Agricultural Outlook Forum
U.S. Department of Agriculture

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Renewable Diesel from Animal Fat

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ConocoPhillips

Renewable Diesel from Animal Fat

USDA Outlook Forum

Lou Burke

Manager Biofuels

Company Profile

- An international, integrated energy company. 11.2 billion BOE reserves
- The 3rd largest integrated energy company in the United States
- 2nd largest refiner in U.S. – 2 MMBPD, EU – 640 MBPD
- 19 Refineries (15 wholly owned), 2.7 MBDP Worldwide
- Approximately 38,400 employees worldwide and assets of $184 billion
- NYSE Ticker: COP

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ConocoPhillips Biofuels

- We are a Blender
  - Ethanol in US and EU
  - Biodiesel in US and EU
- We are a Producer
  - Renewable Diesel in Ireland & US
- We are a Technology Developer
  - Internally
  - At Universities
  - With other commercial companies

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Biofuels Program Strategy

- ConocoPhillips plans to develop & implement biofuels technologies that will:
  - Establish attractive business opportunities
  - Utilize lower cost, more sustainable feedstocks
  - Maximize the use of existing infrastructure
  - Leverage COP's areas of expertise, competence and asset base
  - Minimize the carbon footprint and support COP's sustainable development strategies

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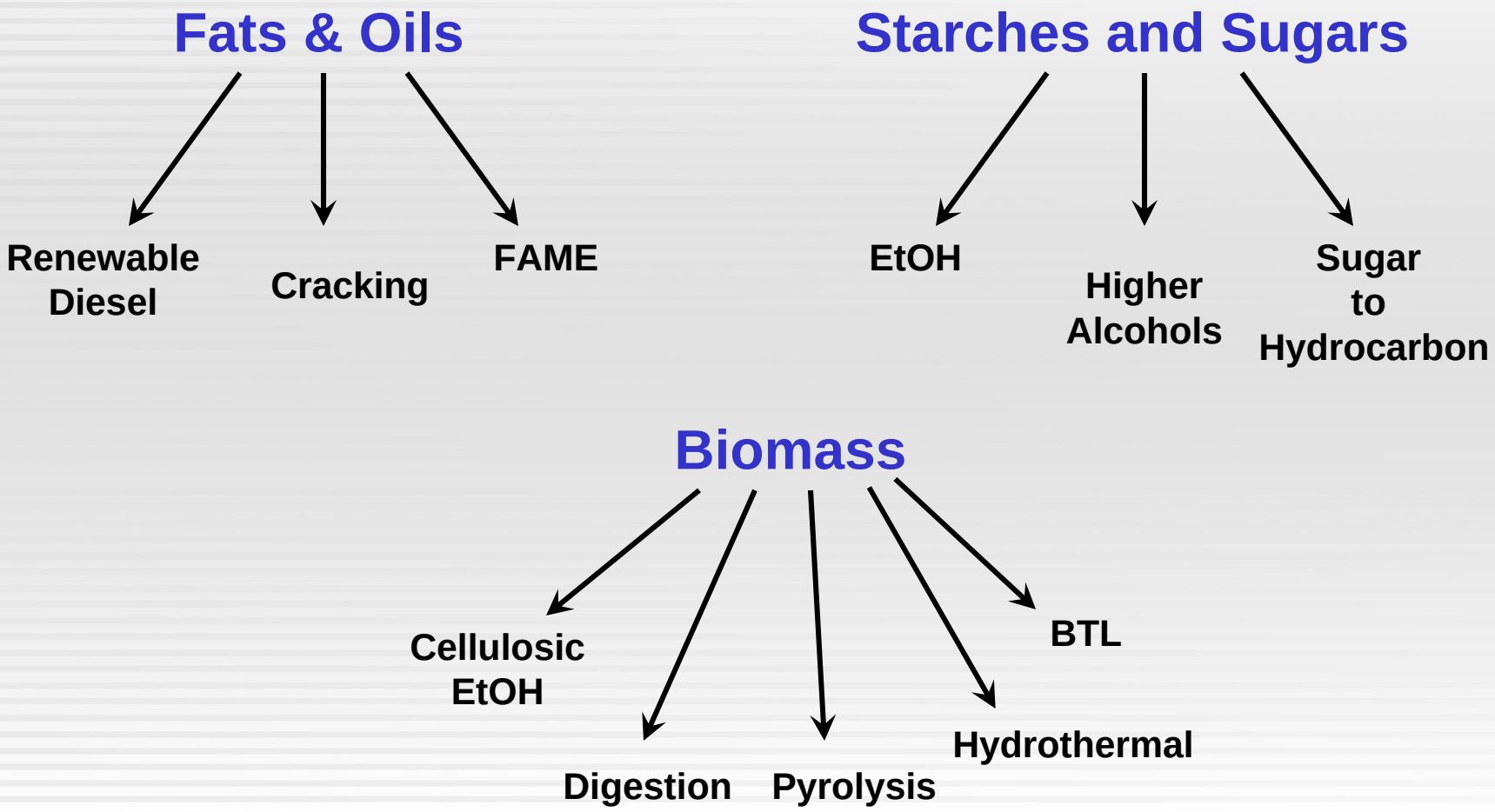
Biofuel Pathways



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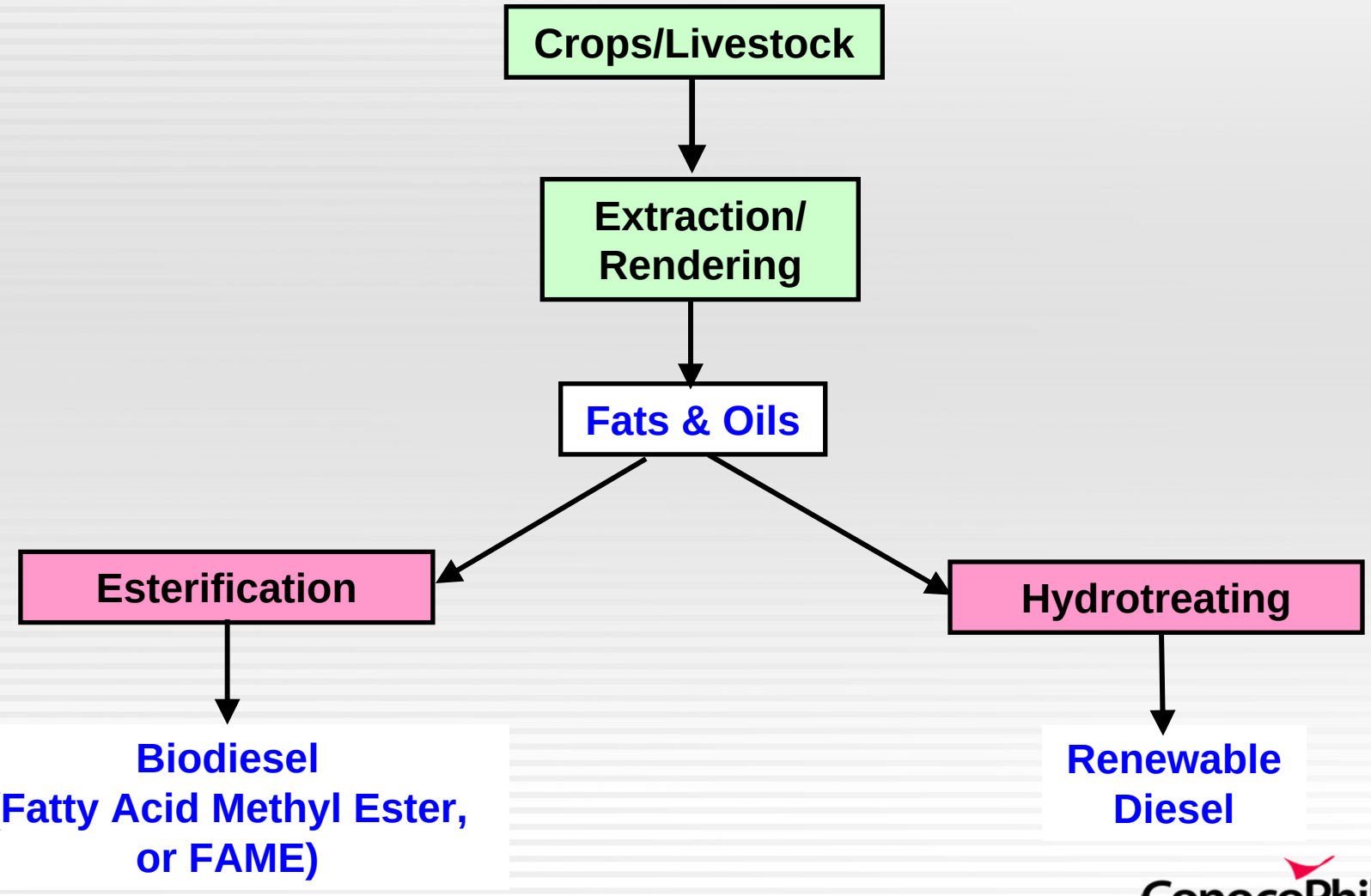
Fats & Oils Processing Options



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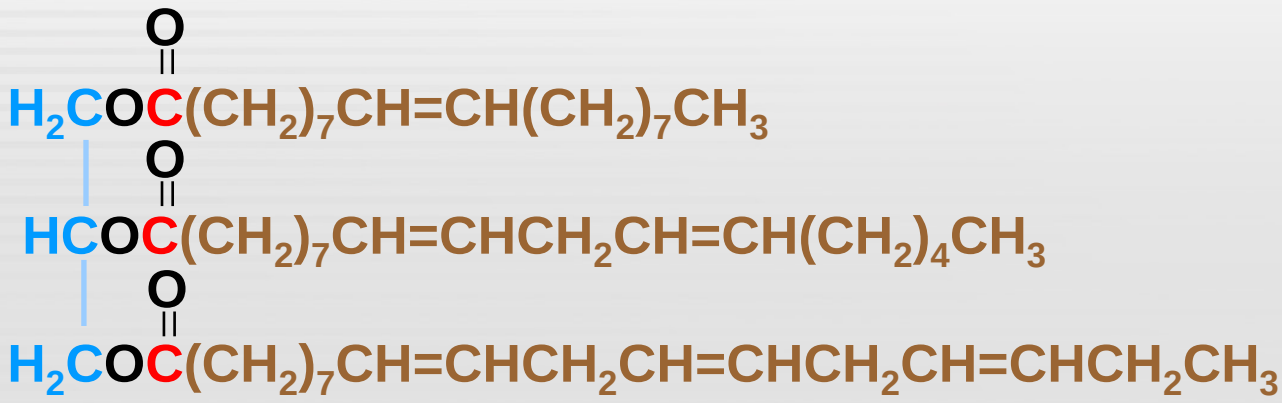
Renewable Diesel Chemistry

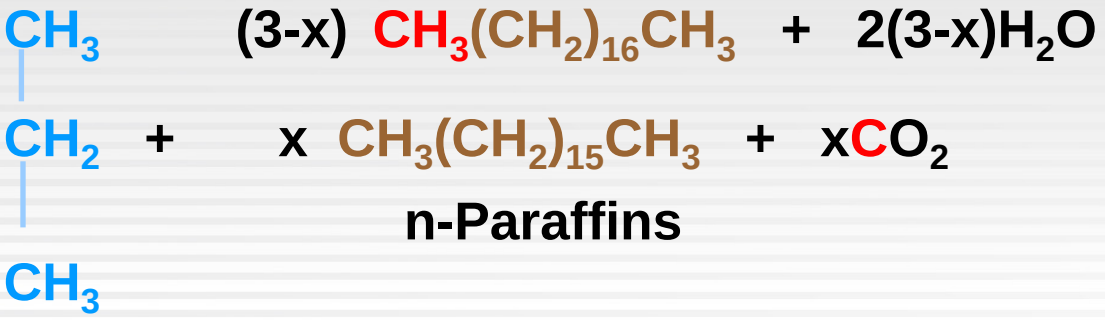
Fat or Oil

(Triglyceride)



Hydrotreating **Heat, Hydrogen, Catalyst**

Renewable Diesel



Propane

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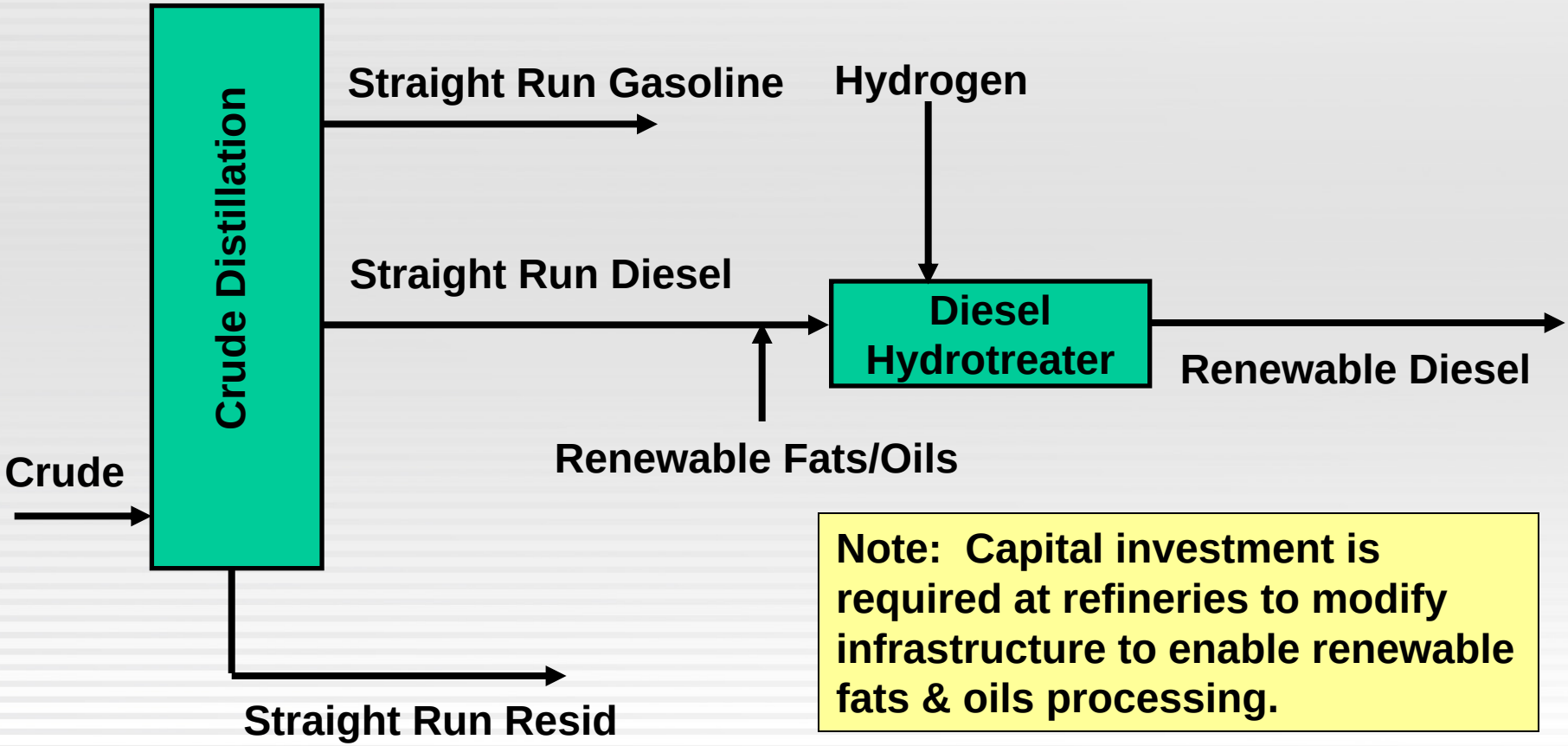
Renewable Diesel Process



Note: Capital investment is required at refineries to modify infrastructure to enable renewable fats & oils processing.

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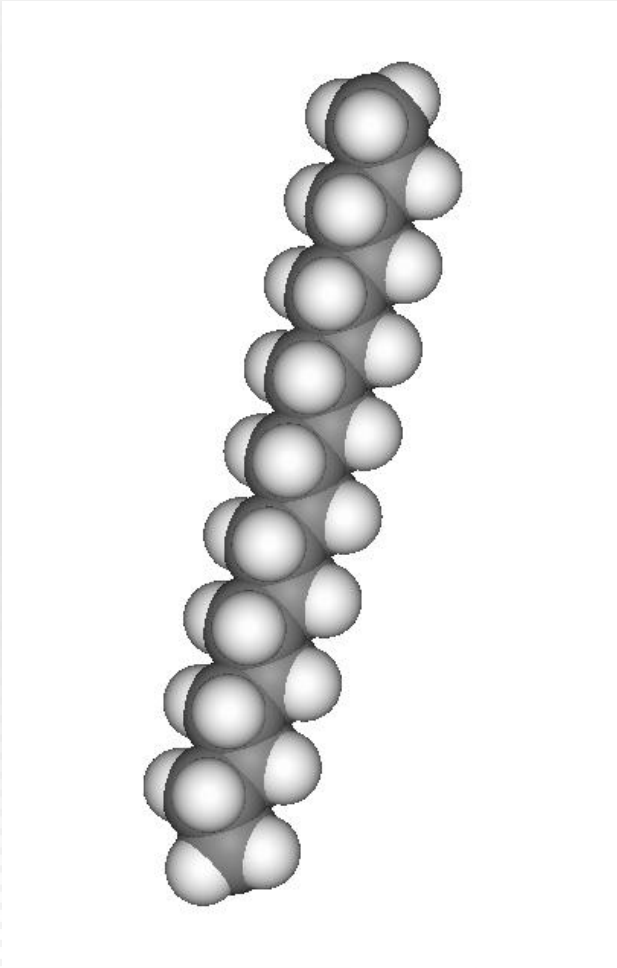
Typical Renewable Diesel

- Paraffinic (C_{15}-C_{18})
- No Oxygen
- No Double Bonds
- In Heart of Diesel Fuel (C_{10}-C_{22})
- High Cetane
- Feedstock Independent
- Cold Flow Issues



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Renewable Diesel Highlights

- No New Molecules-No New Fuel Specs Needed
  - Meets D 975 and EN 590 Specifications
  - Extremely High Cetane
  - Utilizes existing distribution infrastructure
  - No vehicle constraints
- Excellent GHG performance
- Criteria Pollutant Screening
  - NOx, HC, CO, and PM all improved vs. petroleum diesel

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Other Renewable Diesel Projects

- BP: 1,900 BPD, Australia - 2007 (Co-processing)
- Neste/OMV: 4,000 BPD, Austria - 2009
- Neste: 3,400 BPD, Finland - 2007, Second Plant - 2009
- Nippon Oil: Commercial Within 3 Years
- Petrobras: Four Refineries 4,000 BPD - 2007 (Co-processing)
- UOP/ENI - 2009

From publicly available sources

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Other Activities

- ADM Partnership
  - Biomass to “Bio-crude” to fuel
  - Thermo-Chemical conversions
- ISU Partnership
  - Programs range from cropping systems to conversion technologies
  - Focused primarily on thermochemical conversion
  - Recently received DOE grant for BTL
- Other partnerships
  - C2B2
  - Others

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