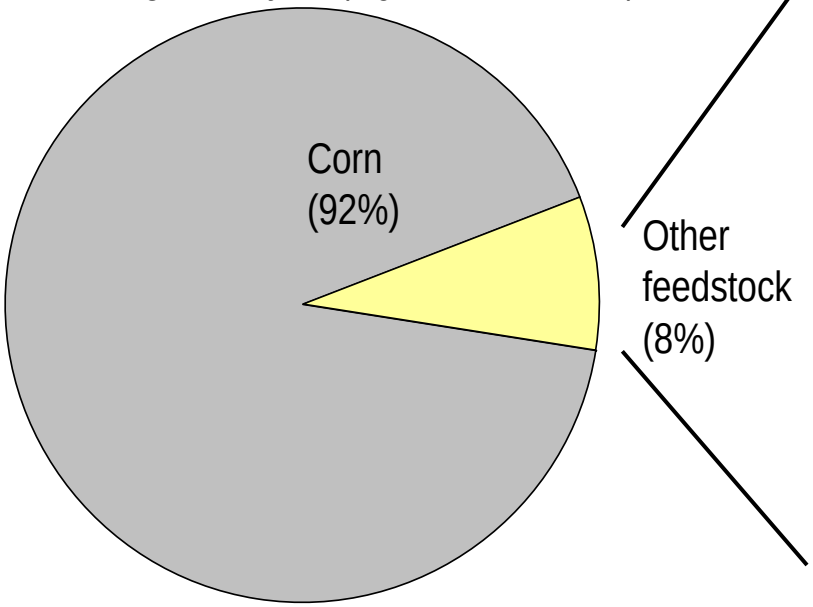
Many states have other types of ethanol related incentives. All state incentives are posted at: http://www.eere.energy.gov/afdc/progs/ddown_matrx.php

Source:American Coalition for Ethanol

CORN IS THE DOMINATING FEEDSTOCK FOR PRODUCING ETHANOL

- 92 percent of production is based on corn

Total production capacity 2006
5200 million gallons /year (1 gallon = 3,785 liter)



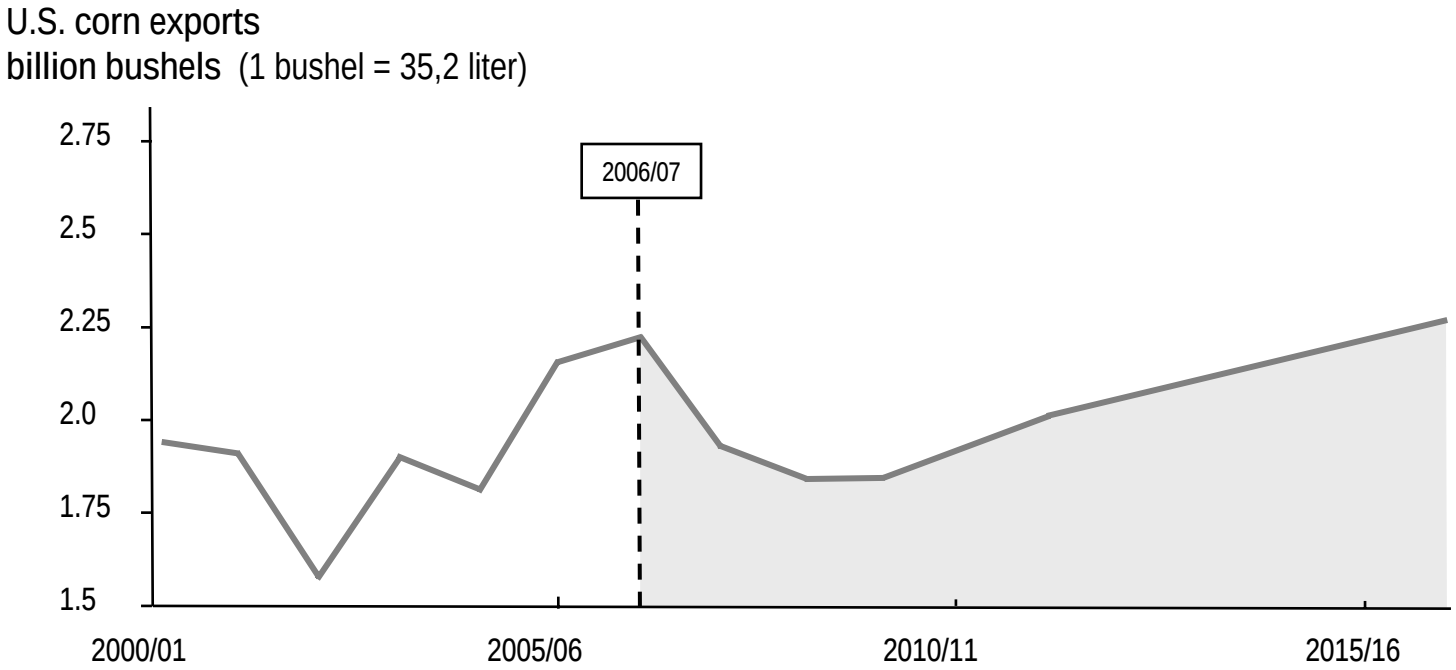
Plant feedstock	Production capacity (million gallons/year)
Corn mixed with milo	244
Corn mixed with wheat	90
Milo mixed with wheat	40
Corn mixed with barley	40
Waste beverages	16
Cheese whey	8
Sugars and starches	2

Only 5 of 77 facilities currently under construction will use alternative feedstocks: milo, grain sorghum and sugar cane bagasse

Source: U.S. Environmental Protection Agency, Renewable Fuels Association

THE CORN FEEDSTOCK IS SOURCED DOMESTICALLY

– Increased U.S. demand for corn for ethanol production is projected to reduce U.S. exports in the short term



According to the U.S. Dept of Agriculture the U.S. share of global corn trade will drop from around 60-70 percent to 55-60 percent due to ethanol expansion and higher corn prices

Source: U.S. Department of Agriculture - Agricultural Projections to 2016.

BECAUSE OF HIGHER CORN PRICES, IN COMBINATION WITH LOWER ETHANOL PRICES, THERE HAS BEEN A HALT TO EXPANSION Q 3, 2007

- The average national ethanol price on the spot market dropped 30 percent from May to October 2007, lowering the margins for the ethanol producers
- In addition, higher construction costs and higher feedstock costs are causing some ethanol plants to slow down or halt construction of new facilities
- Many industry experts say the worst problems are temporary as there is a current oversupply, intensified by transportation bottlenecks in getting ethanol from the heartland to the coasts
- A higher renewable fuels standard would force refiners and blenders to work faster to process increased amounts. The Senate has approved a bill that would require gasoline producers to blend 36 billion gallons of ethanol into gasoline by 2022, an increase from the current standard of 7.5 billion gallons by 2012.
  - The House did not include such a provision in the version it passed, and it is uncertain whether any final legislation will emerge this year and what it will say about ethanol if it does.

”It is not the first time the industry has seen low margins […] The industry is awaiting what goals will be included in the new energy bill”

Klas Abrahamsson, director agro & environmental markets, Alfa Laval

Source: New York Times, Grain Journal, STC interviews

THERE HAS BEEN IMPORTANT INVESTMENTS IN ALTERNATIVE FEEDSTOCKS FOR PRODUCTION OF CELLULOSIC ETHANOL

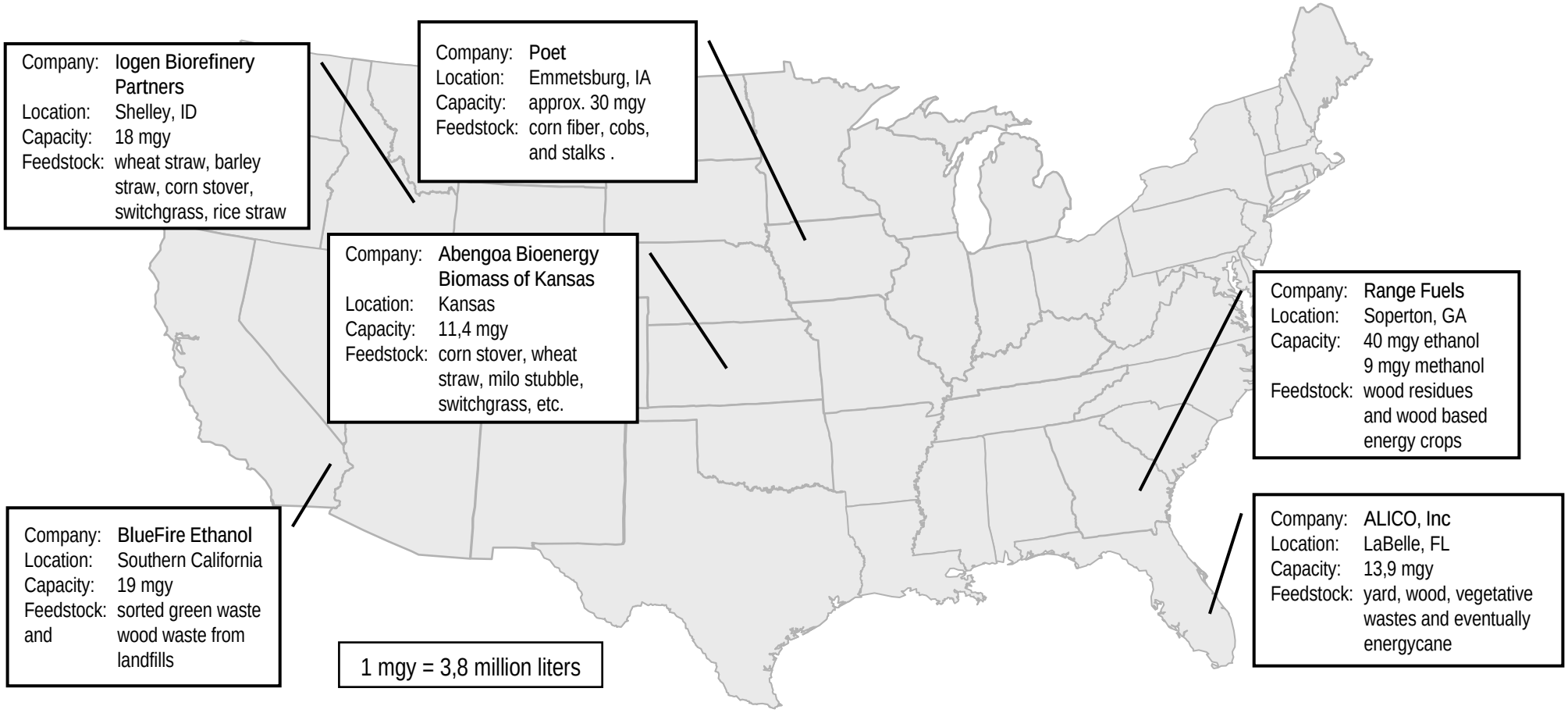
- One of the goals of the U.S. Department of Energy's biomass program is to make ethanol from cellulosic feedstocks cost competitive by 2012.
  - No commercial cellulosic ethanol biorefineries currently exist.
- In March 2007, the U.S. Department of Energy announced that it would award $385 million in grants to support development of six commercial-scale, integrated biorefineries.
  - The public-private projects that will collectively produce up to 130 million gallons of cellulosic ethanol annually by 2012.
  - Feedstocks include agriculture residues such as corn stover, wheat and rice straw; wood residues, wood based energy crops; and landfill organic wastes

"These grants are critical to bringing cellulosic ethanol to the commercial market and underscore the important partnership the federal government must have with the U.S. ethanol industry to achieve both our short-term and long-term energy goals."

Bob Dinneen, President, Renewable Fuels Association

Source: Environmental & Energy Study Institute, Renewable Fuels Association

THE DOE GRANTS ARE DESIGNED TO HELP THE SIX ETHANOL PRODUCERS WITH THE UPFRONT CAPITAL COSTS ASSOCIATED WITH CONSTRUCTION OF CELLULOSIC ETHANOL BIOREFINERIES



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KEY PLAYERS INFLUENCING THE ETHANOL INDUSTRY

U.S. Department of Energy

- The Office of Energy Efficiency and Renewable Energy's Biomass Program works with industry, academia and national laboratory partners through research, development, and demonstration efforts.
- Current focus is to make cellulosic ethanol cost competitive by 2012 and reduce gasoline consumption by 20 percent in 10 years

www.eere.energy.gov

U.S. Environmental Protection Agency

- Under the Energy Policy Act of 2005, EPA is responsible for promulgating regulations to ensure that gasoline sold in the United States contains a minimum volume of renewable fuel (Renewable Fuels Program).
- The Office of Transportation and Air Quality's (OTAQ) mission is to reconcile the transportation sector with the environment by advancing clean fuels and technology.

www.epa.gov/otaq

KEY
OFFICIAL PLAYERS

U.S. Department of Agriculture (USDA)

- The USDA bioenergy program has provided almost 14 million USD to U.S. commercial bioenergy producers, to increase their ethanol production.
- The Program was terminated on June 30, 2006 due to exhaustion of funds.

www.usda.gov

Governors' Ethanol Coalition

- The Governors' Ethanol Coalition is composed of 27 state executives with international representatives from Brazil, Canada, Mexico, and Sweden.
- The coalition supports the production of ethanol from corn or other domestic, renewable resources and encourages its use in the transportation sector.

www.ethanol-gec.org

Source: EPA, Interviews

KEY PLAYERS INFLUENCING THE ETHANOL INDUSTRY

KEY INDUSTRY ORGANIZATIONS

Renewable Fuels Association

- The Renewable Fuels Association (RFA) is the national trade association for the U.S. ethanol industry. RFA promotes policies, regulations and research and development initiatives that will lead to the increased production and use of fuel ethanol.

www.ethanolrfa.org

American Coalition for Ethanol

- The American Coalition for Ethanol (ACE) is the grassroots voice of the ethanol industry.
- More than 700 members include ethanol producers, farmers, investors, commodity organizations and businesses that support increased production and use of ethanol.

www.ethanol.org

Ethanol Promotion and Information Council (EPIC).

- EPIC is a nonprofit alliance of ethanol industry leaders.
- Their goal is to reach consumers and key influencers across the country and educate them on the performance and environmental benefits of using an ethanol-enriched fuel in their automobiles.

www.drivingethanol.org

National Corn Growers Association

- NCGA is the largest trade organization in the United States representing corn growers.
- It represents more than 32,300 dues-paying corn growers from 48 states and the interests of more than 300,000 farmers who contribute to corn checkoff programs in 20 states.

www.ncga.com

Source: STC Research

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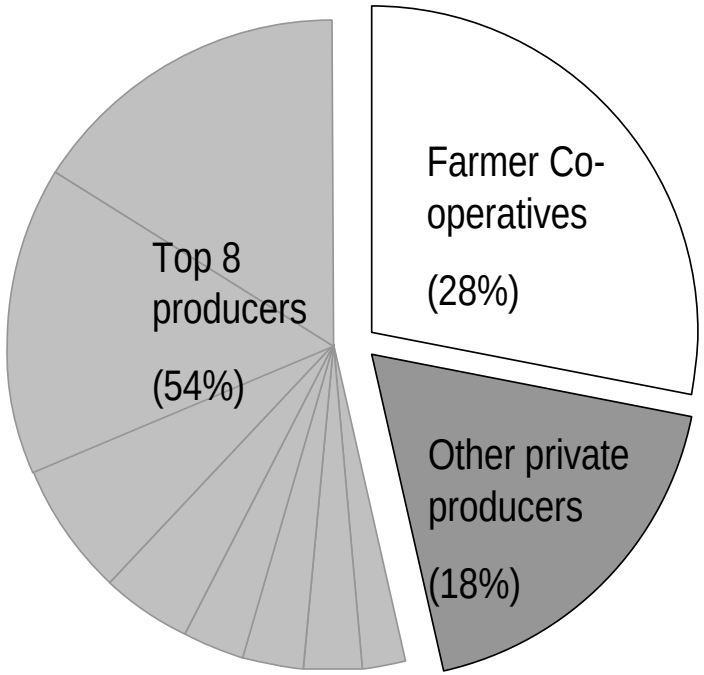
TOP 8 ETHANOL PRODUCERS REPRESENT MORE THAN HALF OF U.S. PRODUCTION CAPACITY

Company	Production capacity (million gallons/year)
POET	1100
Archer Daniels Midland	1070
VeraSun Energy Corp.	450
U.S Bioenergy Corp.	300
Hawkeye Renewables, LLC	220
Aventine Renewable Energy, LLC	207
Abengoa bioenergy Corp.	198
Global Ethanol/Midwest Grain Processors	152

Total production capacity, 6.9* billion gallons/year (1 gallon = 3,785 liter)

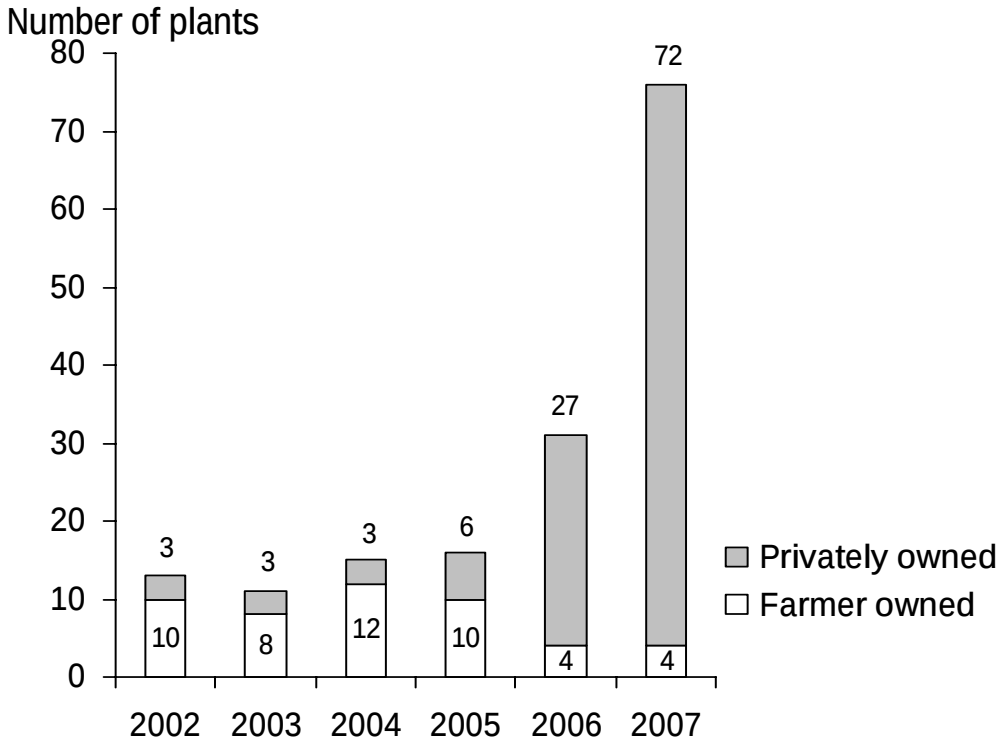


Source: Renewable Fuels Association, 2007-09-28

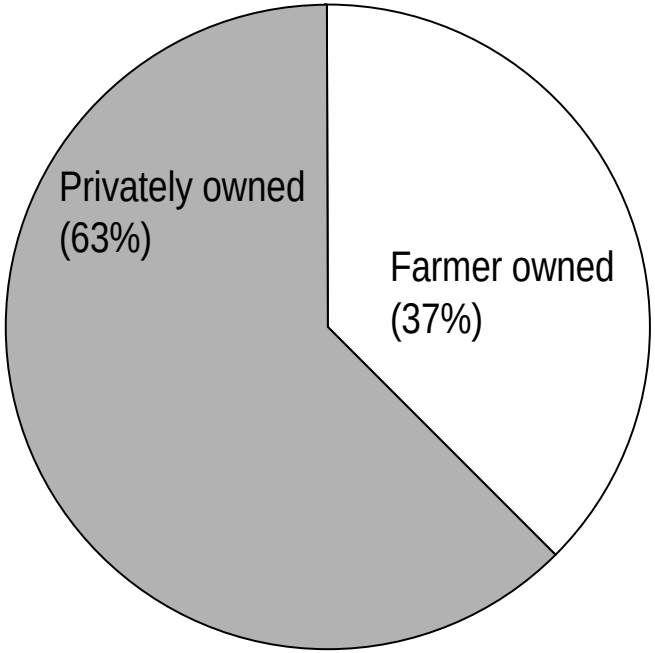
FARMERS COOPERATIVES* ALSO PLAY AN IMPORTANT ROLE IN THE GROWTH OF THE INDUSTRY

- Although private ownership has increased the last couple of years

Plants under construction, by ownership



U.S. ethanol biorefineries, by ownership
(total number 131, Oct. 2007)



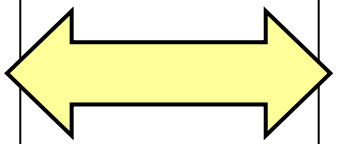
* Farmer cooperatives are tax exempt non profit organizations bringing farmers together on issues of marketing, purchasing and service.

Source: Renewable Fuels Association, American Coalition for Ethanol,
U.S. Environmental Protection Agency, STC Interviews

DRY MILLING IS THE MOST COMMON PROCESS FOR PRODUCING ETHANOL

Dry mill processing

- Grinds the entire kernel into flour
- Flour is fed into a fermentation process to produce ethanol
- Generates distillers grains with solubles as a co-product
  - Some dry mill plants also capture and sell CO2 as a byproduct, but most do not
- Easier to construct
- Smaller in size



Wet mill processing

- Separates the kernel into four products: starch, gluten feed, gluten meal and oil
- Starch is fed into a fermentation process, same as in dry mill, to produce ethanol
- Valuable co-products are sold to food and agricultural markets
- Higher operating costs and more costly to build
- Larger in size in order to achieve economies of scale

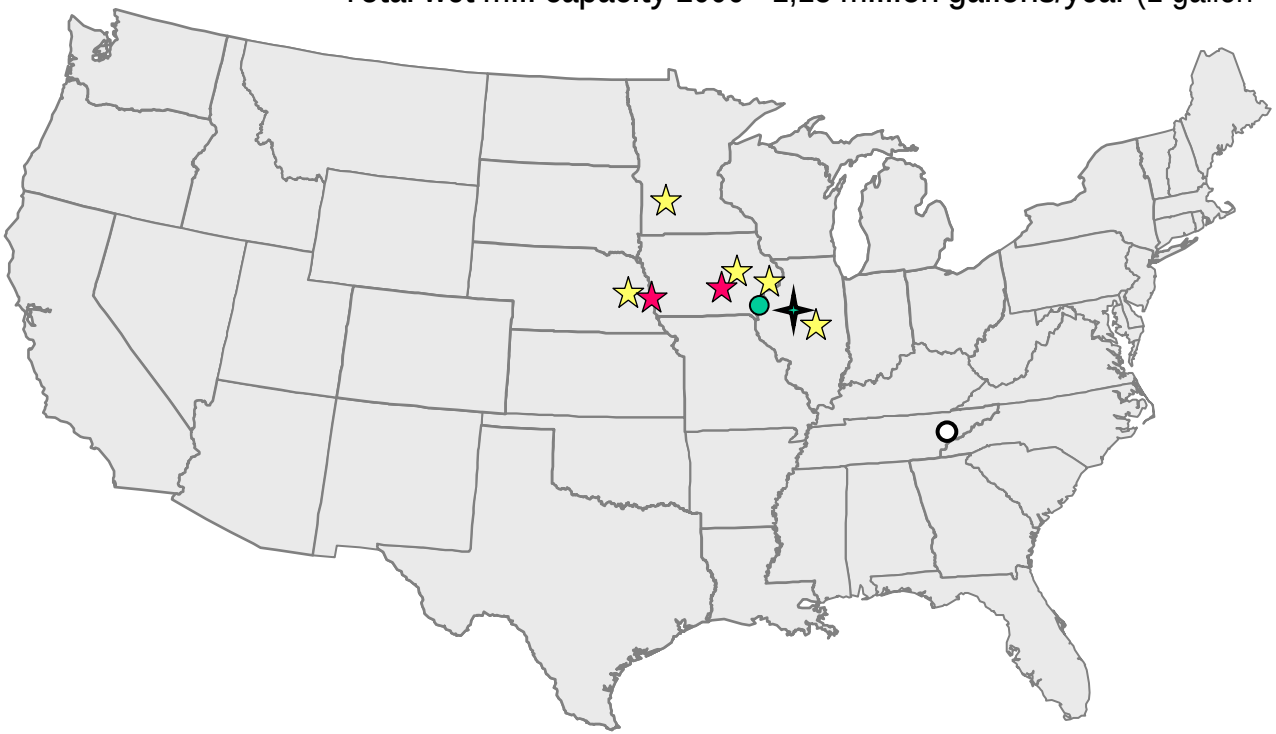
82 percent of the corn based ethanol is produced using dry mill process

Source: U.S. Environmental Protection Agency, Energy Information Administration, Renewable Fuels Association

ONLY FIVE COMPANIES OPERATE WET MILL PLANTS

- Most of the production is located around Iowa

Total wet mill capacity 2006 - 1,13 million gallons/year (1 gallon = 3,785 liter)



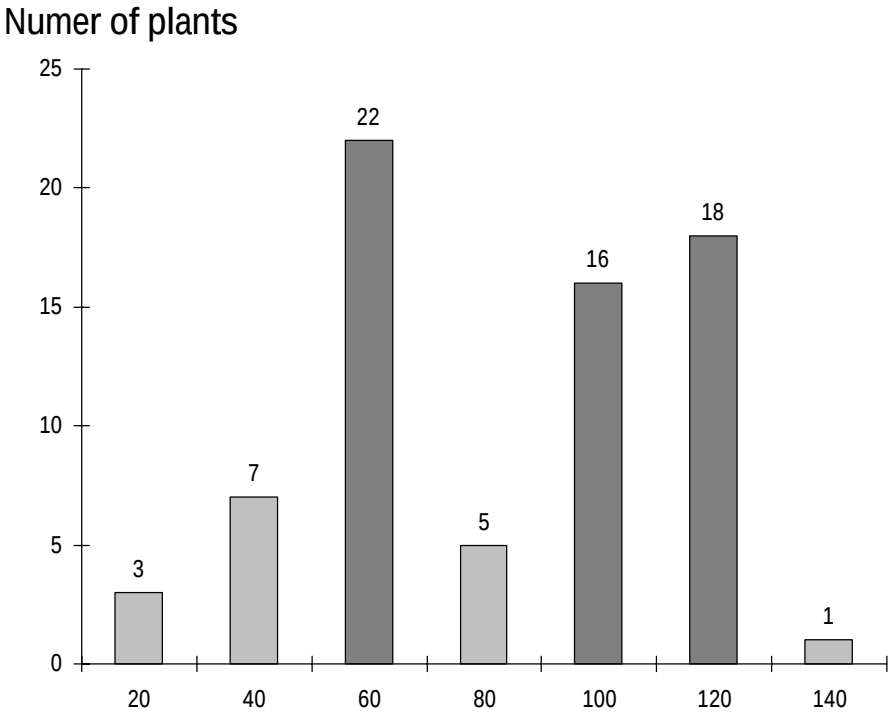
- Archer Daniels Midland
- Cargill, Inc.
- Aventine Renewable Energy
- Tate & Lyle
- Grain Processing Corp.

Archer Daniels Midland is dominating with 73% of wet mill capacity

Source: U.S. Environmental Protection Agency

MOST PLANTS UNDER CONSTRUCTION WILL HAVE A CAPACITY OF 60 OR AROUND 100 MILLION GALLONS PER YEAR

Number of plants under construction, by size



- Tax breaks and regulations favor construction of plants with a certain capacity
  - Small Ethanol Producer Tax Credit applies to facilities with a production capacity of < 60 mgy
  - EPA regulations allow for a more streamlined permitting process for plants with capacity of around 100 mgy or less
- ”Cookie-cutter” design of new plants creates standard sizes

The average new plant has a capacity of 76 million gallons/year

Source: Renewable Fuels Association “Ethanol Industry Outlook 2007”

ALTHOUGH INCENTIVES DRIVE DEMAND FOR ETHANOL, INDUSTRY DOES NOT SEEM TO DEPEND ON IT FOR NEW CONSTRUCTION

- Most of the industry experts interviewed for this study recognize that incentives play an important role in driving demand for ethanol.
  - However, nobody stated that they play a key role in the construction phase.

"Incentives are always helping out the farmer community […], but not so much for construction. You would be surprised how much money there is for investment in ethanol facilities!"

Micki Diesel, Delta-T

"Fagen recognized several years ago that incentives can go away. Under normal market conditions our plants should be built efficient so to achieve positive return in themselves."

Chad Core, Fagen Engineering

Incentives have not been decisive for the investment in new ethanol facilities

Source: STC interview

PROCUREMENT IS GENERALLY HANDLED BY A SO CALLED EPC-CONTRACTOR

Archer Daniels Midland

Global Ethanol/Midwest Grain Processors

Farmer cooperatives

VeraSun Energy Corp

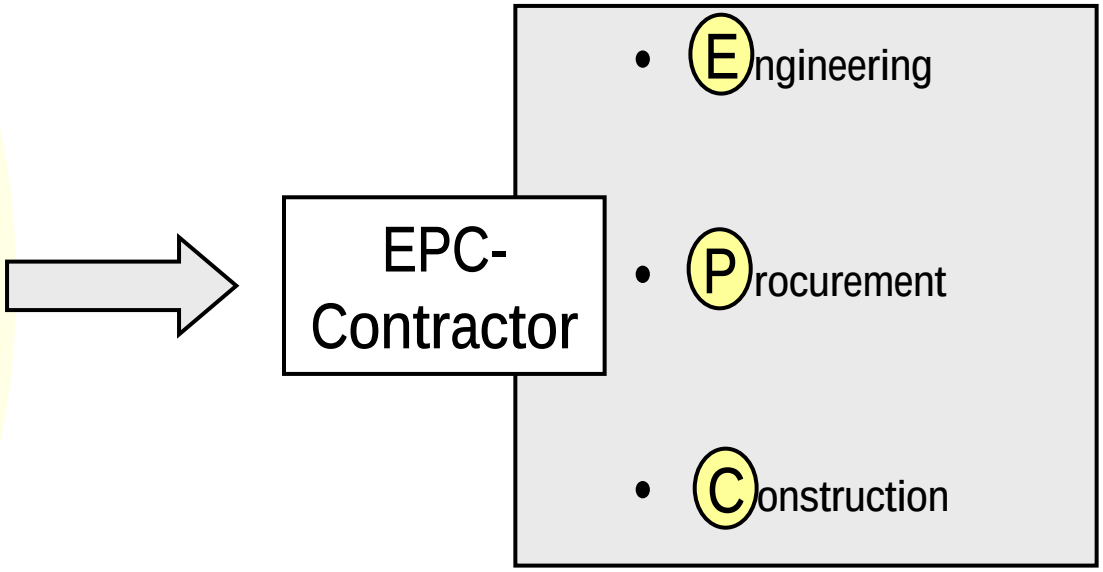
Hawkeye Renewables, LLC

U.S Bioenergy Corp.

Farmer cooperatives

Aventine Renewable Energy, LLC

Abengoa bioenergy Corp.

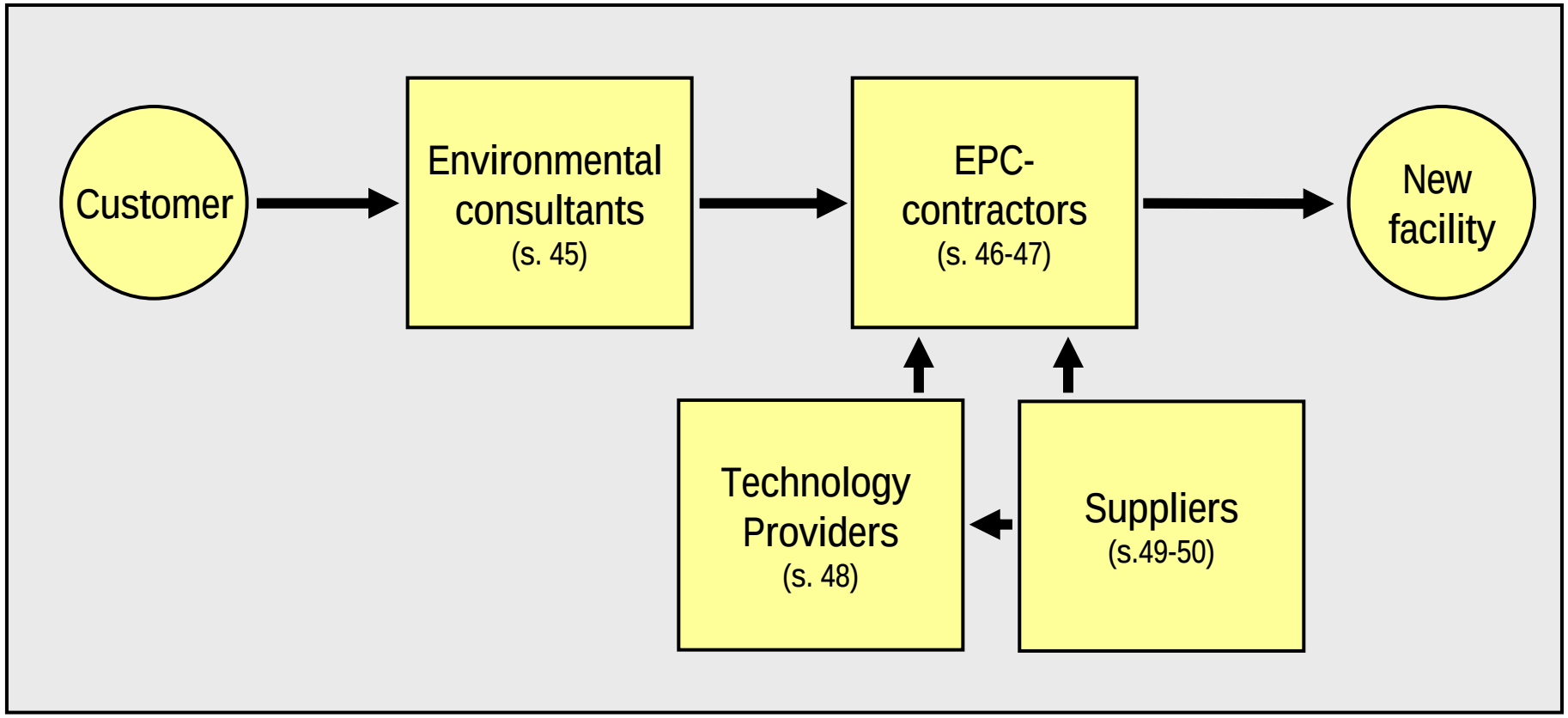


For more information on the EPC-contractors, see segment on competitors

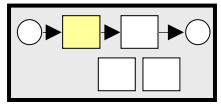
CONTENT

COMPETITION CAN BE DIVIDED INTO FOUR SEGMENTS

- Swedish companies could potentially compete within several fields



SMALL CONSULTANCY FIRMS OFTEN PERFORM THE FEASIBILITY STUDY



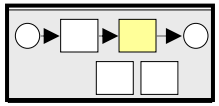
- Based on the specific skills and experience generally required for credible ethanol plant assessment, many entities award a contract for these services.
- Unlike other segments of the industry, the pre-evaluation often involve smaller companies.
- Local presence and knowledge of state and local regulations is essential.
- The most prevalent U.S. company performing these services is BBI international.

Typical assignments can include analysis of:

- Process technology
- Feedstock
- Energy requirements
- Transportation options
- Water requirements
- Permitting assistance

The goal of the feasibility study is to determine the most economically viable combination of site, technology and feedstock that results in optimum ethanol production economics.

NEW PLANTS ARE GENERALLY DESIGNED AND ENGINEERED BY EPC-CONTRACTORS



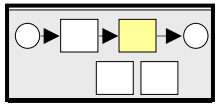
- EPC-contractors provide a one stop shop for clients by:
  - Engineering the plant
  - Procurement equipment
  - Constructing the plant
- Some of the services, such as construction, is outsourced by some contractors.
- EPC-contractors design new plants based on own or licensed process technology

<u>Domaniating EPC-contractors</u>

- Fagen Inc.
- Delta-T Corporation
- Poet
- Archer Daniels Midland

KEY EPC-CONTRACTORS ARE ACTIVE ACROSS THE U.S.

- Although most projects are located in the midwest*



Fagen/ICM

- Fagen is headquartered in Granite Falls, Minnesota and is involved in about 40 projects throughout the U.S.
- Fagen has a close partnership with the technology provider ICM and handles most projects involving ICM technology**
- For some projects ICM is the EPC contractor (currently 10)
- Fagen is the largest design-builder in the U.S. with a reputation for standardized design
- Fagen's clients are to a large extent local farmer cooperatives

Delta-T Corporation

- Delta-T is headquartered Williamsburg, Virginia and is involved in about 20 projects throughout the U.S.
- According to Delta-T, the company is involved some 20 projects which are scheduled to be online during 2007-2008
- New plants are based on own Delta-T technology
- Delta-T has a reputation for handling more of Wall Street type clients

POET

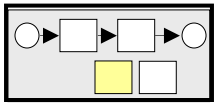
- Poet is headquartered in Sioux Falls, South Dakota and has 6 projects under construction in the Midwest
- Poet use own proprietary process technology
- Poet currently has 6 plants under construction
- In addition to plants under construction, Poet partly owns and manages 21 plants. Poet only performs EPC services for plants in which they invest.

Archer Daniels Midland (ADM)

- Archer Daniels Midland is headquartered in Decatur, Illinois and has 2 large projects under construction in the Midwest
- ADM currently has 2 large scale plants under construction with a total added capacity of 550 million gallons per year
- New plants are based on own technology
- ADM only build for own use.

* For a complete list of projects, please see appendix
** See slides on technology providers

A LIMITED NUMBER OF TECHNOLOGY PROVIDERS GUARANTEE THE WELL FUNCTIONING OF THE PRODUCTION PROCESS



- The design of a new facility is based around a so called process technology.
- The process technology can be understood as a system solution, defining factors such as input, output, energy consumption and emissions.
- The market has crystallized around a few technologies provided by a limited number of companies.
- Because of the large scale investment that is required for the construction of a new ethanol plant, investors are reluctant to try new technologies.

Key technology providers

- ICM (www.icminc.com)
- Delta-T Corporation (www.deltatcorp.com)
- Poet (www.poetenergy.com)
- Archer Daniels Midland (www.admworld.com)
- Vogelbusch (www.vogelbusch.com)
- Katzen International (www.katzen.com)

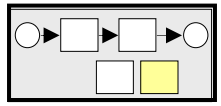
”Historically there have been a lot of projects that have failed. That is why the industry is reluctant to do anything different”

Daniel Magnusson, Weatherly Inc.

”Nobody is going to invest in an unproven technology”

Dave Crass, Michael Best

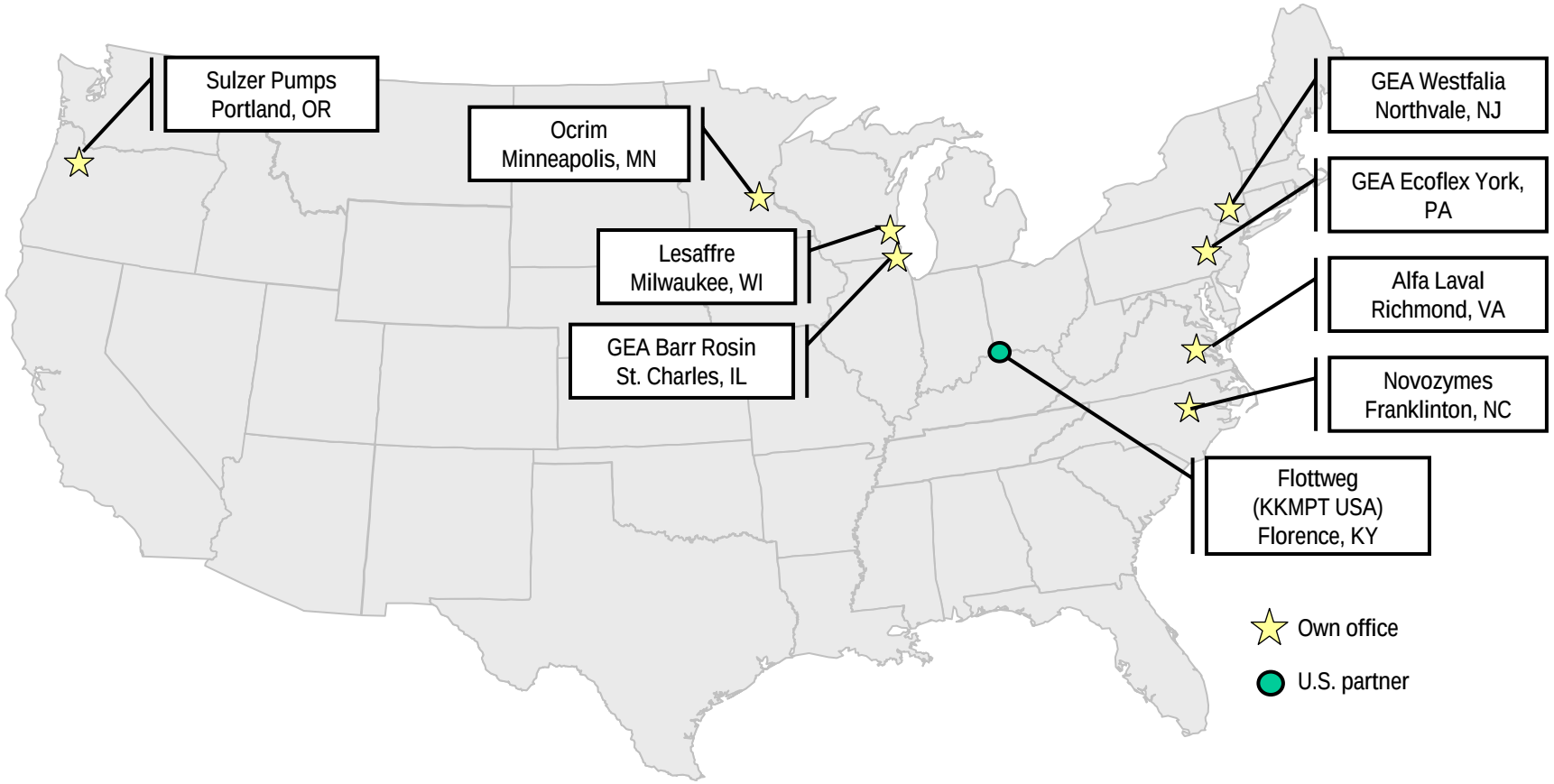
SUPPLIERS SELL PRODUCTS TO TECHNOLOGY PROVIDERS AS WELL AS EPC-CONTRACTORS



Key domestic suppliers	Key foreign suppliers
• A&B Process Systems (distillation columns) • Centrisys – (decanter centrifuges) • CPM/Roskamp Champion (hammermills) • Davenport Dryer (dryers) • Genencor (enzymes) • ICM (bio-methanators, dryers & thermal oxidizers) • Tranter PHE* (heat exchangers) • U.S. Water Services (water treatment systems) • WINBCO (fermentation process tanks, distillation columns)	• Alfa Laval (heat exchangers, centrifuges) • Fermentis/Lesaffre Yeast (yeast) • Flottwegg (centrifuges) • GEA Ecoflex (heat exchangers) • GEA Barr Rosin (dryers) • GEA Westfalia (separators) • Novozymes (enzymes) • Ocrim (milling) • Sulzer Pumps (pumps)

* Tranter has been aquired by Alfa Laval
Source: STC Interviews and desk research

KEY FOREIGN SUPPLIERS HAVE U.S. OFFICES OR PARTNERS



Most key foreign suppliers have a U.S. subsidiary, and many have several offices

THERE ARE TWO MAIN EVENTS WHERE A LARGE SHARE OF THE INDUSTRY PARTICIPATES EVERY YEAR

BBI International's Annual Fuel Ethanol Workshop & Expo

- According to industry experts this is a key industry event where representatives from practically all companies participate
- The 2007 workshop draw an attendance of 5,336. participants representing 2170 ethanol related companies
- The workshop offers opportunities to companies to present on interesting topics, in particular this is key for new technologies
- The 2008 workshop will take place in Nashville, Tennessee and the 2009 in Denver, Colorado

Renewable Fuels Association's Annual National Ethanol Conference

- The RFA conference is also a central event to the industry, with 2000 attendees in the 2007 event.
- Focus is slightly more on policy and according to interviews it is a good opportunity to get an understanding of in what direction the industry is going.
- 2008 the conference will take place in Orlando, Florida.

Tradeshows and workshops are important for making business connections within the U.S. ethanol industry

FRACTIONATION, CELLULOSIC ETHANOL AND HOW TO OPTIMIZE THE WASTE STREAM ARE AREAS OF INTEREST TO THE INDUSTRY

- The most well attended workshop at the 2007 Fuel Ethanol Workshop (FEW) was the fractionation workshop, including presentations on new corn processing system that improves ethanol efficiency and fundamentals of dry fractionation, etc.

"This year there was a lot of interest in cellulosic ethanol [at the FEW] I think cellulosic ethanol will be an important topic at the 2008 conference, as well as biomass and feedstock used to create second generation biofuels"

Dave Blazer, marketing manager, BBI

"What is essential to the industry is basically how to achieve higher yields and lower the operational costs"

Klas Abrahamsson, director agro & environmental markets, Alfa Laval

All presentations from the 2007 FEW are available online:
http://www.bbibiofuels.com/few/2007/FEW07/index.html

CONTENT

SUMMARY ETHANOL 1(2)

- Market conditions and policy incentives have contribute to an unprecedented expansion of the U.S. ethanol industry during the last couple of years
- There is a total of 128 ethanol plants in the U.S., most of them located in the Midwest
  - 77 plants under construction and 8 plant expansions will add an additional capacity of 6,7 billion gallons/year
- The renewable fuels standard (RFS) fueled a rapid expansion of the U.S. ethanol industry by setting goals for production of renewable fuels made from U.S. agricultural resources
  - Seven states have also enacted renewable fuels standards that require the use of ethanol-blended fuel
- Corn is the dominating feedstock for producing ethanol. Because of higher corn prices, in combination with lower ethanol prices, there has been a halt to expansion during the third quarter of 2007

There is a strong expansion of the U.S. ethanol industry although there has been a recent halt to expansion due to conflicting commodity prices

SUMMARY ETHANOL 2(2)

- A few companies operate more than half of U.S. production capacity, while farmers cooperatives also play an important role in the growth of the industry
- The U.S. Department of Energy granted 385 million dollars in 2007 to six ethanol producers for the construction of cellulosic ethanol biorefineries
- The construction process of a new ethanol plant generally involves four industry segments: environmental consultancy firms, EPC-contractors, technology providers and equipment suppliers
  - Environmental consultancy firms tend to be local and smaller firms
  - A few EPC-contractors handles the lion share of U.S. projects
  - Because of a conservative industry there are only a limited number of trusted technology providers
  - All key foreign equipment suppliers have U.S. offices or partners
- Tradeshows and workshops are important for making business connections within the U.S. ethanol industry
  - Areas of high industry interest is fractionation, cellulosic ethanol and how to optimize the waste stream

CONTENT

SAMMANFATTNING ETANOL 1(3)

- Förändringar på marknaden och politiska åtgärder har resulterat i en stark expansion av USA:s etanolindustri
- Det finns för närvarande 128 etanolfabriker i USA med en hög koncentration i mellanvästern
  - 77 fabriker är under byggnation och åtta fabriker bygger ut sin produktionskapacitet. Tillsammans kommer detta utöka USA:s produktionskapacitet med ca 25 miljarder liter/år
- Renewable Fuels Standard (RFS), ett federalt program, har bidragit till den starka expansionen av etanolindustrin genom att sätta mål för hur mycket förnybart bränsle som måste produceras från det amerikanska jordbruket
  - Sju delstater har också lagstadgat om egna RFS vilka kräver viss andel av etanol i bränsleblandningen
- USA:s etanolproduktion produceras nästan uteslutande från majs. En kombination av stigande majspriser och fallande etanolpriser har fått expansionen av etanolindustrin att avta under senare halvåret av 2007

USA:s etanolindustri expanderar kraftigt, men på grund av förändringar i råvarupriset för majs och etanol har expansionen avtagit under senare halvåret av 2007

SAMMANFATTNING ETANOL 2(3)

- Ett fåtal företag står för mer än hälften av USA:s produktionskapacitet även om jordbrukskooperativ också har spelat en viktig roll i expansionen av etanolindustrin

- USA:s energidepartement (DOE) tog under 2007 initiativet att stödja utvecklingen av cellulosabaserad etanol. DOE allokerade 385 miljoner dollar i bidrag för byggnation av sex anläggningar avsedda för cellulosabaserad etanol
  - De företag som fått ovanstående bidrag är: Iogen Biorefinery Partners, Poet, Abengoa Bioenergy Biomass of Kansas, BlueFire Ethanol, Range Fuels och ALICO Inc.

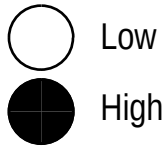
SAMMANFATTNING ETANOL 3(3)

- Med fokus på miljöteknik kan man identifiera fyra typer av aktörer som deltar i produktionsprocessen av nya etanolfabriker: miljökonsulter, så kallade EPC-entreprenörer, leverantörer av processteknologi och underleverantörer av teknik och maskineri
  - Miljökonsulterna tenderar att vara små och lokala företag
  - Ett fåtal stora EPC- entreprenörer genomför den absoluta majoriteten av projekt
  - Den amerikanska etanolindustrin är konservativ och i praktiken används enbart ett fåtal leverantörer av processteknologi
  - De större utländska underleverantörerna har alla dotterbolag eller partnerbolag i USA
- Mässor och workshops är viktiga arenor för nätverkande inom den amerikanska etanolindustrin
- Områden som fått mycket uppmärksamhet inom industrin under senare tid är fraktionering, cellulosabaserad etanol och hantering av restprodukter från produktionen

CONTENT

- Executive summary
- Introduction and background
- Ethanol
- Conclusions and recommendations
  - Conclusions and recommendations (English version)
  - Sammanfattning och slutsatser (svensk version)
- Appendix

CONCLUSIONS ETHANOL



Industry sector	Key observations	Attractiveness
• Environmental consulting	• Most companies are small and local • Local presence is important. Few Swedish companies are present • Little interest from Swedish companies	
• EPC-services	• U.S. market is dominated by a few “giants” • Swedish companies do not have the credibility to compete or manage large scale projects	
• Process technology	• There is a limited number of well established suppliers of process technology (fermentation) • There is a strong interest in new technologies for production of cellulosic ethanol, and no clear market leaders • Sweden has invested in new technologies that could pay off in the future	
• Equipment	• Hard to compete with established suppliers of conventional products • Industry interest in technology and equipment that can create higher yields and lower operational costs, could present future opportunities • Sweden has a competence base in efficient waste handling	

RECOMMENDATIONS - ETHANOL

- Swedish companies interested in the U.S. market need to have a long term perspective and be willing to commit time and resources
  - Establishing a U.S. incorporation or finding a U.S. partner is strongly recommended

- Local network should not be underestimated in opening doors. It is important to utilize contacts available, such as previous partners from the European market that might already be present on the U.S. market

- Industry trade shows are key for networking with U.S. industry. Swedish companies with an interest in the industry should consider to participate in BBI International's Annual Fuel Ethanol Workshop and/or the Renewable Fuels Association's Annual National Ethanol Conference since they are the key industry events

- The industry is characterized by openness to new technologies, but unwillingness to invest until proven. Setting up small pilot projects is a way to show American clients the well functioning of a new technology

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SLUTSATSER ETANOL

Låg
Hög

Branschsegment	Nyckelobservationer	Marknadspotential
• miljökonsulter	• De flesta företagen är små och lokala • För att vara konkurrenskraftig krävs att företaget finns på plats • Svagt intresse från svenska företag	
• EPC-entreprenörer	• Marknaden domineras av några få stora aktörer • Svenska företag har inte resurser eller trovärdighet att konkurrera med dessa om stora projekt	
• leverantörer av processteknologi	• Industrin är konservativ och använder enbart ett fåtal beprövade leverantörer • Stort intresse för nya processteknologier såsom cellulosabaserad etanol • Sverige har investerat i nya teknologier som kan bli aktuella i framtiden	
• underleverantörer av teknik och maskineri	• Svårt att konkurrera med etablerade leverantörer om konventionella produkter • Intresse för ny teknik som kan höja verkningsgraden i processen eller sänka operativa kostnader • Sverige har god kompetens inom hantering av avfall	

REKOMMENDATIONER - ETANOL

- Svenska företag som är intresserade av USA-marknaden behöver ha ett långsiktigt perspektiv och vara villiga att investera tid och resurser.
  - Att starta dotterbolag eller hitta en amerikansk partner är att rekommendera.

- Vikten av ett lokalt nätverk bör inte underskattas. Det är viktigt att använda de tillgängliga kontakter såsom partners man tidigare arbetat med i Europa och som eventuellt redan finns närvarande på USA-marknaden.

- Mässor är ett centralt moment för den amerikanska etanolindustrin och fyller en viktig funktion som nätverksarena. Svenska företag med intresse av USA:s etanolmarknad rekommenderas att delta i BBI International's Annual Fuel Ethanol Workshop och the Renewable Fuels Association's Annual National Ethanol Conference.

- Etanolindustrin i USA är beredd att pröva nya teknologier och produkter, men är generellt sätt inte villig att investera förrän teknologin är beprövad. Att sätta upp småskaliga pilotprojekt på plats är ett sätt att visa funktionaliteten för amerikanska kunder.

CONTENT

LIST OF INTERVIEWED PEOPLE 1(2)

Company/Organization	Contact	Title
U.S. Environmental Protection Agency (EPA)	Julie Boledovich	Chemical Engineer, Fuels Center
Renewable Fuels Association	Samantha M. Slater	Director, Congressional and Regulatory Affairs
ICM	Alan Goodnight	Business Development
Delta T	Mickey Diesel	Marketing Specialist, Business Dev. Dept.
Michael Best	Dave Crass	Managing Partner of the Madison Office
Fagen Engineering LLC	Chad Core	Project Developer
Process- & Industriteknik AB	Kenneth Berg	Divisional Manager
Atrax Energi AB	Anders Elam	Consultant
Weatherly Inc. / Chematur	Magnus Danielsson	Manager Marketing and Sales
Delta T		Purchasing representative
Alfa Laval	Klas Abrahamsson	Director Agro & Environmental Markets

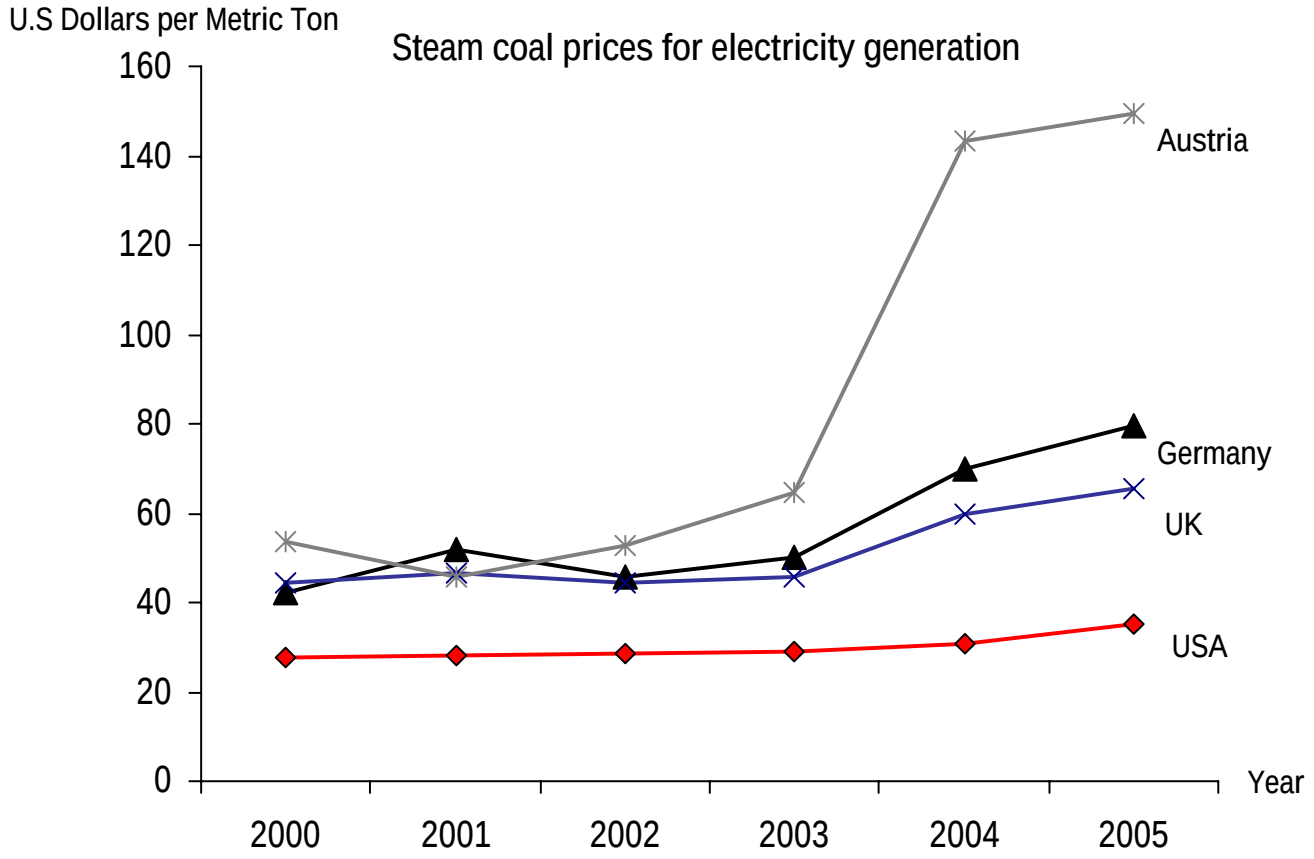
LIST OF INTERVIEWED PEOPLE 2(2)

Company/Organization	Contact	Title
BBI International	Rafael Nieves	International Business Development Manager
BBI International	Dave Blazer	Marketing Manager
Chemrec	Jonas Rudberg	Managing Director

CONTENT

EXPORTRÅDET
SWEDISH TRADE COUNCIL

VERY LOW COAL PRICES MAKES IT DIFFICULT FOR RENEWABLE ENERGIES TO BE COST EFFICIENT IN THE U.S.



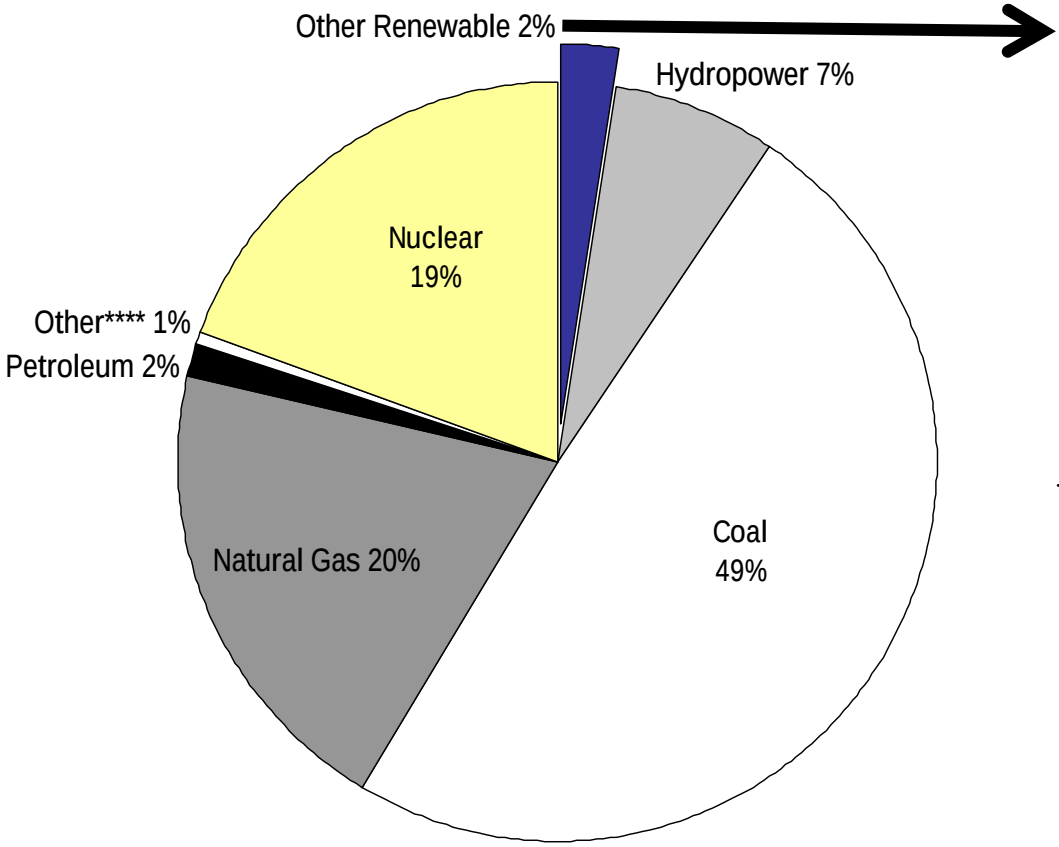
Coal is a very cheap energy source in the U.S. compared to most European countries

Source: Energy Information Administration

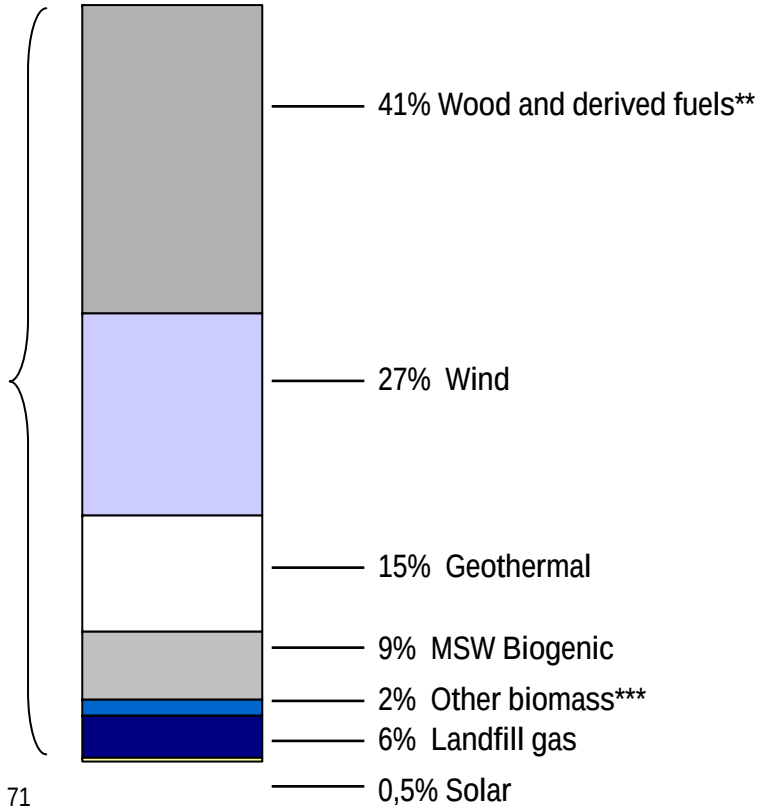
ONLY 2% OF THE ELECTRICITY PRODUCED IN THE U.S. COME FROM RENEWABLE ENERGY SOURCES OTHER THAN HYDROPOWER

- Coal represent 49% of the total electricity generation in the U.S.

Electricity Net Generation in the U.S (2006)
100% = 4053 Billion Kilowatt-hours



Electricity net Generation from Renewable Energy* (2006)
100% = 96,7 Billion Kilowatthours

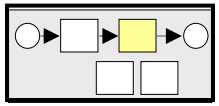


**** Non-biogenic municipal solid waste, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, tire-derived fuels and miscellaneous technologies.

Source: EIA * Excluding conventional hydroelectric power ** black liquor and wood/woodwaste solids and liquids *** agricultural bioproducts, sludge waste and other biomass solids, liquids and gases

CONTENT

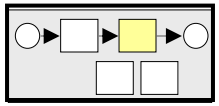
FAGEN IS CURRENTLY INVOLVED IN ABOUT 40 PROJECTS 1(3)



Project	Location	Capacity
Aberdeen Energy, LLC	Mina, SD	100 million gallons per year
Absolute Energy, LLC	St. Ansgar, IA	100 million gallons per year
Advanced BioEnergy, LLC	Fairmont, NE	100 million gallons per year
ASA Albion, LLC	Albion, NE	100 million gallons per year
ASA Bloomingburg, LLC	Bloomingburg, OH	100 million gallons per year
ASA Linden, LLC	Linden, IN	100 million gallons per year
Big River Resources, LLC (expansion)	West Burlington, IA	40 million gallons per year
Blue Flint Ethanol, LLC	Underwood, ND	50 million gallons per year
Castle Rock Renewable Fuels, LLC	Necedah, WI	50 million gallons per year
Central Indiana Ethanol, LLC	Marion, IN	40 million gallons per year
E Energy Adams, LLC	Adams, NE	50 million gallons per year
Elkhorn Valley Ethanol, LLC	Norfolk, NE	40 million gallons per year
Ethanol Grain Processors, LLC	Obion, TN	100 million gallons per year

Source: Fagen website, ICM website

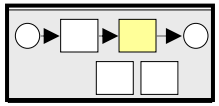
FAGEN IS CURRENTLY INVOLVED IN ABOUT 40 PROJECTS 2(3)



Project	Location	Capacity
First United Ethanol, LLC	Camilla, GA	100 million gallons per year
Golden Grain Energy, LLC	Mason City, IA	40 million gallons per year
Golden Grain Energy, LLC (expansion)	Mason City, IA	40 million gallons per year
Green Plains Renewable Energy, Inc.	Shenandoah, IA	50 million gallons per year
Heron Lake Bioenergy, LLC	Heron Lake, MN	50 million gallons per year
Indiana Bio-Energy, LLC	Bluffington, IN	100 million gallons per year
Little Sioux Corn Processors, LLC (expansion)	Marcus , IA	40 million gallons per year
Marquis Energy, LLC	Hennepin, IL	100 million gallons per year
Marysville Ethanol, LLC	Marysville, MI	50 million gallons per year
Millennium Ethanol, LLC	Marion, SD	100 million gallons per year
Millennium Ethanol, LLC	Marion, SD	100 million gallons per year
Patriot Renewable Fuels, LLC	Mineral , IL	100 million gallons per year
Plainview BioEnergy, LLC	Plainview, TX	100 million gallons per year

Source: Fagen website, ICM website

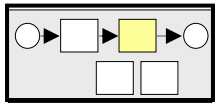
FAGEN IS CURRENTLY INVOLVED IN ABOUT 40 PROJECTS 3(3)



Project	Location	Capacity
Platinum Ethanol, LLC	Arthur, IA	110 million gallons per year
Redfield Energy, LLC	Redfield, SD	40 million gallons per year
Siouxland Ethanol, LLC	Jackson, NE	50 million gallons per year
US Bio Dyersville	Dyersville, IA	100 million gallons per year
US Bio Hankinson	Hankinson, ND	100 million gallons per year
US Bio Janesville	Janesville, MN	100 million gallons per year
US Bio Ord	Ord, NE	40 million gallons per year
Val-E Ethanol, LLC	Ord, NE	40 million gallons per year
VeraSun Energy	Charles City, IA	110 million gallons per year
VeraSun Hartley	Hartley, IA	110 million gallons per year
Verasun Welcome	Welcome, MN	110 million gallons per year
W.E. Hereford, Ltd.	Hereford, TX	100 million gallons per year
Western New York Energy, LLC	Shelby , NY	50 million gallons per year

Source: Fagen website, ICM website

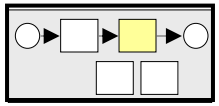
ICM IS CURRENTLY PERFORMING EPC-SERVICES IN 10 PROJECTS



Project	Location	Capacity
Glacial Lakes Energy, LLC (expansion)	Watertown, SD	40 million gallons per year
Heartland Grain Fuels, LP	Aberdeen, SD	40 million gallons per year
Levelland/Hockley County Ethanol, LLC	Leveland, TX	40 million gallons per year
Lifeline Foods, Inc.	St. Joseph, MO	40 million gallons per year
Nesika Energy, LLC	Scandia, KS	10 million gallons per year
Prairie Horizon Agri-Energy LLC	Phillipsburg, KS	40 million gallons per year
The Andersons Ethanol LLC	Albion, MI	55 million gallons per year
The Andersons Ethanol LLC	Clymers, IN	110 million gallons per year
The Andersons Greenville Ethanol, LLC	Greenville, OH	110 million gallons per year
Yuma Ethanol, LLC	Yuma, CO	40 million gallons per year

Source: Fagen website, ICM website

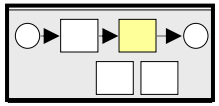
DELTA T IS CURRENTLY INVOLVED IN ABOUT 20 PROJECTS 1(2)



Project	Location	Capacity
BioFuel Energy - Buffal Lake Energy LLC	Fairmont, MN	110 million gallons per year
BioFuel Energy - Pioneer Trail Energy, LLC	Wood, NE	108 million gallons per year
Cascade Grain	Clatskanie, OR	108 million gallons per year
Center Ethanol Company	Sauget, IL	50 million gallons per year
Coshoctan Ethanol	Coshocton, OH	55 million gallons per year
Global Ethanol/Midwest Grain Processors	Riga, MI	55 million gallons per year
Grand River Distribution	Cambria, WI	40 million gallons per year
Green Plains Renewable Energy	Superior, IA	50 million gallons per year
Mid America Agri Products/Wheatland	Madrid, NE	40 million gallons per year
Mid-America Bioenergy and Commodities	Cambridge, NE	44 million gallons per year
NEDAK Ethanol	Atkinson, NE	44 million gallons per year
Otter Tail Ag Enterprises	Fergus, MN	54 million gallons per year
Pacific Ethanol	Stockton, CA	50 million gallons per year

Source: Fagen website, ICM website

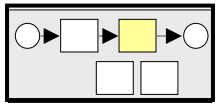
DELTA T IS CURRENTLY INVOLVED IN ABOUT 20 PROJECTS 2(2)



Project	Location	Capacity
Pacific Ethanol	Boardman, OR	55 million gallons per year
Pacific Ethanol	Burley, ID	50 million gallons per year
Pinal Energy, LLC	Maricopa, AZ	50 million gallons per year
Plymouth Ethanol, LLC*	Merrill, IA	50 million gallons per year
United Ethanol	Milton, WI	40 million gallons per year

Source: Fagen website, ICM website

POET AND ARCHER DANIELS MIDLAND ARE BUILDING 8 PLANTS FOR OWN USE



Project	Location	Capacity
Poet	Alexandria, IN	65 million gallons per year
Poet	Fostoria, OH	65 million gallons per year
Poet	Glenville, MN	65 million gallons per year
Poet	Leipsic, OH	65 million gallons per year
Poet	Marion, OH	65 million gallons per year
Poet	North Manchester, IN	65 million gallons per year

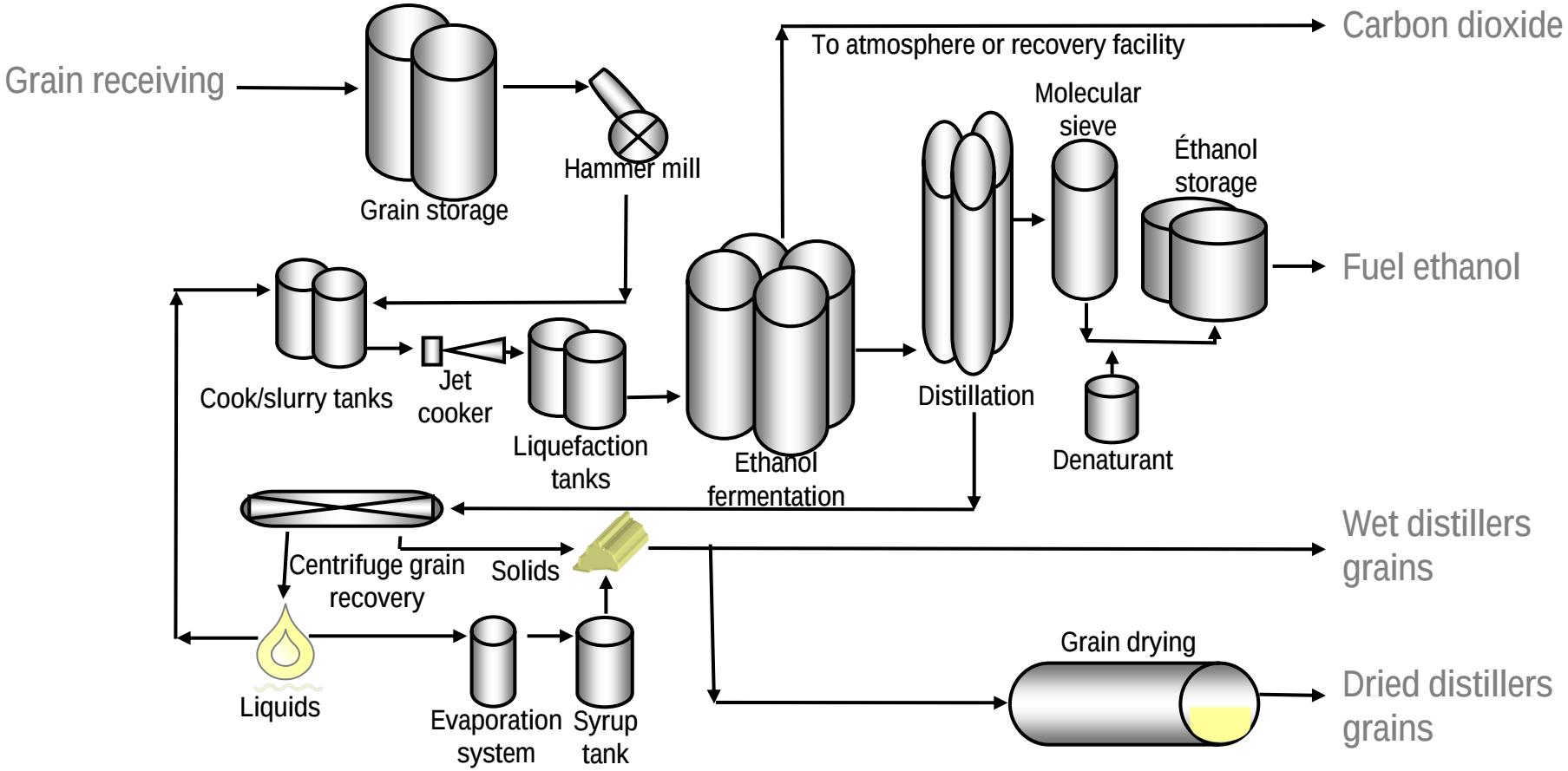
Project	Location	Capacity
Archer Daniels Midland	Cedar Rapids, IA	275 million gallons per year
Archer Daniels Midland	Columbus, NE	275 million gallons per year

Source: Fagen website, ICM website

EXPORTRÅDET
SWEDISH TRADE COUNCIL

CONTENT

THE DRY MILL PROCESS PRODUCES ETHANOL, DISTILLERS GRAINS AND CARBON DIOXIDE



Source: ICM website

CONTENT

IT IS IMPORTANT TO CONSIDER LEGAL MATTERS WHEN DOING BUSINESS ON THE U.S. MARKET

Legal concerns are common among Swedish companies considering the U.S. market. However, these are risks that any company active on the U.S. market are exposed to and that can be accounted for. Nevertheless, it is important to address legal matters in an appropriate way

- Find a U.S. lawyer that know the industry well and can assist you in addressing necessary issues
- Establish a U.S. subsidiary will facilitate doing business with U.S. companies and can also limit liability for the Swedish aktiebolag
- Have a U.S. lawyer review contracts in order to make sure that protection is really protective of your company
- Get insurance that is adequate to cover the risk and project

More information is also available online www.swedishtrade.se/usa and by contacting the Swedish Trade Council in the U.S.

Source: STC interviews

EXPORTRÅDET
SWEDISH TRADE COUNCIL

CONTENT

EXAMPLES OF U.S. VENTURE CAPITAL FIRMS INVESTING IN RENEWABLE ENERGY 1(2)

Company	Web address
3i	www.3i.com
Blue Hill Partners	www.bluehillpartners.com
Chrysalix Energy	www.chrysalix.com
Citigroup Venture Capital International	https://www.citigroupai.com
Cleantech Group	www.cleantech.com
Enertech Capital	www.enertechcapital.com
Environmental Capital ECP	www.ecpcapital.com
Expansion Capital Partners	www.expansioncapital.com
Global Environmental Fund	www.globalenvironmentfund.com

Source: Desk research

EXAMPLES OF U.S. VENTURE CAPITAL FIRMS INVESTING IN RENEWABLE ENERGY 2(2)

Company	Web address
Kleiner Perkins Caufield & Byers	www.kpcb.com
Mohr Davidow Ventures	www.mdv.com
Morgan Stanley	www.morganstanley.com
NGEN Partners LLC	www.ngenpartners.com
Nth Power LLC	www.nthpower.com
Rockport Capital Partners	www.rockportcap.com
Sequoia	www.sequoiacap.com/us
Silicon Valley Bank	www.svb.com
Technology Partners	www.technologypartners.com
Vantage Point Venture Partners	www.vpvp.com

Source: Desk research

EXAMPLES OF SWEDISH VENTURE CAPITAL FIRMS INVESTING IN RENEWABLE ENERGY

Company	Web address
Sustainable Technology Fund	www.stechfund.com
Borevind	www.borevind.se
Industrifonden	www.industrifonden.se
Provider Venture Partner	www.providerventure.com
Greencap Cleantech Venture Partner	www.dealflower.com

Source: Desk research, IDG