



Avoided Conversion Case Study

Bishop Farm | Tazewell County, Illinois

Project Background

In 2022, The Conservation Fund and American Farmland Trust collaborated to calculate the climate benefits that accrue from permanently protecting an Illinois farm with an agricultural conservation easement. The project developed a science-based tool for estimating the greenhouse gas emissions that would be avoided by keeping farmland in agricultural production and avoiding new emissions from the anticipated residential development and use.

Agricultural conservation easements are voluntary legal agreements that protect agricultural land from conversion to development by permanently removing the development rights, thereby ensuring that the land remains available for farming.

The Bishop Farm

Bishop Farm in Tazewell County, Illinois, sits on the edge of the City of East Peoria. The farm straddles the “Future Growth Area” under East Peoria’s Comprehensive Plan and is classified for future residential development. About 65 acres of the property are farmed conventionally with a corn-soybean rotation typical of this part of Illinois. There is also a homestead area that includes a specialty crop operation, and 34 acres of woods. Between 2012 and 2017 the number of farms in Tazewell County dropped 9% and acres in farmland dropped 10%.

Bishop Farm at a Glance

COUNTY: Tazewell County, IL

FARM SIZE: 103 ac (65 ac in crops, 34 ac in woods, 4 ac in residential and road)

DEVELOPMENT: Pressure from East Peoria, IL

CROPS: Corn, soybeans, specialty crops

DOMINANT SOIL: fine-silty, mixed, superactive, mesic Typic Hapludalfs

ESTIMATED GHG BENEFIT FROM AVOIDED
CONVERSION: 19,541 t CO₂e in the first 30 yrs

Agricultural Conservation Easement

The Bishop Farm landowner is working with The Conservation Fund (The Fund) and partners to place a perpetual agricultural conservation easement on the farm. The easement is made possible by funding through the USDA’s Regional Conservation Partnership Program awarded to the FY19 Illinois Working Lands, Water and Wildlife Conservation Partnership. The required local match funding is being provided by the Illinois Clean Energy Community Foundation and Grand Victoria Foundation. Prairie Land Conservancy, a conservation land trust in west central Illinois and partnership member, will hold the easement.

Climate Study Results

To quantify the climate benefit of an agricultural conservation easement on Bishop Farm, American Farmland Trust (AFT) followed [California Air Resources Board's Agricultural Lands Conservation Easement Quantification Methodology \(2020\)](#), with some modifications due to differences in data availability between California and Illinois.

Placing the full 103-acre Bishop Farm in an agricultural conservation easement avoids an estimated **19,541 metric tonnes (t) of carbon-dioxide equivalent (CO₂e)** emissions in the first 30 years. In addition, an estimated **8 t of non-GHG air pollution** can be avoided.

The climate mitigation from the avoided CO₂e emissions equate to:



avoiding 48.5 million miles driven in a gasoline-powered passenger vehicle



5 wind turbines running for a full year



323,112 tree seedlings grown for 10 years

Of the avoided emissions, 40% are from reduced electricity consumption, 38% from reduced driving, and 20% from avoided soil carbon loss.

In addition, the study analyzed three scenarios that would involve changing farm management practices on the 65 acres of cropland. The analysis demonstrates what the additional GHG benefit could be if the protected farm implemented additional agricultural conservation practices. Current farm management of the 65 acres would emit about 1870 t CO₂e over the next 30 years, whereas:

- A Conservation Cropping System would sequester 732 t CO₂e over the next 30 years
- An Alley Cropping System would sequester 842 t CO₂e over the next 30 years
- A Multi-Practice Conservation system would sequester 3076 t CO₂e over the next 30 years



Why This is Important

GHG emissions due to human activity are driving present-day climate change with carbon dioxide being the largest contributor on a global scale. The agricultural sector is uniquely situated to serve as a climate change solution.

Illinois communities can avoid an increase in GHG emissions, CO₂ in particular, by protecting farmland from conversion to low-density residential use. Low-density residential use tends to be more energy intensive per household than smart growth urban development. Further, communities can increase climate benefits beyond emissions avoided by adopting land use practices on protected agricultural lands, such as adopting soil health practices and planting perennial tree crops, that remove CO₂ and store it.

Applicability to Midwest Region

Using the CO₂e rate of benefit from Bishop Farm, if half of the 268,200 farmland acres in Illinois that are vulnerable to development by 2040 were put in agricultural conservation easements, the state could avoid about 840,000 t CO₂e emissions per year. This is roughly equivalent to avoiding all the CO₂ emissions from cement production in Illinois in 2020 (EPA 2022).

This study illustrates the significant climate benefits that can be achieved through avoided development of farmland, smart growth cities, and the implementation of climate-smart agricultural management practices. The model developed through this project can be applied to easements elsewhere in the Midwest with local zoning geospatial data and standard state transportation statistics.

For more information, visit:

www.farmlandinfo.org/publications/avoided_conversion_illinois