



BioEnergy Industry Trends

TENNESSEE RENEWABLE ENERGY AND ECONOMIC DEVELOPMENT COUNCIL

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Trends In Four Key Areas

- Sustainability
- *Renewable Fuels*
- *Renewable Energy*
- *Legislation*



Sustainability

Sustainability: Meeting today's needs for **environmental stewardship**, **economic prosperity**, and **quality of life** without compromising **future generation's** ability to meet these needs for themselves.

Source: Biodiesel Board

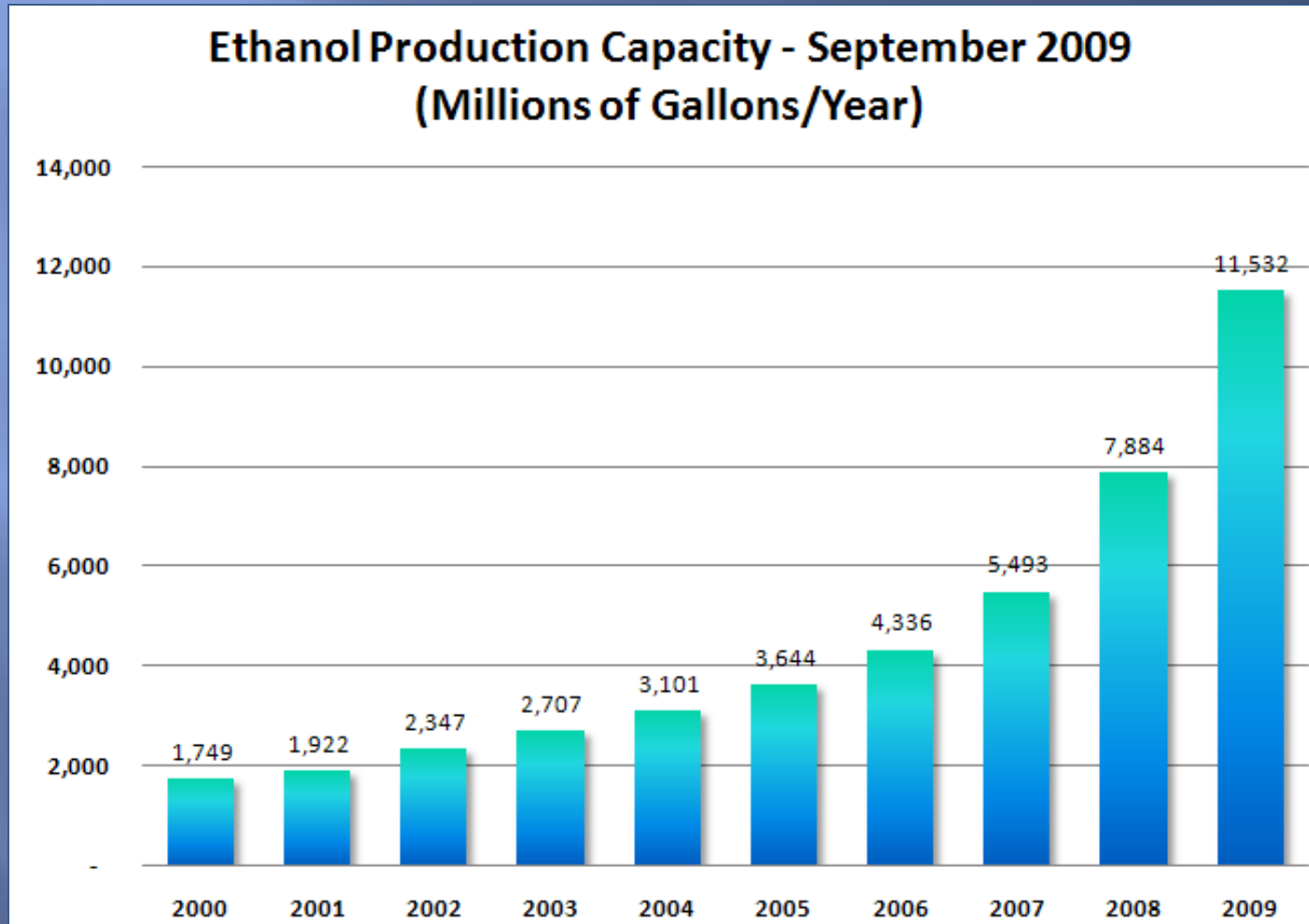
Then I say the earth belongs to each...generation during its course, fully and in its own right. The second generation receives it clear of the debts and encumbrances, the third of the second, and so on.

For if the first could charge it with a debt, then the earth would belong to the dead and not to the living generation. Then, no generation can contract debts greater than may be paid during the course of it's own existence.

Thomas Jefferson
September 6, 1789



Ethanol Trends



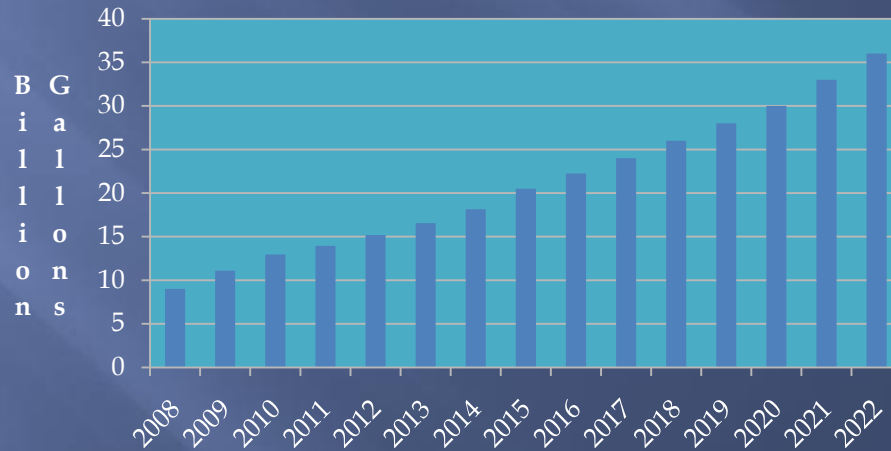
• *Are Logistical and Profitability issues a Surprise?*



Impact of RFS

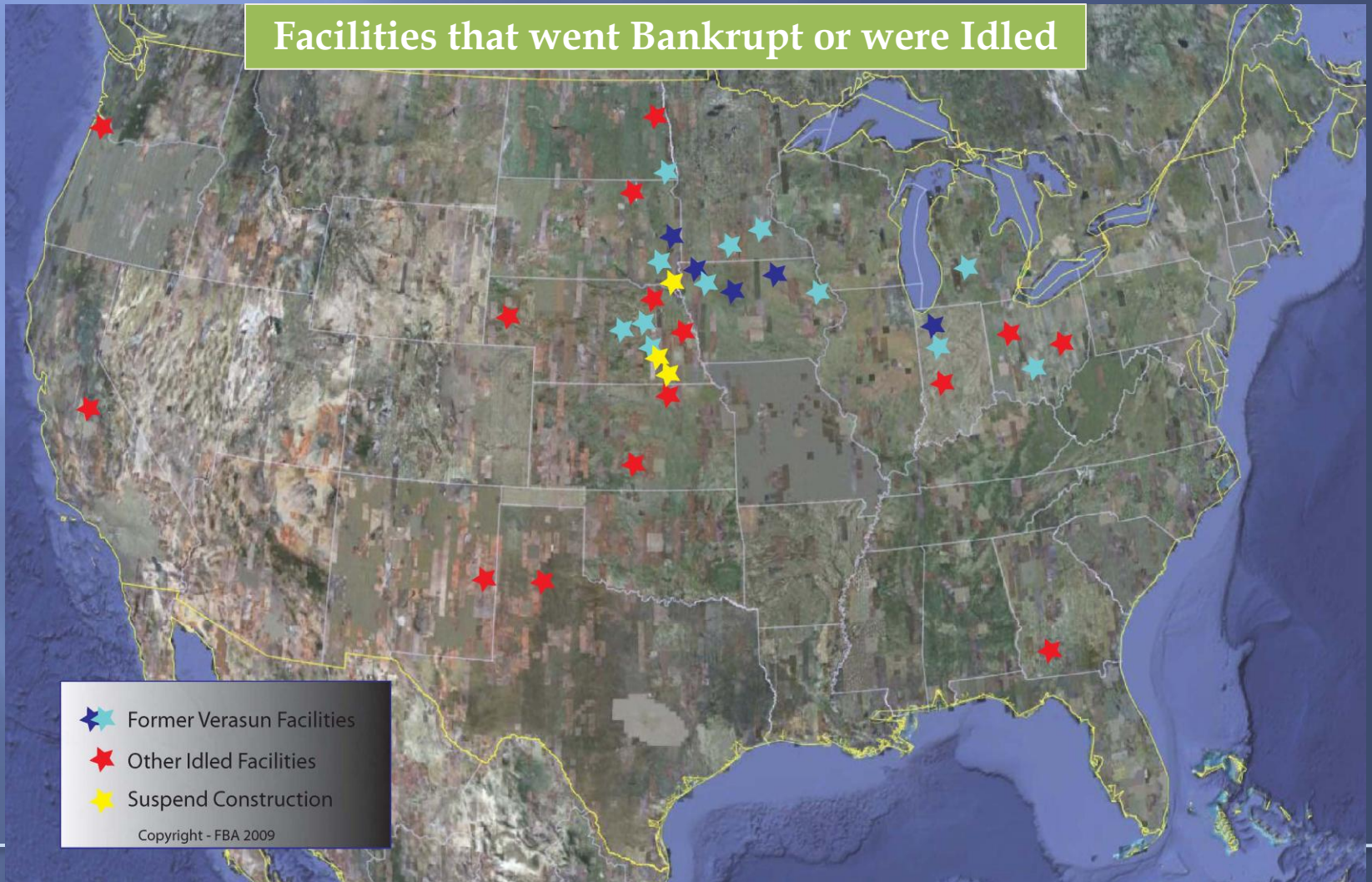
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Renewable Ethanol	9.0	10.5	12.0	12.6	13.2	13.8	14.4	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Advanced Ethanol		0.6	0.95	1.35	2.0	2.75	3.75	5.5	7.25	9.0	11.0	13.0	15.0	18.0	21.0
Cellulosic Ethanol			0.1	0.25	0.5	1.0	1.75	3.0	4.25	5.5	7.0	8.5	10.5	13.5	16.0
Biomass-based Ethanol		0.5	0.65	0.8	1.0										
Undifferentiated Advanced Biofuel		0.1	0.2	0.3	0.5	1.75	2.0	2.5	3.0	3.5	4.0	4.5	4.5	4.5	5.0
Total RFS	9.0	11.1	12.95	13.95	15.2	16.55	18.15	20.5	22.25	24.0	26.0	28.0	30.0	33.0	36.0

Total RFS



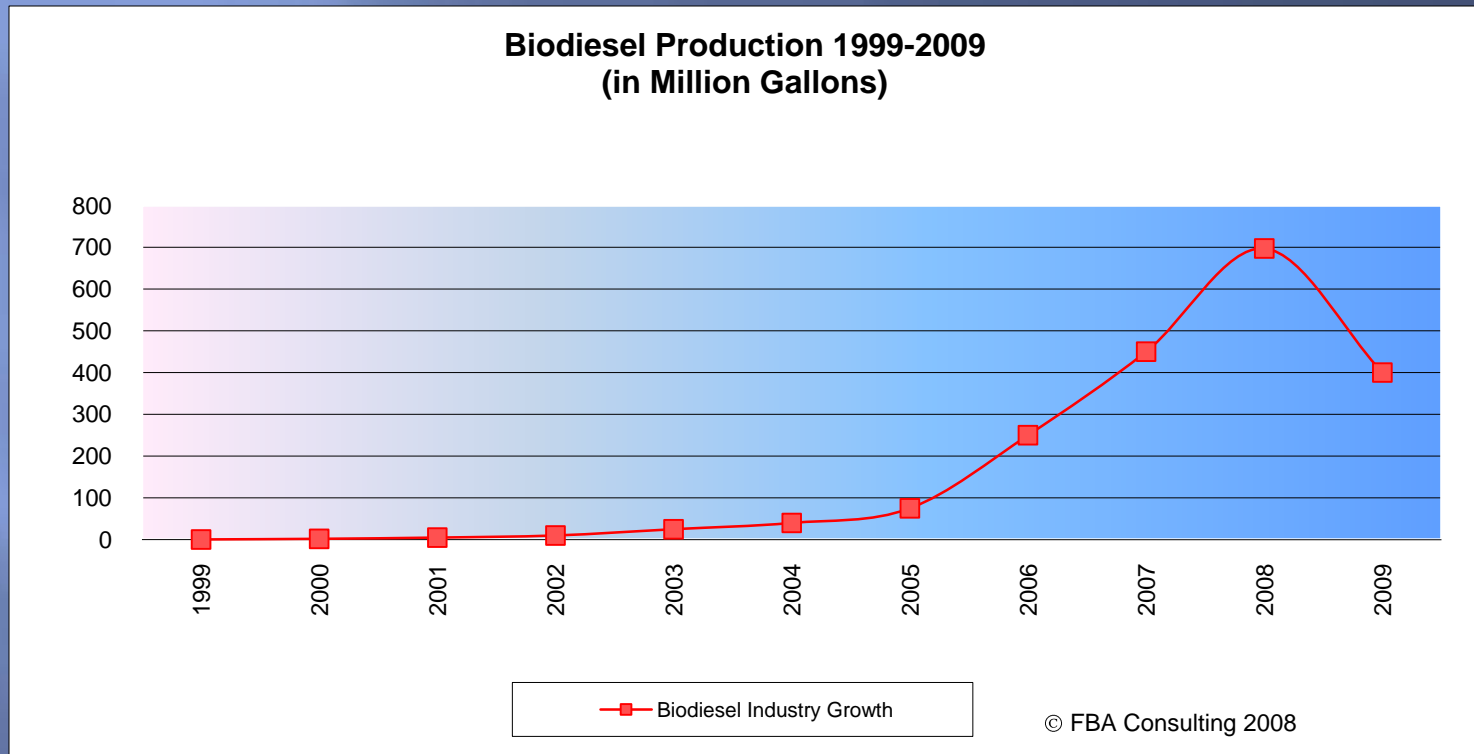
Ethanol Economics

Facilities that went Bankrupt or were Idled





Biodiesel Industry



- *Poor Economics*
- *Capital Restructuring*
- *Technology Realignment*



Renewable Energy

- Renewable Electrical Energy
 - Solar
 - Wind
 - Biomass
 - Biogas
- Renewable Heat/Steam
- Increased Focus on Carbon Footprint



Unresolved Legislation

- RFS2 – Carve out for each fuel
- Indirect Land Use – Penalties?
- Biodiesel Tax Credit Extension???
- Cap & Trade – Will Bioenergy Plants be required to track carbon footprint?



Industry Risk Factors

Raw Material Cost
Product Values
Risk Management
Energy Costs
RFS/Indirect Land Use



Sustainability –

Not a New Thought

“I believe the Great Creator has put ores and oil on this earth to give us a breathing spell...As we exhaust them, we must be prepared to fall back on our farms, which are God’s true storehouse and can never be exhausted. For we can learn to synthesize materials for every human need from the things that grow.”

-George Washington Carver

Thank
You!