



Case Study: Carbon-Neutral Distillery

Overview

The following case study reviews how electric cooperatives worked with Diageo to create a carbon-neutral distillery in central Kentucky.

Cooperative Profiles



East Kentucky Power Cooperative (EKPC) is a not-for-profit, member-owned cooperative providing wholesale electricity to 16 member distribution cooperatives serving 1.1 million residents at 545,000 homes, farms, businesses and industries across 87 Kentucky counties. EKPC provides power from coal-fired power plants, natural gas-fueled peaking units, purchased hydropower and renewable energy resources using more than 2,800 miles of transmission lines. EKPC generates more green power than any other utility in Kentucky. Collectively, EKPC and its member cooperatives are known as Kentucky's Touchstone Energy Cooperatives.

Inter-County Energy Cooperative (ICEC), one of EKPC's electric distribution members, is a not-for-profit, locally owned and member-driven cooperative that has been delivering electricity to over 26,000 members across six counties and parts of six more since 1937, as shown in Figure 1.1.

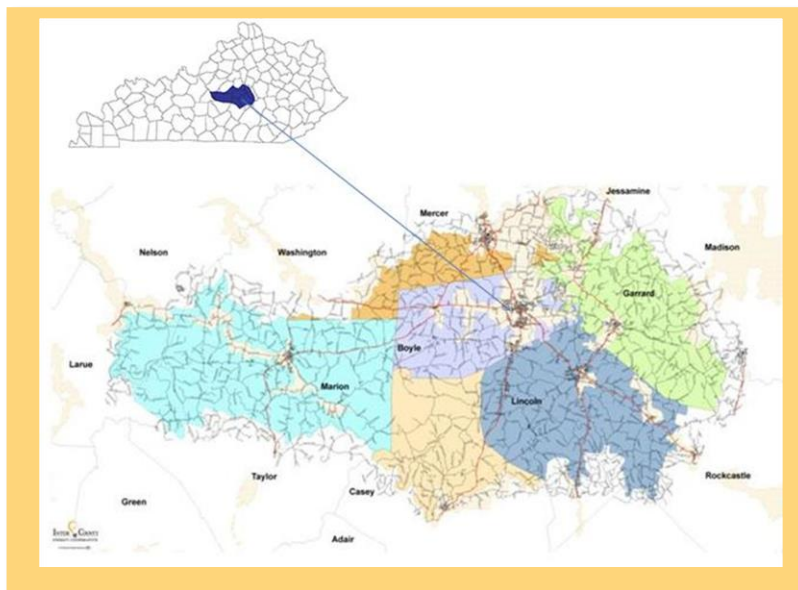


Figure 1.1:
Inter-County Energy Cooperative service territory.
Map courtesy of Inter-County Energy

Overview of the DIAGEO Project

Diageo is a global beverage leader whose brands include Bulleit Bourbon as well as a wide range of other spirits and beer. The company's net sales were £11,752 million (approximately \$15.5 billion) in fiscal year 2020. Brands include Johnnie Walker, Crown Royal, J&B, Buchanan's and Windsor whiskies, Smirnoff, Ciroc and Ketel One vodkas, Captain Morgan, Baileys, Don Julio, Tanqueray and Guinness. In November 2020 the company announced a range of 25 bold and ambitious goals in its *Society 2030: Spirit of Progress* plan, designed to make a positive impact on the world by 2030. This initiative builds on an already impressive record of achievements in the area of environmental sustainability, as highlighted in Figure 1.2. Not surprisingly, in late 2020 Diageo was recognized in the Dow Jones World Sustainability Index for the third straight year.



Figure 1.2: Diageo's Achievements in Environmental Sustainability, 2015-2020.
Image courtesy of Diageo

Diageo is building a new facility on 144 acres in Lebanon, Kentucky that includes a 72,000 square-foot distillery and dry house, along with twelve barrel warehouses. The distillery is expected to begin producing bourbon under the Bulleit brand there in 2021. Early in its planning process for the new facility Diageo initiated discussions with ICEC and EKPC to explore options for acquiring the power from purely renewable sources. ICEC's President and CEO Jerry Carter recalls Diageo's project manager asking whether the co-op could offer any renewable energy options. The parties exchanged information and ideas over a period of several months and built a cordial, working relationship. The discussions led to a breakthrough. The \$130 million distillery will operate on 100 percent renewable electricity, helping to make this what is expected to be one of the largest carbon-neutral distilleries in North America. But there is more to the story. Diageo will also electrify its distilling process at the facility by using electrode boilers to eliminate direct greenhouse gas emissions. According to a Diageo spokesperson, "By using electrode boilers that employ 100 percent renewable electricity, the distillery will help us avoid more than 117,000 metric tonnes annually of direct and indirect carbon emissions – equivalent to taking more than 25,000 cars off the road for a year." Figure 1.3 provides an artist's rendering of the innovative boilers.¹

¹ It should be noted that changing from the planned gas-fired boilers to the electrode boilers caused the site demand to increase enough that a new substation was required.

Figure 1.3:
Rendering of electrode boilers to
be installed at the Lebanon,
Kentucky distillery.
Courtesy of Precision Boiler and
Diageo



How Does the Renewable Supply Arrangement Work?

Scott Drake, EKPC’s Manager of Corporate and Technical Services, explains how Diageo’s request for 100 percent renewable electricity supply is being met. “To contract for the necessary renewable supply resources, EKPC issued a Request for Proposals to supply the renewable energy. Although EKPC is the contracting party, Diageo participated directly in the bid review process, helping to select the resource type. EKPC will execute a power purchase agreement (PPA) to supply Diageo via ICEC, with the energy being specifically dedicated to the distillery.” Under the arrangement, Diageo will also license solar panels from Cooperative Solar Farm One, an 8.5 megawatt (MW) solar farm operated by EKPC on behalf of its member cooperatives. The G&T will enter into PPAs for additional renewable energy resources as needed to operate the distillery at near 100 percent renewable energy resources. To achieve the goal of 100 percent renewable electricity, Diageo will purchase Renewable Energy Certificates (RECs) annually through EKPC if electricity consumption exceeds electricity contracted through PPAs.

The Green Tariff

The Diageo project represents a milestone in Kentucky cooperatives’ efforts to create a process and provide tools that enable them to engage with large industrial and commercial end-use members intent upon achieving their corporate environmental sustainability goals. Because ICEC is rate-regulated by the Kentucky Public Service Commission (KPSC), the co-op entered into informal discussions with the KPSC, EKPC and Diageo to determine the best energy-supply mechanism for supporting the project without unfairly burdening other end-use members with costs. EKPC’s vision was to create a ‘green tariff’ that provides all its member co-ops with the flexibility to respond to the needs of industrial members like Diageo. The green tariff that resulted enables large, end-use members with electricity demand greater than 1 MW to purchase through their local distribution cooperative (ICEC in this case) and EKPC part or all of their energy supply from renewable sources under a long-term Renewable Energy Purchase Agreement (see sidebar). The tariff is reflected in ICEC’s tariff sheets as the Renewable Energy Program rate, with mirrored provisions in EKPC’s wholesale rate. Under the rate, the member (Diageo here) receives credits for EKPC’s avoided costs and certain other adjustments and is billed for the renewable energy supply per the agreement. According to EKPC’s Drake, it is an arrangement that meets the needs of both the industrial member and electric cooperatives involved while guaranteeing no cost-shifting to the rest of the co-op’s end-use members.

Highlights of ICEC’s Renewable Energy Purchase Agreement

- End-use members must purchase a minimum of 1 MW of installed renewable capacity.
- ICEC shall acquire the renewable power sold to the customer from EKPC.
- The customer may aggregate the energy consumption across multiple accounts anywhere within EKPC’s service territory.
- The end-use member may choose the type(s) of renewable resources from which the energy shall be generated. Options include: solar, wind, hydropower, landfill methane gas and biogas.
- ICEC will receive a monthly credit on its wholesale power bill from EKPC reflecting avoided costs and other factors.
- The end-use member will receive a monthly credit on its retail power bill from ICEC reflecting the wholesale credit ICEC has received from EKPC.
- No impact on other rates or members.

Beneficial Electrification Programs Being Offered

ICEC’s Carter emphasizes that beneficial conversion to electricity is not new for his cooperative. “We’ve been offering incentives for end-use members to switch to high efficiency, electric heat pumps since the nineteen eighties as an integral part of our energy efficiency program.” He refers to his heat pump incentive program as the “original form of beneficial electrification.” However, Carter says the near-term prospects for electric vehicles (EVs) continue to face an uphill climb, noting that “until charging stations are deployed on a widespread basis, range anxiety will remain an issue” among rural Kentucky consumers. He expects a big push ahead to build out the network of charging stations to address this. EKPC’s Drake expects further growth in beneficial electrification programs as well. He observes that “the cost of renewables is becoming more competitive and the market is changing.”

Reflections on the Experience

Carter views beneficial electrification, and developing the renewable energy arrangements to support it, as a “win, win, win” for the environment, the cooperative and, most of all, the end-use members. He sums it up, “What it all comes down to is our cooperative fulfilling its mandate by promoting economic development and building a sustainable community.”

This Case Study is part of NRECA’s report: [Case Studies in Beneficial Electrification – Electric Cooperatives Develop Programs to Build Consumer Value and Meet Climate Change Goals](#), written by Eric Cody, Cody Energy Group, codyenergygroup@gmail.com.