Response to UW Peer Review of Project Phoenix Feasibility Study

The Kewaunee County Land and Water Conservation Department was able to review the peer review conducted by the University of Wisconsin (UW) of the feasibility study conducted by Dynamic Concepts for Kewaunee County (Project Phoenix Report). Attached for your consideration and review are the comments addressing the statements and recommendations presented by the reviewers.

Executive Summary
Kewaunee County disagrees with the main contention of the reviewers related to estimation of excreted animal manure and availability of off-farm feedstocks. Kewaunee County supports the estimation of manure production and agrees with the numbers provided by Dynamic Concepts. In addition, because of the proximity of Kewaunee County to a variety of food processing facilities, we believe the availability of substrates for inclusion into the process is attainable.

The review highlights six recommendations regarding the economic feasibility of utilizing animal manure as part of a countywide gasification project.

Kewaunee County disagrees with the peer review that manure volume and substrate estimates are reasonable.

Kewaunee County agrees with the peer review that additional information would need to be collected on manure and feedstock estimates to address any concerns posed by investing entities.

Kewaunee County disagrees with the peer review regarding nutrient modeling related to phosphorous. Calculations of phosphorous intake failed to include all available acres from crop production which resulted in 40,000 acres not being factored in the calculations. In addition, corn silage and corn grain were not separated in the calculations. This combination of corn silage and grain reduced the estimated phosphorous uptake. These differences resulted in a significant difference in the uptake calculation.

Kewaunee County does not disagree that exportation of nutrients may have an environmental benefit and that economic subsidization for water quality improvement could make the project more attractive. Still, this was not the main focus of the feasibility study.

Kewaunee County challenges the assumption that irrigation of agricultural land would be difficult within Kewaunee County. Current technologies can address many of these concerns and may not require advanced manure processing.

Kewaunee supports the peer review opinion that manure processing should be driven by environmental issues and concerns and that renewable gas can be a part of that solution. Nevertheless, Kewaunee County must also weigh additional concerns as identified by the Kewaunee County Board and local governments within the County as well as any legal concerns that address these issues whether the legal concerns federal, state or local.
Task 1 – Peer review the feasibility study
The manure production estimates calculated by the UW are in contradiction with models performed by Department of Natural Resources (DNR) staff. The estimates are significantly less and do not appear to be supported by data used by state and federal agencies (DNR and NRCS).

The peer review posits that the DNR may not allow the irrigation of “tea water” which would result in additional hauling costs. The County finds this point distracting from the analysis. DNR regulates this product by its nutrient strength. In addition, new technologies allow farmers to apply this product based on hydrological factors. Irrigation is an option that can and should be explored.

The County disagrees that the estimation of 20% off-farm feedstock is too high. We believe that based on existing projects that the 20% estimation is attainable. Sub points made by the peer review regarding source removal from wastewater facilities or landfills and that an initial study is typically more conservative are not pertinent to this analysis and should not have been included.

The peer review opinion that an irrigation approach may not be suitable due to sensitive soils disregards the fact that digestion and solid separation remove 98% of the solids and 90-95% of the phosphorous prior to application. In addition, current technologies allow the application to be performed in a fairly precise manner.

While we agree that phosphorous balance could be more robust with additional data, we believe current data demonstrates that phosphorous levels have been declining. In addition, peer review calculations fail to include important factors in uptake estimations.

Task 2 – Gas production from the digesters
We disagree with peer review calculations as they are based on estimates and assumptions that the County challenged in Task 1. Because the initial assumptions are incorrect in our estimation, the production estimates that result from those assumptions are believed to be incorrect as well.

Task 3 – Evaluation of environmentally sensitive lands
We are unsure as to the purpose of this section. If the section is to question the feasibility of irrigation, the County contends that the water being applied through the irrigation process has less than 2% solids, 90-95% of the phosphorous removed and nearly all of the pathogens removed. Therefore, from an environmental perspective, this method is more advantageous to current manure application methods. From a regulatory perspective, the DNR and local governments can address those concerns.

Task 4 – Sensitivity analysis of the major project economic assumptions
The County disagrees with the peer review assumptions involving manure production and substrate availability. These two items are the foundation from which the economic model is based. All parties agree that substrate inclusion is essential to economic viability. The peer review appears to accept the economic modeling outlined by Dynamic with the exception of the manure and substrate assumptions.

Conclusion
While we believe that the UW attempted to provide a clear and definitive analysis of the feasibility study performed by Dynamic, the utilization of inaccurate manure production estimates, availability of substrate and phosphorous uptake calculations resulted in recommendations that cannot be supported. We believe that additional research and confirmation of these assumptions would lead the reviewers to a similar conclusion as presented in the feasibility study. In addition, it may be of benefit for the two parties to discuss their assumptions and recommendations to better identify what data has adequate numerical support and which assumptions, if any, require modification.