Net-Zero SAF, Chemicals, and Materials

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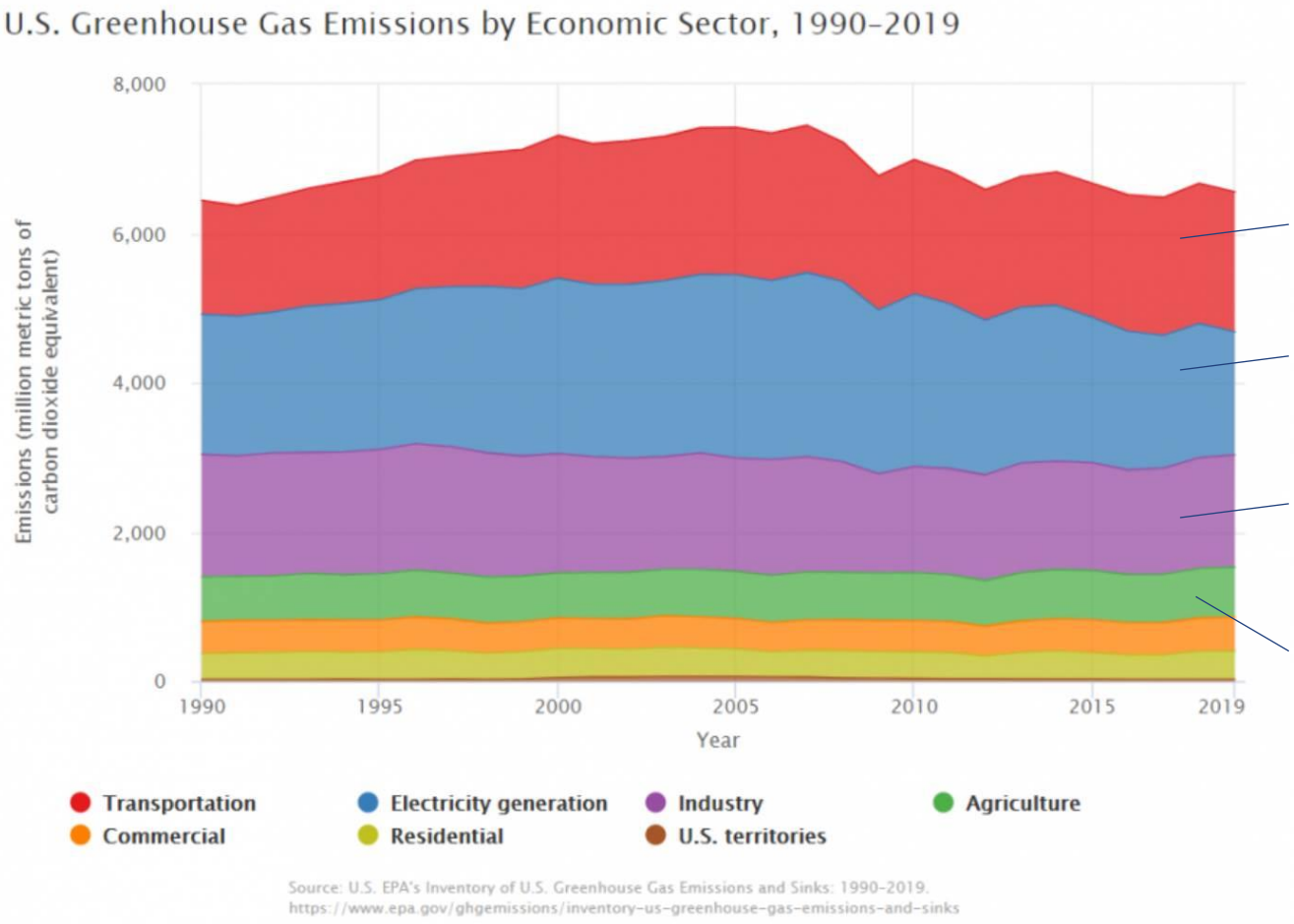
gevo

House Committee on Agriculture Renewable 2022 Review of the Farm Bill: Energy – Renewable Energy Opportunities in Rural America

FUELS AND MATERIALS CAN BE MADE FROM RENEWABLE CARBON

BURNING OF FOSSIL ENERGY CREATES THE VAST MAJORITY OF GHG EMISSIONS IN US

We can catalyze improvements in agriculture and food production, renewable energy infrastructure and production



Transportation: Can be eliminated with renewable energy (electricity, green hydrogen, RNG and renewable hydrocarbons)

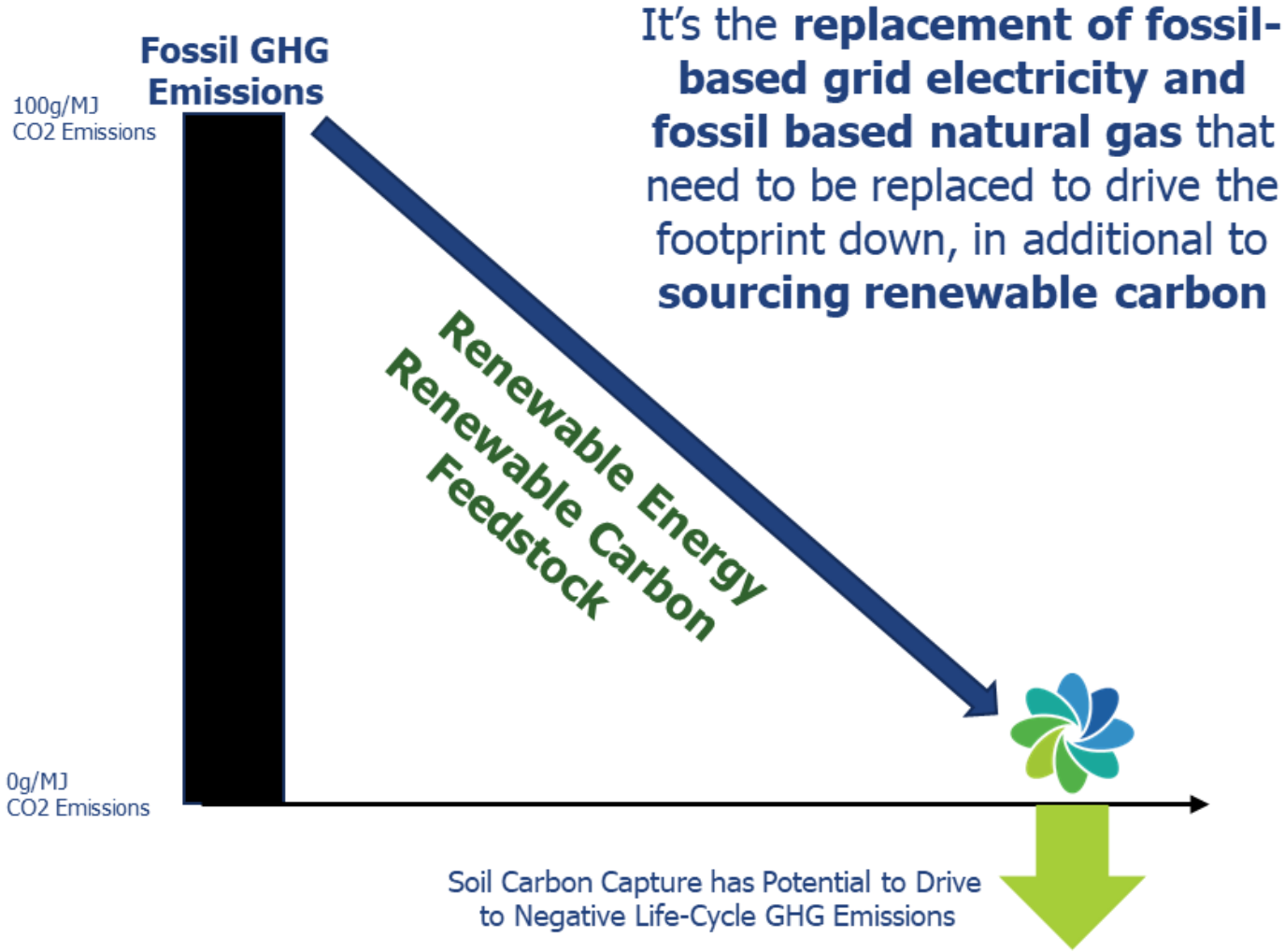
Electricity: Can be eliminated with wind, solar, CHP of renewables like RNG, and nuclear

Industry: 50% of this Industry GHG footprint is due to burning fossil fuel. Can be eliminated with renewable energy

Agriculture: Can be improved with soil management, reduced chemical inputs, and lower carbon fertilizers

Source: https://cfpub.epa.gov/ghgdata/inventoryexplorer/

HOW TO ACHIEVE NET-ZERO SAF:
ELIMINATE FOSSIL BASED ENERGY AND CAPTURE RENEWABLE CARBON



It's the **replacement of fossil-based grid electricity and fossil based natural gas** that need to be replaced to drive the footprint down, in additional to **sourcing renewable carbon**

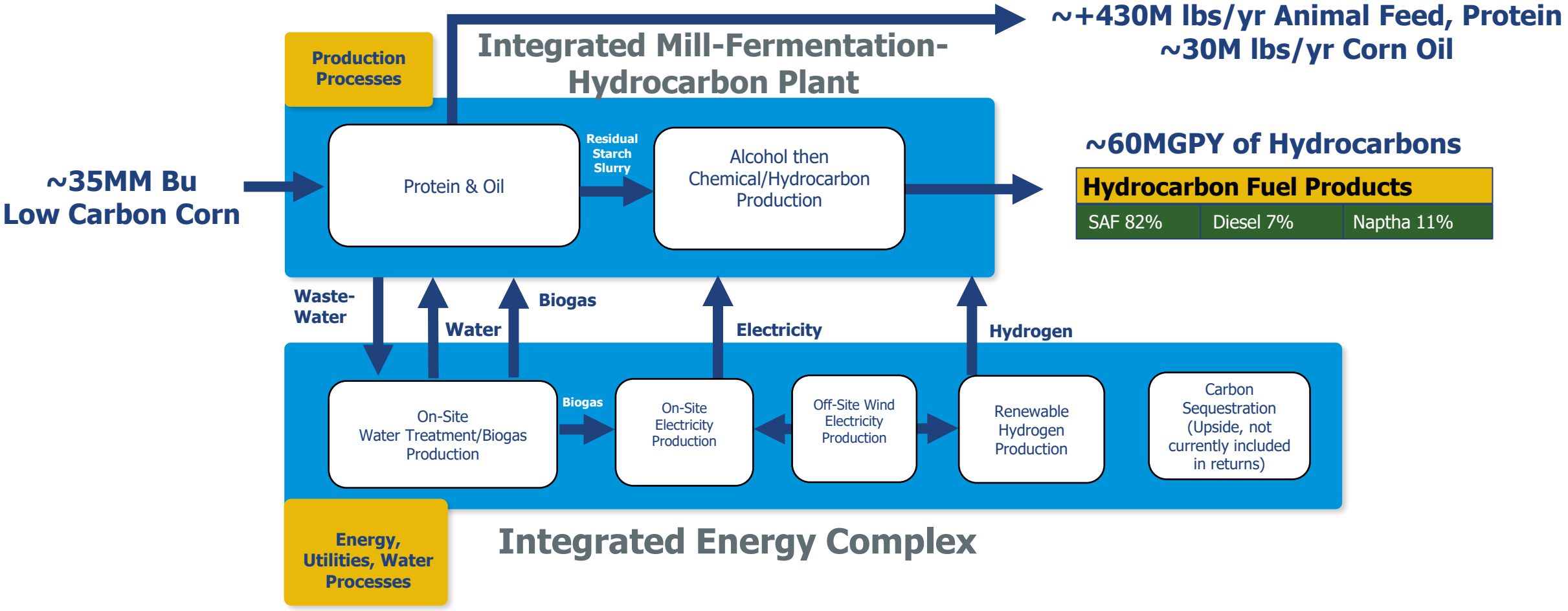
As calculated by Argonne GREET model

NET-ZERO 1*: BEING ENGINEERED NOW--EXPECTED TO BE OPERATING IN 2025

One site, Multiple "Off-the-Grid"** integrated plants: Mill, Protein, Oil, Chemical and Hydrocarbon Plant

Projected Net-Zero 1 Project EBITDA: ~$150-200M/yr (Based on current assumptions)***, ~$900M Total Capex (financed and installed)

Site: Lake Preston, SD

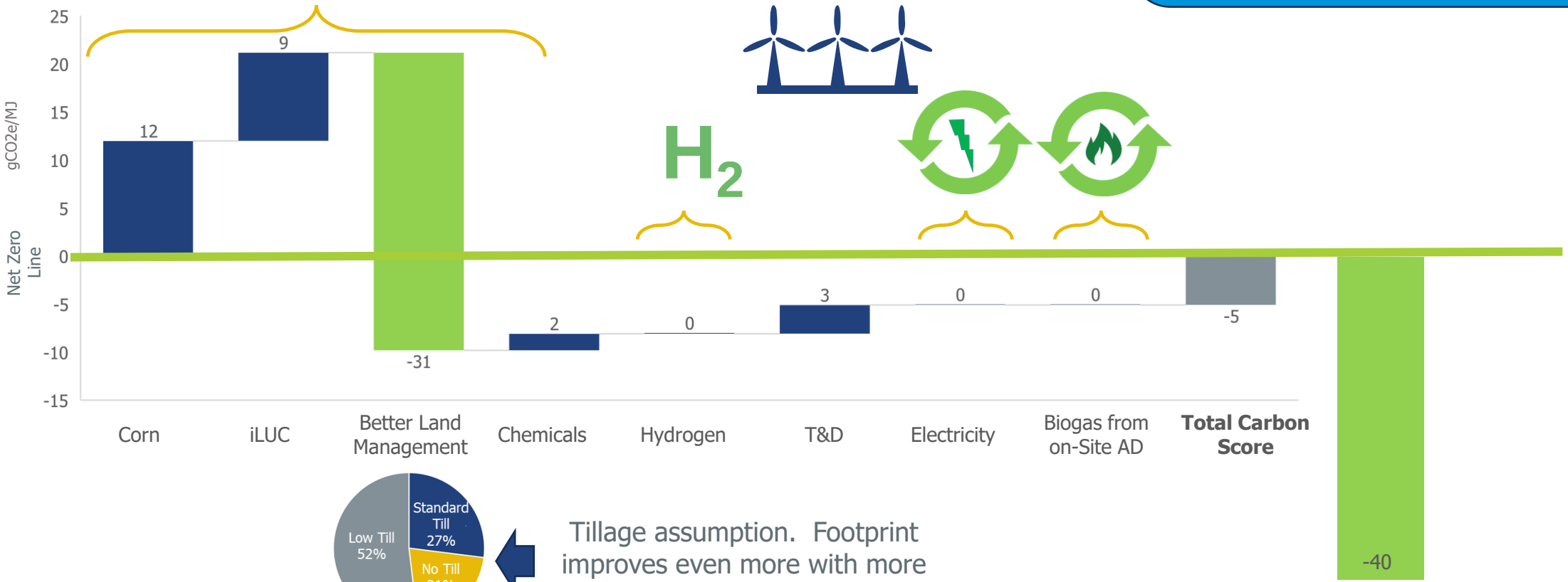


*Currently Planned for Lake Preston, SD volumes of inputs and products are subject to change. **The plant would be connected to the grid to supply energy to the grids, and also to take energy from the grids if needed. The plant is being designed to be self sufficient for its energy between what can be generated on-site and from the planned off-site wind farm. Gevo may also bring RNG to the plant from its RNG project. The financial projections on this slide are based on certain assumptions such as corn price, oil price, protein price, carbon value, and others that can change. The financial projections are also based on current engineering and design work completed to date which work has approximately a plus/minus 50% error bar. ***Estimated based on current assumptions, including those around future commodity pricing and future environmental benefit credit values, and preliminary engineering work

NET-ZERO 1 PRODUCT GHG SOURCES (BASE CASE)

Why DOE Argonne GREET Model?
- Best scientific model
- State of the art
- Updated regularly to reflect new science
- ***Not politicized***

Tillage Practices Near Net-Zero 1 Site (2)



Tillage assumption. Footprint improves even more with more Climate Smart Practices

Note: Gevo is actively working with Argonne to publish GHG values for Net-Zero 1 and future plants.
(1) Better management defined by Argonne on average as low farming CI, and sustainable farming practices like cover crops.
(2) Depending on corn portfolio Gevo has, the -31gCO23/MJ value shown here will vary between 0 and -62. On average Gevo is assuming a conservative portfolio that mainly sources low tillage corn.

WHICH OF THESE FIELDS HAS A BETTER SUSTAINABILITY FOOTPRINT?

Strip Till leads to a -5 CI SAF or better(1)

All No Till leads to a -30 CI SAF or better(1)

Roughly 50% of crop land uses low till or no till.
If everyone used no till, we'd save 2% of Total US GHG emissions(2)
With further advances is soil science, even more it possible

(1) Assumes renewable energy is used in manufacturing and calculated using Argonne GREET
(2) Thompson, N. et al. (2021) "Opportunities And Challenges Associated With "Carbon Farming" For U.S. Row-Crop Producers", Purdue University Center for Commercial Agriculture. Accessed on August 12, 2021 at https://ag.purdue.edu/commercialag/home/resource/2021/06/opportunities-and-challenges-associated-with-carbon-farming-for-u-s-row-crop-producers/ . Image available on same site, powered by Bing, GeoNames, Microsoft, and TomTom

ARGONNE GREET MODEL IS THE GO TO STANDARD FOR COUNTING CARBON

HOW REGULATIONS / PROGRAMS ARE COMPARED TO GREET LCA

CARBON EMISSION CONTRIBUTIONS	GREET	Ca. GREET 3.0	CORSIA	RFS	EU REDII	Canada CFS	RenovaBio
Farm Specific Cultivation	✓	✗	✓	✗	✓	✓	✓
iLUC Updated Land Use Data	✓	✗	✗	✗	✓	N/A	N/A
Land Management Changes	✓	✗	+/-	✗	✓	✓	✓
Carbon Capture and Sequestration Crediting	✓	✓	✗	✓	✓	✓	✓
Electricity Source	✓	✓	✓	✓	✓	✓	✓
Thermal Source	✓	✓	✓	✓	✓	✓	✓
Methane Avoidance for Manure Systems	✓	✓	✗	✓	N/A	N/A	N/A
Hydrogen Source	✓	✓	✓	✓	✓	✓	✓

✓Always calculated ✗ Not calculated +/- Carbon emission calculated if positive, and not if negative N/A Not within system boundary

THIS GRAPHIC REFLECTS CURRENT REGULATIONS AS OF MARCH 2022

WHAT CAN THE USDA DO?

- Assist development of "Climate Smart Agriculture"
  - Help farmers access equipment that enables
  - Fund unbiased research on capturing carbon in the soil
- Assist development of rural green energy
  - Electricity
  - Alternatives to fossil based natural gas
- Continue to work with DOE so the GREET model has the most current data
- Help, if possible, defray the cost of the new capital that is required

FOR ADDITIONAL INFORMATION ABOUT GEVO

These short videos explain more about Gevo, our process, business system, and how we think about sustainability

NET ZERO 1 (1:52): https://vimeo.com/540736374
Gevo – Solving Energy (2:00): https://vimeo.com/531083659
Working Toward Zero Carbon Footprint (2:46): https://vimeo.com/440219829
Food and Fuel (1:19): https://vimeo.com/440220247
Where we are so far (1:21): https://vimeo.com/416215170
Our Process (1:01): https://vimeo.com/416215010
Replacing Fossil Based Carbon (2:07): https://vimeo.com/396232536
Farming Carbon & Soil Conservation (1:54): https://vimeo.com/379773448
Sustainable Jet Fuel (1:59): https://vimeo.com/379896308
Partners with Mother Nature (1:49): https://vimeo.com/416215170
Going After the Whole Gallon(0:50): https://vimeo.com/451342705
We are Recycling Carbon (0:45): https://vimeo.com/451341985
Our Circular Economy (0:48): https://vimeo.com/451341499

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