

## Energy Efficiency, Generation & Energy-related Livestock Partnerships

Increasing energy efficiency and generating low greenhouse gas (GHG) emitting energy creates opportunities in agricultural and rural residential sectors of the economy. Direct (on-farm or residential fuel combustion) and indirect (off-premises power generation) GHG emissions reductions can be achieved by decreasing the consumption of fossil and other fuels with high GHG emission levels. Decreasing the consumption of high GHG emitting fuels can be achieved by improving fuel use efficiency or substitution low GHG emitting fuels, also referred to as renewable energy sources of fuel. The type and amount of fuel used to power agricultural operations varies widely by farm enterprise type, size, age, and location. The amount of rural housing energy efficiency can vary depending on socio-economic and other factors. All these efforts are supported by current USDA programs administered by different agencies.

Once energy use is improved to its most efficient level, renewable energy generation could then potentially offset the use of high GHG emitting energy sources. Renewable energy generation produces synergistic benefits of reducing harmful GHG emissions indirectly and producing energy for on-farm or off-farm use. For the specific concern of reducing methane emissions from anaerobic lagoons or tanks typically used in dairy cattle, egg layer, or swine operations, liquid or slurry waste utilization systems that may include a combination of solid separation, lagoon covers, digesters, bedding recovery and or composting have demonstrated methane reduction and conversion of manure to energy benefits. Substitution of dry poultry litter and biomass fuels for fossil fuels may also have GHG emission reduction potential over the complete life cycle analysis of energy generation and use. Other renewable energy generation opportunities include small-scale solar, wind and micro-hydro installations on agricultural lands, farmsteads and rural communities.

### **National USDA Building Blocks for Climate Smart Agriculture and Forestry Goals:**

- Promote renewable energy technologies and improve energy efficiency through EECLP, REAP, NOFEI (EQIP), and RHS programs.
- Install 500 anaerobic digesters; install impermeable covers on 10% of dairy cattle and swine operations

### **Core Issues for workshop:**

- What barriers exist that prevent energy efficiency practices and renewable energy implementation such as digesters and impermeable covers from being installed? Are there challenges to efficiently implementing quality control and reporting of private and public benefits? If so, what are they?
- What opportunities exist to strengthen USDA's program consistency and effective delivery through technical and financial assistance? How is interagency cooperation succeeding or not working well? Are there institutional barriers and what are they?

- What is working well in existing private/public partnerships and can these successes be extended to other projects? What is not working well and what are the potential solutions to overcome them?
- Are there other technologies that can reduce GHG emissions on livestock operations? What sort of partnerships would accelerate adoption of these technologies?