Cellulosic Ethanol Commercialization

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Converting Cellulosics into Fuels and Chemicals

- Feedstock agnostic
  - “Grow where we go”
- Low conversion cost
  - 40% higher yield
- Multiple products
  - Advanced biofuels and chemicals
- Minimize risk
  - Known processes and natural organism
- Compete with lowest cost alternative
  - Must be economical vs. oil to succeed

Company History

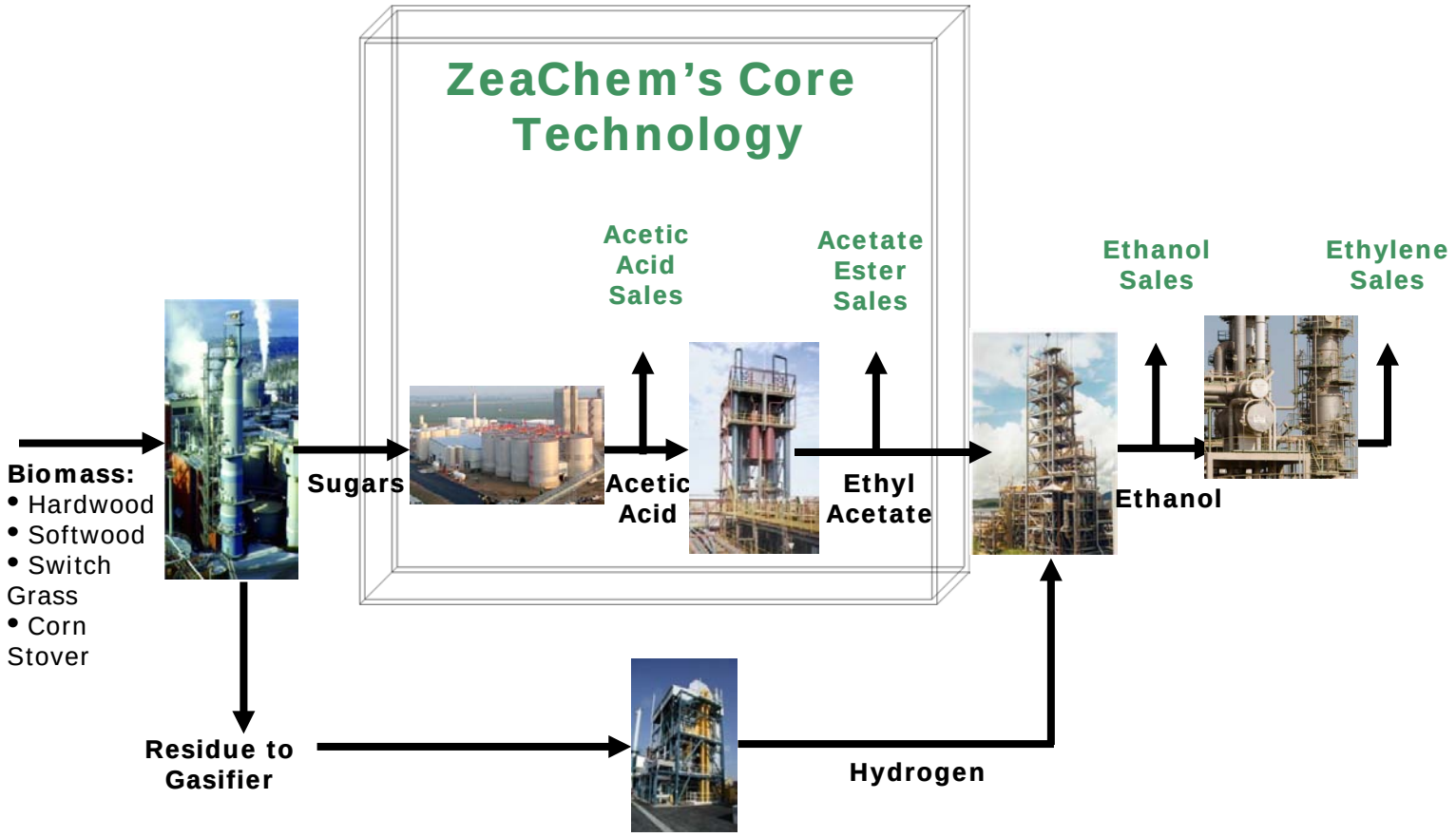
- Founded in 2002

- Series A ($6MM) in 2006
  - Led by MDV and Firelake Capital
  - Proved technology at lab scale

- Series B ($34MM) in 2008
  - Co-led by Globespan and PrairieGold
  - Valero Energy Corporation
  - Money raised for demo plant

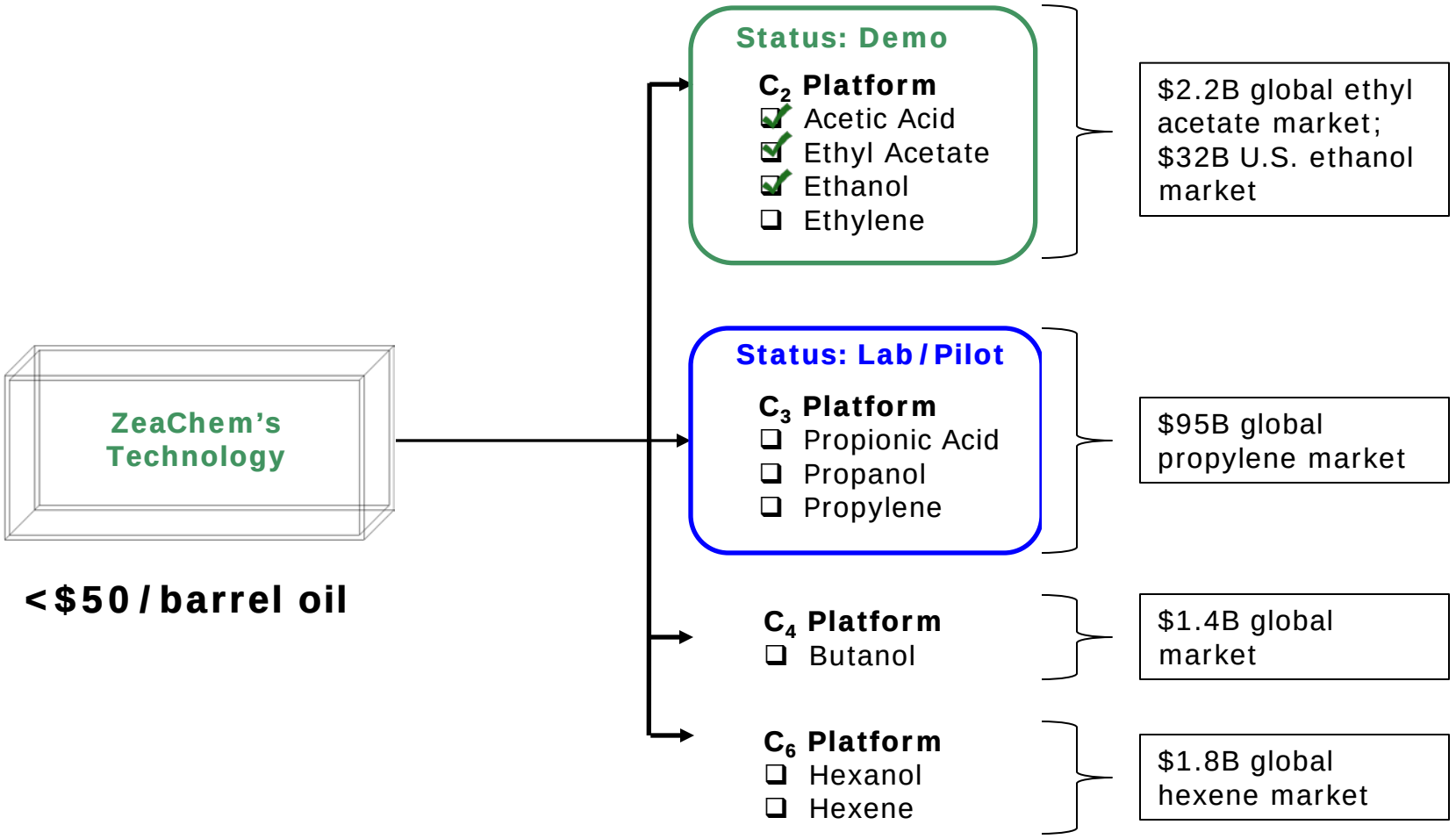
- Current Status
  - Demo facility construction is underway and fully funded
  - US DOE grant $25MM
  - Solid cash position

ZeaChem's C_2 Platform



Novel integration of known processes, natural organism (no GMO) = low risk

Product Platforms and Markets



Dedicated Energy Farms

- ZeaChem process is feedstock agnostic
  - Hardwood, softwood, grasses, ag residues
- Dedicated sustainable energy crops
  - Geographic diversity, “Grow where we go”
- Contract with GreenWood Resources
  - Supply high yield hybrid poplar feedstock
- Benefits
  - Efficient harvesting, cost effective
  - “Store on the stump”
  - Integrate energy crop + biorefinery = minimal footprint, low CO_2

* Canada has excellent woody biomass resources

ZeaChem Technology Deployment

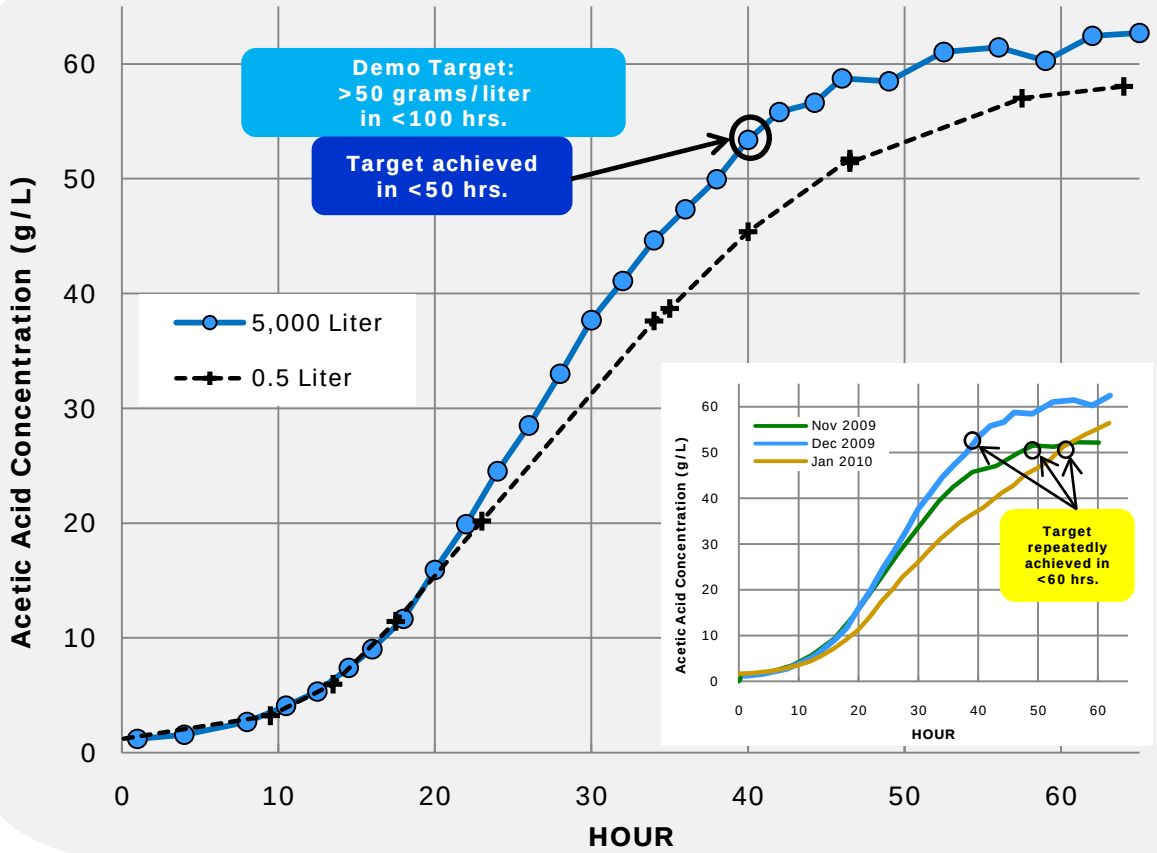
Lab → Pilot → Demo

Milestones:
- Proven at lab scale
- Raised $6MM for pilot

Milestones:
- Proven at non-integrated pilot scale
- Successfully fermented mixed sugars and hydrolyzates
- Raised $34MM to support demo

Milestones:
- 10,000x fermentation scale-up met and exceeded targets
- Completed downstream conversion:
  - glacial acetic acid
  - commercial grade ethyl acetate
  - ethanol

Fermentation Scale-Up



Scale-up

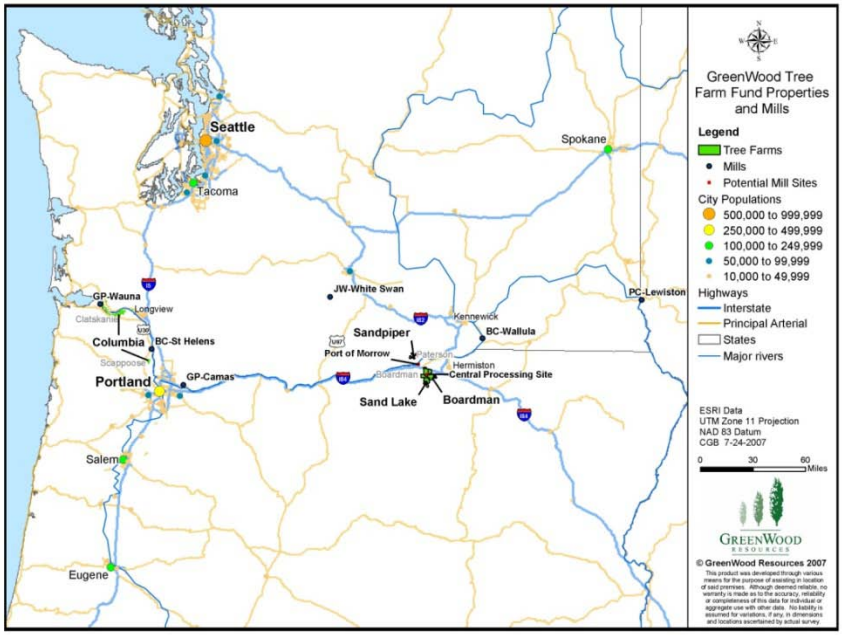
Control

Acetic Acid

- 10,000x Scale-up
- Repeated numerous times
- Multiple vendor trials
- Glacial Acetic Acid, 99+% pure

ZeaChem

Integrated Biorefinery



Schematic of future facility

Photo courtesy of Matt Kegler, Diagram supplied by Burns & McDonnell

- 250,000 GPY capacity
- Produce ethyl acetate and cellulosic ethanol
- Hybrid poplar + others feedstocks
- 75 Construction jobs, 25 Operating jobs
- Capex and Opex Funded in Cooperation with US DOE

Groundbreaking June 2, 2010

Construction Underway

ZeaChem's Business Model

1. License technology for early plants
2. Monetize markets, geographies and products
3. Once technology is established, utilize traditional project finance
4. Expand technology into other products and repeat
5. Compete with petroleum

Thank You

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