



State Energy Conservation Office (SECO)
Municipally Owned Utility (MOU) or Electric Cooperative (Co-op)
SB-924 Energy Efficiency Report
Data Entry Form

MOU or Co-op: Bowie-Cass Electric Cooperative. Inc.
 County: Bowie, Cass, Morris, Titus, Franklin, Red River
 Contact: Mark Boyd
 Contact Title: General Manager
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1) Is your MOU or Co-op hereby reporting on energy efficiency as required by SB-924, PURA Sections 39.9051 and 39.9052?

Yes No

2) Energy Efficiency Goals: Please tell us about the goals that your MOU or Co-op has related to energy efficiency:

Instructions: Provide a brief description of your MOU or Co-op's energy efficiency goals for the previous calendar year. Examples may include information about energy efficiency for MOU or Co-op customers or utility facilities. Supplemental information may be provided at your option on any long-term energy efficiency goals that your MOU or Co-op might have. Please use a separate sheet of paper if you need more space.

Please see attached Energy Efficiency Programs description.

3) Your MOU or Co-op's Energy Efficiency Programs:

Instructions: Input information as applicable; add fields as necessary. For the previous calendar year, please list energy efficiency programs and provide applicable estimated achieved savings – energy and/or demand, or other program performance metric (for example participation.) Add additional lines as needed.

Energy Efficiency Program	Estimated Energy Savings or	Estimated Demand Savings or	Other Program Performance Metric
Save Money, Save Energy Program	See attached info.		
Cooperative Demand Control Program	See Attached info.		
Totals			

4) Program Materials / Additional Information

Instructions: Public information about your energy efficiency programs (brochures, website information, etc.) may be attached and provided with this form.

Attachment:

**Bowie-Cass Electric Cooperative, Inc.
Energy Efficiency Programs
April 1, 2012**

Bowie-Cass Electric Cooperative recognizes the importance of energy efficiency and demand response programs. The Bowie-Cass Energy Efficiency Plan has two segments, the "Save, Money, Save Energy" Program targeting the energy use of our consumer/members, and the "Cooperative Demand Control" Program aimed at the cooperative distribution system and facilities usage.

"Save Money, Save Energy." Program

Bowie-Cass Electric Cooperative has taken a multi-faceted approach to reducing the energy consumption of its membership. Understanding that saving money is a good motivator for most consumers, the "Save Money, Save Energy" Campaign was launched. The campaign uses the sale of energy efficient water heaters, educational materials, and motivational advertising to promote energy efficiency. The message being communicated to the member is, "You have the power to control your energy costs by becoming energy efficient".

Energy Efficiency Education: Through its partnership with Touchstone Energy and Texas Electric Cooperatives, Bowie-Cass Electric Cooperative has produced and distributed to its membership, "Home Energy Savings Guides" and "You Have The Power Cost-Cutting Conservation Guides". These are offered free of charge. These guides are designed to give all the information a member needs to manage energy effectively in their home and business. Everything from heating and cooling systems, to lighting and appliances are covered. These guides include easy day to day tips on saving energy, as well as, detailed information about taking into account energy efficiency when replacing major appliances or doing renovations.

Web Based Energy Resources: The Bowie-Cass web site, www.bcec.com, is a one stop connection to valuable tools, resources and information to help members create a more energy efficiency home and business. The Bowie-Cass web site "Save Money, Save Energy" link takes full advantage of the Touchstone Energy Savers web based applications. From the Bowie-Cass web site, members can learn tips on energy savings, lighting, heating and cooling, and perform an online home energy audit. The web site also provides important information to members concerning Stimulus Package money available for energy efficiency improvements.

Energy Inspections: Bowie-Cass Electric offers at no charge to members, In-Home or In-Business Energy Inspections. Trained Energy Use Advisers examine the building envelope, check major appliances, check heating and cooling systems, check pumps, and other devices to pin-point energy efficiency problems. After these inspections, recommendations are made to help the member "Save Money, Save Energy". 194 Energy Inspections were performed in 2011.

Marathon Water Heater Program: Water heaters have become an important part of the Bowie-Cass energy efficiency program. The Marathon Water Heater offers superior energy efficiency and a lifetime tank warranty. With an Energy Rating of .92 to .95, members who replace their older less efficient heaters will see a significant energy use reduction.

“Cooperative Demand Control” Program

Bowie-Cass has several programs in place that directly lead to demand control or reduction. These programs are on-going and will continue to moderate demand growth annually.

Area Lighting Initiative: Bowie-Cass has implemented an area lighting initiative that directly leads to a reduction in demand. Prior to implementation of the initiative, Bowie-Cass installed 175 watt and 400 watt mercury vapor (MV) area lighting. The initiative calls for the replacement of mercury vapor based area lighting with high-pressure sodium (HPS) based area lighting. The HPS lighting provides the same lumen output of the corresponding MV area lighting, but with lower wattage bulbs, 100 and 250 watts, respectively. Bowie-Cass has 16,850 of the smaller wattage area lights and 1,890 of the larger wattage area lights. The completed initiative will decrease demand by 1,265 kW for the smaller wattage and 285 kW for the larger wattage area lights for a total reduction of 1,550 kW system-wide. The initiative is scheduled on an economic benefit basis.

Transformer Efficiency: Bowie-Cass has always evaluated transformer life-cycle costs when selecting transformer vendors, but has begun requiring transformer manufacturers to provide even more efficient transformers that will lead to the reduction of system demand due to losses. The life-cycle costs evaluation includes the costs of initial purchase, no load losses and load losses. (No load losses are apparent on the system for the entire life of the transformer while it is energized. Load losses result when the transformer loading is increased due to consumer usage patterns.) For instance, Bowie-Cass received quotations for 15kVA and 25kVA transformers, the most common units utilized, with average total losses of 282.8 watts and 413.3watts, respectively. Bowie-Cass received similar quotations recently with average total losses of 251.0 watts and 377 watts, respectively. This increase in efficiency requirements has led to a 10.5% reduction in losses per transformer unit.

Conductor Upgrade: Bowie-Cass has identified particular projects to upgrade (increase) conductor size that will lead to reduction of system line losses and system demand. Conductors have characteristic resistances based upon the area of aluminum, in this case, included in the conductor. For instance, #4 ACSR (aluminum cable, steel re-enforced), the smallest primary voltage conductor that Bowie-Cass installs, has a characteristic diameter of 0.1039 inches, aluminum area of 0.03277 square inches, and resistance of 2.240 ohms per mile. Alternately, 477 KCM ACSR, the largest primary voltage conductor that Bowie-Cass installs, has a characteristic diameter of 0.858 inches, aluminum area of 0.3749 square inches, and resistance of 0.196 ohms per mile. The conductor resistance is directly related to distribution line losses by the equation for loss of $P_{LOSS} = I^2 * R$, where R is the resistance and I is the current (amperage) load on the line. One particular conductor upgrade project identified entails replacing approximately 3 miles of 1/0 ACSR with 477 kCM ACSR conductor. This project will reduce that particular feeder circuit's line losses from 214.6 kW to 73.0 kW at peak loading with similar, but less dramatic loss reduction year round.

Multi-phasing Distribution Lines: Bowie-Cass has identified particular projects to increase the number of primary phase conductors (i.e., multi-phasing) that will lead to reduction of system line losses and system demand. As previously noted, conductors have characteristic resistances based upon the area of aluminum, in this case, included in the conductor. Multi-phasing projects reduce the current (amperage) load on the system by dividing the load on a particular section of line between additional phases. Typically, a single-phase line section is converted to three-phase. In this case, the resistance remains constant, but the load current (amperage) is reduced in the equation for line loss of $P_{LOSS} = I^2 * R$. One particular conductor multi-phase

project identified entails adding two phases to approximately 2 miles of #4 ACSR single-phase. This project will reduce that particular feeder circuit's line losses from 23.0 kW to 14.5 kW at peak loading with similar, but less dramatic loss reduction year round. Often multi-phasing projects are coupled with conductor upgrades to further reduce line losses.

Facility Upgrades: Bowie-Cass has an on-going Facility Eco-Friendly Program that includes measures to reduce electric consumption at the main plant. In 2011, as a part of this program, a plan to upgrade facility windows with energy efficient windows was completed. In addition, an energy efficient roofing radiant barrier membrane was installed over the main office complex.