24 September 2012

Department of Agriculture
Rural Utilities Service
7 CFR Parts 1710, 1717, 1721, 1724, and 1730
RIN 0572-AC19
Energy Efficiency and Conservation Loan Program

Comments on the Proposed Rules for the Energy Efficiency and Conservation Loan Program, 77 Fed. Reg. 43723 (July 26, 2012).

The Alliance for Industrial Efficiency ("The Alliance") appreciates the opportunity to comment on the Rural Utilities Service's proposed Energy Efficiency and Conservation Loan Program. The Alliance for Industrial Efficiency is a diverse coalition that includes representatives from the business, environmental, labor and contractor communities. We are committed to enhancing manufacturing competitiveness and reducing emissions through industrial energy efficiency, particularly in the form of clean and efficient combined heat and power (CHP) and waste heat recovery (WHR). We believe that the Energy Efficiency and Conservation Loan Program can provide a helpful financing mechanism to encourage greater deployment of CHP and WHR. We write to urge the Department of Agriculture to make the application of the program to these technologies explicit.

The RUS is correct to recognize the many economic and environmental benefits associated with energy efficiency. The Alliance is particularly pleased the new program will be available to both utilities and third parties,[1] thereby increasing the opportunities for investments in energy efficiency. This program can provide a valuable incentive to third-party developers, who often finance large-scale energy efficiency projects, which can cost millions of dollars.

While we are gratified to see USDA's recognition of the benefits of energy efficiency, we believe the rule can be strengthened by explicitly acknowledging that these benefits extend to CHP and WHR projects. In particular, we encourage the RUS to explicitly highlight CHP and WHR projects as eligible within the proposed loan program by adding these technologies to the list of eligible activities at 7 CFR §1710.406. The Rural Electrification Act explicitly "authorize[s] and

[1] Dep't of Agriculture, Rural Utilities Service, 77 Fed. Reg. 43723, 43726, July 26, 2012, Notice of Proposed Rulemaking: "Energy Efficiency and Conservation Loan Program" ("Eligible EE Programs may be comprised of a variety of activities, performed by either the utility or third parties.").

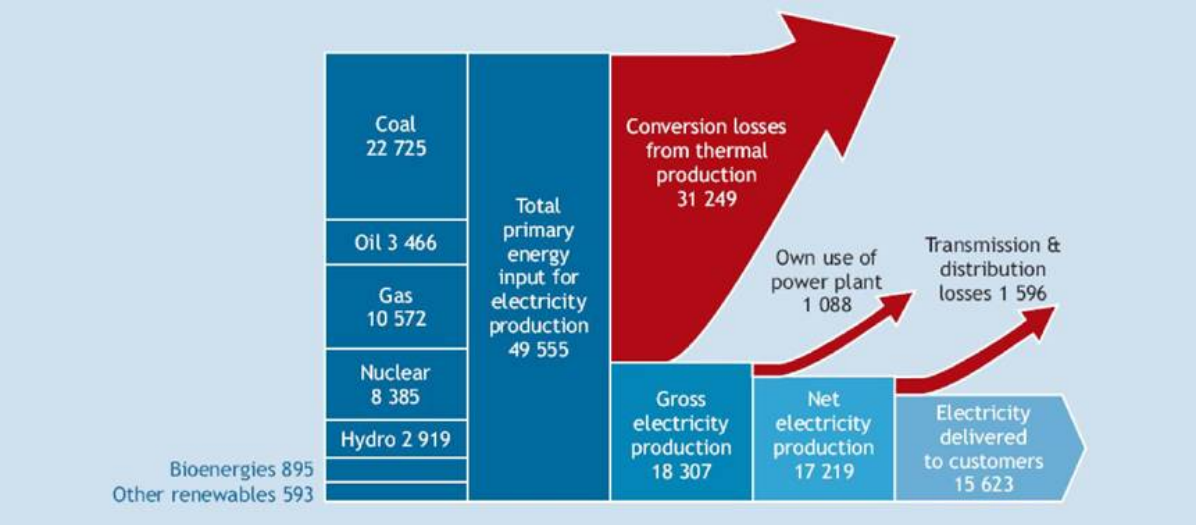
empower[s]" the Secretary of Agriculture to "make loans … for the purpose of … energy efficiency and conservation programs, and … off-grid renewable energy systems."[2] Distributed generation technologies, like CHP and WHR, clearly fall within this authority. The proposed rule enumerates five goals that could be funded under the emerging program:

> (1) Increasing energy efficiency at the end user level, (2) modifying electric load such that there is a reduction in overall system demand, (3) effecting a more efficient use of existing electric distribution, transmission and generation facilities, (4) attracting new businesses and create jobs in rural communities by investing in energy efficiency, and (5) encouraging the use of renewable energy fuels for both demand side management and the reduction of conventional fossil fuel use within the service territory."[3]

CHP and WHR projects further each of the stated goals.

Indeed, CHP and WHR address an often-ignored area of energy efficiency – making the production of electricity more efficient. Conventional power production is very inefficient. Indeed, as the following figure illustrates, roughly two-thirds of energy inputs (68 percent) are simply emitted into the air with conventional generation, with a mere 32 percent actually delivered to customers. The unfortunate results are lower competitiveness due to higher energy costs, lost jobs, and increased emissions.

FIGURE 1: Losses from Conventional Power Generation[4] (TWh)

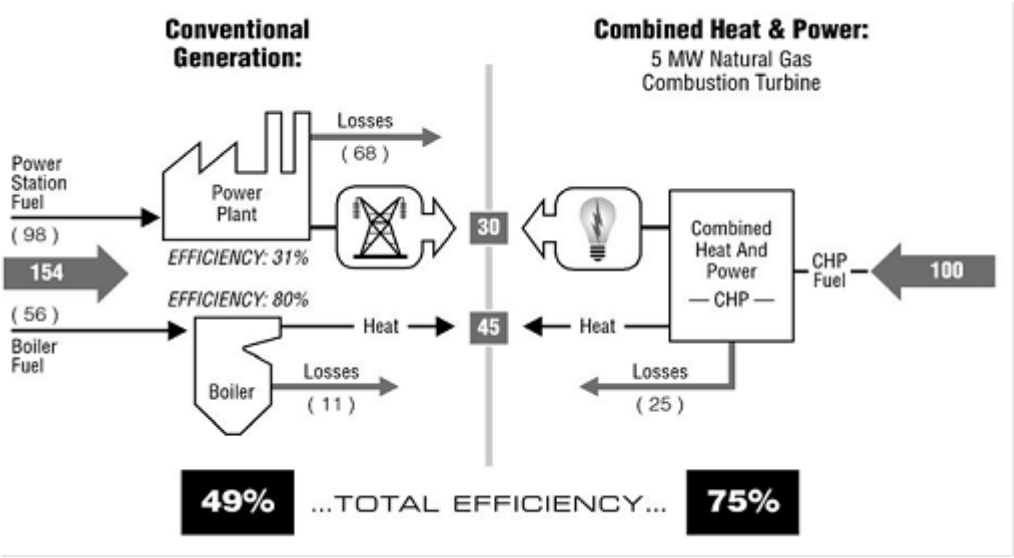


CHP and WHR greatly reduce these losses. Indeed, by capturing and reusing waste heat, a CHP system can convert what would otherwise be wasted energy into additional electricity and thermal energy (heat). This dramatically lowers emissions and increases fuel efficiency (to upwards of 75 percent) – allowing utilities and companies to effectively "get more with less." Moreover, by producing power close to the source, transmission and distribution losses are eliminated. As

[2] 77 Fed. Reg. at 43726.
[3] *Id.*
[4] International Energy Agency, 2008, "Combined Heat and Power: Evaluating the benefits of greater global investment," at 6 (Figure 3) (http://www.iea.org/papers/2008/chp_report.pdf).

Figure 2 illustrates, total fuel use is significantly greater with conventional separate heat and power generation (here 154 units) than it is under combined heat and power (here 100 units).

FIGURE 2: CHP System Efficiency[5]



In a report released just last month, the Department of Energy (DOE) and Environmental Protection Agency (EPA) highlighted these efficiency gains, explaining that "CHP can provide significant energy efficiency and environmental advantages over separate heat and power," and noting that CHP applications operate at 65 to 75 percent efficiency.[6] According to DOE and EPA, CHP and WHR can improve U.S. manufacturing competitiveness, lessen the need for new transmission and distribution infrastructure and enhance power grid security, and enhance energy reliability.[7]

Despite these clear economic and environmental benefits, CHP investments fall short of their potential. While the Oak Ridge National Laboratory projects that CHP could provide 200,000 megawatts of clean electric power, or 20 percent of US electricity demand by 2030,[8] current levels are less than half that amount. By clarifying the application of the Energy Efficiency and Conservation Loan Program to CHP and WHR, the USDA can take an important step toward realizing this full potential.

The Alliance also commends the RUS for measuring energy efficiency in ways that facilitate the widest and greatest contribution, thereby capturing the efficiency benefits from energy other than

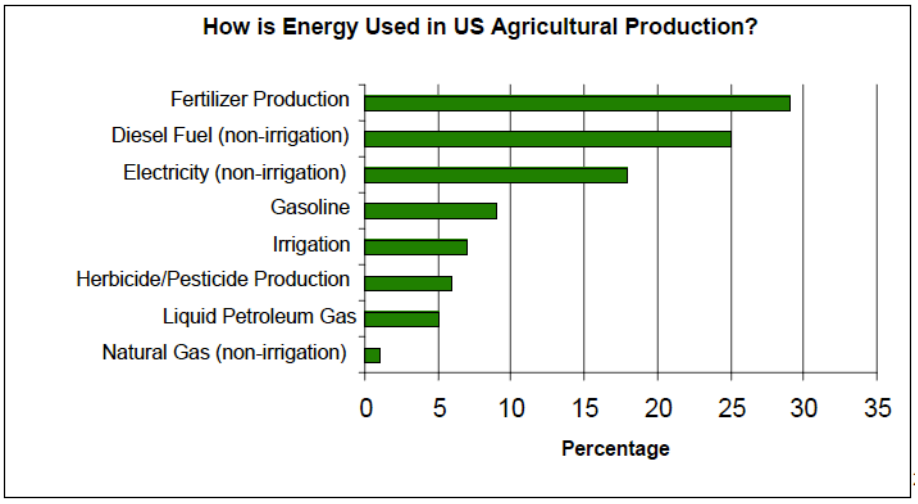
[5] U.S. Env'tl Protection Agency, "Output-Based Environmental Regulations Fact Sheet" (http://www.epa.gov/chp/state-policy/obr_factsheet.html) (Note that this figure is for illustration only. CHP performance relative to separate heat and power depends on numerous site- and project-specific factors).
[6] U.S. Dep't of Energy, U.S. Env'tl Protection Agency, Aug. 2012, "Combined Heat and Power: A Clean Energy Solution," at 7 (http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_clean_energy_solution.pdf).
[7] *Id.* at 5.
[8] Oak Ridge National Laboratory (ORNL), Dec. 1, 2008, "Combined Heat and Power: Effective Energy Solutions for a Sustainable Future," at 4 (http://www1.eere.energy.gov/industry/distributedenergy/pdfs/chp_report_12-08.pdf).

electric power.[9] Notably, CHP systems produce both electric power and thermal energy from the same fuel source and would thus benefit from this treatment.

Last month, (August 30, 2012), President Obama issued an industrial efficiency Executive Order, establishing a national goal of increasing the deployment of CHP and WHR by 50 percent (40 gigawatts) by 2020. Therein, the President directs the Administrative branch to "use existing Federal authorities, programs, and policies to support investment in industrial energy efficiency and CHP."[10] As noted above, USDA clearly has the authority to provide energy efficiency and conservation loans to CHP and WHR projects. The Executive Order further states that the Department of Agriculture "shall coordinate policies [with other agencies] to encourage investment in industrial efficiency in order to reduce costs for industrial users, improve U.S. competitiveness, create jobs, and reduce harmful air pollution."[11] Clarifying the application of the RUS Energy Efficiency and Conservation Loan Program to CHP and WHR projects is consistent with this directive and represents an important first step in responding to the President's Executive Order.

CHP and WHR projects could dramatically lower energy use and associated costs and emissions in agricultural settings. In fact, "[t]he agricultural sector is one of the most energy-intensive sectors of our economy."[12] According to the American Council for an Energy Efficiency Economy, non-irrigation electricity accounts for nearly 20 percent of energy use – and 33 percent of agricultural sector carbon emissions (Figure 3). By doubling the efficiency of this input, America's farmers and food processers can become more competitive and profitable.

FIGURE 3: Energy Use in Agriculture[13]



[9] *See* 77 Fed. Reg. at 43727 ("This proposed rulemaking recognizes that energy may take a variety of forms, not just electricity.").
[10] Barack Obama, The White House, "Executive Order – Accelerating Investment in Industrial Energy Efficiency," Aug. 30, 2012 (http://www.whitehouse.gov/the-press-office/2012/08/30/executive-order-accelerating-investment-industrial-energy-efficiency) (visited Sept. 14, 2012).
[11] *Id.*
[12] Sarah Black & Neal Elliott, ACEEE, Aug. 20, 2009, "Fact Sheet: Energy Efficiency Policies for Agriculture and Rural Development" (http://aceee.org/files/pdf/fact-sheet/ag_policyposition0809.pdf).
[13] *Id.*

The benefits of CHP and WHR in rural settings are already evident. There are currently more than 3,700 CHP and WHR projects nationwide. These projects are located in all fifty states,[14] and include many rural applications. Take, for instance, Crave Brothers Farm, a dairy farm and cheese factory in Waterloo, Wisconsin. In 2009, Crave Brothers installed a 633 kilowatt WHR system, fueled by digester gas. This system has allowed the farm to expand capacity and lower methane emissions. Recovered heat from the system is used to provide heat and hot water to the farm's buildings. Today, the farm sells both electricity and cheese – selling surplus electricity to the Wisconsin Electric Power Company. By providing the utility with electricity generated from a clean, renewable resource, Crave Brothers Farm has not only found a new revenue source, but it is also helping to displace the fossil fuel used to generate electricity by the utility power plants, and therefore displacing harmful greenhouse gas emissions. The WHR system provides annual energy savings of up to $300,000 with a simple payback of less than five years.[15]

Further west, in August 2012, Houweling's Tomatoes is the first U.S. facility to take advantage of CHP technology for greenhouse purposes. The system provides heat and power to a 125-acre facility in Camarillo, CA, where captured carbon is used in the greenhouse to nourish the plants. The system generates 10.6 MW of thermal power and 8.7 MW of electrical power, enough to power 8,800 American homes.[16]

These represent only a handful of potential CHP and WHR applications in rural settings. Opportunities abound at utilities, pulp and paper mills, biorefineries, and food processing facilities. By clarifying that the emerging Energy Efficiency and Conservation Loan Program applies to these technologies, USDA can encourage other facilities to consider their use. As the Center on Wisconsin Strategy elaborates in their comment letter, we note that many potential efficiency projects in rural areas are not implemented because of financing obstacles. We commend their comments to your attention for additional background.

Thank you for your consideration of these comments. We are encouraged by USDA's recognition of the benefits of energy efficiency and are hopeful that the benefits of the new loan program can be expanded by clarifying that the program extends to combined heat and power and waste heat recovery.

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[14] US Dep't of Energy, "Combined Heat and Power Installation Database" (http://www.eea-inc.com/chpdata/); U.S. Dep't of Energy, U.S. Env'tl Protection Agency, Aug. 2012, "Combined Heat and Power: A Clean Energy Solution," at 11 (http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_clean_energy_solution.pdf).

[15] Midwest Clean Energy Application Center, Project Profiles: "Crave Brothers Farm" (http://www.midwestcleanenergy.org/profiles/ProjectProfiles/CraveBrothers.pdf).

[16] Business Wire, Aug. 22, 2012, "GE and Houweling's Tomatoes Unveil the First Greenhouse Combined Heat and Power Project in the US with Carbon Dioxide Fertilization" (http://seekingalpha.com/news-article/3919661-ge-and-houwelings-tomatoes-unveil-the-first-greenhouse-combined-heat-and-power-project-in-the-us-with-carbon-dioxide-fertilization); For additional examples, *see* U.S. Dep't of Energy, "Combined Heat and Power Projects by Market Sector" (http://www1.eere.energy.gov/manufacturing/distributedenergy/projects_sector.html).

Sincerely,

David Gardiner, Executive Director
Alliance for Industrial Efficiency

On behalf of
Alliance to Save Energy (ASE)
Mechanical Contractors Association of America (MCAA)
National Electrical Contractors Association (NECA)
Ohio Environmental Council (OEC)
Recycled Energy Development (RED)
Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)
Sheet Metal, Air, Rail and Transportation Workers (SMART).
Southern Alliance for Clean Energy