Case Study: Rural Opportunity Zone Enables Fertilizer Business Startup

BioXRG Inc., is a startup company organized in September 2021 by a team of four young chemical engineers, two seasoned business executives, an initial investment by a Treasury certified Community Development Financial Institution (CDFI) and some angel investors from Texas and Iowa. The team of chemical engineers and business executives brought prior experience working together on a novel fermentation platform based on 35 years of research from Texas A & M University. The Team's prior projects demonstrated that cafeteria food waste could be used to make jet fuel. The business executives also had a wide range of legal, finance, real estate, and food industry experience.

Land for a site was an early focus. The four engineers all lived in Bryan-College Station Texas and wanted to remain in the area. A site with infrastructure requirements near good highways, natural gas, and rail connections was identified in a city industrial park next to city limits. A federal Opportunity Zone designation was mentioned but was not a factor for initial site selection and purchase. Federal eligibility as a low-income Census tract was of interest for CDFI financing. City permitting requirements were of interest due to the potential for delays in approval and potential need for extra cash flow to complete plant construction. An adjacent parcel outside city limits became available. After comparison, the company sold part of the parcel in the city and purchased the adjacent rural site to reduce permitting, construction, and startup time. The rural site outside city limits was also within the Opportunity Zone.

In February 2022, Russia invaded Ukraine causing disruptions in global grain and fertilizer markets and patterns of trade. Due to a rapid rise in fertilizer prices for U.S. farmers, a USDA Fertilizer Production Expansion Program was announced in September of 2022. The startup team shifted focus from other biobased products to fertilizer. A proposal was submitted in December 2022 and approved in 2023. The $3.8 million grant required a non-federal match of $3.2 million. A local capital gain motivated investor was identified with experience in agriculture, mixed use building construction, and opportunity zones created by the 2017 Tax Cuts and Jobs Act. The project was pitched to the motivated investor who connected the project to a North Carolina attorney with extensive Opportunity Zone experience. The motivated investor purchased the development site from the startup company, and the startup used the proceeds for grant matching funds. The sales agreement provided the startup with leaseback terms and rights to repurchase the site. So, the motivated investor receives capital gains tax reduction for the prior tax liability over ten years and the startup company secured grant funds, provided matching funds, and retained rights to regain full plant ownership in the future after capital gain tax liability is mitigated.

Additional funds came from angel investors in Texas, Kansas, Iowa and Minnesota. A Western Iowa rural angel group hosted an information meeting in November 2024 and facilitated a pitch to a family-owned holding company with ethanol industry construction experience. The angel investors completed the $11 million capital stack goal. With startup company engineers acting as the general contractor, the first plant broke ground in February 2024, was constructed, commissioned, and shipped first product on March 2025. The company currently has 19 employees. First year offtake has been spoken for. Annual production is 850,000 gallons. The plant produces bio-based fertilizer-stimulants for organic and conventional agricultural producers. As the first plant is optimized, work begins on the planning for scaling additional project sites. Rural Opportunity Zones and CDFI-eligible Census tracts will be considered as favorable attributes in future site location decisions.

Additional Resources: 1. Economic Innovation Group: https://eig.org/issue-areas/opportunity-zones/
2. CDFI Fund: https://www.cdfifund.gov/about

By Mark A. Edelman, PhD., retired Extension Ag Policy Economist & Professor Emeritus, Iowa State Univ.
Case Study 25.1 on Tax Policy Innovations, The Barry Flinchbaugh Center for Agriculture and Food Policy, Kansas State University, Manhattan, KS. April 20, 2025.