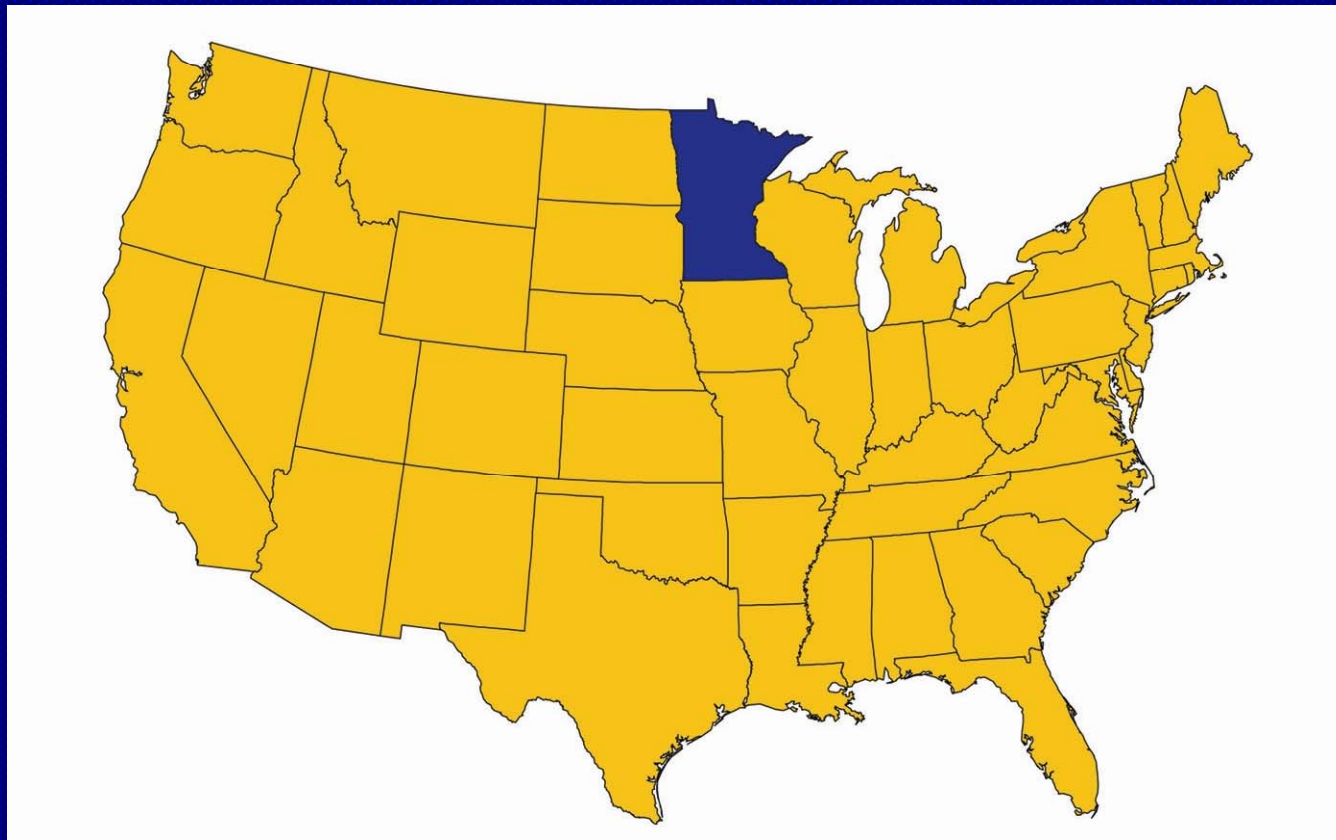


# Renewable Fuels in Minnesota

Commissioner Gene Hugoson



# Renewable Fuels in Minnesota



Minnesota: “The North Star State”

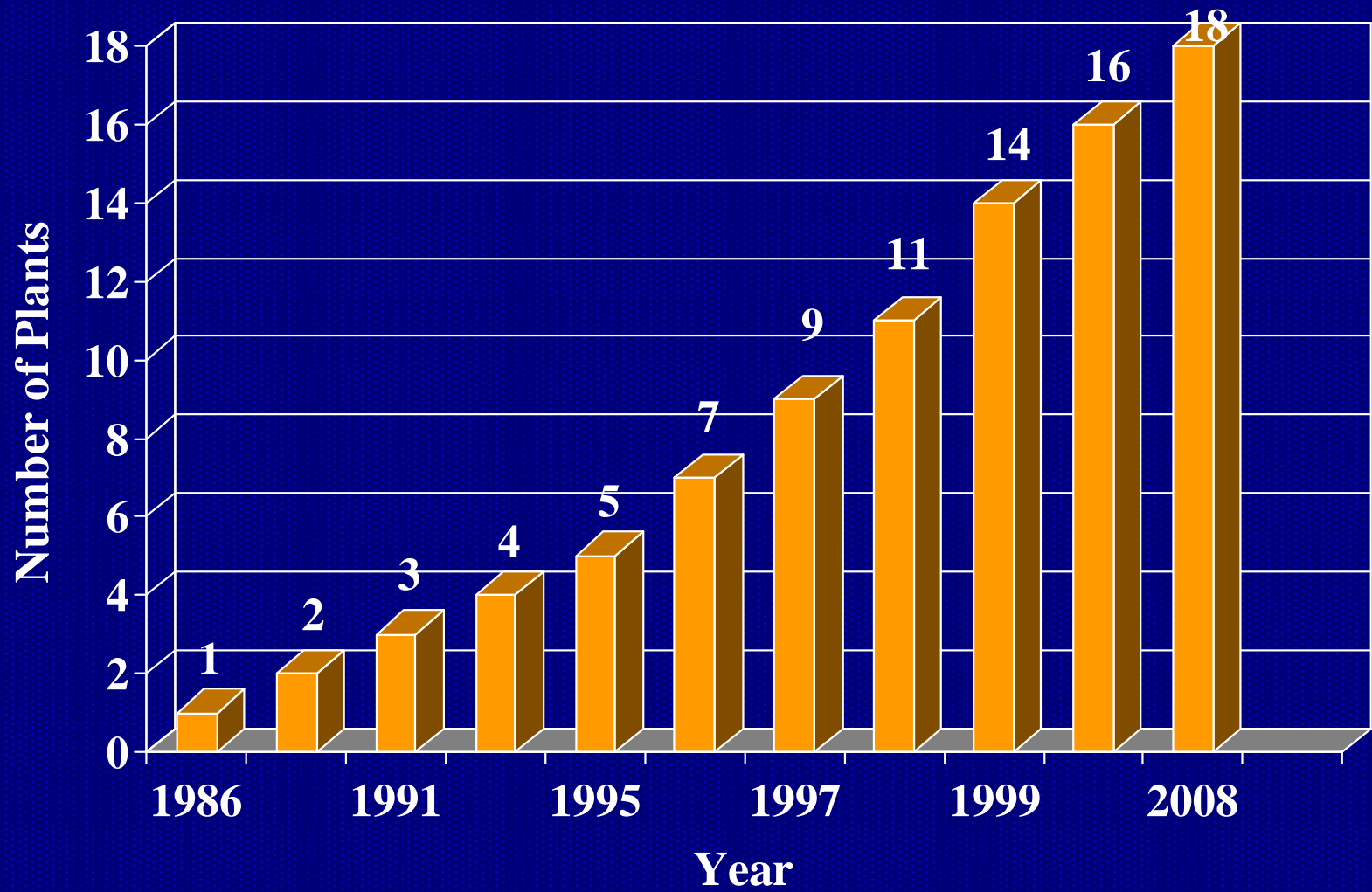
# Renewable Fuels in Minnesota

- Minnesota's renewable fuels agenda
  1. Boost the farm and rural economy
  2. Reduce dependence on foreign fossil fuels
  3. Improve air quality

# Renewable Fuels in Minnesota

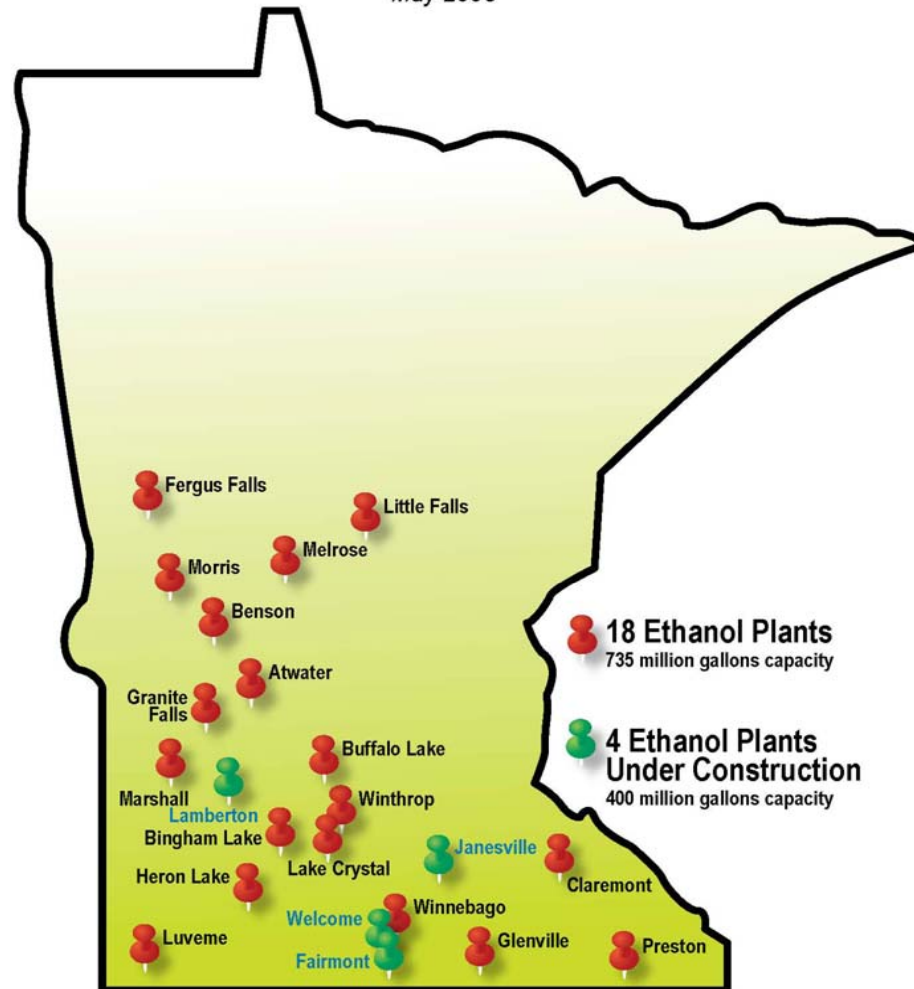
- The MDA's Role:
  - Increasing ethanol production
  - Encouraging farmer-owned developments
  - Public education

## Number of Ethanol Plants in Minnesota



# Ethanol Plants in Minnesota

May 2008

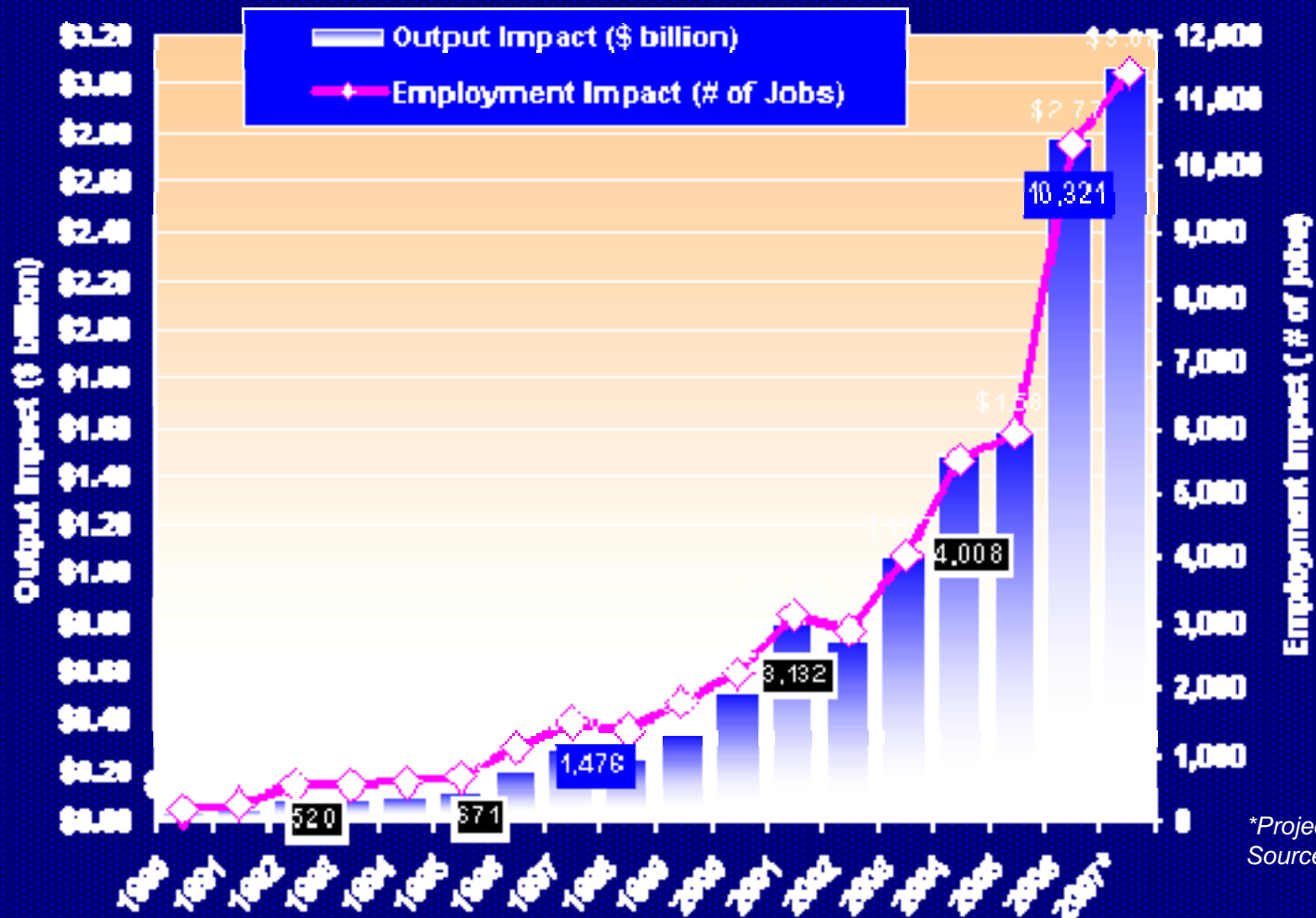


[www.mda.state.mn.us](http://www.mda.state.mn.us)

# Renewable Fuels in Minnesota

- The results: June 2008
  - Ethanol supports more than 11,000 jobs
  - Ethanol generates \$3 billion for state
  - 18 ethanol plants, many farmer-owned
  - Est. 2008 production capacity: 730 million gallons
  - 22% of state's corn crop used for industrial processing
  - \$500 million in value added to commodities

# Minnesota Ethanol: Economic and Employment Impact



\*Projected  
Source: AMS, MDA

# Renewable Fuels in Minnesota

- Goals achieved:
  - Boost farm and rural economy ✓
    - Value added to corn crop
    - Multiple farmer-owned, value-added cooperatives
  - Reduce reliance on foreign energy ✓
    - Replaced 10% of gasoline with ethanol
  - Clean up environment ✓
    - Twin Cities in attainment for carbon monoxide

# Renewable Fuels in Minnesota

- Governor Pawlenty takes Minnesota to the next level
  - Making Minnesota the “Saudi Arabia of renewable energy”
    - May 2005: Signs legislation to move to 20% ethanol (E20) content in state gasoline by 2013
    - Boosts number of E85 vehicles in state fleet
    - September 2005: Minnesota becomes first state to mandate use of 2% biodiesel

# Renewable Fuels in Minnesota

- Governor Pawlenty takes Minnesota to the next level
  - E20 progress
    - Conducting tests
      - Materials compatibility (MN State U, Mankato)
        - » March 2008 results show E20 presents no problems
      - Drivability (U of M Engineering)
      - Exhaust and evaporative testing (RFA with ATL labs)
    - Additional testing
      - Health impacts of E20
      - Long-term durability

# Renewable Fuels in Minnesota

- Governor Pawlenty takes Minnesota to the next level
  - May 2007: Signs Next Generation Energy Initiative into law
    - Increases Renewable Energy Objective to 25% by 2025
    - Promote cellulosic ethanol and advanced biomass technologies

# Renewable Fuels in Minnesota

- Governor Pawlenty takes Minnesota to the next level
  - Next Generation Energy Initiative includes...
    - Next Generation Energy Board
      - Develop recommendations on how state should invest resources to achieve renewable energy goals
    - Next Generation Energy Grants
      - \$35 million for Next Generation Energy initiatives, including funding for a wide variety of grants and research

# Renewable Fuels in Minnesota

- Governor Pawlenty takes Minnesota to the next level
  - Next Generation Energy Board membership includes...
    - State legislators
    - State agency officials
    - Representatives from academia
    - Farm groups and other non-profit organizations

# Renewable Fuels in Minnesota

- Governor Pawlenty takes Minnesota to the next level
  - May 2008: Signs measure moving Minnesota toward 20% biodiesel blend (B20) in Minnesota diesel fuel
    - 5% biodiesel blend by 2009
    - 10% by 2012
    - 20% by 2015

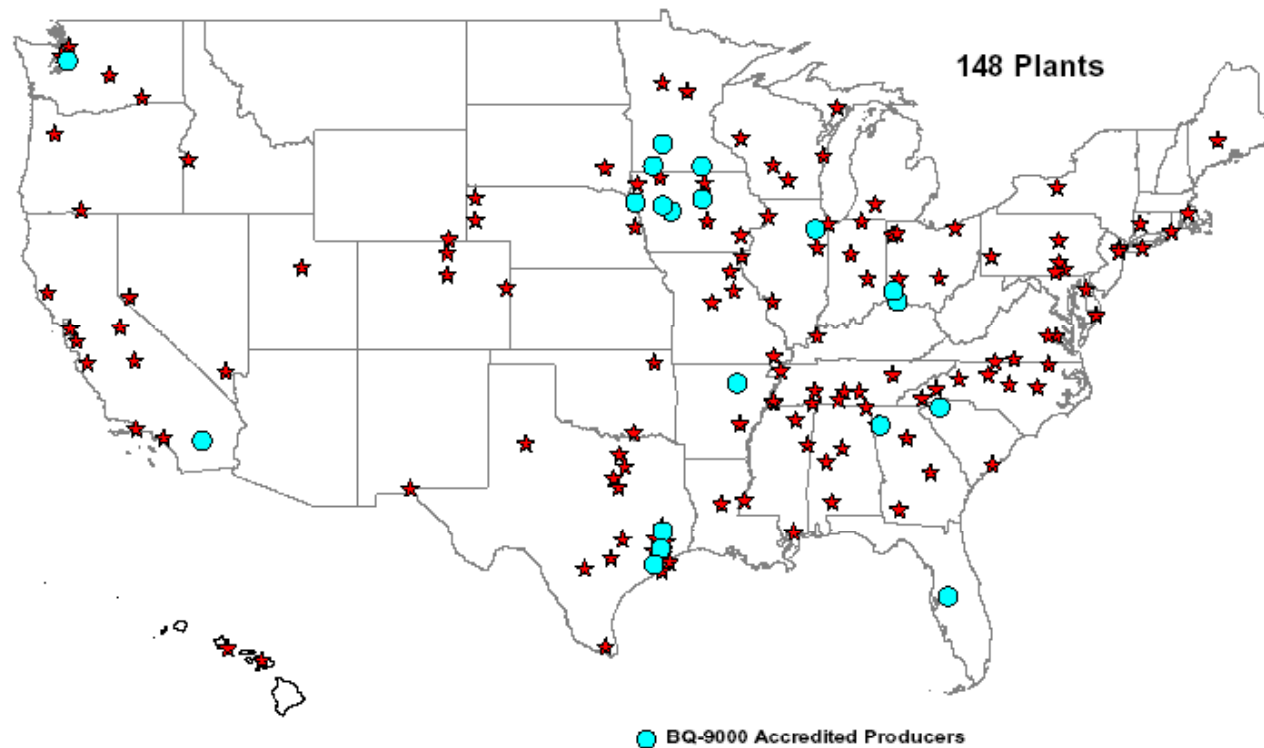
# Renewable Fuels in Minnesota

- Biodiesel in Minnesota: June 2008
  - Three major biodiesel plants with annual production capacity of 63 million gallons
    - Minnesota plants can produce enough biodiesel to replace 5% of state's diesel fuel today
  - Minnesota ranks 9<sup>th</sup> among largest biodiesel producers in the country
  - Focus on quality: Minnesota plants meet BQ9000 certification standards

# Renewable Fuels in Minnesota



Commercial Biodiesel Production Plants (June 7, 2007)



\* Denotes BQ-9000 Accredited Producers

# Renewable Fuels in Minnesota

- Minnesota's status in June 2008
  - Nearly 350 E-85 stations
  - 18 ethanol plants with more than 730 million gallons of production capacity
  - Minnesota leading the nation in per-capita consumption of renewable energy

# Renewable Fuels in Minnesota

- Minnesota's status in June 2008
  - Continuing to grow
    - Four new ethanol plants under construction
    - New plants will add 400 million gallons of production capacity

# Renewable Fuels in Minnesota

- Minnesota's status in June 2008
  - Continuing to innovate
    - Winnebago plant can burn DDG syrup, replacing half of natural gas needs for process energy
    - Little Falls gasification plant can use wood chips and DDGs to replace all natural gas and 1/3 of electricity needs
    - CVEC plant in Benson working on producing syn-gas, opening door to cellulose-to-energy technology

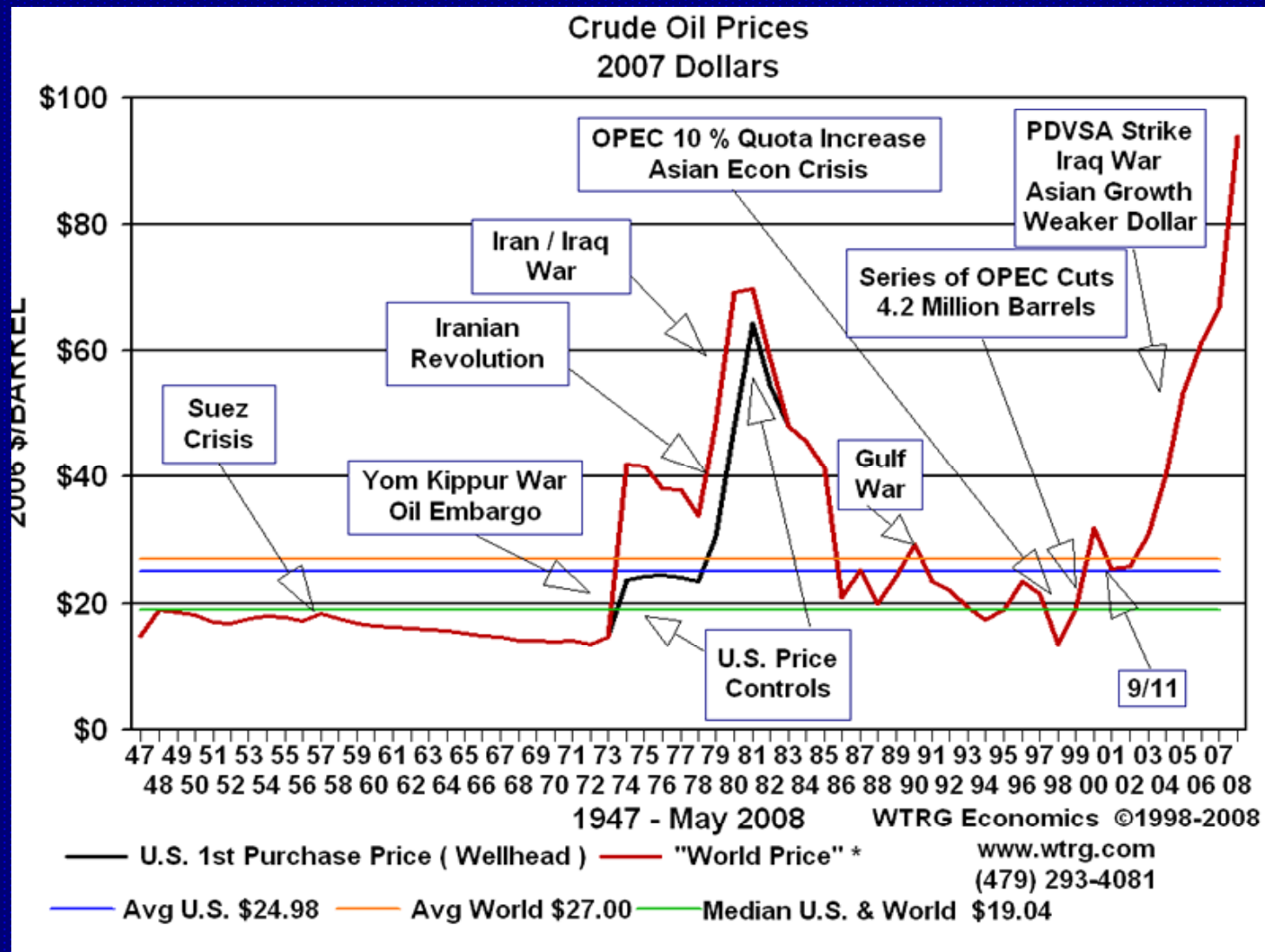
# Renewable Fuels in Minnesota

- Federal activity
  - 2008 Farm Bill provides \$1 billion to leverage industry investments in new renewable energy technologies and feedstocks
    - \$320 million in loan guarantees for biorefineries moving to production of advanced biofuels
    - \$35 million to help existing ethanol plants reduce fossil fuel use
    - \$5 million over five years for biodiesel fuel education of industry, public

# Renewable Fuels in Minnesota

- External influences
  - Oil prices surge past \$135/barrel
  - Weak U.S. dollar
    - Fast-rising demand from developing economies
      - Rising incomes and living standards mean increasing food, energy consumption
      - 1,500 new cars registered each day in Beijing

# Renewable Fuels in Minnesota



# Renewable Fuels in Minnesota

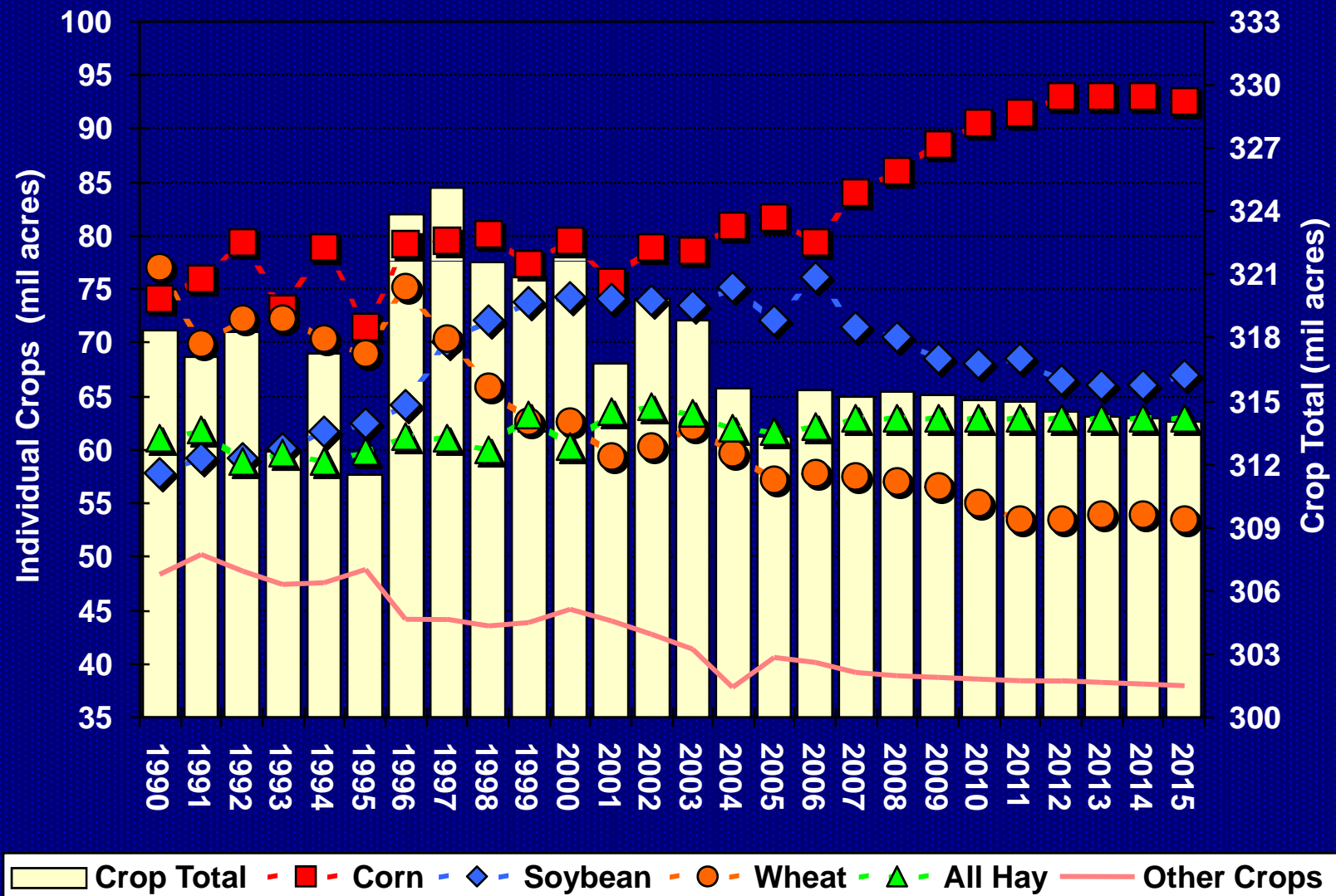
- External drivers
  - Oil industry drops MTBE as oxygenate option
  - U.S. auto makers step up promotion efforts for E-85 vehicles
  - Fuel infrastructure challenges
  - Emissions and climate change

# Renewable Fuels in Minnesota

- External barriers to success
  - Lingering misconceptions about renewable fuel
    - That it causes engine problems
    - That it drives up fuel prices
    - That it takes more energy to produce than it yields
    - That it is the root cause of food shortages and price hikes

# Renewable Fuels in Minnesota

## U.S. Crop Area Summary to 2015



# Renewable Fuels in Minnesota

- To-do list for U.S.
  - Continue pursuit of alternative fuel stocks
  - Commercialize cellulose-to-ethanol technology
  - Educate public about renewable fuels

# Renewable Fuels in Minnesota

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