

DTE Energy



DTE Biomass Energy

DTE Biomass Energy Renewable Natural Gas Project Development

California Dairy Sustainability Summit

November 28, 2018

DTE Biomass Energy Background

Product Flow and RNG Plant Layout

DTE Biomass Energy is a leader in the waste gas to renewable energy industry



Company Highlights

- Part of DTE Energy's Power & Industrial business unit
- Currently operate 21 landfill gas projects in 8 states
- Constructing 3 dairy gas facilities in WI with several more in design
- Design, build, own and operate our facilities on a long term basis



Power Generation

- Landfill gas used to fuel either reciprocating engine or turbine driven electric generation
- Produce electricity, capacity and environmental attributes (RECs)
- Typically long term, fixed price offtake agreements

Thirteen Sites – 78.1 MW



Pipeline Quality Gas

- Typically at larger landfills where volumes justify gas clean up investment
- Solvent based or membrane technologies used to separate methane from carbon dioxide
- Pipeline quality natural gas produced along with environmental attributes

Five Sites – 36.8 MMCFD

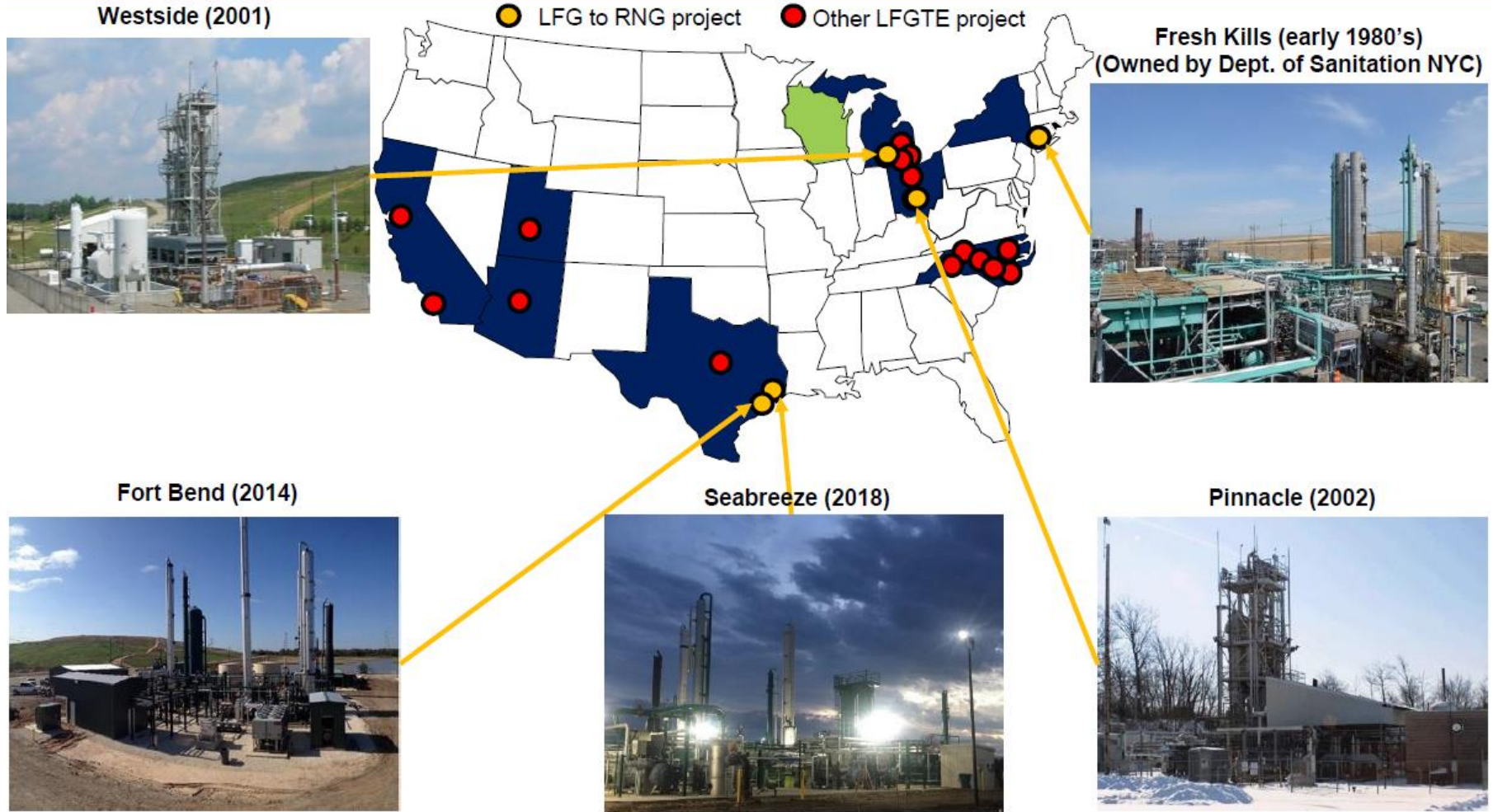


Medium Btu Gas

- Landfill gas mildly conditioned and direct pipelined to a commercial or industrial end user where it is typically used as boiler fuel
- Gas is sold at a discounted price to customer's natural gas alternative

Three Sites – 8.2 MMCFD

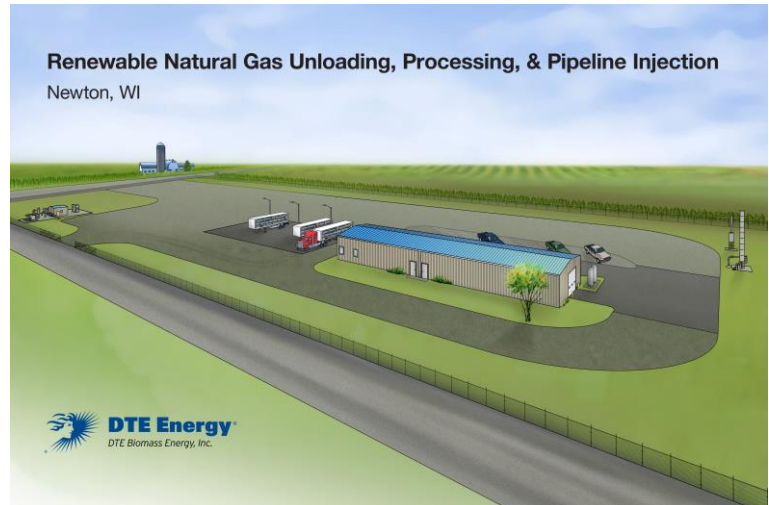
DTE Biomass Energy has been producing renewable natural gas for over 15 years



DTE Biomass Energy is currently constructing several dairy biogas to RNG projects in Wisconsin

Renewable Natural Gas (“RNG”) from Dairy Biogas

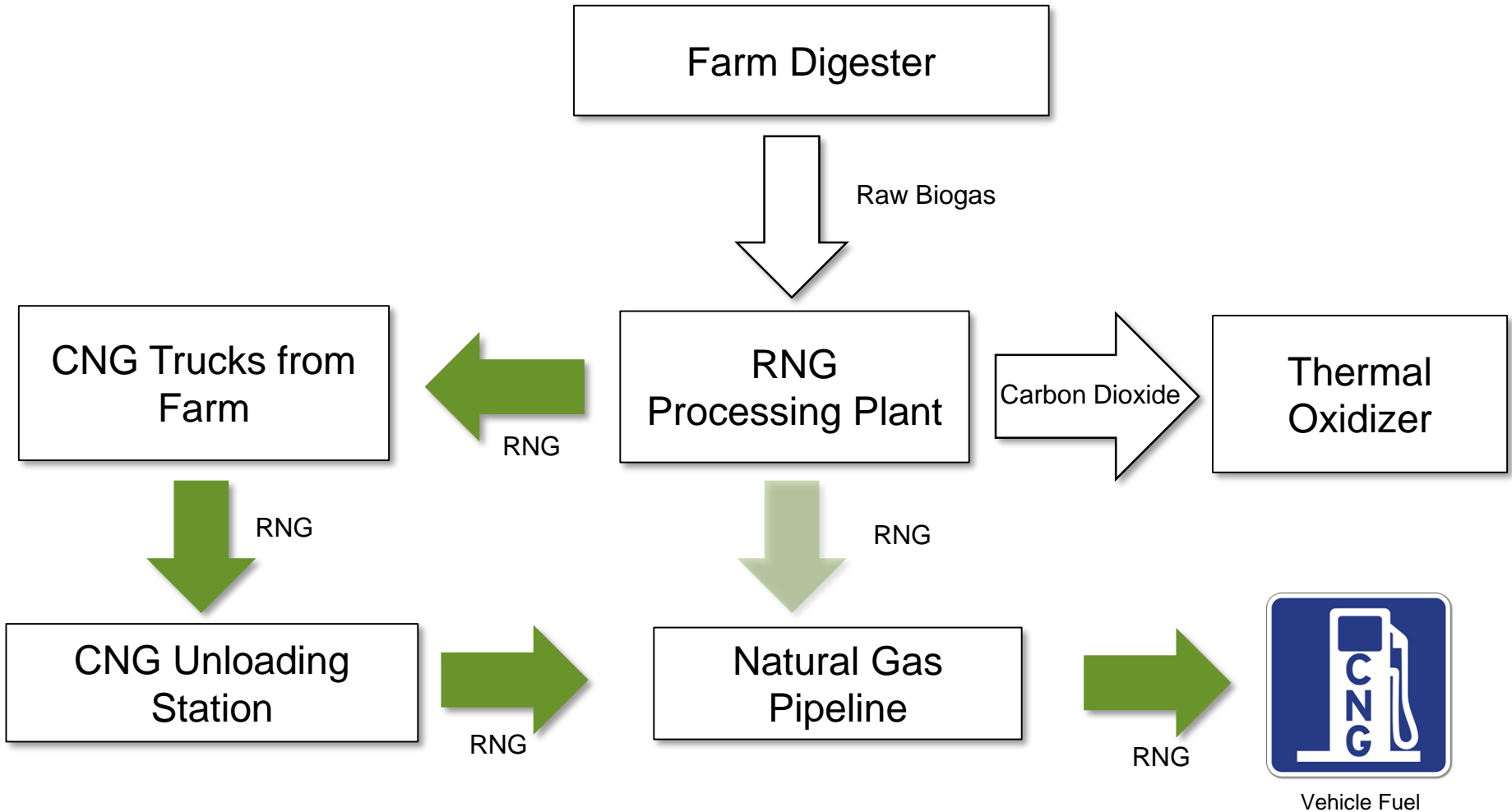
- Biogas that is created within manure digesters at dairy farms is similar to landfill gas created at landfills
- DTE Biomass Energy will utilize our operating expertise at landfills to clean up and process the dairy biogas into RNG as well
- We are developing RNG projects throughout the United States including dairy farm based projects in California



DTE Biomass Energy Background

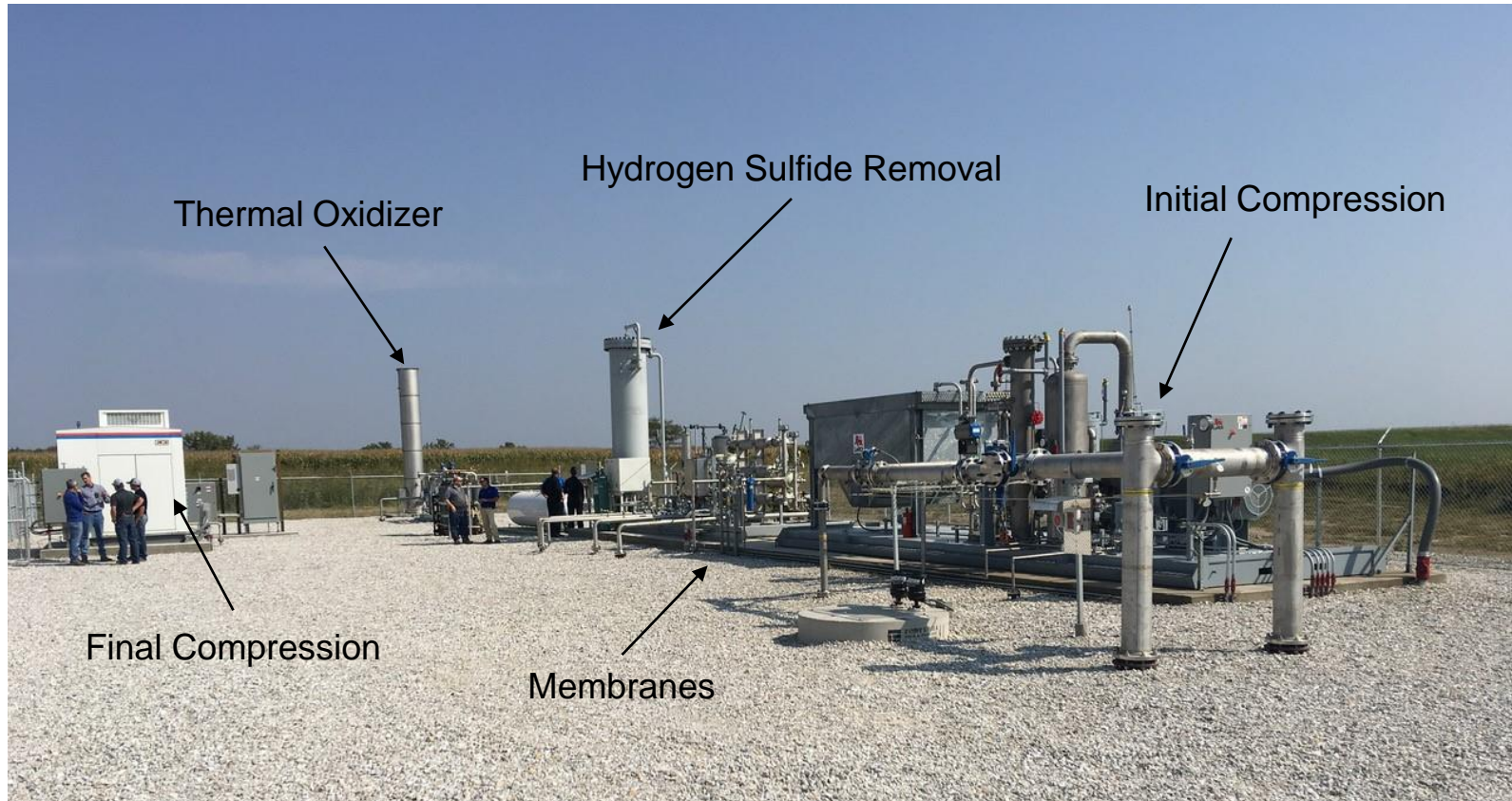
Product Flow and RNG Plant Layout

The Renewable Natural Gas Production Process



RNG processing equipment – safe, proven, effective

DTE Biomass Energy houses the RNG processing equipment in a building



RNG can be trucked to the injection facility if a direct pipeline is not feasible



- Trucks will slowly fill at the farms, limiting the amount of trips required
- DTE contracts with experienced LNG/CNG trucking operators
- Experienced drivers with proper licensing
- 53' trailers limited to 80,000 pounds loaded

Our RNG facility invests in the local economy, creates jobs, and provides the farm with additional revenue



- DTE Biomass Energy invests millions of dollars in the RNG processing and interconnect facilities and bring full time jobs to the local community
- We provide operational and environmental benefits to dairy farms with manure collection and digestion
- We provide a financial benefit to the farm not tied to milk prices
 - Several different structures available to the farm
 - DTE can purchase biogas from existing farm owned digesters, or can build, own and operate digesters in addition to the RNG facilities
 - Farms can receive fixed payments or a share of the RNG revenue



Thank You

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