



PEPSICO



Tropicana



Environmental Sustainability

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Director Eng./Maint.





PEPSICO Corporate Structure

PepsiCo Americas Foods

- ***Frito-Lay North America***
- Quaker
- Sabritas
- Gamesa
- Latin American food businesses
- Power of One retail sales teams

PepsiCo Americas Beverages

- Pepsi-Cola North America
- Gatorade
- Tropicana
- Latin American beverage businesses
- North America foodservice

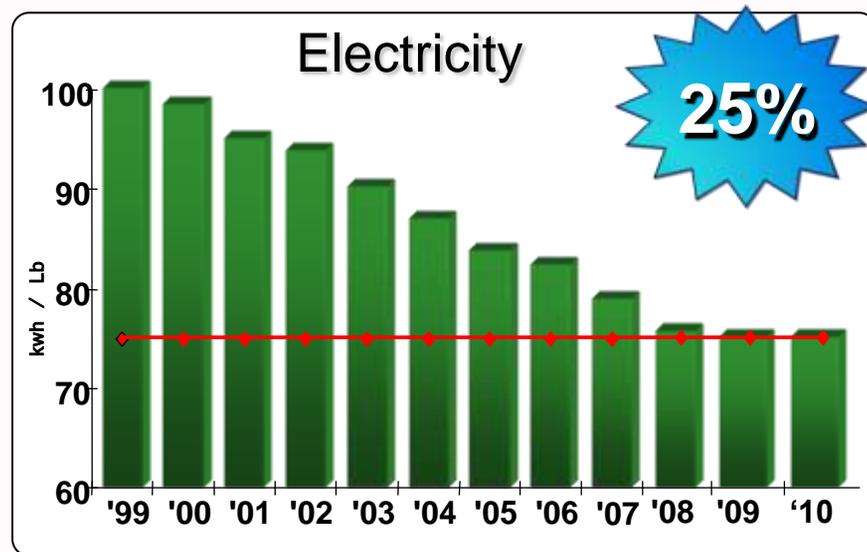
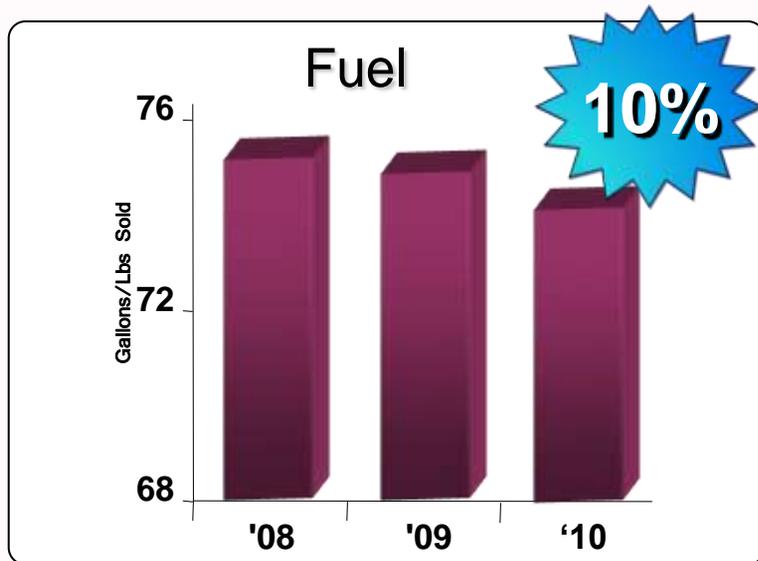
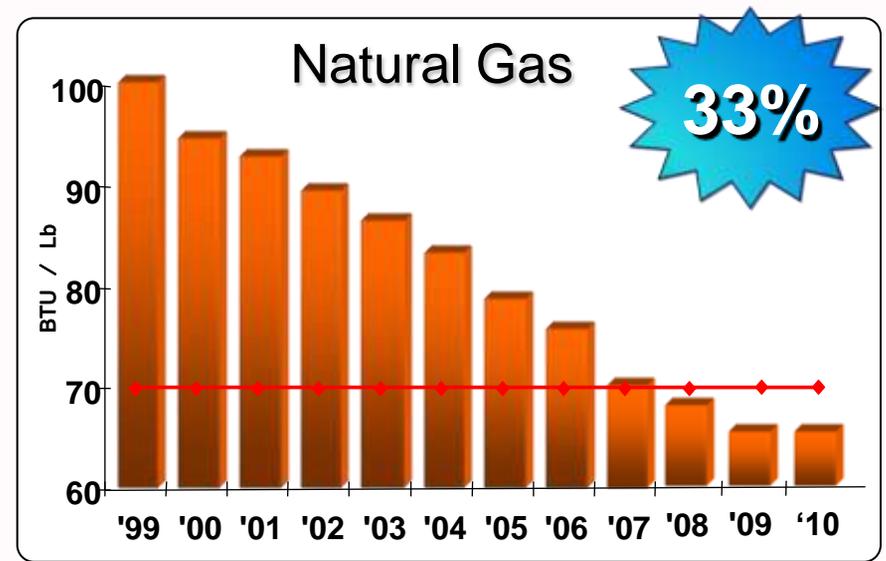
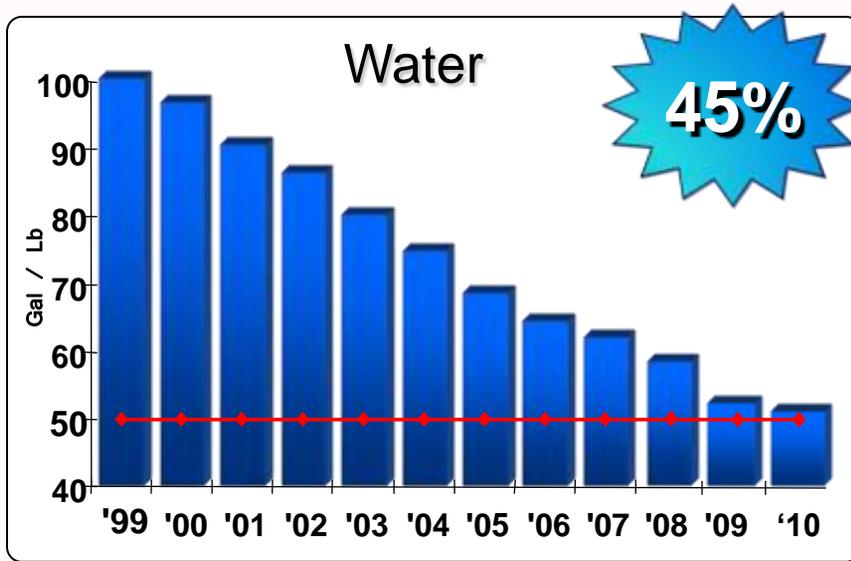
PepsiCo International

Our food, snack and beverage businesses in:

- U.K.
- Europe
- Asia
- Middle East
- Africa



Frito-Lay has Reduced our Environmental Footprint Significantly and Consistently for Eleven Consecutive Years



We Continue to Receive the Highest External Recognition and Validation as World Class



Modesto Solar Field... April, 2008 Earth Day



**Producing Industrial
Grade 400 PSI
Steam**



Casa Grande Near Net Zero is a Showcase of Frito-Lay's Commitment to Innovation and Forward Thinking



Casa Grande Potential Layout



MBR



Bio Mass Boiler



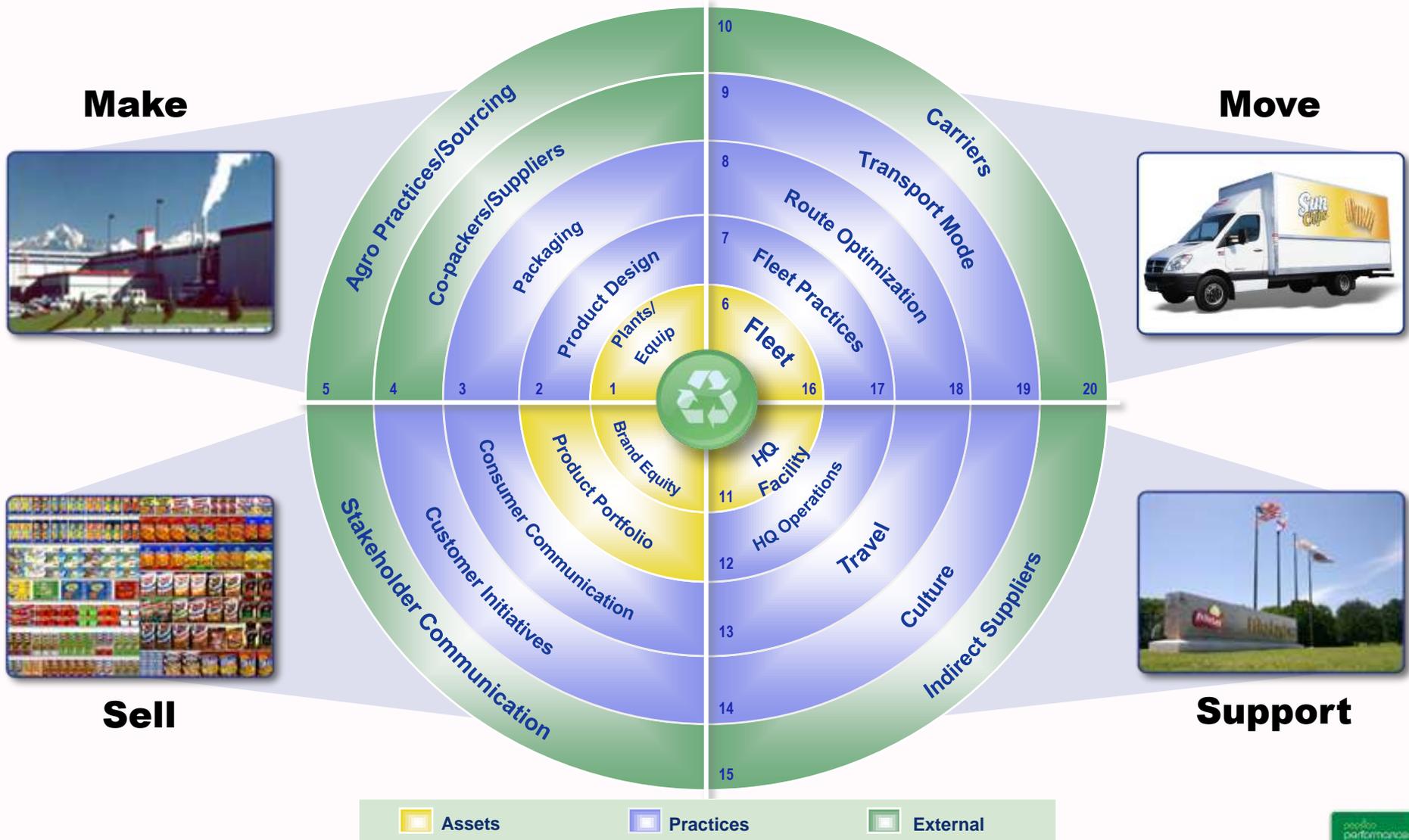
Solar PV Trackers



Stirling Engine



Our Strategic Scope Includes Our Entire Operating Footprint, Extending to Every Partner to Whom We “Write a Check”





Frito-Lay Topeka - Background

- **3rd Largest FLNA Facility; 750,000ft²; 850 employees; 175,000,000 lbs**
- **Produce all “core” brands; Lay’s, Doritos, Tostitos, Cheetos, Sunchips, Fritos, Tostitos Scoops**
- **“Full Mix” facility that receives and ships all products including Rold Gold Pretzels, Grandma’s Cookies, Cracker Jacks, dips, etc.**
- **Steam Fired Site, 75%+ natural gas is used to heat process oil.**
- **0.25% of Solid Waste Goes to Landfill**
- **2nd Existing Food Manufacturing Facility in the US to Achieve LEED Gold**

Topeka "Near Net Zero" Strategy



PEPSICO



Compostable Bags 

Waste Heat Recovery 

Biomass Boiler 

1% LF, Pkg & Finish Waste 

Wind Turbine 

LEED Gold 

High MPG Trucks 

Green Team 

Env. Compliance 



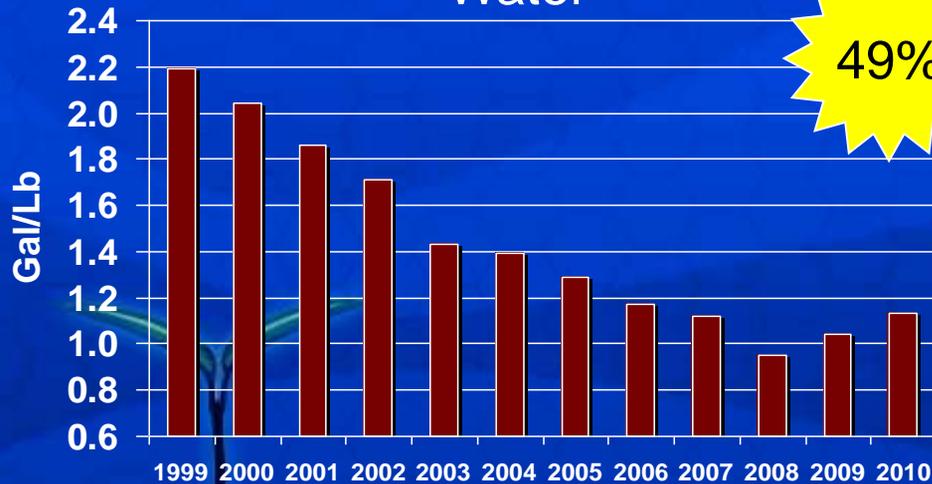
Topeka Results



PEPSICO

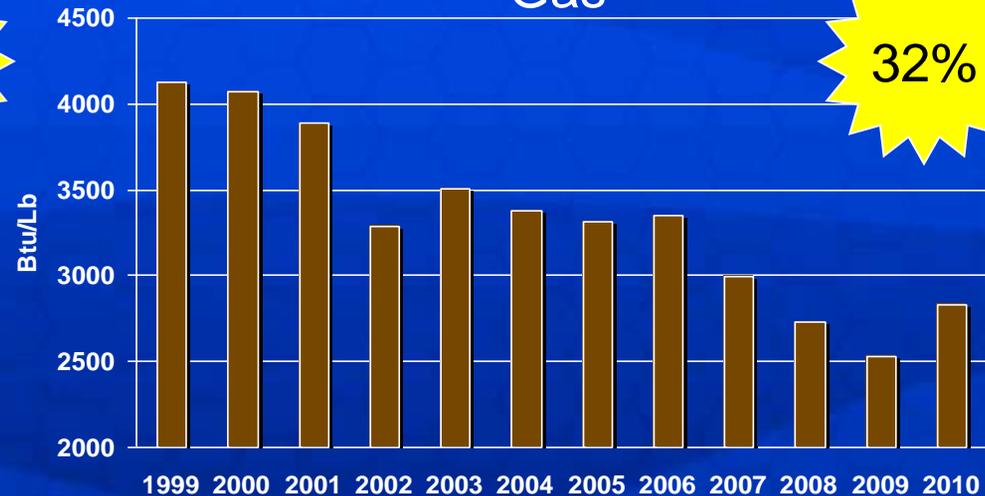


Water



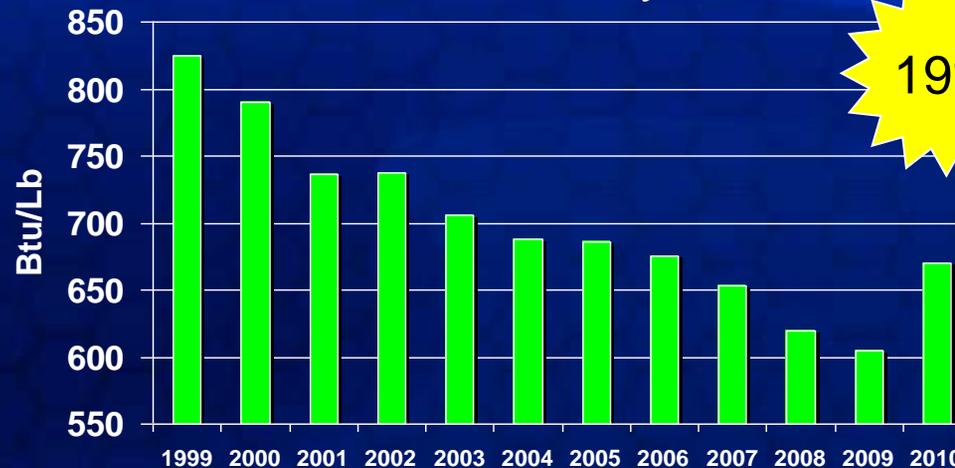
49%

Gas



32%

Electricity



19%



Innovation & Engagement Have Enabled Our Results



PEPSICO



- Low Water Corn Cook Pilot
- Steam Stop Block Valve for LBCSS and Fryers
- Removable Insulation Blankets
- Zero Landfill Processes
- Pollution Prevention Interns
- Biomass Boiler
- Facility wide communication and engagement
- Employee personal impact tips & guidelines



FRITO-LAY

BIOMASS ENERGY CENTER

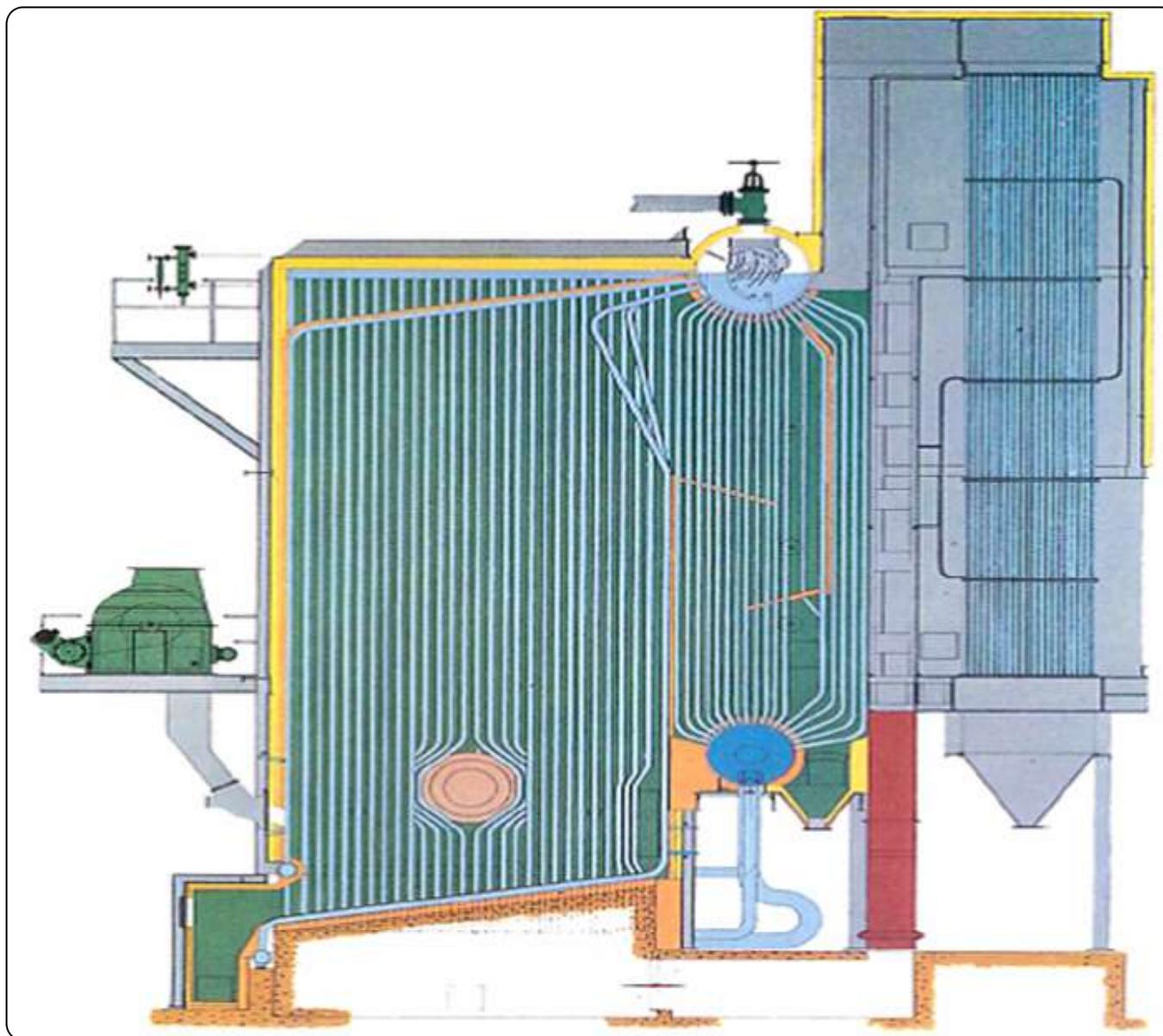
Topeka, Kansas



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Topeka Biomass Boiler....2010 Start Up



Frito-Lay Topeka - Biomass to Energy



- **Oct. 2005, the beginning of discussions**
- **Nov. 2005, “Where are you going to get trees in Kansas?”**
- **2006 Investigation**
 - **Wet or Dry Fuel ?**
 - **What Type of Boiler ?**
 - **Fuel Sourcing Strategies**
- **2007 Feasibility Study**
 - **Fuel Supply Source, Storage and Handling**
 - **Combustion Technology Evaluation**
 - **Permitting Requirements**
 - **Ash Disposal**
 - **Estimated Cost**

Frito-Lay Topeka - Biomass to Energy



- **2008**
 - Project Development, Submittal and Approval
 - Awarding of Contract
- **Project Kickoff: March 2009**
- **Design Completion: August 2009**
- **Installation Activities Begin: September 2009**
- **Plant Steam Tie-ins: Thanksgiving 2009**
- **Startup & Commissioning Completed: August 2010**
- **Plant Steam Supply: September 2010**
- **Performance Assessment: Through January 2012**

Frito-Lay Topeka – Project Specifics



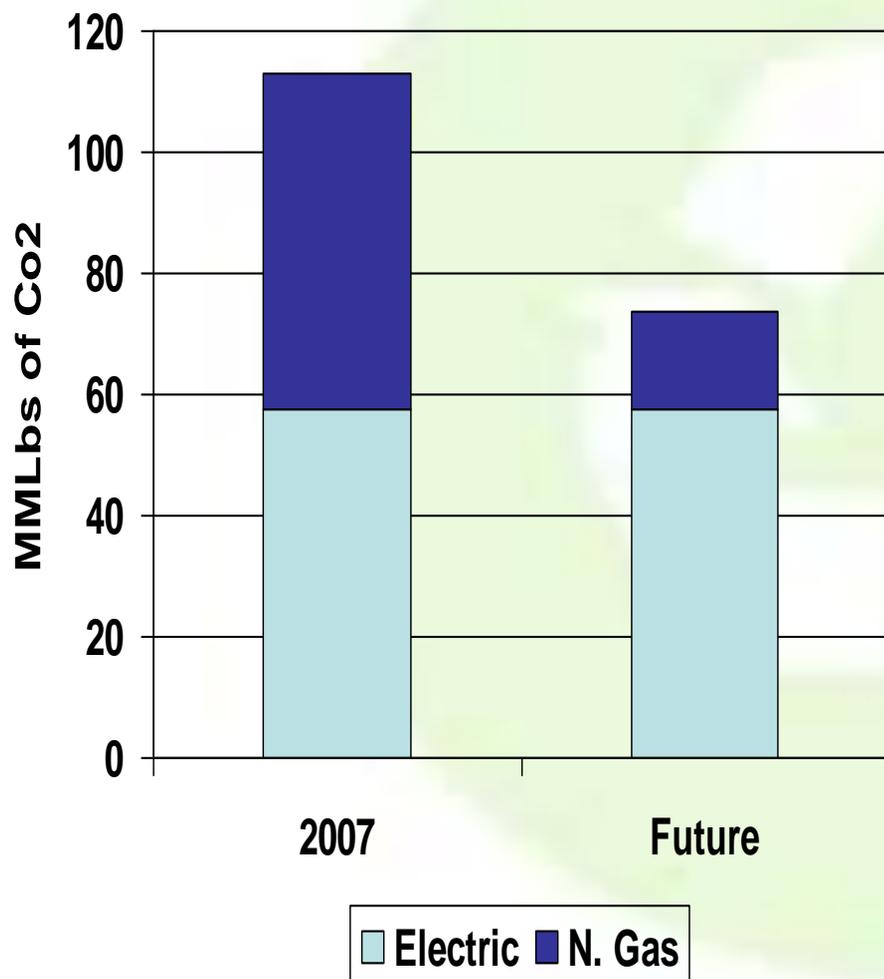
- **60,000 pph Stoker, Fixed Grate, Field Erected**
- **Tensioned Fabric Fuel Storage Facility**
- **Fuel Transfer: drag conveyor, sizer, incline belt, magnet, storage hopper w/ feed screws**
- **Permitted for 7% Tire Derived Fuel**
- **ID fan, Over-fire and under-fire combustion fans**
- **70% efficient**
- **Bottom Ash drag conveyor**
- **Electrostatic Precipitator**
- **Fly Ash Handling System**
- **Wheel Loader**



Biomass Boiler Impact



Topeka CO2 Emissions



- CO2 Emissions
2007 – 27,808 tons
Post Project – 8066 tons
72% Reduction for site
- Reduction in CO2 emissions represents **2.9% reduction in CO2 emissions from all combustion sources in FLNA**
- Reduction is equal to removing 3,442 automobiles from highway.

Department of Energy Funding Grant

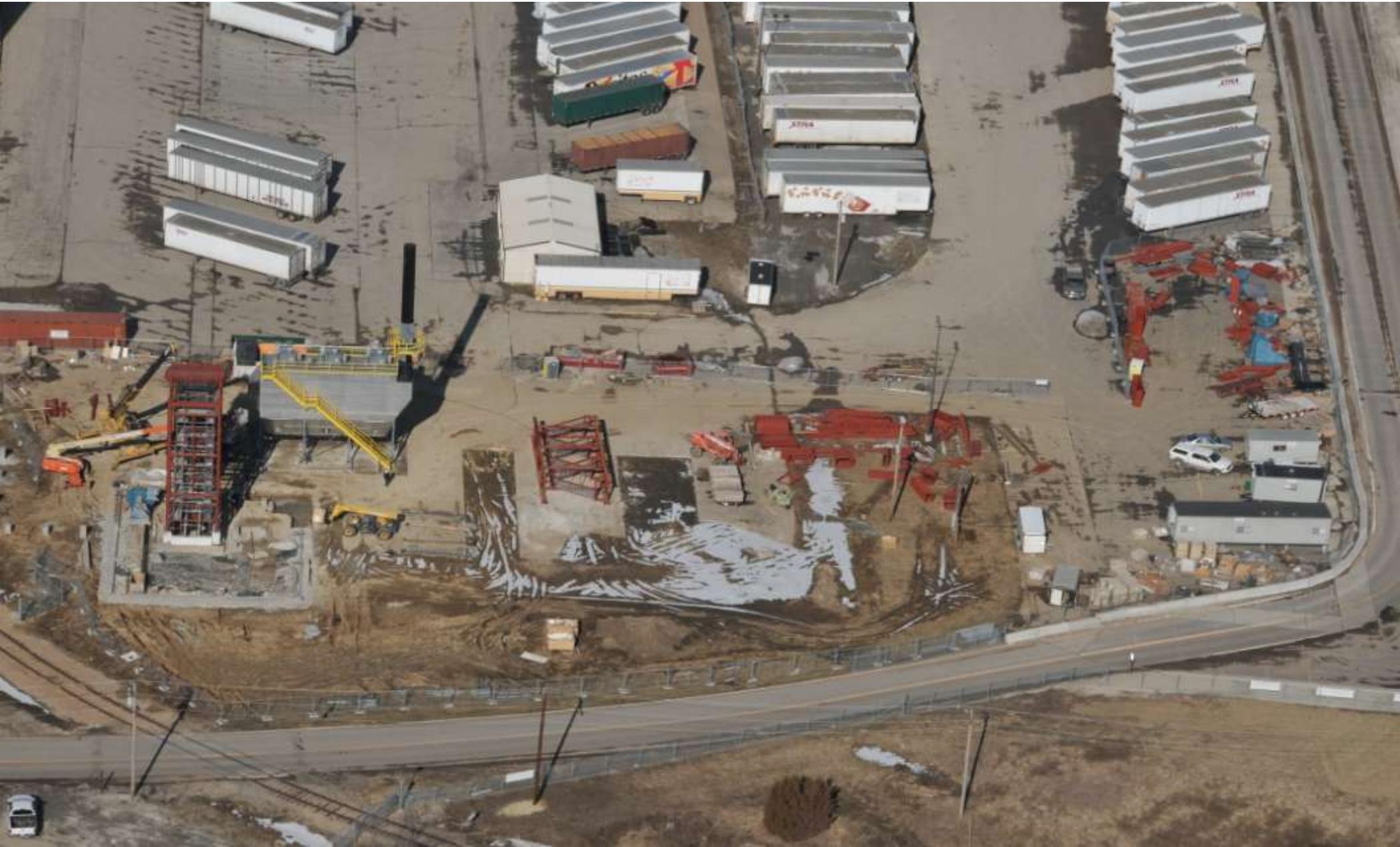


- Research, Development and Demonstration of Biomass Boiler Applications in the Food Industry
 - **DOE Target is displacement of 3% – 7% of natural gas by 2012**
 - **Biomass steam generation is low-risk approach**
 - **Conventional industrial boilers consume ~ 20% of natural gas used in industry and ~ 237 TBTU of energy annually**
 - **Food industry consumes ~ 73% of natural gas in conventional boilers**
 - **Promote wider adoption of technology in food industry**
- Technical Performance Metrics
 - **Successful installation, start-up, and commissioning**
 - **Demonstrate operation for 18 months post start-up**
- **\$1.4MM Grant Awarded to Install and Study Performance**

Construction Progress – Oct. 2009



Construction Progress – Jan. 2010



Construction Progress – Jan. 2010



Construction Progress – March 2010



Construction Progress – April 2010



Construction Progress – June 2010



Construction Progress – July 2010



Construction Progress – August 2010



Start-Up – Sept. 2010



Start-Up – Sept. 2010



Start-Up – Sept. 2010



60,000 lb/hr Steam

1500 degrees Fahrenheit

Boiler Operations

- **Fuel mix is 0-75% pallets**
- **Moisture range 6%-32%**
- **Average 450 BDT per week**
- **5-7 loads per day, 5 days**
- **24/7 staffing**
- **Manual bottom ash raking 4-8 times per shift**
- **Regular saw-dust management/clean-up**

Project & Start-up Learning's



- **Partnerships have been key to project implementation**
- **Don't pick the worst winter to construct outdoors**
- **What are we going to do with 1500 tons of fly ash?**
- **What about the bottom ash?**
- **Anyone want to purchase some used nails?**
- **Lot's still to learn about fuel composition and preparation**
 - **Wet/dry blend, screen size, sifting**
- **Site erected boiler requires custom controls and operation**
- **1st of its kind learning's**

Frito-Lay Topeka - Biomass to Energy



THANK YOU