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Innovative technology solutions for
sustainability



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Kansas Legislative Briefing

March 21, 2013

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Abengoa Bioenergy US Holding, Inc.

Abengoa is an international company that applies innovative technology solutions to sustainable development in the energy and environment sectors

Sectors

Energy

76%



20 MW CSP Torre (España)

- Electrical Transmission
- Concentrated solar power (CSP)
- Biofuels

Environment

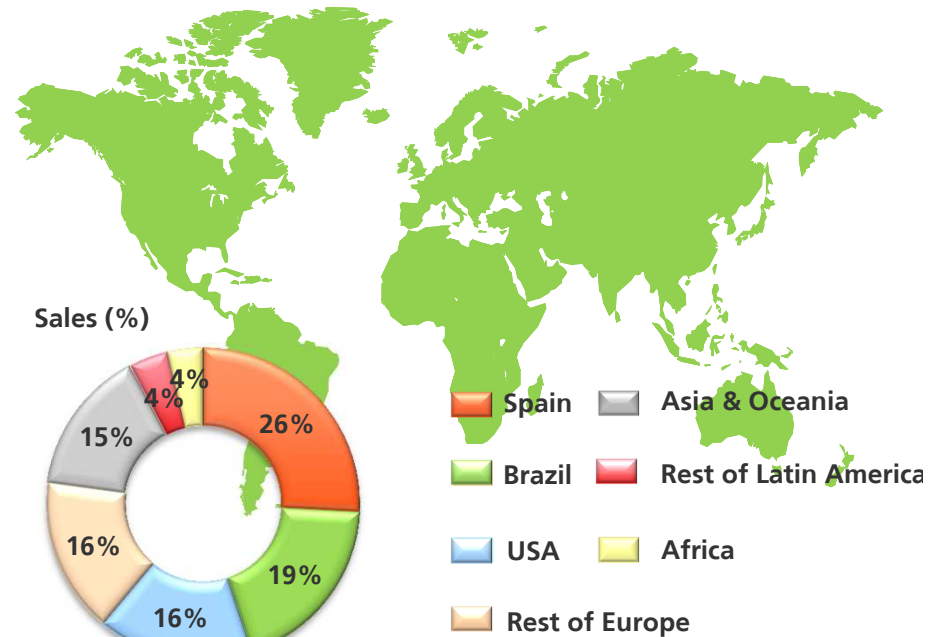
24%



100.000 m³/day Desalination plant (India)

- Desalination
- Industrial waste recycling

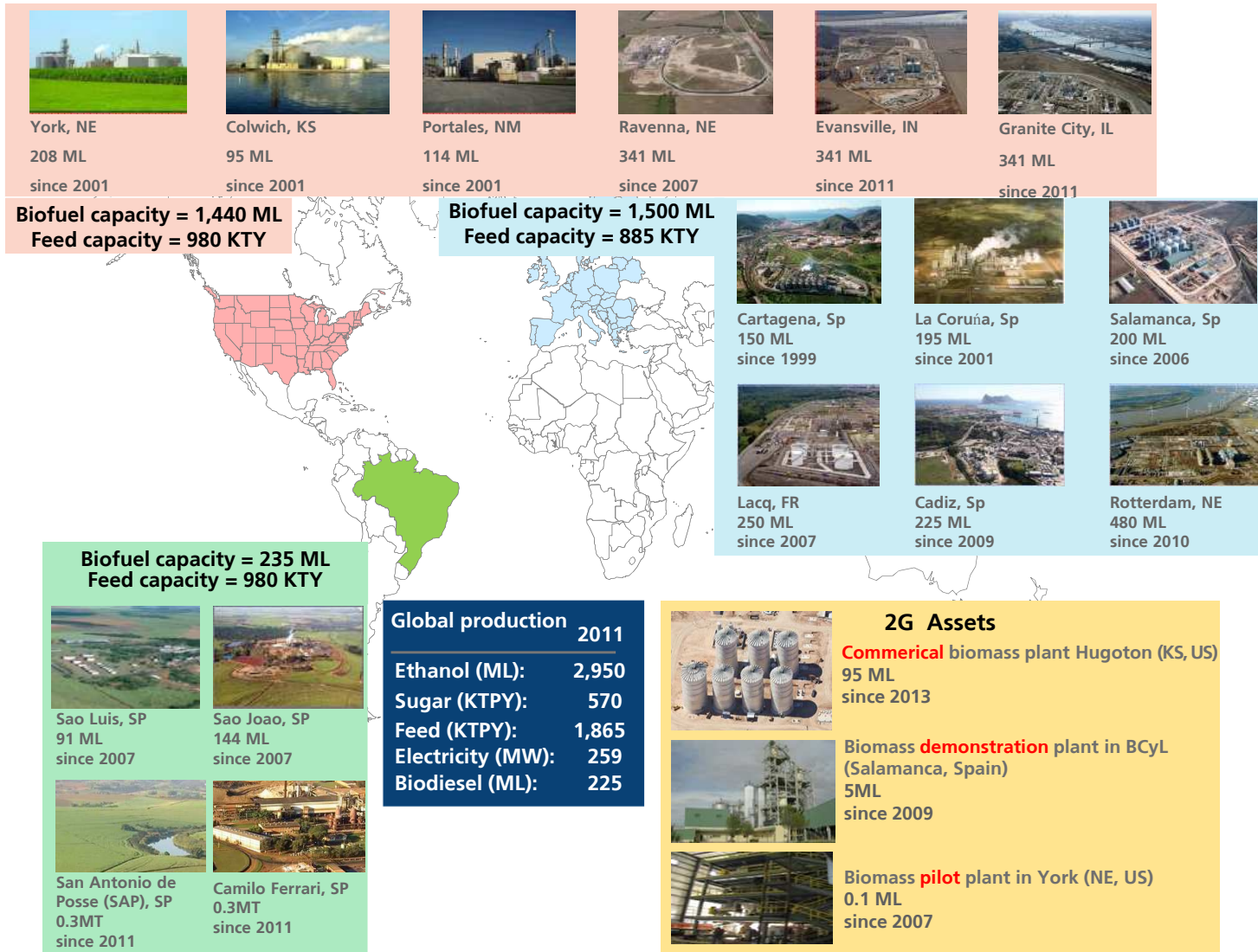
Geographic distribution



+ 23,000 people

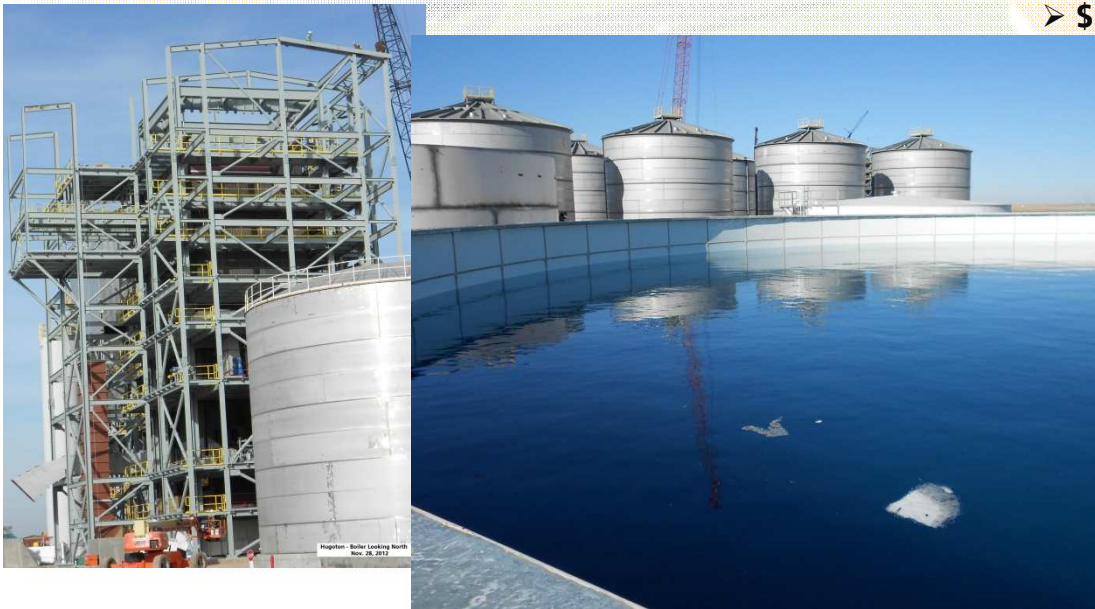
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...becoming the only global ethanol company



Hugoton project highlights

- Capacity: 25 MGPY ethanol from biomass
- Electricity capacity: 21-MW electr. power. Neutral to grid
- Location: Hugoton, Kansas
- Site: 400-acre parcel
- Feedstock: Corn stover, switch grass
- Estimated start-up: 2013
- Biomass: ~380,000 dt per year contracted fix price for 10y
- Objective: enzymatic hydrolysis conversion of biomass to ethanol to operate at 2.00 \$/gal cost in 2014
- Finance: DOE awards validating our technologies
- Positive Economic Impacts
 - \$17 million in local feedstock purchases
 - 300 direct construction jobs for 2 years
 - 65 permanent local jobs at the facility
 - \$5 million annual payroll



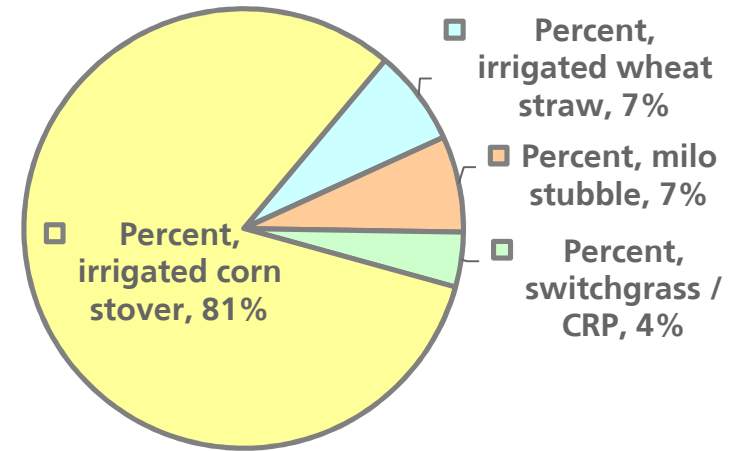
1st commercial-scale biomass to ethanol plant construction started

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Biomass feedstock

Hugoton plant biomass feedstock needs

- 380,000 "dry" tons of biomass per year
- Less than 20% of available biomass available within 50 mile radius



Irrigated Wheat Straw



Milo Stubble



Switchgrass



Irrigated Corn Stover



CRP Grassland

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Current work in progress



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Current work in progress – Distillation and Dehydration



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**Biomass Bales and
Fermentation Tanks
May 2012**

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Completed Fermentation and Cooling Towers



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Hugoton today



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3. Milestones update

- Cogeneration scheduled mechanical completion - Aug 2013
- Enzymatic hydrolysis mechanical completion - Dec 2013
- Workforce Statistics
 - Average # of workers on site for February 2013 – 254
 - Planned peak: **~550 in May 2013**

RFS is working, as first and second generation technologies work together:

- **First generation technologies have:**
 - ❖ Provided a base infrastructure on which second generation fuels can be built
 - ❖ Provided an alternative to the petroleum monopoly, increasing the availability of US produced fuels (10% ethanol today) and reducing price volatility
 - ❖ Increased our national security by helping to reduce the volumes of imported petroleum from 60% to 42% of our transportation fuel requirements (we still spend \$1 billion every day to import petroleum)
 - ❖ Saved consumers money at the pump through significantly reduced fuel prices (from pricing, volume and octane benefits)
 - ❖ Provided tremendous economic benefits to rural America – (created and supported 400,000 US jobs, and saved consumers \$50 billion in fuel costs during 2011)
 - ❖ Helped clean the air across the nation, reducing vehicle emissions

Advanced biofuel technologies are now being implemented:

- Commercial scale production facilities are being constructed today and projected to produce 200 million gallons annually by 2015
- Foreign investment generated that would not otherwise be seen
- Creating a 50 state solution to further reduce our dependence on oil imports
- Will bring even more broad based economic development through multiple potential feedstocks
- Development would be slowed, national security and environmental benefits reduced, and price hikes for consumers would result through inconsistent support of this critical energy policy

Kansas Benefits from RFS

➤ Advanced Biofuels

- ❖ Kansas is the largest state producer of grain sorghum
- ❖ Many Kansas plants have used sorghum (non-corn feedstock) to qualify as an Advanced Biofuel, and earn a benefit from the RFS for this higher quality, low carbon ethanol
- ❖ Actual benefits vary depending on the market values for the Advanced Biofuel RIN, but can be up to \$75 per gallon

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Questions

