

RNG WORKS



# SAVING ONE ACRE AT A TIME



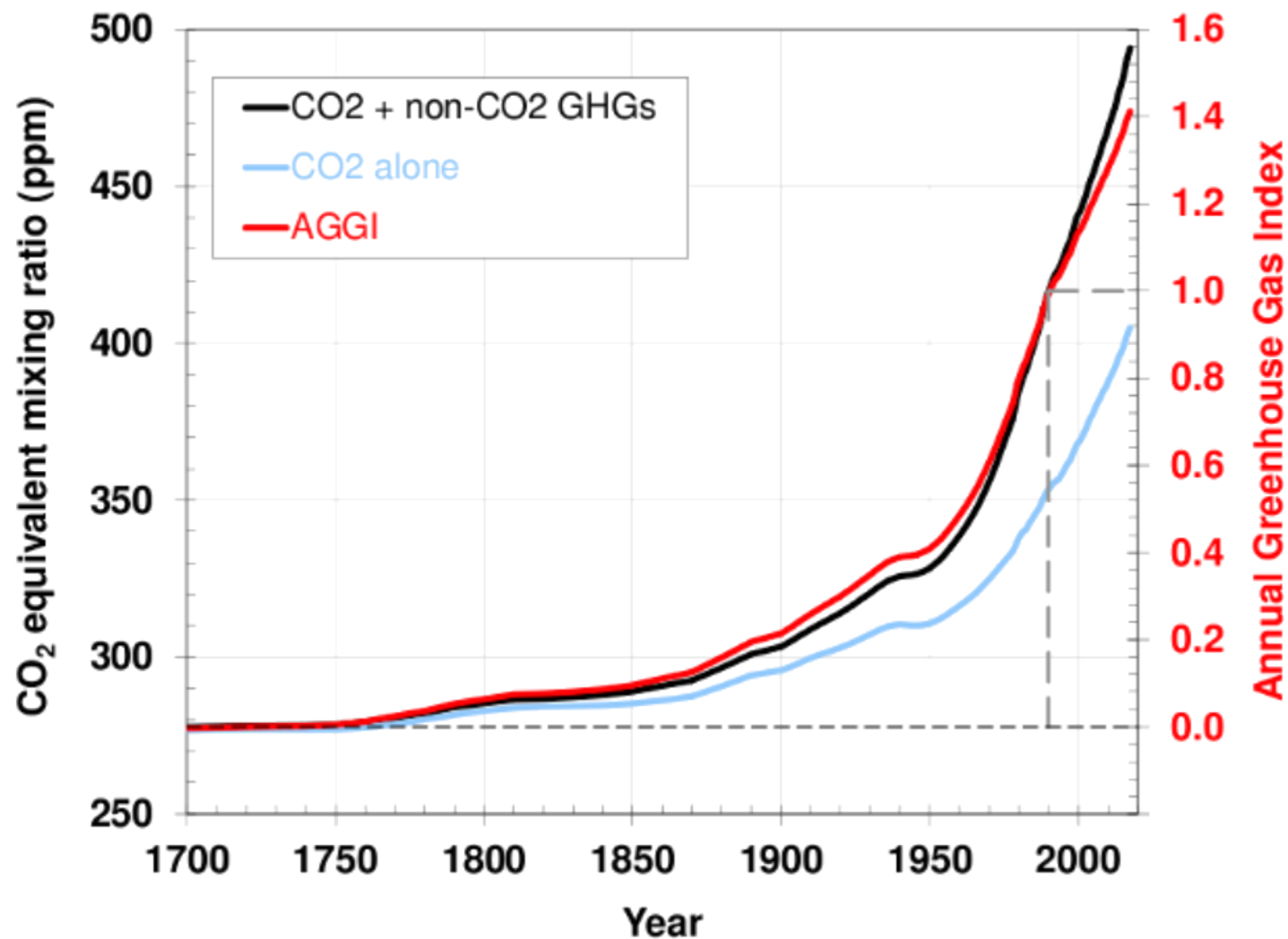
# Energy, Ecosystem, and Wildlife Currently at Odds



# The New Way with Roeslein Alternative Energy



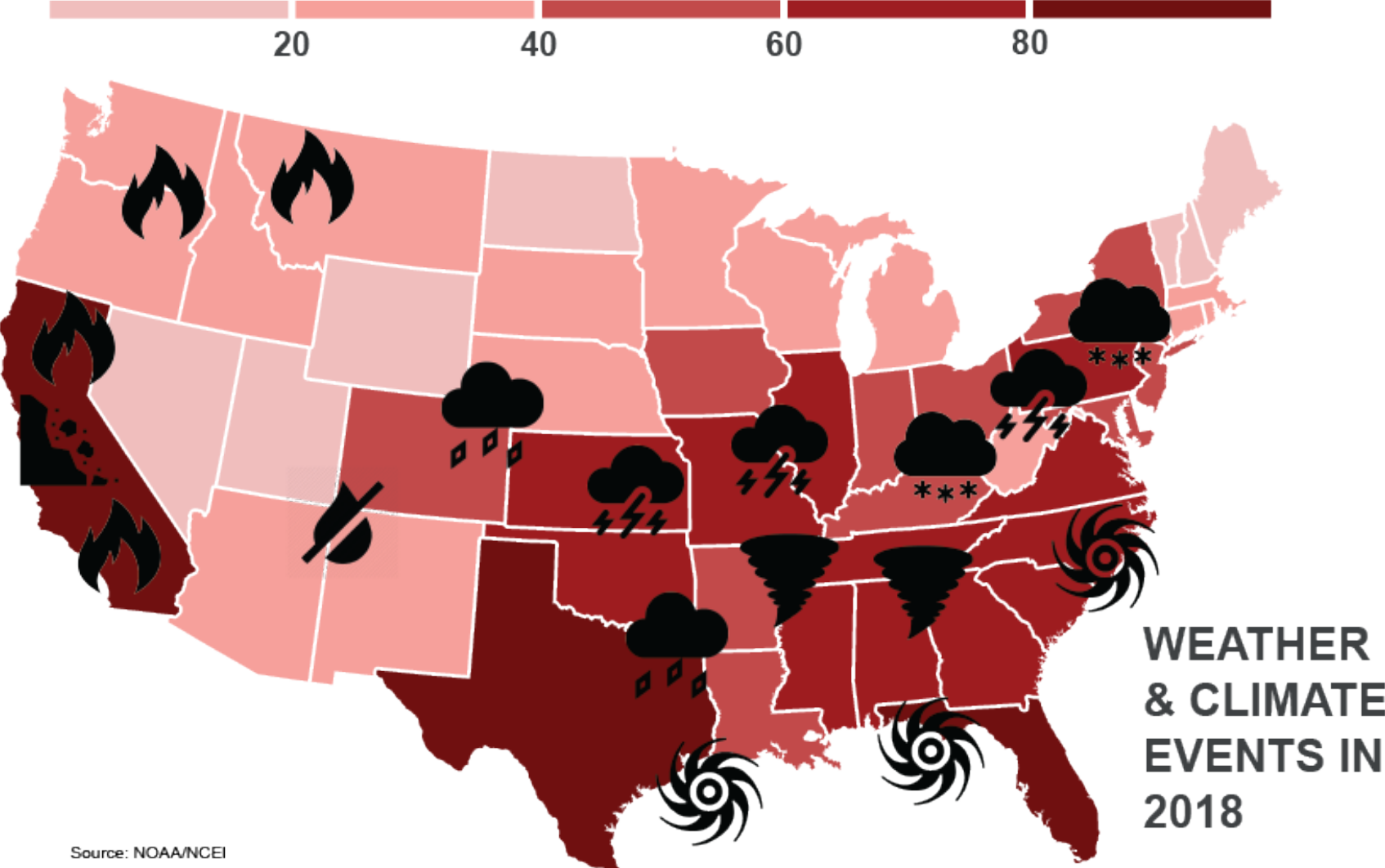
# Annual Greenhouse Gas Index



Source: <https://www.ersl.noaa.gov/gmd/aggi/aggi.html>



# BILLION DOLLAR DISASTERS



**WEATHER  
& CLIMATE  
EVENTS IN  
2018**

Source: NOAA/NCEI

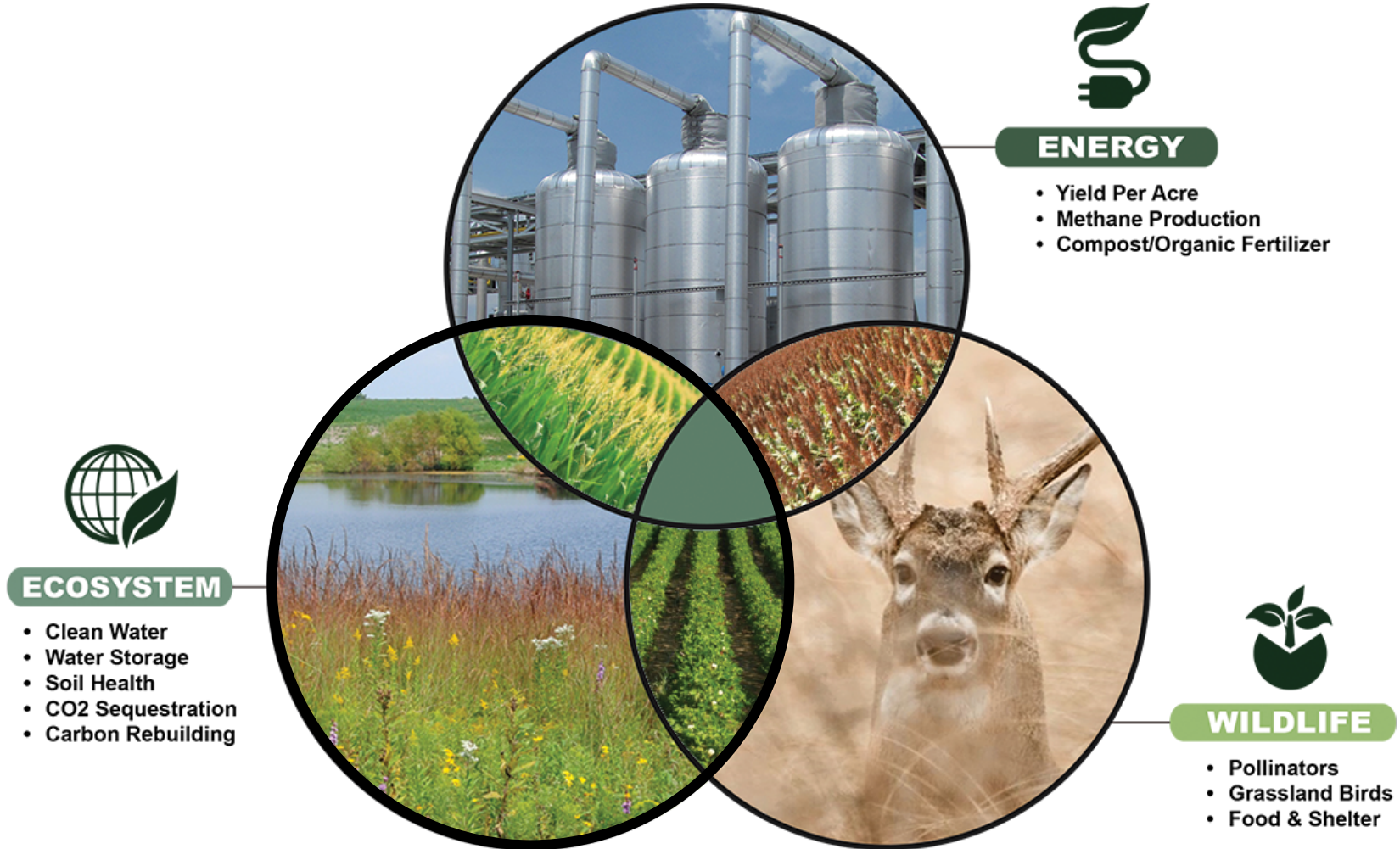


# Population Growth to 9.6B by 2050

- Increasing amount of stress on our landscape
- Planet is facing competing demands
- Erosion, soil degradation, and water problems arising
- Climate and weather patterns changing
- Our planet is in need of help, so what can we do?



# A New Way with Roeslein Alternative Energy



# Annual Cost of Soil Erosion

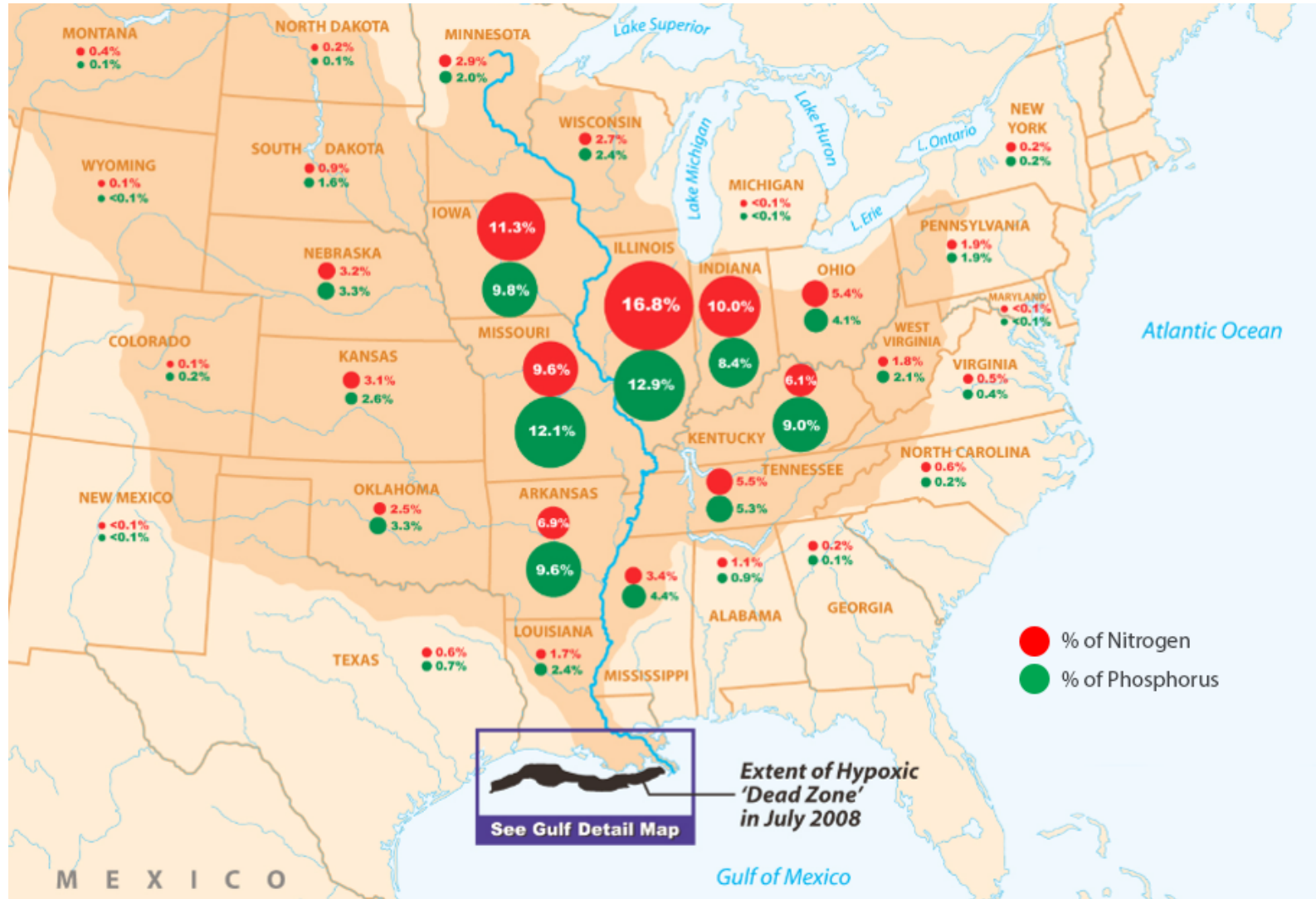
- U.S. Cropland Soil Erosion = 5.6 tons / acre
- U.S. Total Soil Erosion Cost = \$44B / year

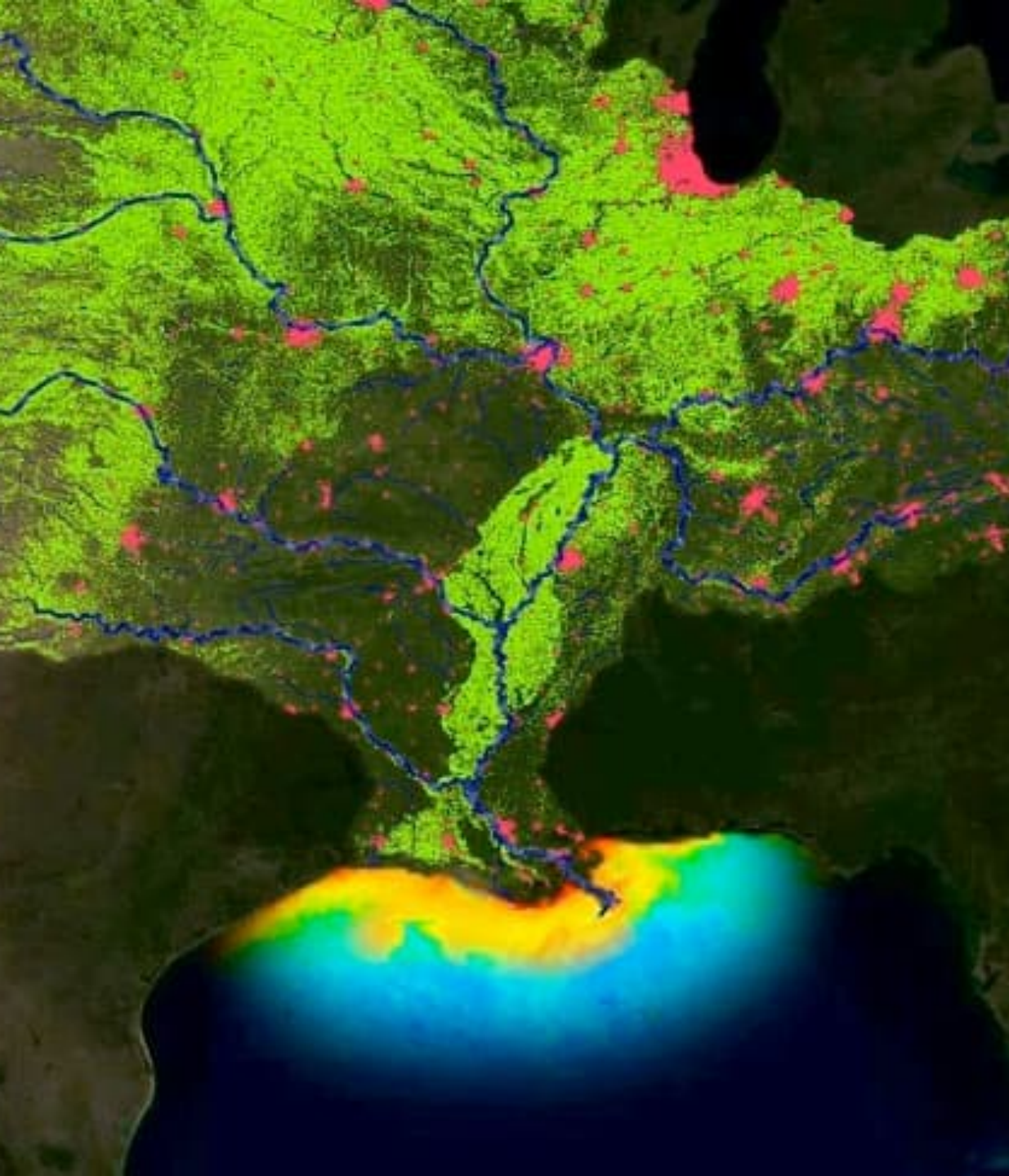
Source: <https://www.sciencedaily.com/releases/2014/06/140618163922.htm>





# Mississippi River Basin Runoff



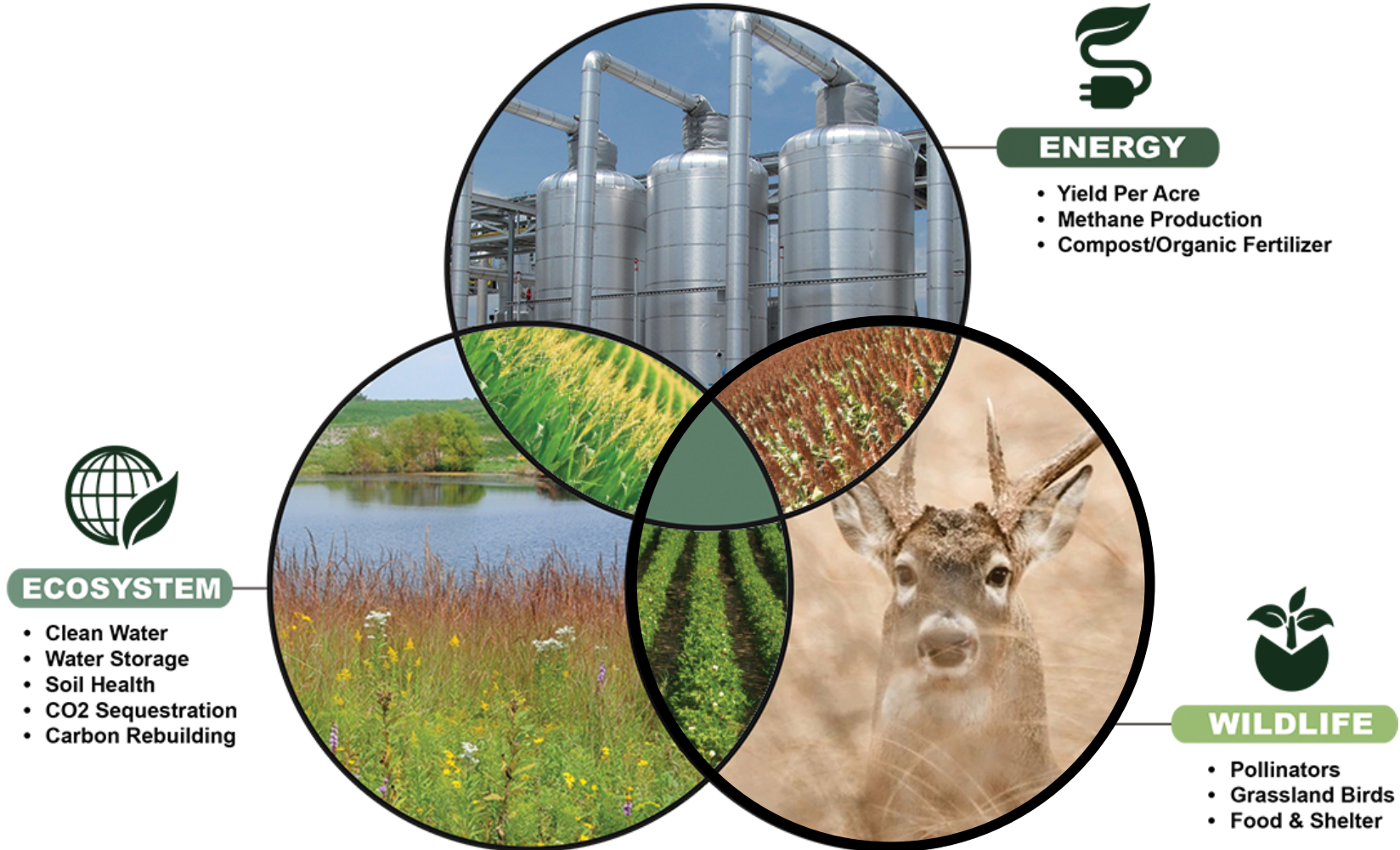


## Negative Economic Impact with Hypoxia

- \$350M fishing expenditures
- \$350M boating expenditures
- \$1.5B property value losses
- \$44M for conservation plans
- \$813M for bottled water due to taste/odor issues
- Significant impact on \$1.6 Trillion Outdoor Industry



# Energy, Ecosystem, and Wildlife Objectives in Balance



# Wildlife and Habitat Crisis

- Nature is declining globally at rates unprecedented in human history
- 1 million animal and plant species face extinction in the coming decades
- Nearly 40% of all species require urgent conservation action
- Native species in most major land-based habitats have fallen by at least 1/5 in 100 years



# Endangered Species Act (ESA)

- 1,600+ endangered and threatened animals and plants on the list
- 1.5 billion annual costs associated with administering the ESA
- Burdensome and costly regulations for industry and landowners
- Broad economic impact of hundreds of billions annually
- Prairie Chicken listing estimated at 5.6 billion annual economic impact

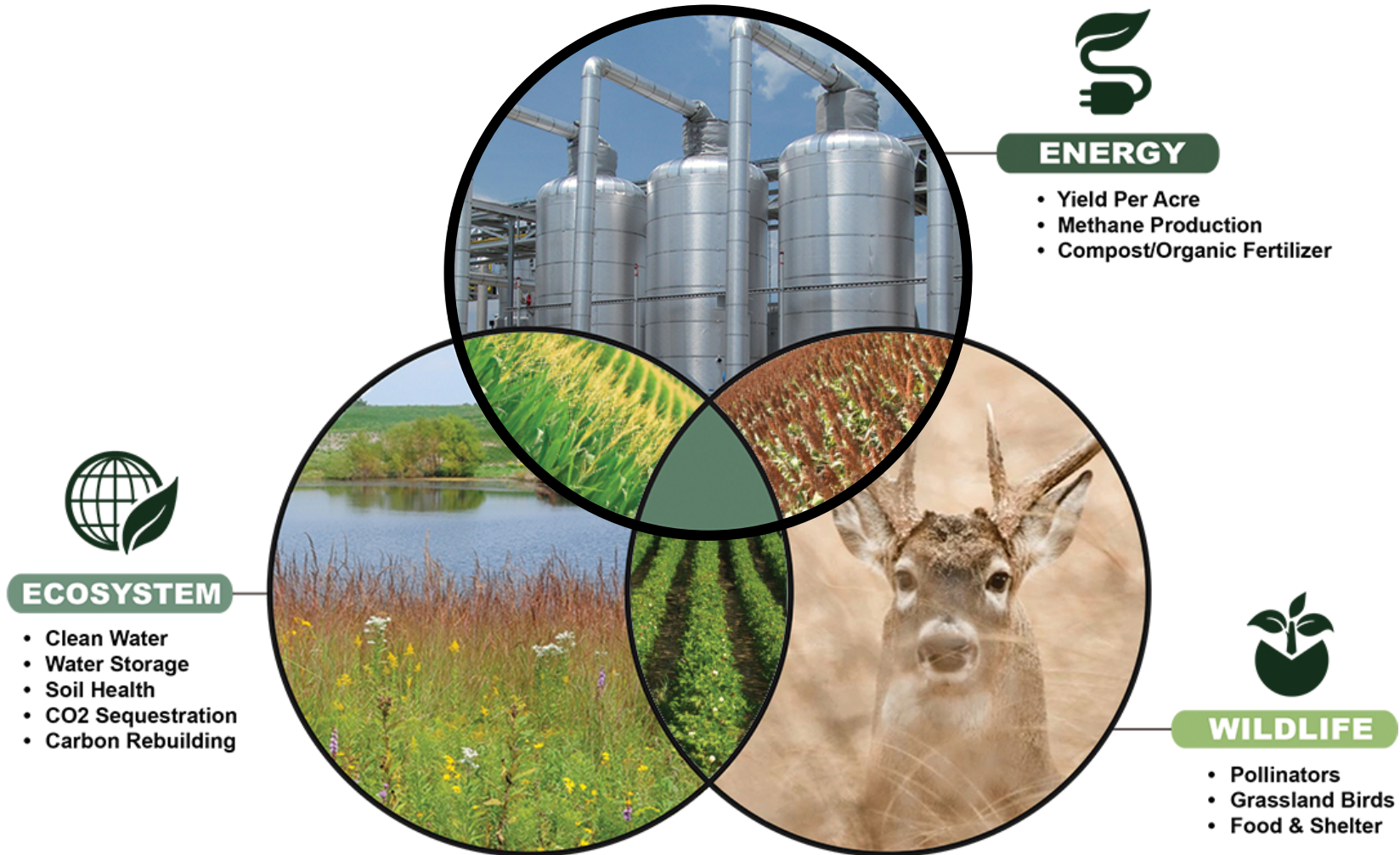


## RAE Wildlife Benefits

- Restored native habitat for prairie and grassland species
- Improved water quality for aquatic species
- Increased nutrients in soil supporting life underground
- Supports \$40 billion worth of pollinated products annually

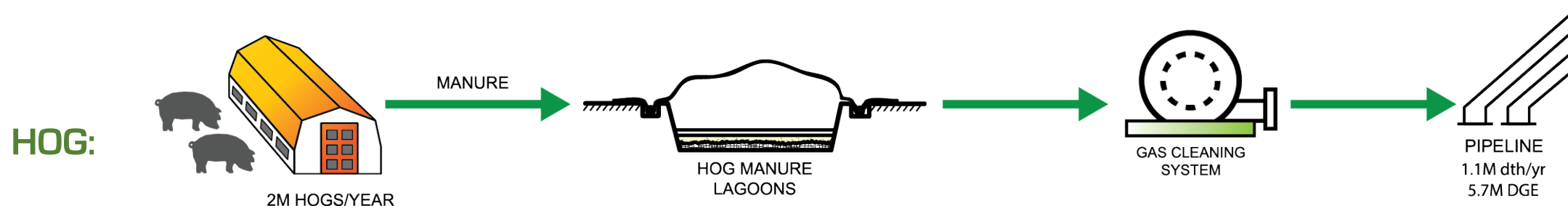


# Energy, Ecosystem, and Wildlife Objectives in Balance





# Northern Missouri Anaerobic Digestion of Manure



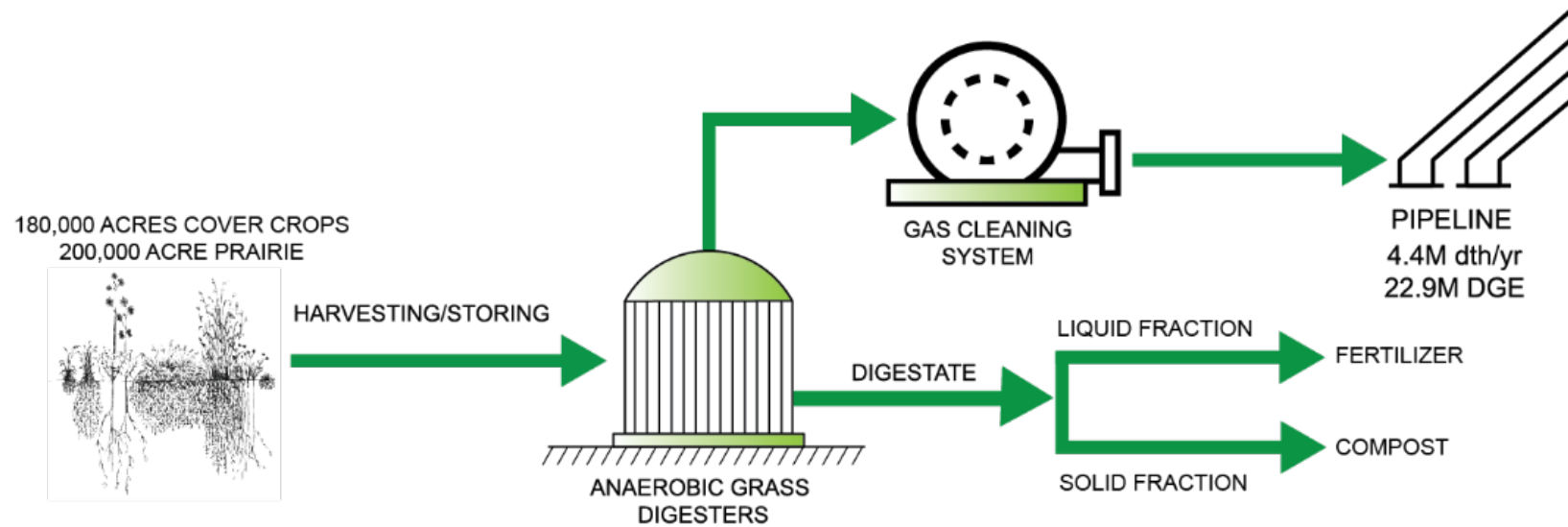
## BENEFITS:

- Separation of rain water from manure
- Reduced odor and volatile organic compounds (VOC)
- Production of renewable biofuel
- The solid fraction of the digestate is used as soil amendment.



# Northern Missouri Anaerobic Digestion of Cover Crops & Prairie

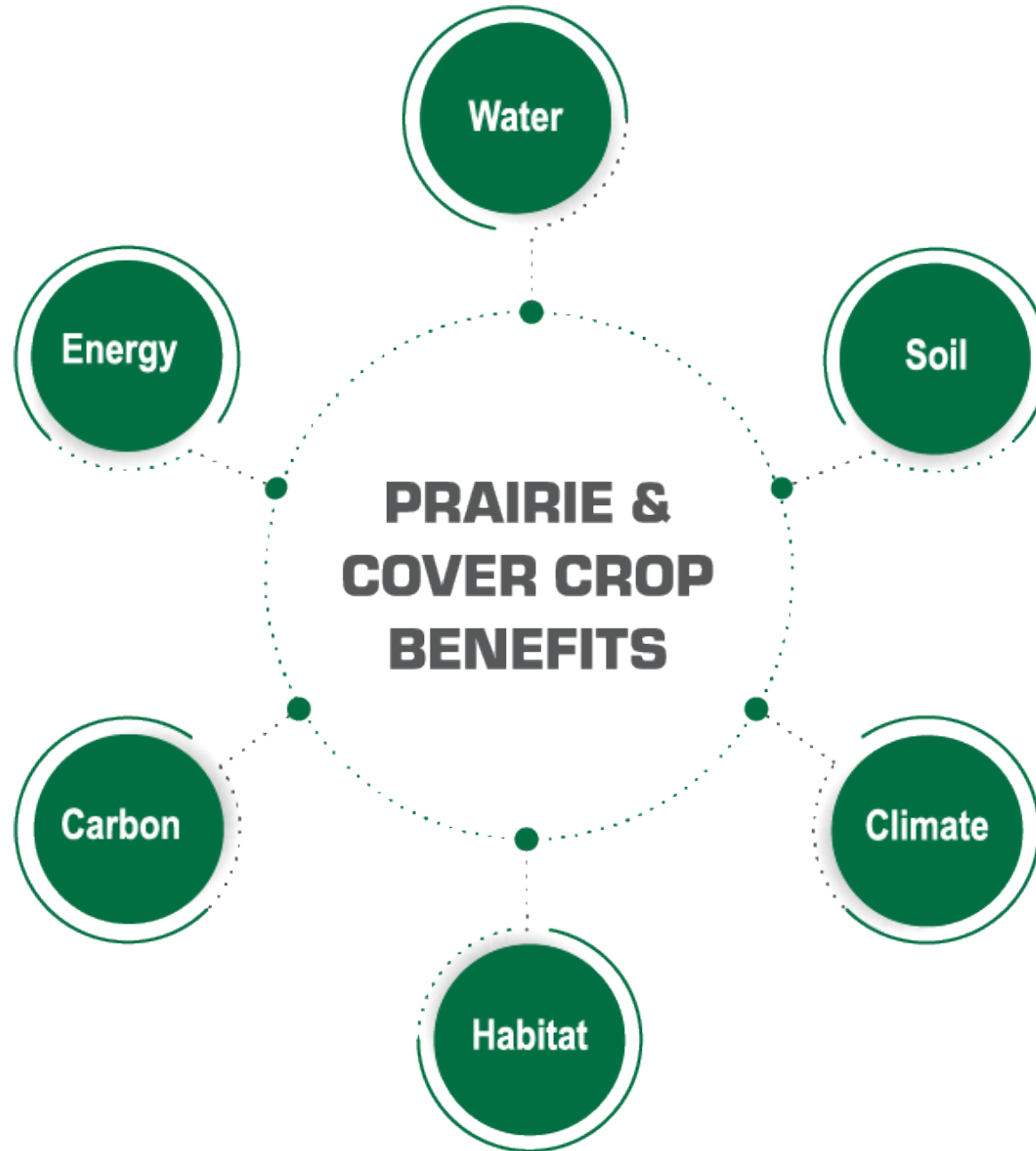
## COVER CROPS & PRAIRIE:

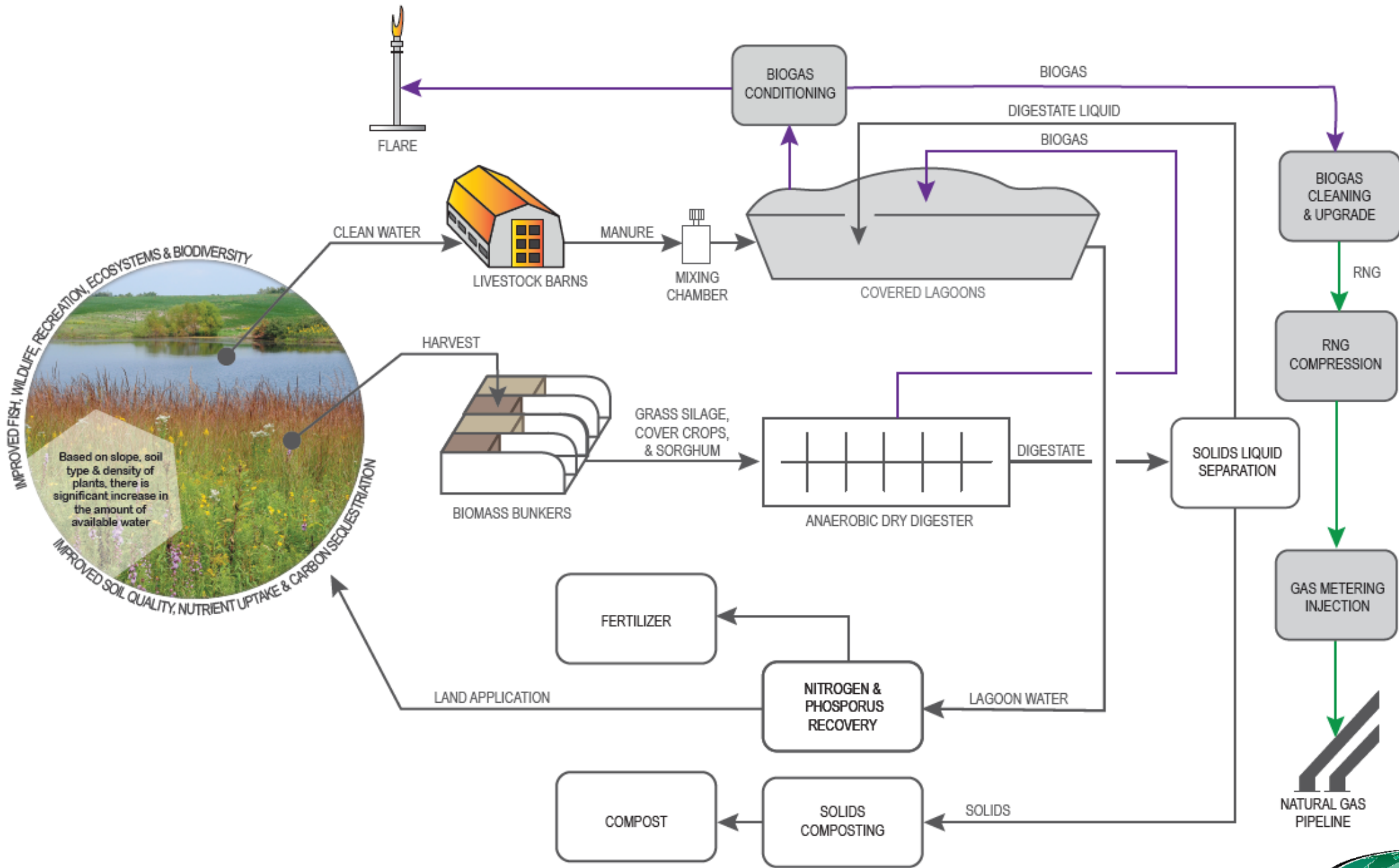


## BENEFITS:

Ecological Services

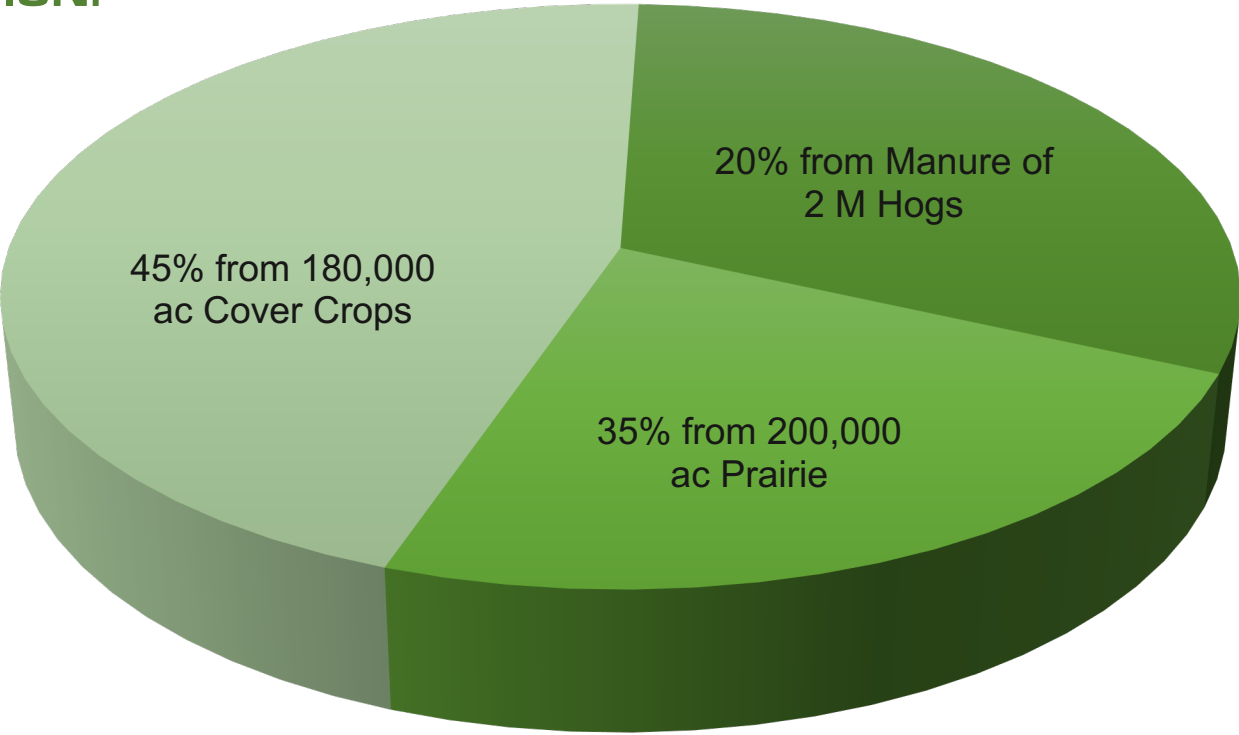
# Eco Services





# Northern Missouri Ag Potential of 5.5M dth/year

## SOURCES OF ENERGY GENERATION:



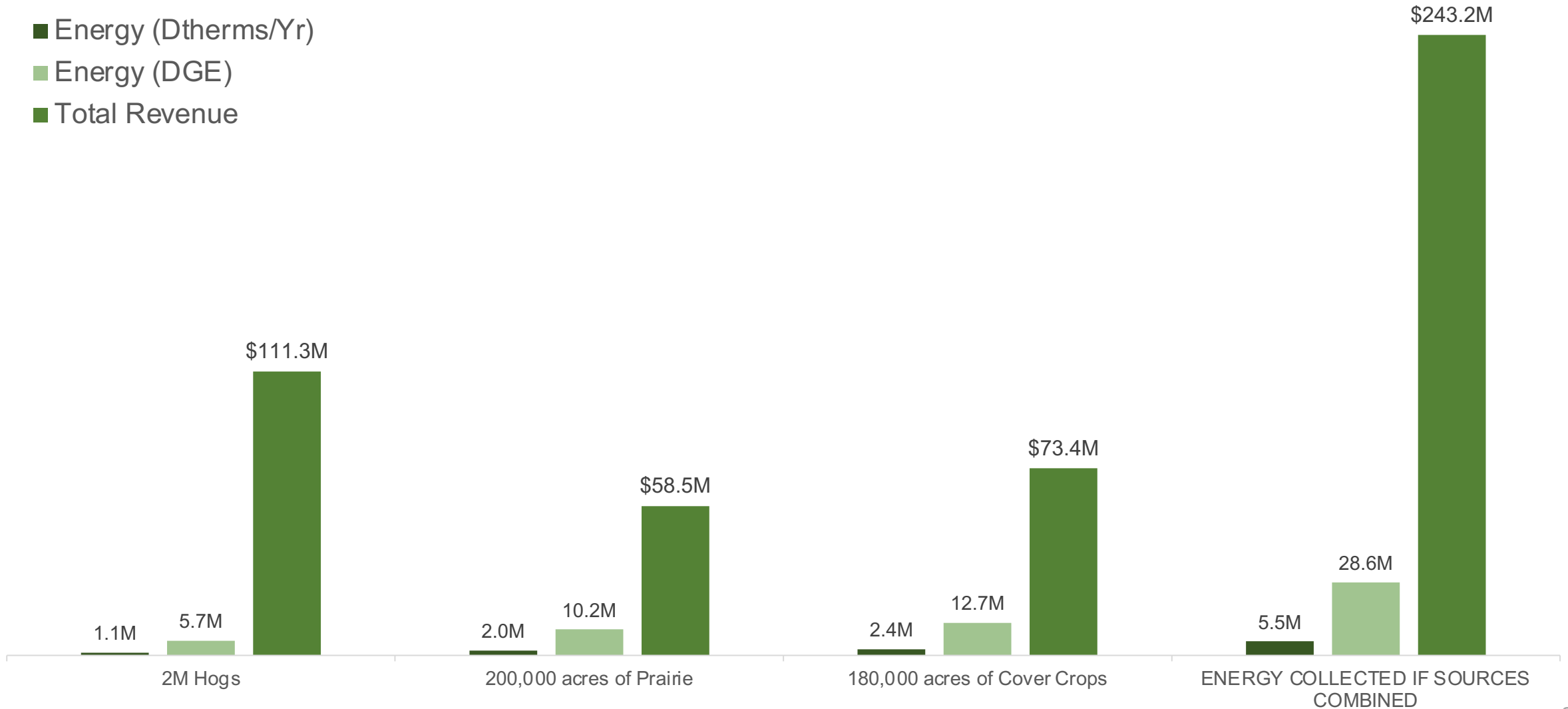
**REVENUE POTENTIAL OF \$243M**

**EQUIVILANT TO REMOVING 29M DIESEL GALLONS**



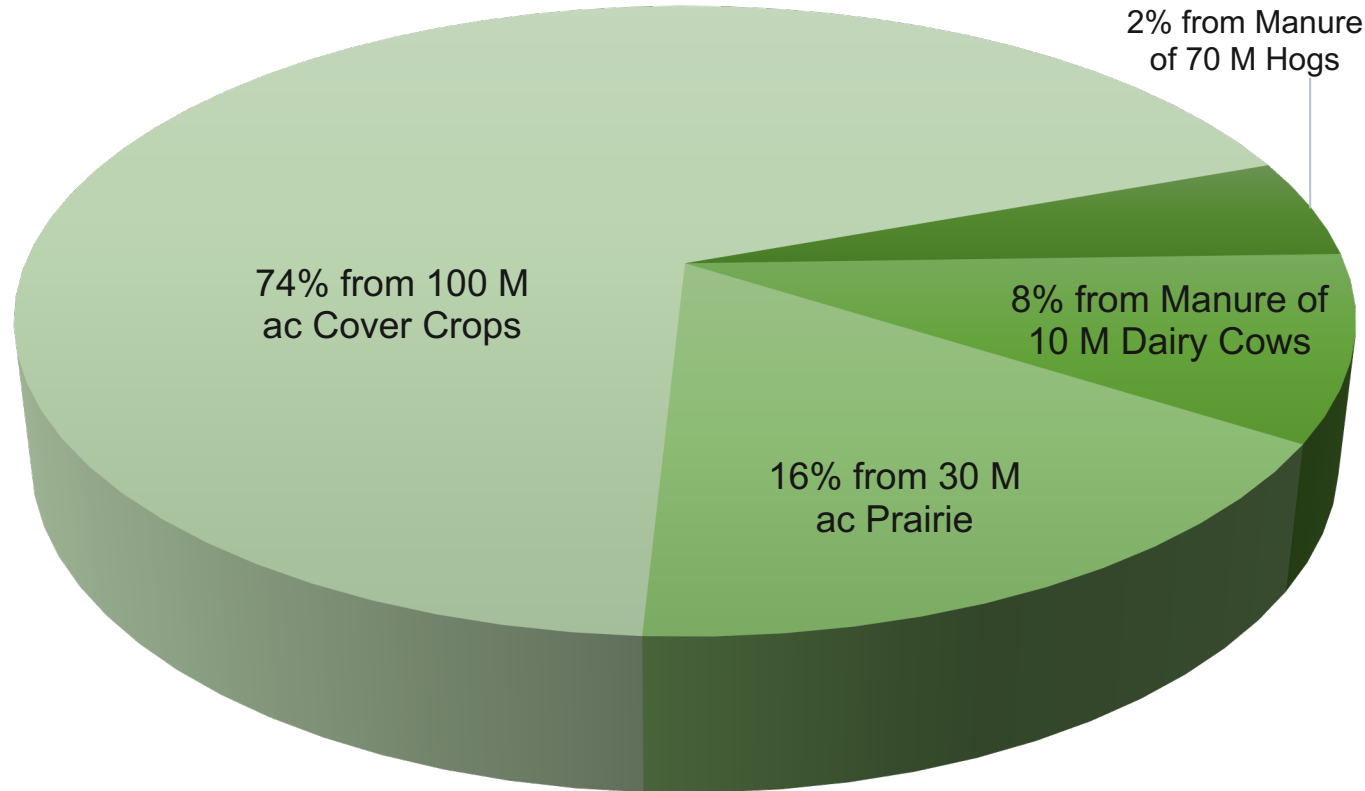
# Northern Missouri RNG Diesel Gallon Offset

- Energy (Dtherms/Yr)
- Energy (DGE)
- Total Revenue



# US Ag Production Potential of 1.8B dth/year

## SOURCES OF ENERGY GENERATION:



**REVENUE POTENTIAL OF \$63.6 B**

**EQUIVILANT TO REMOVING 9.5B DIESEL GALLONS**

# US RNG Diesel Gallon Offset

■ Energy (Dtherm/Year)   ■ Energy (DGE)   ■ Total Revenue





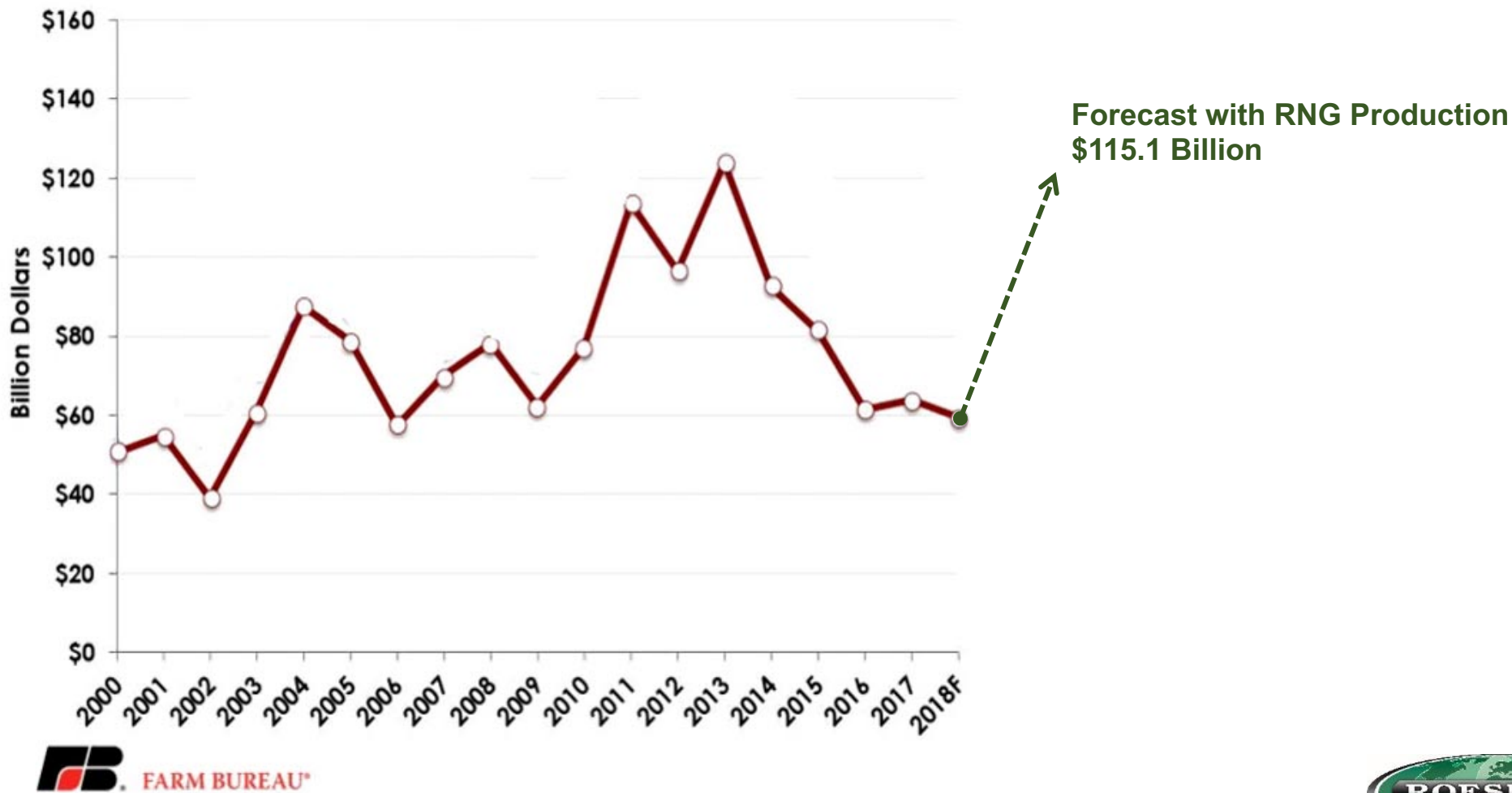
# Net Farm Income



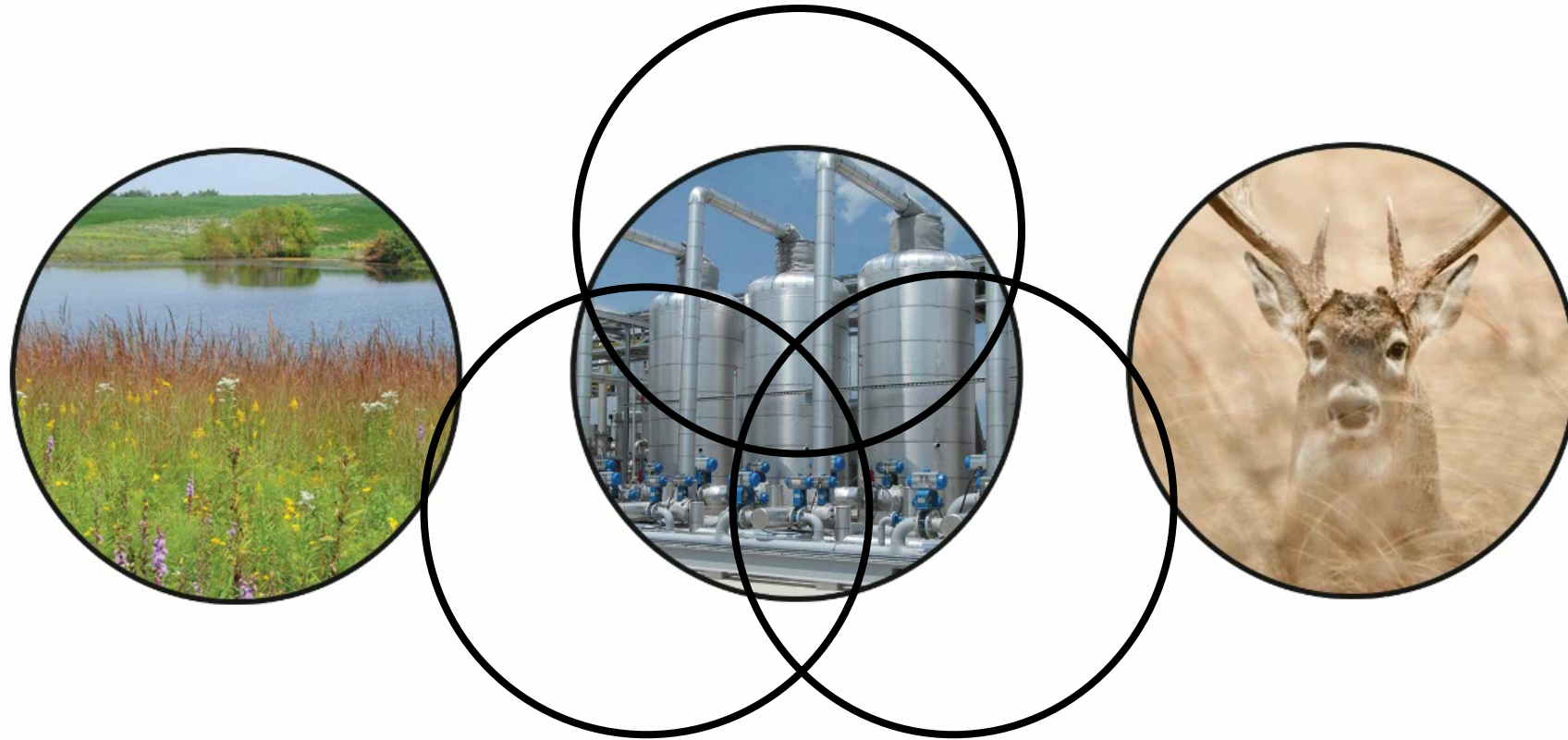
Source: USDA ERS



# Net Farm Income with RNG Production



# The New Way with Roeslein Alternative Energy



Combining Energy, Ecosystem, and Wildlife for a Sustainable Solution

# Thank You

