Next Generation Biofuels –
Next Steps to Enable Sustained,
Large Scale Commercial Production

BP Biofuels
a growing alternative

Susan Ellerbusch, President
BP Biofuels North America
Global biofuel penetration of gasoline/diesel demand

Volume (million barrels/day)

2005  2010  2015  2020  2025  2030

19%

11%

consensus range

announced regulation

Assumed limit of ‘first generation’ technologies


BP Biofuels a growing alternative
Biofuels are truly renewable “Green Barrels”
BP Biofuels’ strategy is based on 3 strategic initiatives:

1. Sugarcane ethanol from Brazil
2. Advanced molecules: biobutanol
3. Advanced technology: lignocellulosics

Low-cost, Low-carbon, Scalable, Sustainable
BP’s Biofuels investments

- **Energy Biosciences Institute**: BP-supported research institute
- **Butamax Advanced Biofuels**: Head office
  - **Dedicated biofuels technology centre**: San Diego (operating)
  - **Cellulosic ethanol demonstration plant**: Louisiana (operating)
- **Vivergo Fuels (JV)**: World-scale wheat-ethanol plant, UK (under construction)
- **Tropical BioEnergia**: Ethanol mill (operational)
- **Highlands Ethanol**: Commercializing cellulosic ethanol, Florida (farm planting started)
- **Biobutanol technology demonstration plant**: Hull UK (JV) (start-up phase)
- **Sugar-to-diesel research with DSM (ex-Martek)**
- **Butamax Advanced Biofuels**: Commercializing biobutanol technology (demonstration plant, Hull UK (JV) (start-up phase)
- **2011 acquisition of CNAA assets**: Ethanol mills in Minas Gerais and Goiás states, Brazil (operational)

**BP Biofuels a growing alternative**
BP's is an end-to-end player in the biofuels value chain.

Biotechnology R&D

Agriculture at scale → Conversion → Fuel markets

Engineering and Operations Capabilities
Large Scale Demonstration Facility
We are growing energy grass
Land management and farm growth
breaking ground in...
An industry that will need partnering

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<td>Research and development</td>
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Markets can take time to mature

**Corn Ethanol Production**
1980 - 2011

**US Mobile Ownership**

(Millions of subscribers)

**BP Biofuels a growing alternative**
Stable policy helps build the market


Source: American Wind Energy Association
Conclusion

• Conversion technology is ready and will be at commercial scale soon
• Technology can be slow to take off but there is a market for biofuels
• Feedstocks are being grown
• Partnerships and new rural job opportunities are being created
• Government policy is relatively stable and needs to remain so to stimulate growth and confidence
• We are not waiting for others to lead.