

# *Governor Phil Bredesen on the future of biofuels in **Tennessee***

***“I believe alternative fuels have enormous potential to benefit Tennessee in terms of economic growth, agricultural opportunity, consumer choice and environmental quality.”***



# **Homegrown Biofuels Make Sense for **Tennessee** because they:**

- **Foster Rural Economic Development**
  - *Direct investment in production facilities as energy dollars move from imported fuel to rural businesses*
  - *Reduce rural job loss and create good paying jobs*
  - *Added value of bi- and co-products*
- **Increase Farm Income**
  - *Farmers produce and sale to local producers*
  - *Lower farm surpluses will improve crop prices rural economies*
- **Improve Public Health**
  - *Alternative Fuels help reduce Asthma, Heart and Lung Disease, Cancer, and Neurological Defects*
- **Improve our Energy Security**
  - *Help reduce oil price volatility*



# Priming *Tennessee's* Biofuel Pump

## 2006

- **Governor Bredeesen proposes and General Assembly approves \$4 million Alternative Fuels Package**
  - **Green Island Corridor Network**
  - **Biodiesel Infrastructure Loans to Counties**
  - **Grant Biofuel Processing Grants**
- **Creation of the Governor's Alternative Fuels Working Group**

## 2007

- **Governor announces \$72.6 million allocation to support Tennessee Biofuel Initiative at UT**
- **Launch of [www.biotenn.org](http://www.biotenn.org)**
- **Governors Conference on Biofuels in May**
- **DOE awards ORNL \$135 bioenergy research center**
- **General Assembly approves \$1 million incentive package for biodiesel producers**



# ***Tennessee's Alternative Fuels Strategic Plan***

## **The Governor's Alternative Fuels Work Group**

- ***Governor Bredesen issued Executive Order 33 in Early 2006***
- ***Cross-departmental team involving management from seven state agencies***
- ***50 Member Task Force of SMEs***
- ***Deliverable: A strategic plan to make Tennessee a leader in the southeast in the production, distribution and use of biofuels***



# **Tennessee's Alternative Fuels Strategic Plan**

- **Know More**
  - Outreach, Education, Coordination
  - Target General Public, Farmers, Producers, Consumers
- **Grow More**
  - Leverage Tennessee's strong tradition agricultural production
  - Traditional feedstocks (corn and soybeans)
  - Non-traditional feedstocks (switchgrass and other biomass)
- **Make More**
  - Expand the growing biofuels production sector with Tennessee
  - Encourage additional private investment in the marketplace
  - Remove barriers to entering the market, expand incentives and ensure quality



# ***Tennessee's Alternative Fuels Strategic Plan***

- ***Move and Use More***
  - *Displace petroleum usage with biofuels*
  - *Expand the Biofuel Green Island Corridor Network*
  - *Encourage additional private investment in the marketplace*
  - *Expand use of biofuels in public fleets, private fleets and by the individual consumer*
- ***Leverage Regional Advantages***
  - *Establish regional Green Island Corridors*
  - *Uniform biofuels signage on interstates*
  - *Regional quality assurance program*



# **Tennessee's Green Island Corridor Network**

- **Objective is to establish a statewide network of publicly accessible B20 and E85 refueling stations (“Green Islands”) along Tennessee interstates and major highways**
- **Competitive grant process administered through TDOT. TDOT will pay up to 80% of total cost; Grantee will pay at least 20% of project cost.**
- **Maximum funding is \$45,000 per pump and \$90,000 per location**



***Tennessee is making steady progress, but there is still work to be done.***

### **Market Snapshot**

#### **February 2006**

- 1 E85 pump
- 4 B20 pumps
- 67 mgpy ethanol (1 Plant)

#### **February 2008**

- 18 E85 pumps
- 46 B20 pumps
- ~200 mgpy ethanol production (2 Plants)
- ~85 – 90 mgpy biodiesel (5 Plants)



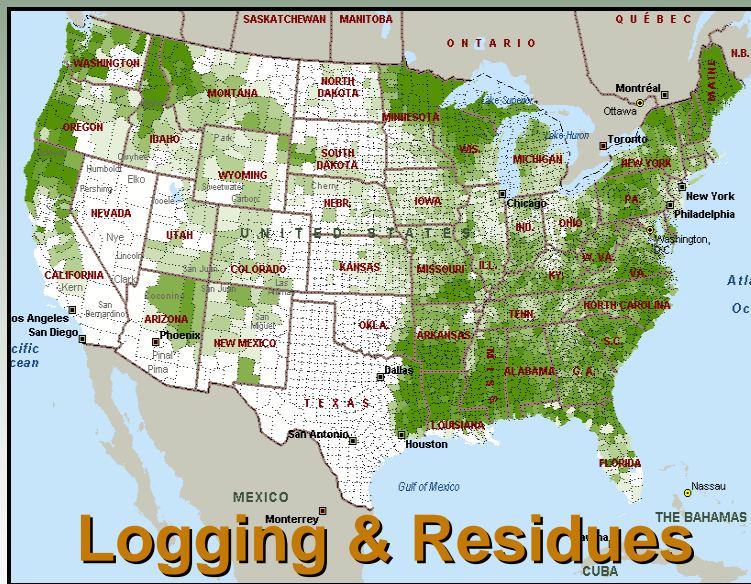
# UT Tennessee Biofuels Initiative

- Partnership between UT-Knoxville and ORNL
- Cellulosic Ethanol from Switchgrass (Grassoline)
- \$72+ million state investment in biofuels industry
  - \$8+M for 8,000 acres switchgrass feedstock production
  - \$40+M for 5M-gal/year pilot biorefinery
  - Additional R&D, collaborations
- \$135 million from DOE to get the science right
- Refine systems for local resources
  - Switchgrass supply system
  - Local forest resources
- Improve process, scale up to commercial
- Leverage R&D

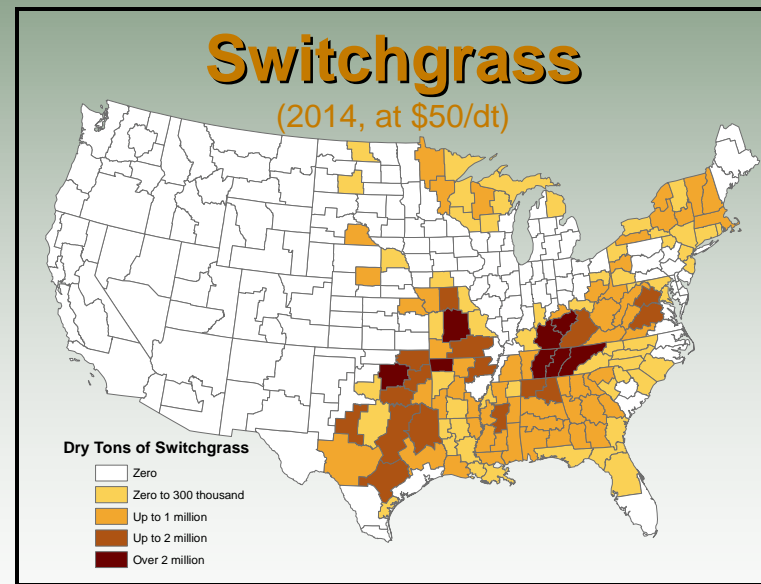


# Why Switchgrass?

## It's *Tennessee's* Comparative Advantage



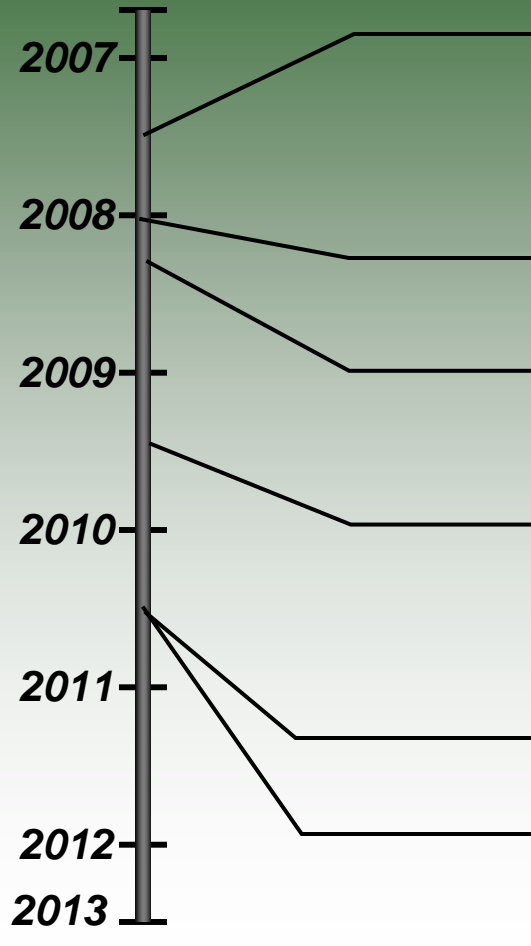
Perlack, R.D., et al. 2005. Biomass as Feedstock for a Bioenergy and Bioproducts Industry: Technical Feasibility of a Billion-Ton Annual Supply.



Ugarte, et al. 2006 (forthcoming). Economic Implications to the Agricultural Sector of Increasing the Production of Biomass Feedstocks to Meet Biopower, Biofuels and Bioproduct Demands.



# UTBI: The Pathway Forward



- Install switchgrass research plots
- Select/Acquire plant site
- Complete farmer incentive contracts
- Groundbreaking for cellulosic ethanol facility
- Expand switchgrass program (1,000 acres, moving to 8,000 acres)
- First gallon of Grassoline produced
- Full-scale production
- First commercial-scale (40-60 MGY) cellulosic ethanol facility deployed



# *The UTBI Bioeconomy Vision...*

- Produce & consume at least **1 billion** gallons of cellulosic ethanol, at **\$1.50** per gallon wholesale
- **10+** new biorefineries operating in Tennessee, employing **4,000** and supporting 12,000 rural jobs
  - At least **4** of the biorefineries owned and operated by local farmer cooperatives, retaining an additional **\$40 million** in local communities
  - Satellite co-product plants creating an additional **3,000** jobs and **\$2 billion** in revenue
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- More than **20 thousand** farmers growing dedicated energy crops, adding more than **\$100 million** in new net farm revenue

University of Tennessee Office of Bioenergy Programs

