



# Transforming the Future of Sustainable Energy & Agriculture



# What is Renewable Natural Gas?

Renewable natural gas (RNG) is methane captured from hog and dairy farms, landfills, food waste and wastewater treatment facilities that is converted into clean, renewable energy to heat homes and power local businesses.

## Benefits

- ✓ Greenhouse gas (GHG) reduction
- ✓ Improved manure management
- ✓ Around-the-clock renewable energy
- ✓ New revenue stream for family farmers



# Turning Hog Manure into Clean, Renewable Energy



1

## Capturing Methane from the Farm

Methane is captured from covered lagoons or digesters and then transported to a central conditioning facility.

2

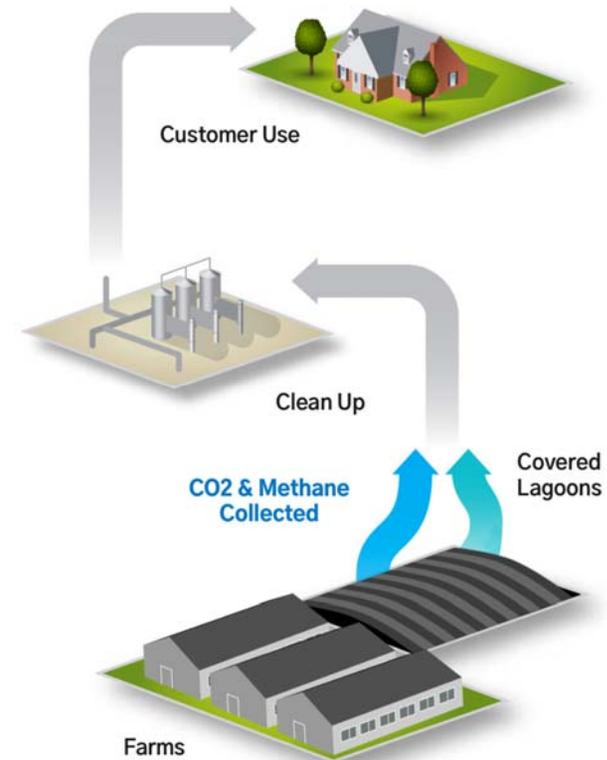
## Converting it to Renewable Natural Gas

The methane captured from multiple farms is processed and converted into renewable natural gas at a central conditioning facility.

3

## Delivering RNG to Homes and Businesses

Once the RNG is processed to meet pipeline quality standards, it is put into existing pipelines to serve local homes and businesses.



# Capturing Methane from Hog Farms

- Manure from hog barns is transferred by underground pipe to an adjacent covered lagoon, known as an anaerobic digester.
- Naturally occurring bacteria breaks down the manure over 6-12 months, generating organic fertilizer and methane.
- The methane generated from anaerobic digestion is pumped to a central conditioning facility.

Most projects consist of clusters of  
**15 – 20 farms**



# Converting Methane into Renewable Natural Gas

- The methane captured from multiple farms is transported to a central conditioning facility, where it is processed to meet pipeline quality standards.
- The RNG is then pumped into existing distribution pipelines to serve local homes and businesses.



# Global Industry Leaders Form Largest RNG Partnership in History



- 50/50 joint venture formed in November 2018
- \$500 million over the next 10 years
- 4 initial projects in NC, UT\* and VA

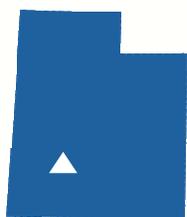


\*The Utah project is under consideration for Align RNG. It is currently underway as a Smithfield Foods project.



**\$500 million**  
joint venture between  
Dominion Energy and Smithfield Foods

# First Four Projects in North Carolina, Virginia and Utah



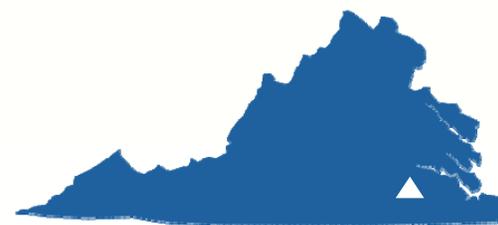
## Milford, UT\*

Construction began in 2018  
Operational by late 2019



## Sampson and Duplin Counties, NC

Construction begins in mid-2019  
Operational by mid-2020



## Waverly, VA

Enough energy to power

# 14,000

homes and businesses

Emissions reduction equal to planting

# 14 million

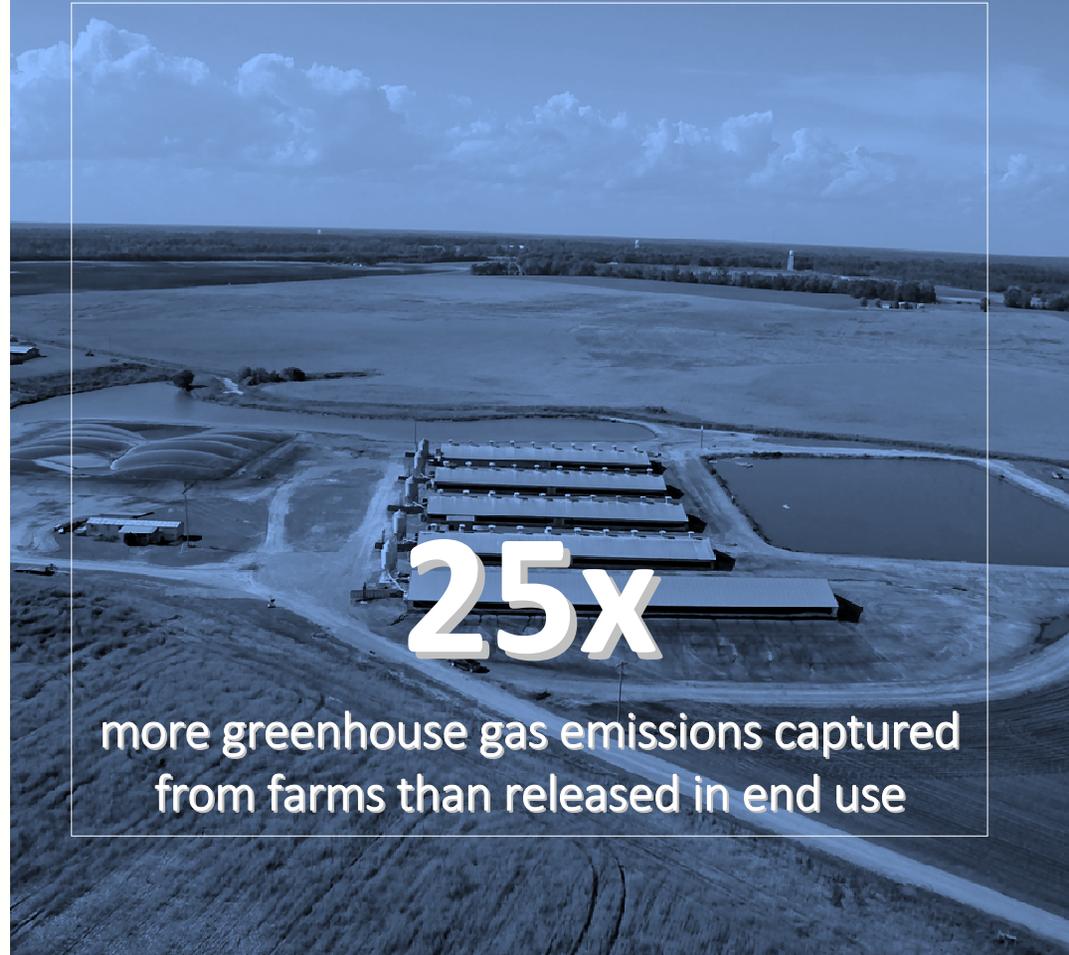
new trees



\*The Utah project is under consideration for Align RNG.  
It is currently underway as a Smithfield Foods project.

# Dramatic Greenhouse Gas Reduction

- Renewable natural gas is a carbon-negative fuel because it leads to a net reduction in GHG's in the atmosphere.
- The methane captured from hog farms is 25 times more powerful as a GHG than the CO<sup>2</sup> generated when burning natural gas.



# Around-the-Clock Renewable Energy

Renewable natural gas generates energy 24/7, 365 days a year and can be used on demand to meet the real-time needs of homes, businesses and utilities.



RNG generates reliable power

**24/7, 365**

days a year



Solar generates reliable power

**25%**

of the time



Wind generates reliable power

**35%**

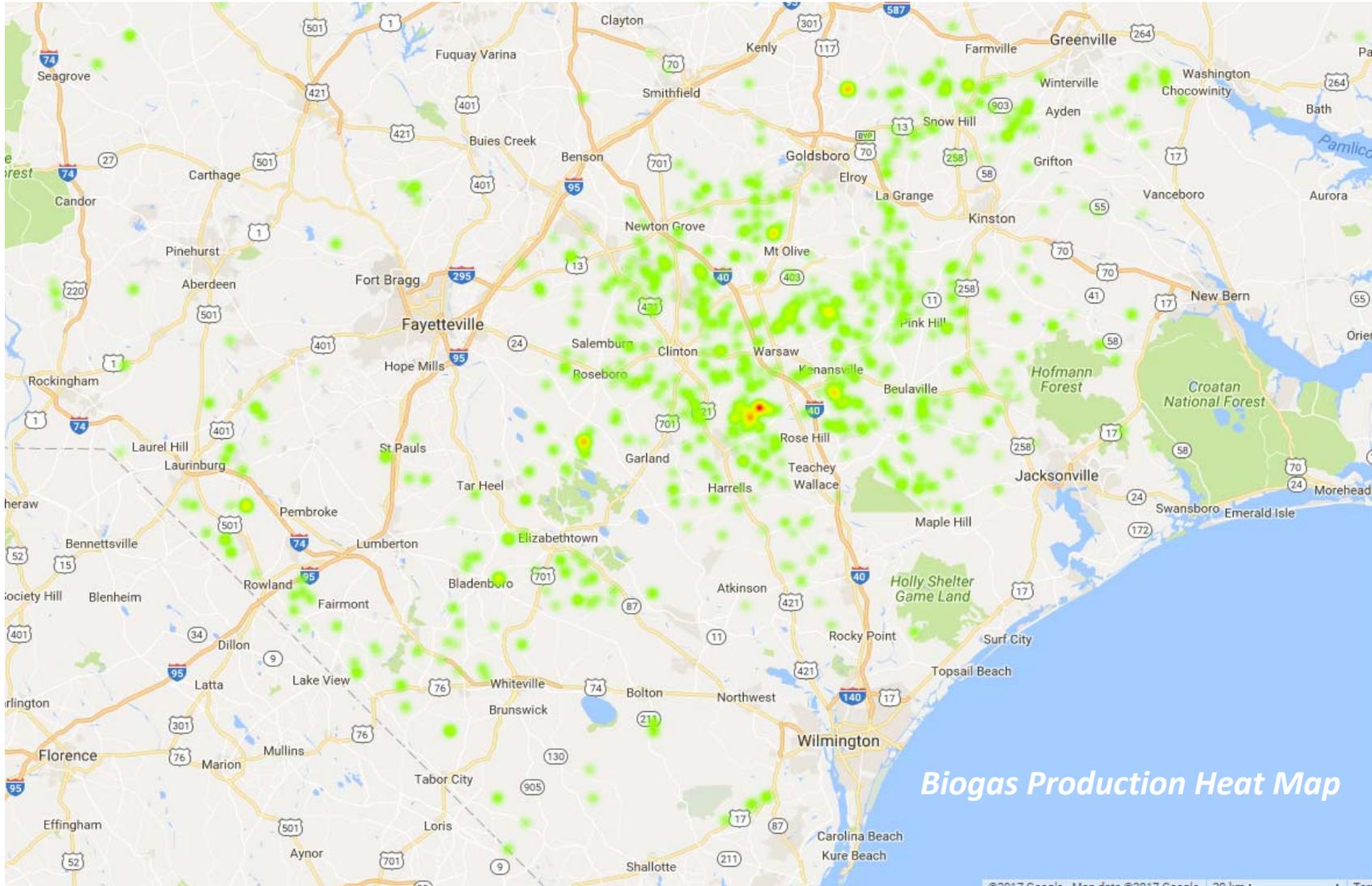
of the time

# New Revenue Stream for Family Farmers



- Waste management is a significant cost for family farmers.
- RNG allows farmers to turn a major cost driver into a new revenue stream.
- Farmers can invest in building the infrastructure on their farms and then share long-term revenues.





*Biogas Production Heat Map*

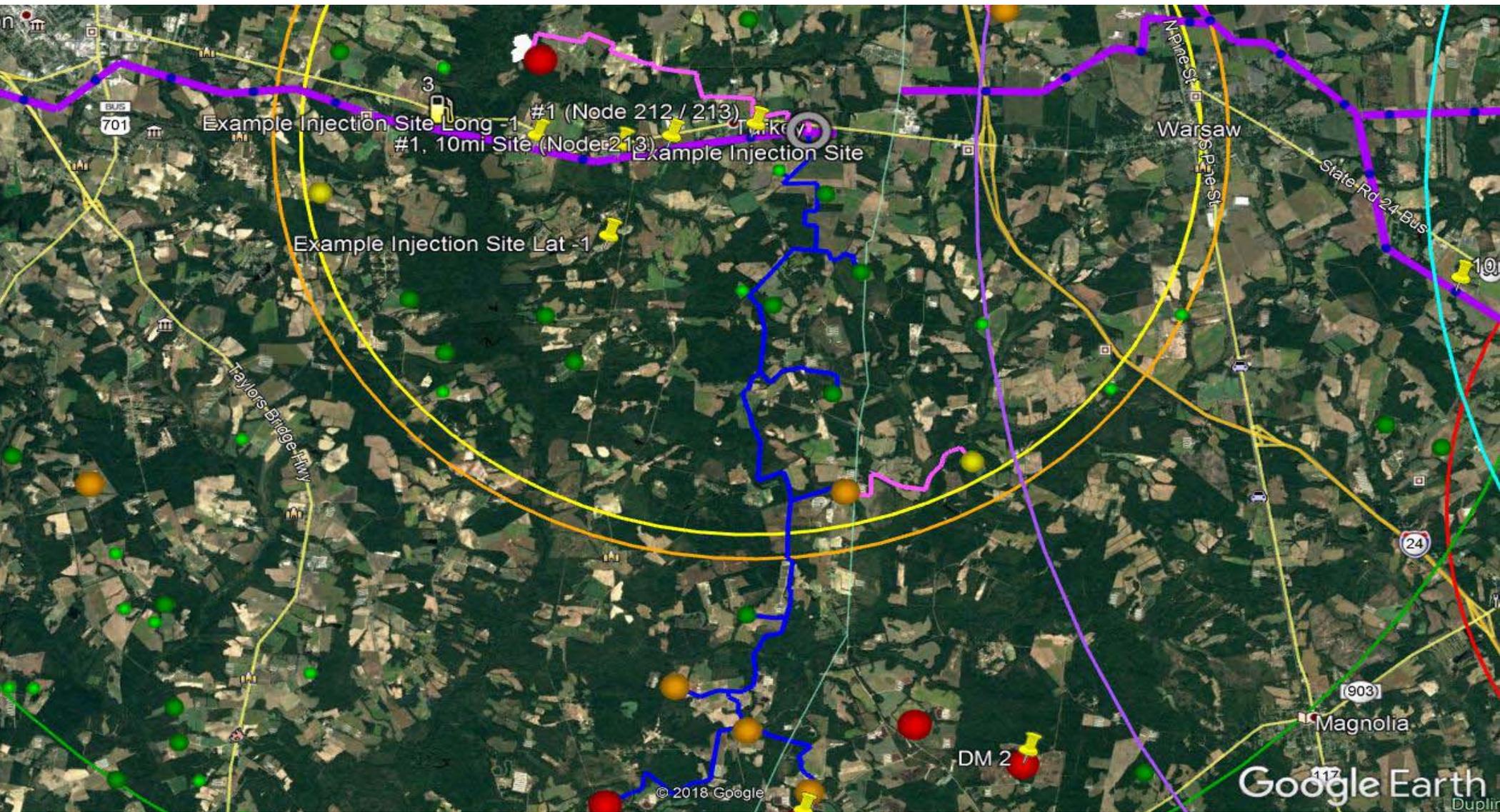
©2017 Google - Map data ©2017 Google - 20 km

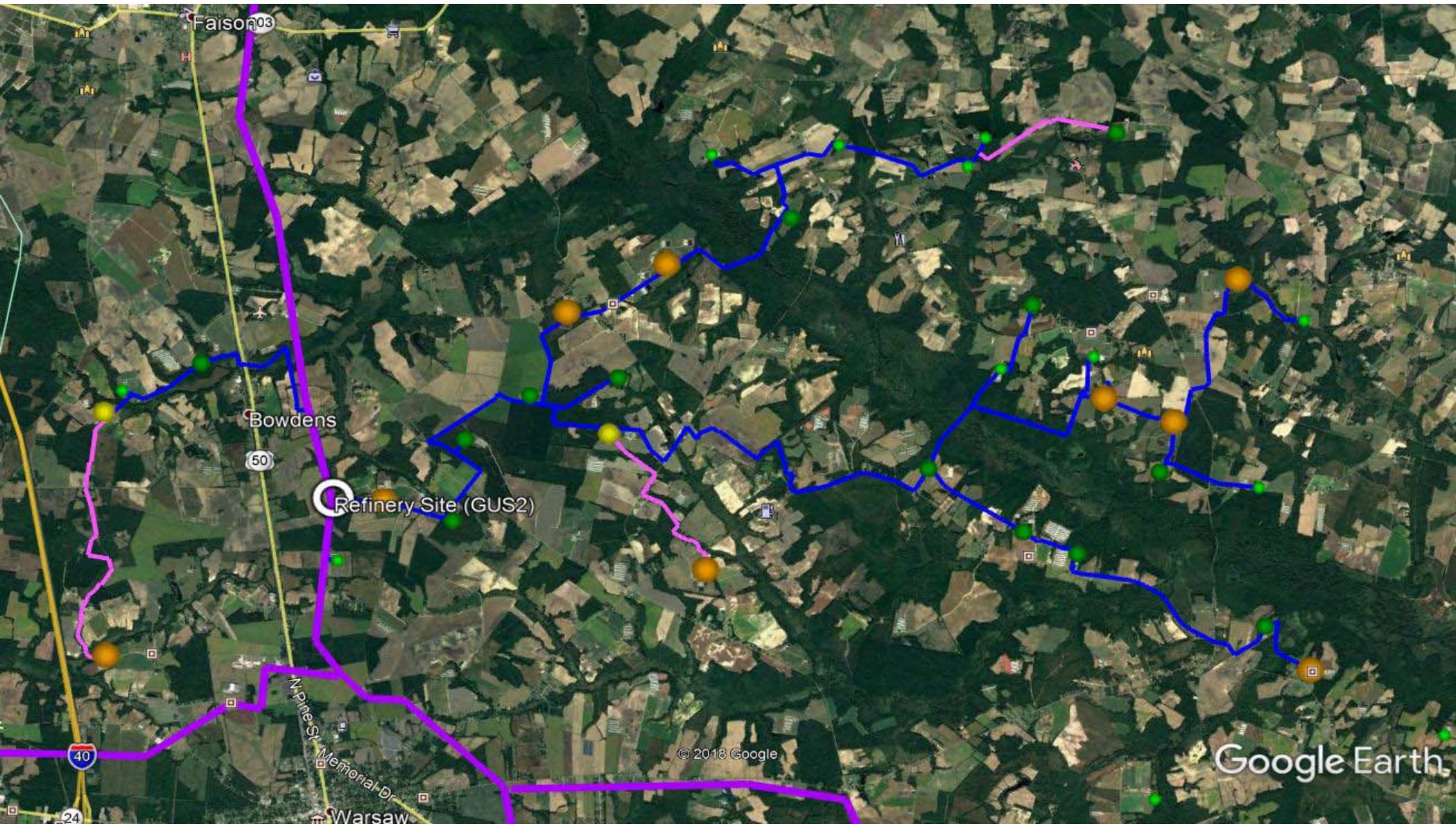
## Slide 11

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- A27** Prefer the slide we use in house that has pins for all the farms. They are used to seeing it.  
Author, 2017-08-29
- A28** Issue is that this is not just location, but quantity of gas. I think if we change shades, it may be easier to see.  
Author, 2017-08-29







Faison 03

Bowdens

Refinery Site (GUS2)

N. Pine St Memorial Dr  
Warsaw

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Google Earth

Thank You

Learn more about Align RNG:  
[www.alignrng.com](http://www.alignrng.com)

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Speaker Title  
Company Name  
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