

Status Report: Opportunities for sustainability and green design elements at Farmland –June 2012

The redevelopment of the former Farmland Industries site represents an opportunity for the City to simultaneously remediate a contaminated industrial site, while creating economic development opportunities and primary jobs. The master planning process currently includes a focus on renewable energy opportunities for on-site green power, and best practices for stormwater management.

The redevelopment of Farmland into a “green” business park also provides significant opportunity for the City to expand our vision to include pilot projects of various sustainable building and design elements. By piloting these projects out at the Farmland site, the City will have the opportunity to study sustainable building practices for incorporation into future City projects. Also, many of these elements will provide LEED credits for interested business park occupants, and could support their green-building plans as well.

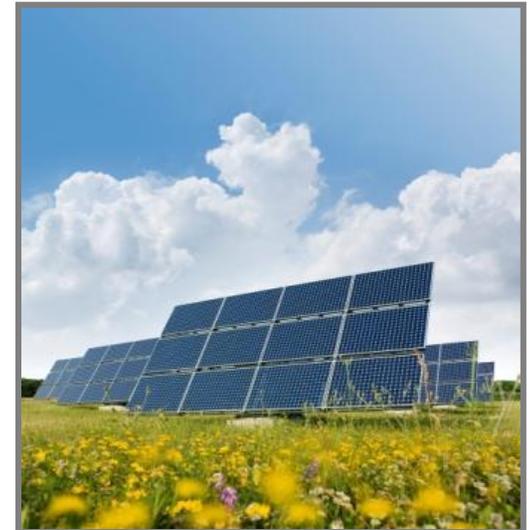
Below is an overview of the sustainability projects currently being researched for the former Farmland site, and a list of potential pilot projects to consider as well.

Projects Currently in Research or Design Stage:

1. Renewable energy for on-site green power:

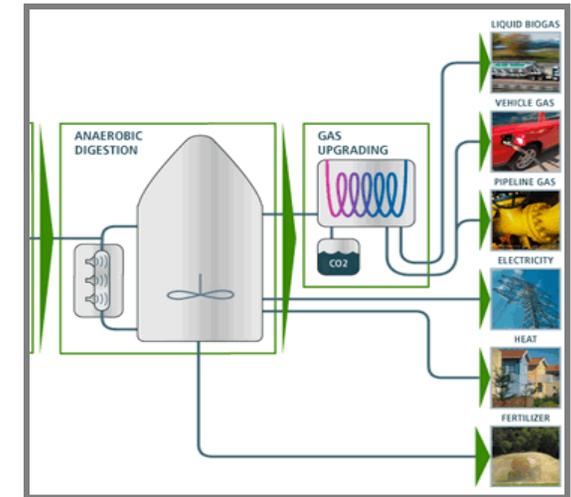
Solar photovoltaic panels for electricity generation on site.

- **Scale:** Depends upon future tenants and power needs. Options include sizing system to current load of stormwater and mitigation pumps, or building a larger system and entering a Purchase Power Agreement with Westar Energy (currently paying 2.9cents/kWh).
- Current annual load used by mitigation/stormwater pumps: 264,000 kWh (\$32,920)
Utilities’ pump station #25: 40,000 kWh (\$5,000)
- **Location Options:**
 - SE of water tank (1.7 MW array) \$10.5 million
 - Over capped ponds (1.1 MW array and 1.5 MW array options) \$7-9.5 million
- **Lead Contact:** CDM-Smith Mike Beezhold & Cambridge Office
- **Next Steps:** Eileen will continue to research PPA options, and potential for selling commercial tax credits. CDM-Smith will propose a system sized to city-owned loads (irrigation pumps, pump station #25).



Biogas production at wastewater treatment plant.

- **Scale:** Two options: (1) Utilize biogas from existing biosolids at plant (generates 200-250 kW), or (2) increase biogas by adding food waste to biosolids (adds approximately 20-30kW).
- **Source of biomass:** Identified industrial partners (i.e. Del Monte) or institutional food service providers (i.e. KU Dining Services or County Correctional Facility or Haskell University).
- **Considerations:** The building for the microturbines exist, but would need to purchase generators and gas clean-up equipment. Adding food waste adds significant logistical challenges with transport and processing and additional receiving facilities.
- **Capital Cost Estimates:** Processing only biosolids (\$2 mil). Biosolids + food waste (\$5.5 mil).
- **Lead Contact:** CDM-Smith Scott Carr
- **Next Steps:** B&W and CDM-Smith will research feasibility of industry/WWTP partnership, and calculate Return on Investment for two scenarios.



Algae to biofuels research project on mitigation ponds.

- **Description:** Would utilize nitrogen-rich water in mitigation ponds to grow algae for eventual processing into biofuels. Nearby phosphorous (ICL) also an asset.
- **Scale:** Would be a collaboration b/t City and KU for scaling up of research at WWTP.
- **Lead Contact:** KU Engineering, Dr. Belinda Sturm
- **Next Steps:** Eileen & Dr. Sturm will continue to assess feasibility/funding.



Biomass plant for production of steam heat/electricity or biomass pellets.

- **Scale:** Depends upon future tenants and uses. Options include a biomass steam plant or biomass pelletizing manufacturer.
- **Lead Contact:** Gregg Tomberlin, NREL
- **Next Steps:** NREL will conduct a feasibility analysis of biomass power and provide final written report to city by November (although we can review drafts sooner).



**Note: It is against state law for an entity to provide power in another utility's service territory. The City cannot generate electricity and provide it to business park tenants. However, the option exists to enter into a Purchase Power Agreement with Westar Energy. Further research on this topic remains a key priority.*

2. Complete Streets design elements :

- All streets through business park will be designed with complete streets elements such as bike lanes and sidewalks.
- The main E-W road will also include a 10' recreational path both for commuting and recreational use.
- The N-S road (extension of O'Connell) will include a divided street and landscaped median.



3. Stormwater management best practices:

- Property will include regional detention basin to manage stormwater from site.
- Grass filter strips, sediment forebays, and bioretention (i.e. rain gardens) and other stormwater sustainability best practices will be considered.
- Greenbelt that runs N-S through site will include include vegetation and terracing to slow water flow and improve water quality.
- Water elements and fountains are under consideration for K-10 frontage.



Additional Sustainability Projects for Consideration:

Many of these elements will provide LEED credits for interested business park occupants, and could support their green-building plans.

Transportation:

- Provide a Park-n-Ride lot on site for carpooling commuters.
- Promote alternative fueled vehicles in these lots by providing preferred parking for low emissions and fuel efficient vehicles.
- Promote electric vehicles by providing EV charging stations in the lot.
- Promote bicycle commuting by providing covered bike lockers.
- Provide a T-stop with a covered shelter to encourage bus ridership.



Site Design and Management:

- Protect habitat by leaving undeveloped areas as habitat for wildlife. Establish corridors for wildlife to move through site, and encourage restoration of native prairie habitat.
- Minimize water usage in landscaping design by utilizing xeriscape or other low-water usage techniques.
- Use reflective paving materials to reduce the heat island effect.
- Use open grid pavement in parking lots (aka porous pavers) to allow for infiltration of stormwater.
- Use permeable asphalt on bike paths or commuter lot to reduce stormwater runoff.

- Reduce light pollution by reducing the lighting power density of streetlights, and ensure that all light is cast downward toward street surfaces. Utilize small-scale renewable energy for streetlights (i.e. solar PV).



Waste Reduction and Recycling:

- Manage construction and demotion (C&D) waste by builders. Require a C&D Waste Management Plan that identifies:
 - The construction and demolition waste materials that will likely be generated on a building site
 - The procedures that will be used to collect and sort the waste materials
 - Who will haul away the waste material
 - The location to which the materials will be hauled
 - How the materials will be reused or recycled
- Build an on-site recycling aggregation center to encourage business park tenants to recycle.

Miscellaneous:

- Engage community members and recreation path users in sharing the story of the Farmland cleanup and redevelopment. Include signage around the business park educating passersby on the stormwater practices, renewable energy usage, etc.
- Consider providing incentives for businesses locating within the park to be LEED-certified.
- Partner with KU to offer opportunities for research and incubator businesses.
- Build a spec building that is built to LEED standards, and showcases best practices in green buildings.
- Consider small-scale renewable energy:
 - Wind turbine to power front fountain and signage lighting.
 - Solar PV streetlights for streets throughout complex.

