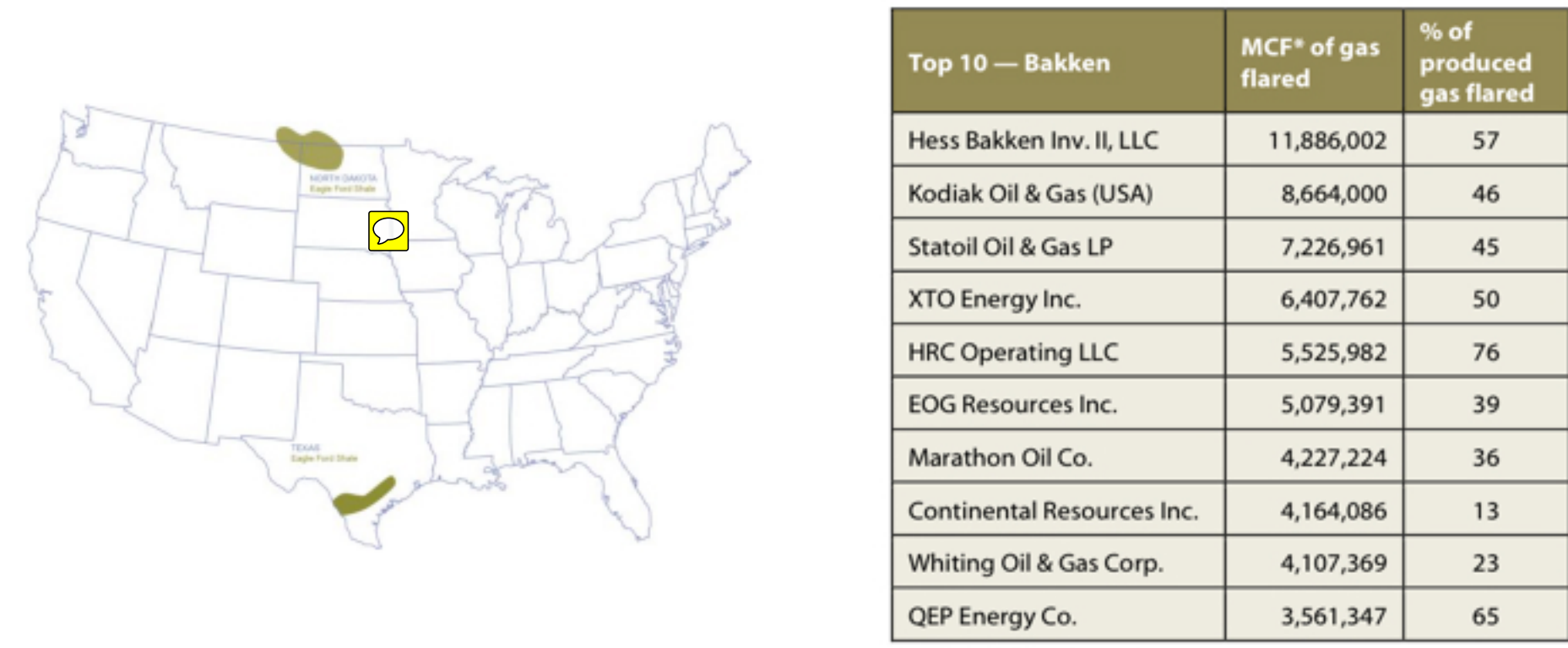


The Flare Gas Problem

Flammable natural gas is flared at oil and gas wellheads during the extraction process in an effort to reduce the negative impacts of venting excess gas into our atmosphere—but neither flaring nor venting is a truly viable solution. On a worldwide scale, according to a 2014 World Bank Study, the following countries represent the five largest producers of flare gas: Russia, Nigeria, Iran, Iraq & the United States. Within the United States, (1) North Dakota and (2) Texas are by far the biggest producers of flare gas. Flaring in North Dakota's Bakken and in Texas's Eagle Ford in 2013 combined to produce the equivalent CO2 production of 1.5 million cars.



Though the environmental problems created as a direct result of flaring are significant, even more staggering are the amount of economic opportunities lost from flaring the wasted gas. The main hurdle to solve is the problem of making flare gas recovery economically feasible and profitable for these oil & gas companies.



According to company data, 12 companies in the Bakken region flared more than 3 billion cubic feet of gas in 2013. 8 out of the top 10 flared more than 35% of their total volume production (with 4 of those 10 flared at more than 50%).

FedEx

Who is FedEx?

FedEx, an American global courier delivery service, is considered a world leader. Covering over 220 countries and connecting more than 99% of the world's GDP, FedEx combines technology, transportation, information, and ideas in order to deliver the world's packages.



Going Green

From a sustainability point of view, FedEx is considered an innovator. From their mission statement, "We constantly strive to do more with less, reducing our environmental footprint even as we deepen the ways we connect the global economy." In addition to initiatives such as EarthSmart, FedEx has been searching for alternatives fuels such as CNG, LNG, and electric vehicles. In 2013, Chairman and CEO Frederick Smith noted that over the next 10 years, he expects between 5%-30% of US trucking to be fueled by CNG or LNG.



Why FedEx?

With FedEx already testing multiple CNG and alternative fuel trucks in the field, they are perfectly positioned to take advantage of our unique opportunity. They have partnered with WrightSpeed, an electric drive train based on CNG, and deployed many pure CNG trucks. On average, CNG trucks cost \$50 to fill up each day compared to the \$100 required for diesel.

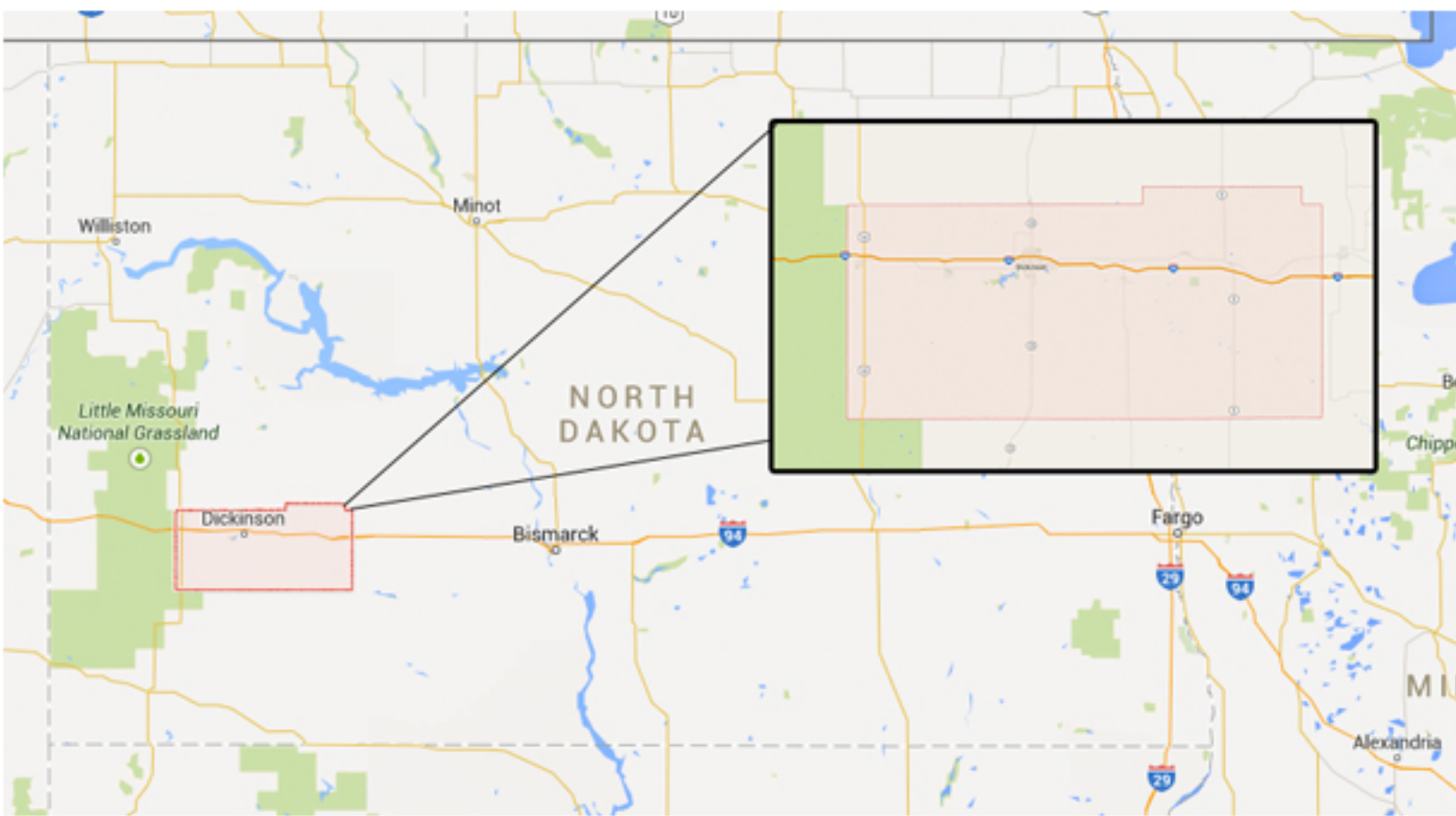
Using Flare Gas to Power

Duke University | BASS CONNECTIONS

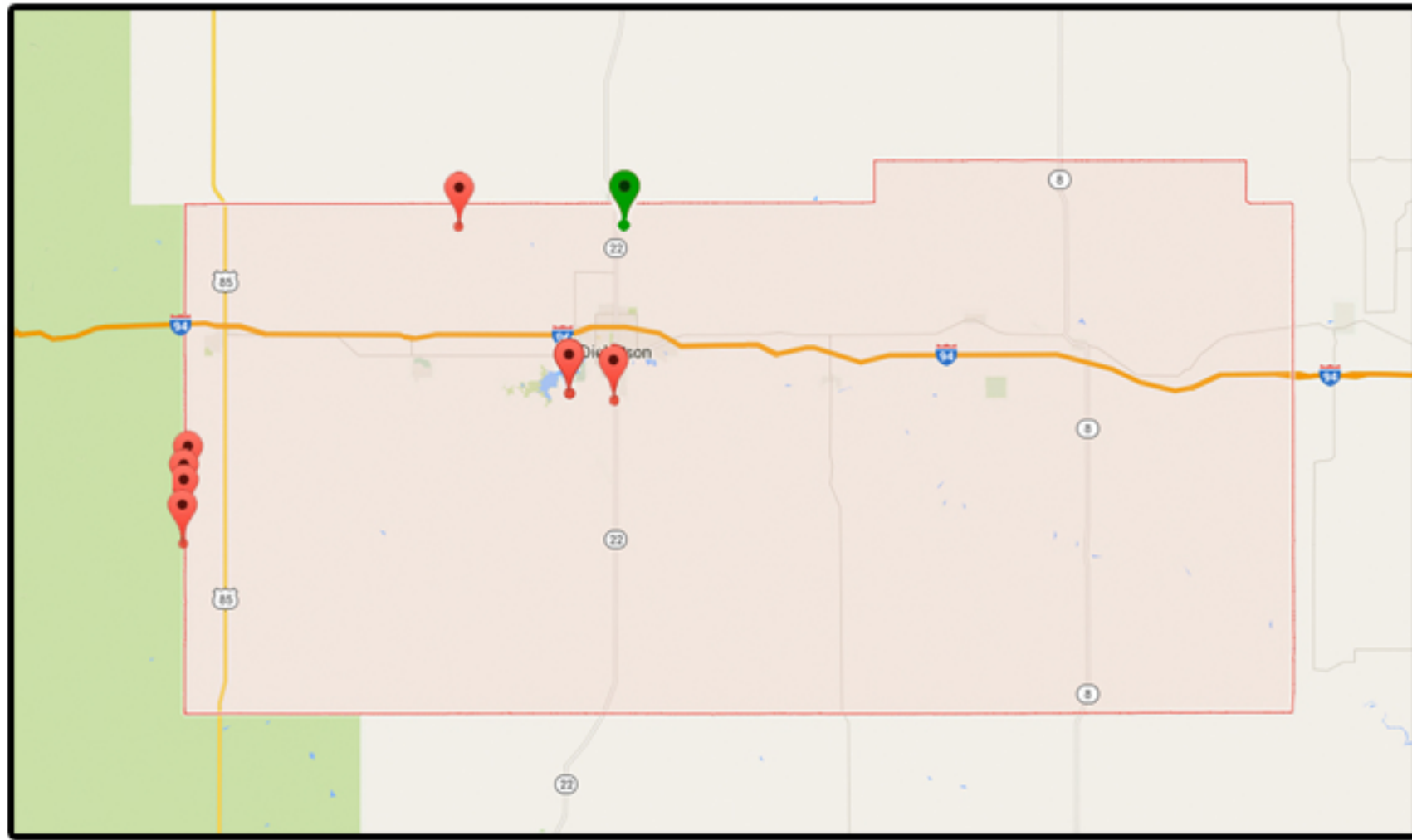
Dylan Brown, Isaac Fraynd & Ryder Quigley



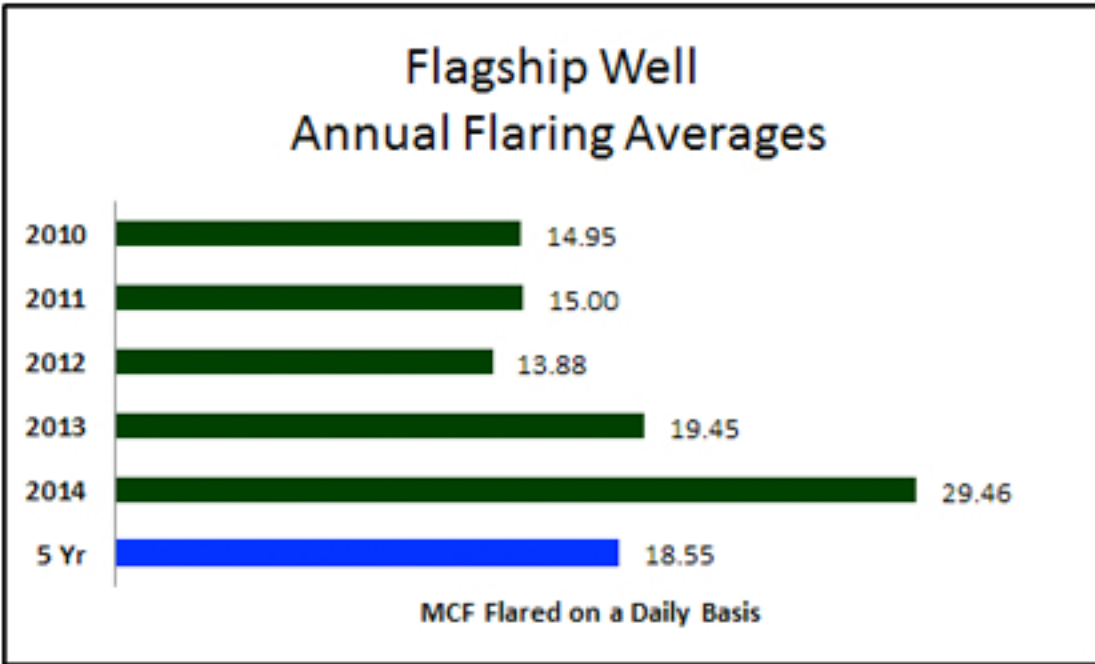
Stark County, ND



- o Located in the Southwest part of North Dakota
- o Approximately 25,000 people (as of 2010)
- o County seat is Dickinson
- o Since oil boom, Dickinson is one of the fastest growing cities in the US
- o FedEx has existing cargo service between Dickinson and Grand Forks (major cities)



- o Stark county's proximity to well sites makes it attractive (low transport costs)
- o Average distance of about 15 miles from site to distribution center
- o 7 sites currently in Stark county, will use 3 more from surrounding areas



Site Equipment



Compression

- 1 CNG compressor required for every site (10 total)
- Compressor Costs: \$95M per unit

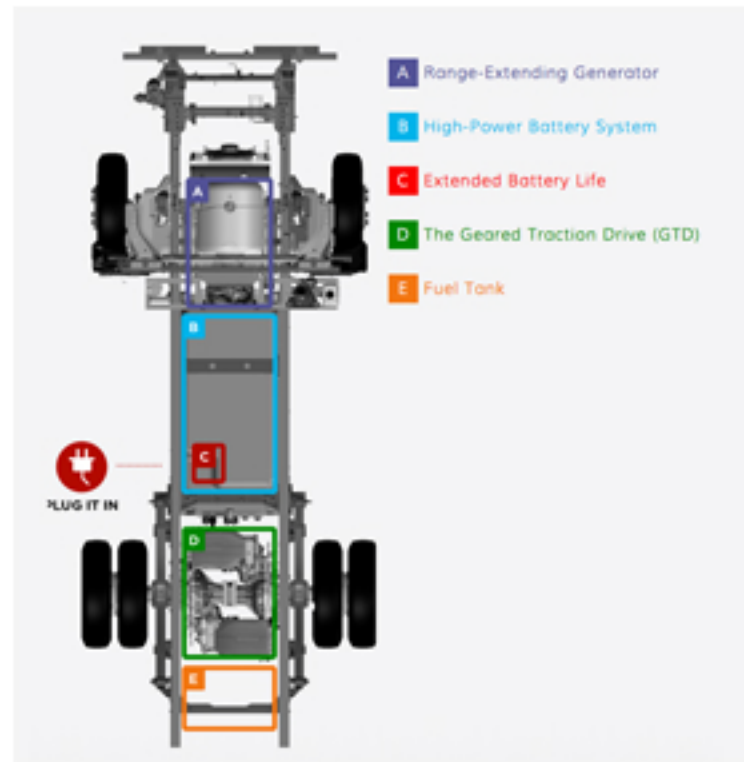
Storage

- ~11,000 gallon storage tanks required
- 25 tanks required (1 per site, 1 per truck, 10 at the distribution center)
- Storage Tank Costs: \$5M per unit

Transport

- 1 delivery truck is required for every 2 sites
- Daily distance traveled: 60 miles per truck
- Trucks Costs: \$80M per unit

Distribution Center



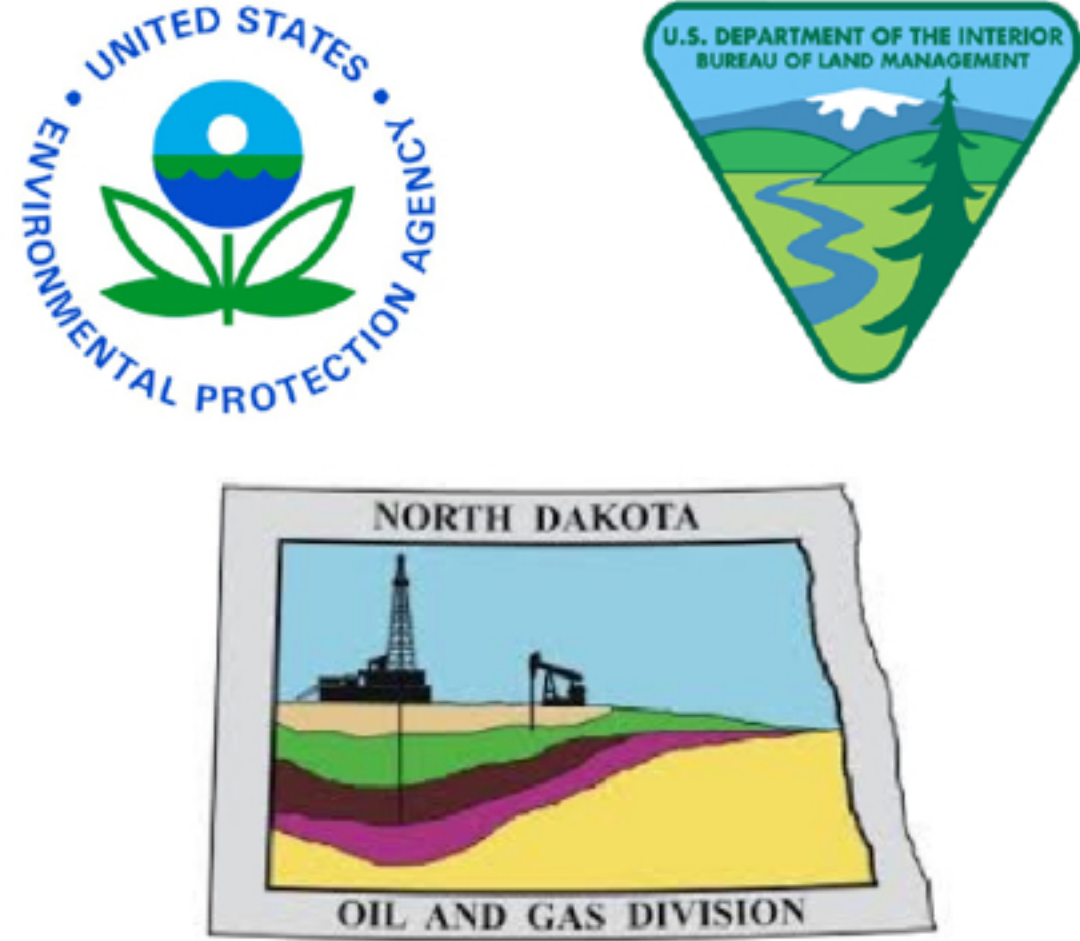
- o Utilization of Wrightspeed Electric Power trains provides means for fleet to utilize flare gas as fuel

- o Project consists of establishing a FedEx distribution center in proximity to the respective well sites
- o Property will be acquired and remodeled to satisfy tenant (FedEx) needs
 - 23,750 sq. ft facility
 - Space for 35 trucks
 - Necessary office space
 - Real Estate Investment: ~\$594M

- o Property will be leased on a long-term contract
- o FedEx will benefit from daily fuel delivery
- o Fuel costs will be incorporated at a premium to monthly property rent

Regulatory Environment

- o Policies to combat negative impacts from flaring already exist on a federal and state level
- o EPA passed control measures to be phased in for Reduced Emission Completions (RECs) in Q1 2015.
- o Bureau of Land Management requires a 12.5% royalty for flaring on federal land
- o Despite restrictions, North Dakota allows for gas flaring "for up to a year without payment of royalties to private owners of the mineral rights or taxes to the state."



- o North Dakota Industrial Commission Goals
 - 1) Cut flaring to 5-10% of production volume by Q4 2020 from current ~22%
 - 2) Improve communication between producers and midstream companies
 - 3) Require detailed gas capture plans in order to obtain drilling permits
- o Regulation Noncompliance Violations
 - 1) Well production volume restrictions
 - 200 barrels a day if below current threshold but above 60% captured
 - 100 barrels a day if below 60% captured
- o Harsh Penalties and Fines
 - 1) Initial penalties begin at \$1,000/month
 - 2) Failure to adhere can increase penalties up to \$12,500/well/day

Impacts

Environmental & Health

- o Flaring reduces greenhouse gasses 25 times more effectively than venting
- o By products, such as nitrogen, carbon, and sulphur oxides, particulate matter, and hydrogen sulfides, are still released when natural gas is flared
- o Excess heat from flaring is known to kill surrounding vegetation
- o Atmospheric contaminants harm animal and human life
- o It also contributes to acid rain, which damage crop yields, depletes soil nutrients and erodes infrastructure
- o Direct human health effects: cancer, neurological & reproductive developmental effects, deformities, lung & skin damage, blood and blood forming cell damage - anemia, pancytopenia or leukemia



Economic

- o ~\$2.02MM of investment required to fund project
- o Financing will take place in the private markets
- o 15-year investment horizon
- o Projected Break Even: 7 years
- o Projected IRR: ~10%
- o Positive Externalities via means of:
 - Mitigation of health issues
 - Reduced dependency on gasoline for transport
 - Urbanization of surrounding community
 - Long-term job creation
- o Increasing regulation may deliver benefits via tax credits