

Cellulosic Ethanol: A “Fantasy” No More!

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POET-DSM Advanced Biofuels

two innovative companies – one shared vision



Three Key Takeaways

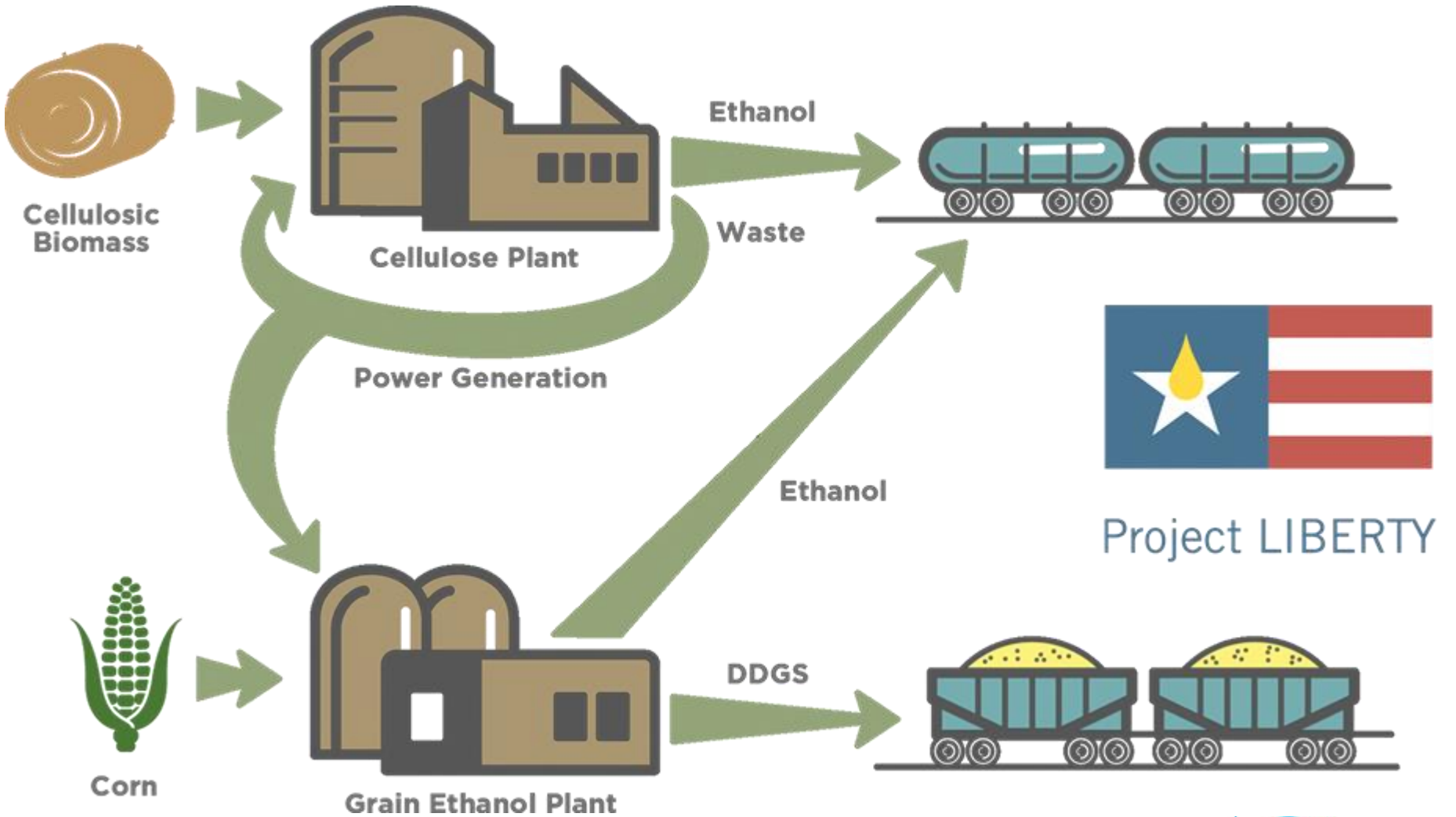
- Cellulosic Biofuels have arrived at commercial scale
- 2014 is an inflection point for Advanced Fuels
- This is important for U.S. consumer savings, national security, and GHG reductions



Quick Recap

- 25 million gallons of 90% emissions-free fuel
- Uses agricultural waste that otherwise would be left to decompose on the field
- This was a huge investment and one we think will pay off if market conditions remain attractive

Poet – DSM Integrated Model



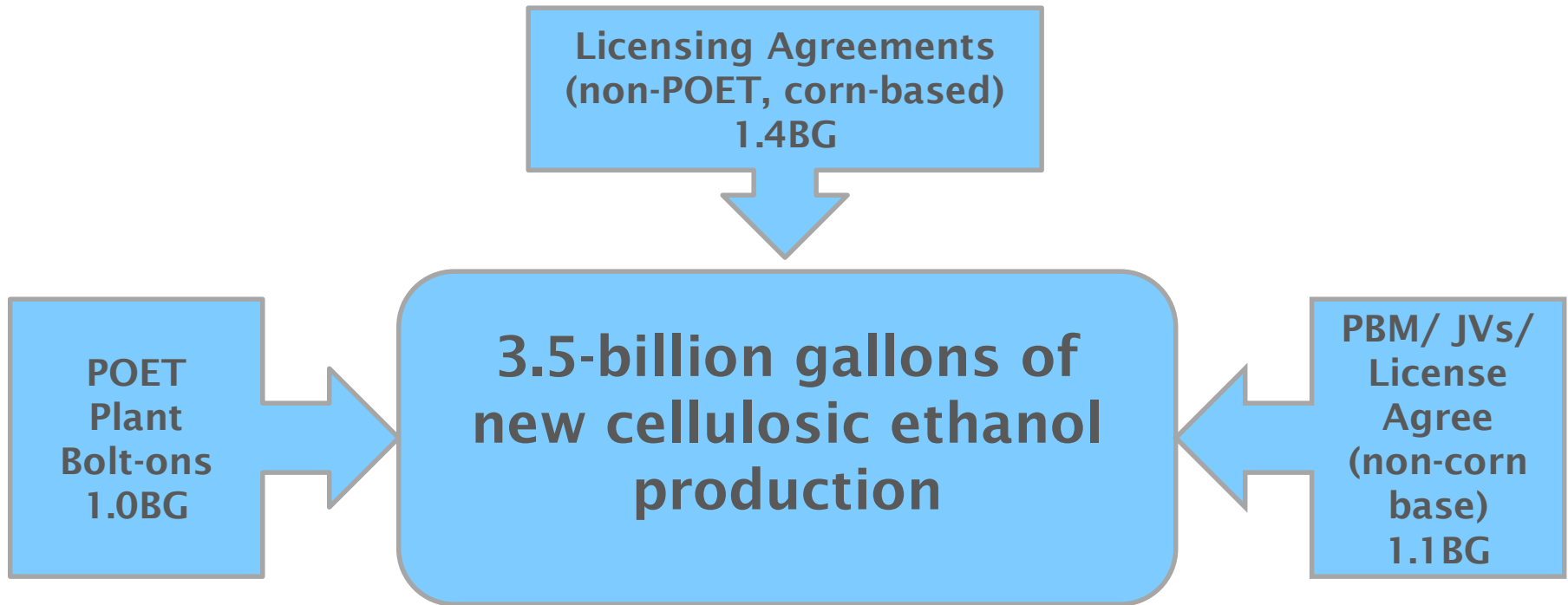
Did it take a long time?

- Seems that way, but the RFS is only 8 years old
- The regulations from EPA are only 4 years old
- Also note, we broke ground in 2013 and finished in 2014, so took only 18 months to build (on our first attempt)

The Game Changes

- Feedstock that does not have more than one user
- We can move beyond the corn belt into new states
- With feedstock differentiation comes increased flexibility and ability to produce low-cost fuel even under drought conditions

Where do we go from here?



So why should you care?

Consumer savings

Gas would be between 50 cents and \$1.50 more per gallon than its costs today. That means that Americans are saving \$700 million a year on the low end and \$2.6 trillion on the high end.

- Philip Verleger Data
Former Ford and Carter
administrations energy advisor

Consumer savings – \$1.20/gallon



Lansing, Michigan – Mid-September 2014

Why does ethanol lower gas prices?

- Oil is nearly \$100 a barrel vs. ethanol which is around \$40 a barrel
- Ethanol ranges between 50 cents to \$1.10 cheaper than a gallon of gasoline (CBOT)
- Oil is very sensitive to geopolitical events:
 - Iraq
 - Ukraine

Security

Energy Security

A single plant replaces:

- About 1 million barrels of imported oil per year.
- \$50 million in annual foreign spending with US jobs.
- Mitigates price spikes which are becoming more frequent
 - 14 shocks since 1979

National Security

- Libya, Venezuela, Iraq, Syria, Iran, Russia
- ISIS is making and estimated \$2-3 million per day selling oil to the world
 - Take away their buyer and you take away their funding

Environmental Sustainability

- Cellulosic ethanol must be 60% better than gasoline's 2005 green house gas emission levels.
- A single plant will reduce over 210,000 tons of CO₂ per year.
- Sustainable biomass collection: we only collect 25% of the stover which in some cases makes farming more productive and less likely to need more fertilizer

Where will the industry expand?

- U.S. is leading today, but RFS debate hurts and makes other countries more attractive
- Brazil has many strengths including a requirement of E30
- Europe is looking for options yet again as Putin sabre rattles
- China has not only an energy need but a public health crisis





Advanced Biofuels



Advanced Biofuels