

A large, stylized green letter 'V' graphic that serves as a background element for the slide. It is composed of two thick, rounded strokes that meet at a sharp point at the bottom.

Verbio

Biofuel and Technology

VNA Sumner, LLC

SUMMARY

- ❑ VERBIO is Europe's only industrial-scale producer of biodiesel, bioethanol and renewable natural gas (biomethane) vehicle fuels.
- ❑ VERBIO is Europe's largest renewable natural gas (RNG) producer – sold as **verbiogas** it currently serves 20% of the German market for CNG vehicle fuel. The remaining 80% of the CNG market is served almost exclusively by fossil gas imports.
- ❑ The renewable natural gas industry was created as part of the federal Renewable Fuel Standard which created the ethanol and biodiesel industries.

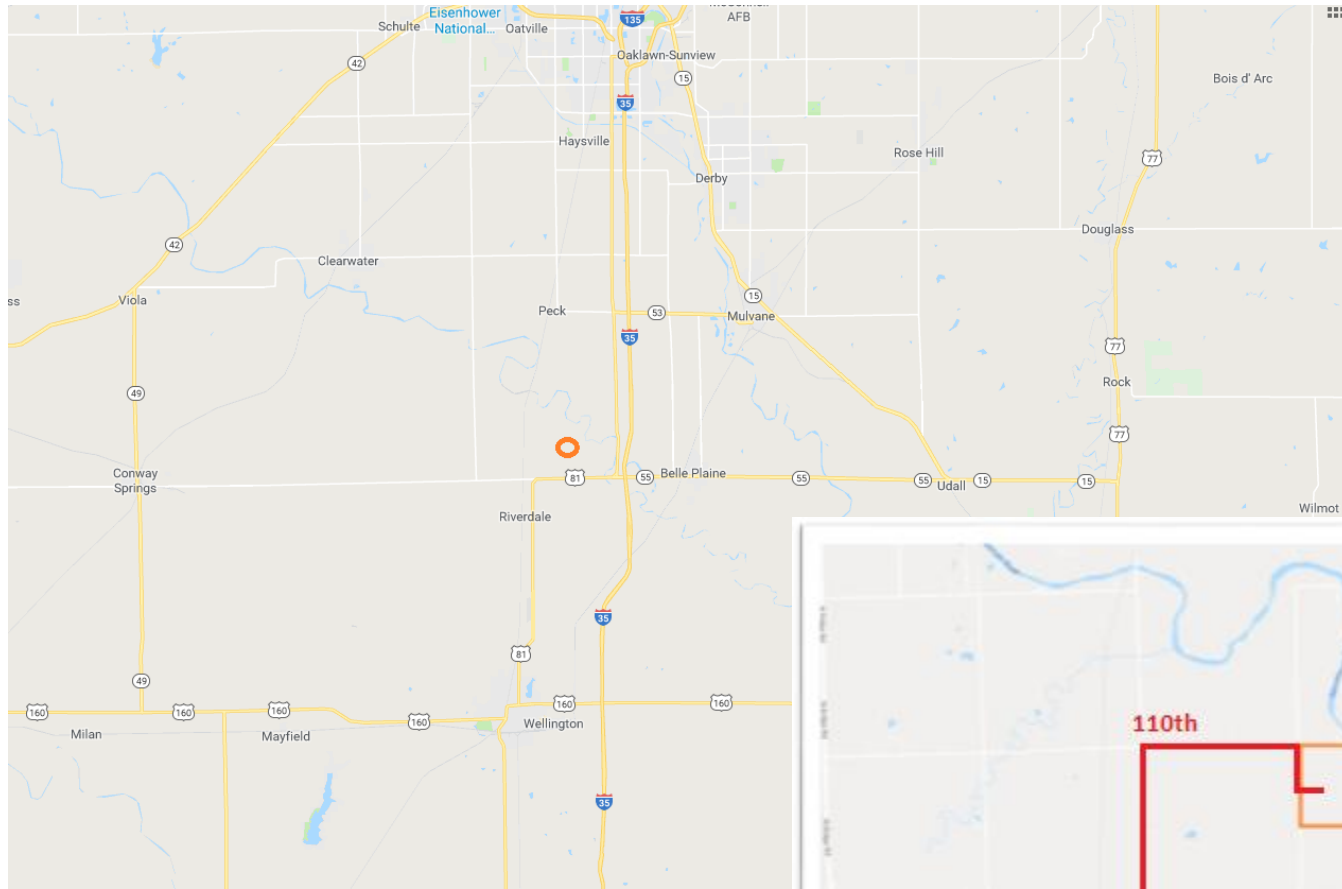
Feedstock

- Initial requirements: ~75,000 metric tons of straw annually
- Target ramp-up capacity to ~150,000 metric tons annually
- ~1.2 tons of humus returned to land per 1 ton of straw
- Preference for farmers to provide storage for straw and humus at fields

Site Selection

- 100+ acre minimum size
- Proximity to a natural gas pipeline and highway infrastructure
- 100+ million annual gallons of freshwater for process input
- Feedstock requirements largely achieved within a 50 mile radius
- Strong local, regional, and statewide support

Plant Location & Route



- 1 Farmers generate a new revenue stream – sale of wheat straw, corn stover and cover crops (\$3.5+ million/year during Phase 1)
- 2 Humus returned to the land – nutrients and water retention
- 3 Each facility requires a final investment of \$100+ million and creates 75+ direct full time jobs and 150+ indirect jobs in the supply and value chain



Process Overview

Straw



Anaerobic
digestion



verbiogas



CNG/LNG
vehicle fuel



Humus
soil
amendment



Renewable Natural Gas

Verbio
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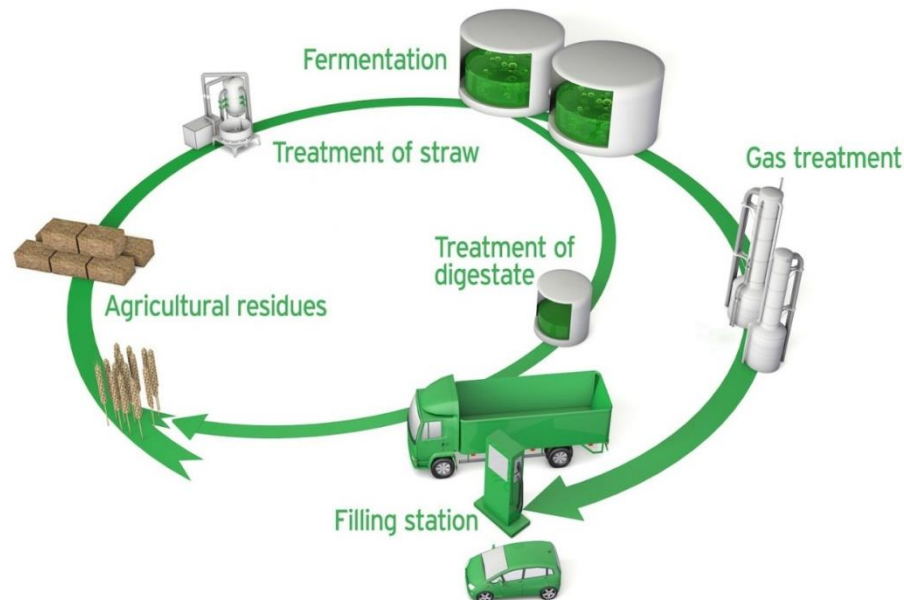
Existing VERBIO Facilities



Existing VERBIO Facilities



- Oct 2018** Finalize permits and authorizations
- Nov 2018** Begin site excavation and foundation improvements
- Mar 2019** Begin tank construction
- Jun 2019** Begin building construction
- Oct 2019** Complete tank construction
- Dec 2019** Complete electrical, piping, and equipment installation
- Jan 2020** Begin Phase 1 operations
- Jan 2021** Begin expansion of facility



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QUESTIONS?

FREQUENTLY ASKED QUESTIONS – VNA SUMNER, LLC

What is VNA SUMNER, LLC?

This is the operating entity for the industrial project planned for the unofficial address of 1080 N. Meridian Road, Peck KS 67120, on a 160-acre site currently used as farmland. The entity is expected to eventually support 75+ full time direct jobs and another 150+ indirect jobs in the supply and value chain. The vast majority of jobs are “blue-collar” and expected to be filled by Sumner County residents. We are projecting an average wage of \$28+/hour and a median wage of \$32+/hour in our first operating year.

Who is developing and financing this project?

VNA Corporation (Grand Rapids, MI) is developing this project using proprietary technology provided by VERBIO Vereinigte BioEnergie AG, a leading producer of biofuels in Germany. VERBIO is providing all project financing for Phase 1 of construction. No public financing, federal grants or bank loans have been sought. Phase 1 is the 2018-2019 construction project followed by operations in 2020. In 2021 and beyond we hope to gradually expand the facility and production based on local availability of feedstock supply.

Why did you choose this location?

The 160 acre parcel we have selected for this project is of sufficient size and meets all of our infrastructure requirements. There is a large capacity, low pressure natural gas transmission pipeline running through the site to support gas injection. There is a 69 kV electric substation located less than 2 miles away to support plant power demand. There is nearby access to major highways and county roads to support transportation logistics. There is more than sufficient feedstock availability in Sumner County and adjacent Harper, Kingman, Grant, and Kay Counties. And finally, sufficient water is available through a combination of groundwater and surface water.

What are your process inputs?

We only use baled crop residues and water as our process inputs. Initially during Phase 1, these crop residues will be 75,000+ tons per year of wheat straw and corn stover, but over time we will be interested in other cellulosic material such as tall grasses and immature cover crops. We will never use manure or food waste in our process.

What are your process outputs?

We produce renewable natural gas (RNG) and humus. RNG will be cleaned to pipeline natural gas standards and injected into a nearby natural gas transmission pipeline for eventual use as CNG/LNG vehicle fuel. Humus is a lignin- and nutrient-rich soil amendment similar to peat moss or compost which will be principally returned to feedstock suppliers. The balance will be sold commercially, potentially to feedlots for blending with livestock manure.

FREQUENTLY ASKED QUESTIONS – VNA SUMNER, LLC

How is your business model profitable given the low price of natural gas?

While the physical product we produce is indistinguishable from fossil natural gas once in a pipeline, we will also generate RINs, which are the currency of the federal Renewable Fuel Standard (RFS). The RFS is the same legislation, passed by Congress in 2005 and amended in 2007, that created the biodiesel and ethanol industries. The variety of RINs we produce (D3) have a market value nearly 10 times greater than the gas commodity. Some states such as California also have their own programs to further incentivize the production of renewable fuels, and we also plan to participate in these types of programs.

Will the site be noisy?

Noise generating equipment such as compressors, mixers, and straw grinding systems will be contained within buildings. There will be noise associated with heavy truck traffic which is unavoidable.

What will be the impact on air quality?

We will have a natural gas fired boiler on site to provide heat and a thermal oxidizer to clean the CO₂ we emit. We will also have a safety flare on site to burn renewable natural gas in the event of an emergency shutoff to the pipeline or malfunction. We are not burning straw!

Will there be noxious odors?

We do not use any odorous material feedstock in our process. We only use baled crop residues such as wheat straw and corn stover – the majority of which will be stored off-site and must remain relatively free from rot and degradation to support our process. Our byproduct – humus – has a smell similar in character to peat moss or compost and will be trucked to and stored on farmland for land application.

What is the traffic pattern?

Trucks will come to the site entering off Highway 81, traveling 2 miles north via N. West Rd., then 1 mile east via E. 110th Ave. N., and finally south ¼ mile along N. Meridian Rd to the plant entrance. Trucks will only haul feedstock and humus between the hours of 6 AM and 10 PM except during the harvest season. During Phase 1 there will be 15-25 trucks per day during most of the year and up to 50 per day during the brief wheat straw harvest season. We are conducting a traffic impact study under the direction of KDOT to assess required road improvements for access off Highway 81.

FREQUENTLY ASKED QUESTIONS – VNA SUMNER, LLC

What are your water requirements?

Water supply is critical to our operation and we will use an average of 100 gallons per minute (50 million gallons per year) during Phase 1. We are currently conducting hydrogeologic exploration and test drilling on the site and will use the results to apply for a new water right through the Kansas Division of Water Resources (KS-DWR). Our preference would be to take all water supply as groundwater/well-water. If this supply is insufficient, we will also evaluate capturing water via surface water from the Ninnescah River as a diversified supply strategy (we would take less than 1 of every 500 gallons of river flow). If KS-DWR ultimately does not approve our application for a new water right, or does not approve the volumes we require, we will not build a plant at this location.

Do you create wastewater?

Our process does not create any wastewater. The water we use is ultimately returned to farmland as moisture content in the humus, after being recycled through our process to the maximum extent possible. In the rare event of a spill or leak there are no public health concerns.

How do you protect against bale fires at the site?

Rapid detection of fires is critical. We will install a system to be monitored 24/7/365 by site personnel. We will install a water supply system in the straw storage area which can immediately begin extinguishing any detected fires. In the event of fire, we will immediately inform Mulvane Emergency Services and plan to engage with them on training exercises to optimize their response.

Will my power rates go up?

We plan to purchase power from Sumner-Cowley Electric Cooperative (SUCOCOOP), and we expect to become their biggest customer. As a result, they will have improved purchasing power and should be able to better control costs and pass along some incremental savings to their existing and future customers. We will also look at collaborating with SUCOCOOP on the installation of solar arrays at our site which would generate low cost renewable power. We are not producing or selling power from the gas we produce.

Will I still be able to see the stars at night?

We hope so! Perimeter lighting will only be designed to support minimum security and operational requirements. Consideration will be given to the placement and positioning of lighting to minimize the impact on our neighbors to the north. We will also farm the northern-most portion of the parcel to create an aesthetic buffer between our plant and neighbors.