

1a. IRFA Anti-Trust Policy/Independent Board Member Policy

IOWA RENEWABLE FUEL ASSOCIATION ANTITRUST POLICY AND MEETING GUIDELINES

The Antitrust Law. U.S. and state antitrust laws have as their general goal the promotion of free competition. Under the antitrust laws, competitors may not restrain competition via agreements or understandings regarding the price, production or distribution of products and services. Competitors may not engage in any activity intended to restrict the competitive capabilities of their customers, suppliers, or other competitors.

The antitrust laws are complex and often of unclear applicability. Unlawful agreements can be inferred from even circumstantial evidence. A conviction for violating the antitrust laws may result in severe penalties, both on corporations and individuals. Convicted individuals are subject to fines of up to \$100,000 and jail terms of as much as three years. Corporations may be punished by fines not exceeding \$1 million. If the lawsuit is won by a damaged individual, actual damages are automatically trebled by the court, and the defendant must pay the plaintiff's attorneys fees. Even if the antitrust case is won or settled, the demands upon the time of those involved can be very high.

Meeting Guidelines. At IRFA meetings, the following subjects will not be discussed:

1. Current or future industry prices; either prices of the industry product; or prices of inputs. (Great care must be taken in discussing past prices).
2. What constitutes a "fair" profit level.
3. Possible increases or decreases in industry prices.
4. Standardizing or stabilizing final prices.
5. Pricing procedures.
6. Cash discounts.
7. Credit terms.
8. Control of sales.
9. Allocation of markets or customers.
10. Refusals to deal with a corporation or an individual because of its pricing or marketing practices.
11. Whether or not the pricing practices of any industry member are unethical or constitute an unfair trade practice.

General Operating Procedures. To guard against unintentional conduct, all IRFA meetings shall be conducted in accordance with the following procedures.

1. A written agenda will be prepared for each meeting, and will be reviewed by legal counsel upon request of the Executive Director.
2. Accurate minutes providing a complete summary of each meeting will be prepared. The minutes of all meetings will be reviewed by legal counsel to ensure there is no misinterpretation.
3. Upon request of the Executive Director, legal counsel will be present at meetings of the Board of Directors, or of the Executive Committee, or other meetings at which sensitive issues will be discussed.
4. All Association meetings will be properly and formally scheduled; members should never hold "rump" meetings.
5. In case of doubt concerning the propriety of any topic of discussion, members will consult IRFA legal counsel prior to raising it at an IRFA meeting.
6. Should a question arise as to the propriety of remarks or discussion at an IRFA meeting, state the question. If the discussion is not terminated or the question not satisfactorily resolved, the chair shall adjourn the meeting temporarily to request advice of legal counsel. If the issue is not resolved to the satisfaction of the concerned member, that member should leave the meeting.

Outside IRFA Meetings:

1. Members shall not attend or stay at any informal meeting where there is no agenda, no minutes are taken, and no Association staff member is present.
2. Members shall not do anything before or after Association meetings, or at social events, which would be improper at a formal Association meeting.
3. Members shall alert Association staff to any improper discussion.
4. Members shall send copies to an Association staff member of any communication or documents sent, received, or developed by the member when acting for the Association.
5. Members shall alert every employee in their company who deals with the Association about the Association's Antitrust Compliance Policy.
6. Members should be conservative. If you feel an activity might be improper, ask for guidance from the Association staff in advance.

IRFA Antitrust Compliance Policy to be Read at all Meetings:

"IRFA and its officers, directors, and employees fully support and intend to comply with all applicable federal and state antitrust laws and shall not engage in anti-competitive conduct or practice, nor allow IRFA to be used by any member or other party for anti-competitive or unlawful purpose, including but not limited to the following kinds of prohibited conduct:

- a. Any discussions or effort to directly or indirectly fix, raise, lower, control, recommend, suggest, or maintain prices on products or inputs.
- b. Any contract, combination, conspiracy, discussions or effort to divide or allocate markets or customers.
- c. Any discussions or effort to engage in any boycott or considered refusal to deal.
- d. Any discussions or effort through unsanctioned industry standards, restrictions or any other method, to injure the business or trade of anyone.

Minutes will be kept of all meetings of the Board of Directors, the Executive Committee and Standing Committees. These minutes shall summarize accurately and concisely the action taken at the meeting."

The above Antitrust Policy and Meeting Guidelines was adopted by majority vote at a regular meeting of the Board of Directors of the Iowa Renewable Fuels Association, a quorum being present.

President, Ia. Renewable Fuels Assn.

Date

051130 Antitrust Policy T4224



Procedure for Determining Independent Board Members

The Iowa Renewable Fuels Association has the right to expect that all actions and decisions of its Board of Directors and Officers will be made objectively and in the best interests of the Association. Directors and executive officers must be free from undue influence of personal or outside business interests that may appear to or actually interfere with IRFA best interests.

In order to ensure that the Board of Directors and Officers are acting in the best interest of IRFA, the following procedure will be read into and included in the minutes of each board meeting.

Independent Board Member Policy

Definition of Independent Board Member

The IRS defines a voting member of the board as independent if all of the following are met at all times through the IRFA tax year;

1. The member was not compensated as an officer or other employee of the organization or a related organization
2. The member did not receive total compensation or other payments exceeding \$10,000 during the IRFA tax year from either the IRFA or a related organization, other than reimbursement under an accountable plan or reasonable compensation paid for services provided in the capacity as a member of the governing body
3. Neither the member nor any family member of the member was involved in a transaction with IRFA or a related organization within the tax year.

Disclosure Requirements

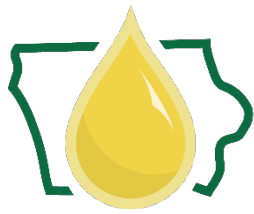
If a board member cannot meet the above requirements, they must disclose to the Board of Directors and Officers the conflict present and must abstain from voting on the transaction for which a conflict of interest exists.

Conflict of Interest Statements

Each board member will be asked to sign a Conflict of Interest Policy that asks them to disclose any potential conflicts.

1b. Reading of Minutes

Iowa Renewable



Fuels Association

Iowa Renewable Fuels Association
Quarterly Board Meeting Minutes
December 7, 2022
Iowa Renewable Fuels Office
Johnston, Iowa

DRAFT

Meeting was called to order by IRFA Vice President Devin Mogler at 8:32 a.m.

People participating:

Member Plants:

Absolute Energy
ADM
Big River Resources
Corn LP
Elite Octane
Gevo
Golden Grain Energy
Green Plains
Homeland Energy
Lincolnway Energy
Little Sioux Corn Processors
Quad County Corn Processors
Renewable Energy Group
Siouxland Energy
Southwest Iowa Renewable Energy
Western Iowa Energy
Verbio North America

Rick Schwarck
Chris Riley
David Zimmerman
Chris Boshart, Elizabeth McOllough
Nick Bowdish
Kent Hartwig
Jerry Calease
Devin Mogler
Telly Papasimakis
Bill Couser
Daryl Haack
Al Giese
Paul Nees
Bob Van Gelder
Mike Jerke
Brad Wilson
Sarah Hoodjer

Associate Members

Alliant Energy
Christianson PLLP
EcoEngineers
Growmark
ICM
IFF
Iowa Corn
Iowa Soybean Association
Kurita America
Navigator CO2
Renewable Fuels Association
Veolia Water Technologies & Solutions

Julie Vande Hoef
Jamey Cline
Mark Heckman
Jeff Manthei
Rusty Johnson
Griffin Ford, Brian Constable
Grant Menke, Kevin Studer
Doug Struyk
Rob Herbon
Elizabeth Burns-Thompson
Robert White
Greg Hoffpauir

Other Participants:

Iowa Renewable Fuels Association

Monte Shaw, Nathan Hohnstein, Lisa Coffelt

1A. IRFA Anti-Trust Policy/Independent Board Member Policy

The Boards anti-trust policy was reviewed:

"IRFA and its officers, directors, and employees fully support and intend to comply with all applicable federal and state antitrust laws and shall not engage in anti-competitive conduct or practice, nor allow IRFA to be used by any member or other party for anti-competitive or unlawful purpose, including but not limited to the following kinds of prohibited conduct:

- a. Any discussions or effort to directly or indirectly fix, raise, lower, control, recommend, suggest, or maintain prices on products or inputs.
- b. Any contract, combination, conspiracy, discussions or effort to divide or allocate markets or customers.
- c. Any discussions or effort to engage in any boycott or considered refusal to deal.
- d. Any discussions or effort through unsanctioned industry standards, restrictions or any other method, to injure the business or trade of anyone.

Minutes will be kept of all meetings of the Board of Directors, the Executive Committee and Standing Committees. These minutes shall summarize accurately and concisely the action taken at the meeting."

The Independent Board Member Policy was reviewed:

Definition of Independent Board Member

The IRS defines a voting member of the board as independent if all of the following are met at all times through the IRFA tax year;

1. The member was not compensated as an officer or other employee of the organization or a related organization
2. The member did not receive total compensation or other payments exceeding \$10,000 during the IRFA tax year from either the IRFA or a related organization, other than reimbursement under an accountable plan or reasonable compensation paid for services provided in the capacity as a member of the governing body

3. Neither the member nor any family member of the member was involved in a transaction with IRFA or a related organization within the tax year

Disclosure Requirements

If a board member cannot meet the above requirements, they must disclose to the Board of Directors and Officers the conflict present and must abstain from voting on the transaction for which a conflict of interest exists.

Conflict of Interest Statements

Each board member will be asked to sign a Conflict-of-Interest Policy that asks them to disclose any potential conflicts.

1B. Reading of Minutes

The minutes of the September 8th quarterly board meeting, October 27th executive committee meeting, and December 6th executive committee meeting were reviewed.

Moved by Zimmerman, seconded by Schwarck, to approve the minutes. Motion carried.

1C. President's Report

Mogler thanked the IRFA staff for their successful efforts while being short one employee for half the year. He thanked the board and staff for their support while serving as 2022 IRFA Board President.

1D. Treasurer's Report

Wilson gave an update on IRFA's financials and noted he and Mogler had reviewed IRFA's checkbook and Shaw's expense reports for June through November. Shaw went over details through the end of November.

Moved by Couser, seconded by Calease, to approve the Treasurer's reports as presented. Motion carried.

1E. Executive Director's Report

Shaw noted 2022 was a successful year with approval of the Governor's Biofuel Access Bill, B30 tax credit, increase of \$10 Million in RFIP, 3 new plant members and record associate members. Schwarck gave an update on the Hormel Institute aromatics research project. Shaw updated the board on the status of IRFA Communications Manager position and presented Mogler with a token of appreciation on behalf of the board.

1F. Members' Update

IRFA members reported on current activities for their respective companies.

2A. IRFA Nominating Committee

Shaw reviewed the IRFA Nominating Committee Report for board members and alternates.

Motioned by Bowdish, seconded by Haack, to approve the Nominating Committee report for IRFA 2023 board members and alternates as recommended. Motion carried.

2B. Election of IRFA Officers and Executive Committee

Shaw reviewed the IRFA Nominating Committee report for IRFA officers and Executive Committee members and asked for any further nominations from the floor. There were none.

Motioned by Papasimakis, seconded by Nees, to approve the Nominating Committee report for IRFA 2023 officers and Executive Committee members as recommended. Motion carried.

2C. 2023 IRFA Board Meeting Dates

Shaw gave an overview of all proposed 2023 meeting dates.

Moved by Nees, seconded by Riley, to approve the 2023 IRFA meeting dates. Motion carried.

2D. 2023 IRFA Member Dues

Shaw gave an overview of the Executive Committee proposal for FY2023 dues, including due changes for producer and associate members.

Moved by Van Gelder, seconded by Hartwig, to adopt the FY23 dues as recommended. Motion carried.

2E. 2023 IRFA Budget

Shaw went over the 2023 IRFA budget as proposed by the Executive Committee and highlighted some budget categories.

Moved by Haack, seconded by Calease, to adopt the proposed 2023 IRFA budget as recommended. Motion carried.

2F. IRFA Member PACs

Hohnstein went over the status of IRFA member PACs. He mentioned that the next FEC reports are due on Thursday, December 8. He discussed that he'll be working on two draft mailers for members, one in spring and the other in late summer/early fall.

2G. IRFA Renewable Fuels Summit

Coffelt gave an update on the sponsors and trade show participants. She gave a brief overview of upcoming speakers and panels. She also noted there are limited rooms within the room block and for members to reserve hotel rooms soon.

2H. 2023 Biofuels: Science and Sustainability Tour

Shaw presented the board with a save the date flyer and briefly discussed the 2023 route, likely from Des Moines to Mason City, and possibly ending in Minneapolis, MN. Discussion followed.

2I. 2023 Members' Day

Hohnstein presented the board with the save the date for the 2023 Members' Day at Lake Panorama Golf Resort.

2J. Iowa Monarch Conservation Consortium

Hohnstein reviewed the September 2022 Monarch Conservation Effort Report. Shaw reminded board of potential issues if monarch butterflies are listed as an endangered species by the U.S. Fish and Wildlife Service.

2K. Communications Update

There was not a communications update.

2L. Elections Update

Hohnstein gave overview of November 2022 Election Results and some final recounts. Shaw discussed work on the 2024 Caucus Project.

There was consensus to work with other groups to form a caucus project similar to four years ago.

3Ai. State Legislative Issues – E15 Regulations

Hohnstein gave an update on E15 Access Standard implementation. Hohnstein noted the change in state vehicle biofuel stickers, new standard for B20-B99 and the process for Iowa retailers selling E15. Discussion followed.

3Aii. State Legislative Issues – Legislation

Hohnstein discussed legislative priorities approved at the September meeting for 2023 including the Renewable Fuels Infrastructure Program, E15 Access Standard, and equitable treatment for pipeline projects. Discussion followed.

3Bi. Federal Issues – RFS2

Shaw gave overview of Ernst letter expressing concern with a GAO report. Shaw reviewed EPA draft RVO rule. Shaw discussed how E-RINs might impact various RIN categories. Discussion followed.

3Bii. Federal Issues – E15

Shaw noted letter to Congressional leaders supporting federal E15 fix from national ag, retailer, oil, and ethanol groups. Shaw reviewed CHS and API letters supporting a federal solution for year-round E15. Shaw updated the status of the requests by individual states for a year-round E15 solution. Shaw mentioned a letter from Magellan requesting a delay in elimination of RVP waiver and a RFA response to Magellan's request. Discussion followed.

3Biii. Federal Issues – Low Carbon, Higher Blends, FFVs

Shaw noted the Grassley press release introducing Biochar Research Network Act. Shaw gave summary of his participation on carbon capture and sequestration panel at the University of Iowa law school. He reviewed IRFA's letter to county supervisors, and op-ed supporting carbon capture and sequestration. Shaw noted CAAFI quarterly report and AAE member updates from September and November in board book. Discussion followed on how IRFA and its members could engage in the debate.

There was consensus for IRFA to work with member plants to send an explanatory letter on why carbon capture is important to their shareholders and corn suppliers.

3Biv. Federal Issues – Tax Credits

Shaw discussed the Inflation Reduction Act. He also reviewed a confidential memo on Prevailing Wages and Qualified Apprenticeship Programs are the act. Shaw noted Growth Energy and RFA comments for CO2 Sequestration. Shaw led discussion on

some considerations regarding the relative benefit of 45Q vs 45Z. Shaw noted Clean Fuels comments on credits for Clean Hydrogen production. Discussion followed.

3Bv. Federal Issues – USDA/DOE

Coffelt noted 218 total applications were submitted for USDA HBIIP funding. White stated applications totaled more than \$200 Million, and there is discussion on amount of funding out of IRA's \$500 Million that USDA will make immediately available. Shaw noted Growth Energy and RFA comments on USDA programs under the Inflation Reduction Act. Discussion followed

3C. State Trade Associations Meeting/Governors' Biofuels Coalition

Hohnstein gave overview of September 2022 meeting where they discussed the Iowa biofuel legislation, Nebraska E30 project and shared IRFA's IUB comments. At least two other states are looking to adopt similar E15 legislation that passed in Iowa this past year.

3D. International Trade

Shaw went over documents in the board book on trade markets, and highlighted recent activities in Indonesia, South Korea, and Brazil. Shaw announced he will be participating in USGC trade mission to India in January 2023. Shaw referenced USGC presentations, and Ethanol A-Team minutes. Discussion followed.

3E. ASTM/NCWM Updates

Hohnstein mentioned there are no ASTM/NCWM updates as their meetings were taking place this week.

4A. Ethanol Promotion Committee

Coffelt went over the projects for DriveClean and noted teacher packets will be sent in January 2023 to school districts and IDOT Student Driver programs.

4B. Biodiesel Promotion Committee

Coffelt gave an update on IRFA's On-Farm Biodiesel Credit program promotion activities and committee discussions on using testimonials from participants to promote biodiesel in farm equipment. Coffelt noted 3 participants to attend Clean Fuels Meeting in January 2023.

4C. Membership Committee

Coffelt announced IRFA will be completing a 2023 Wage & Benefits Survey. She referred members to the updated membership rosters in the board book.

4D. IRFA PAC Committee

Hohnstein gave an update on the PAC and noted the current balance of \$110,771.75 after recent receipts and donations. Hohnstein noted an approved PAC Committee memo listing donations to newly elected legislative candidates from the recent election.

4E. Co-Products Committee

Coffelt gave brief update on the NCERC ethyl carbamate study.

4F. Safety/Environmental Compliance Task Force

Hohnstein reviewed the most recent meeting and announced the next meeting is February 1st, 2023, prior to the 2023 IRFA Summit.

5Ai. DNR – Iowa Comprehensive Petroleum Underground Storage Tank Fund Board

Coffelt gave a brief update of the program and noted the next meeting was scheduled for December 15, 2022.

5Bi. IDALS – Renewable Fuels Infrastructure Program

Coffelt reported in October the RFIP board met and awarded additional grants for ethanol projects. She noted the \$1.25M cap on biodiesel has created a cue for further biodiesel applications to be approved with FY24 monies. Application deadline for next meeting is set at Friday January 13, 2023.

5Ci. Department of Revenue – IA Biodiesel Production Tax Credit

Lisa went over the chart in the board book. She noted production was similar to Q3 in 2021.

5Cii. Department of Revenue – Research Activities Credit

Hohnstein mentioned recent discussions with RSM over the RAC. At this time no member has asked for further IRFA help or involvement. Shaw noted that this topic will be eliminated from future IRFA board meetings.

5D. Iowa Utilities Board/CO2 Projects

Shaw noted IRFA submitted comments to the IA Utilities Board. Hohnstein discussed feedback from Representative Grassley on pipeline projects, and a letter from Jim Kersten supporting the carbon capture projects. Both highlighted the need for continue effort to bring out support for these projects.

5E. USDA NRCS State Technical Committee

Heckman with EcoEngineers noted NRCS is seeking comments on implementation for IRA funded conservation programs.

5F. ISU Iowa Grain Quality Initiative Advisory Committee

Giese noted \$30M was spent on grain quality research in 2022. Giese has invited a representative to speak at the May IRFA Board Meeting.

Moved by Couser, seconded by Giese, to adjourn the meeting at 1:29. Motion carried.

IRFA Secretary

Date

1c. President's Report – Al Giese

1d. Treasurer's Report – Chris Boshart

**Iowa Renewable Fuels Association
Statement of Revenue and Expense
for the period ending December 31, 2022**

	Budget	Actual
REVENUE		
Members	\$977,450.00	\$ 999,450.00
Associate Members	\$ 95,000.00	\$ 99,250.00
Interest Income		\$ 8,573.12
PAC		\$ 43,246.27
Summit	\$100,000.00	\$ 121,760.00
Members Day	\$ 18,000.00	\$ 21,550.00
Tour	\$ 50,000.00	\$ 45,000.00
Other - Misc.	\$ 68,000.00	\$ 101,105.98
TOTAL REVENUE	\$ 1,308,450.00	\$ 1,439,935.37
EXPENDITURES		
Auto Maintenance	\$ 2,500.00	\$ 2,531.71
Insurance	\$ 5,000.00	\$ 4,756.00
Gain on Sale of Asset		\$ 15,863.16
Professional Fees	\$ 20,000.00	\$ 19,419.21
Supplies	\$ 5,000.00	\$ 6,660.33
Salaries & Benefits	\$592,000.00	\$ 581,846.52
Federal & State Taxes	\$ 4,000.00	\$ 544.00
Services Contract	\$ 67,870.00	\$ 67,870.40
Telephone	\$ 6,000.00	\$ 2,590.15
Computer	\$ 12,000.00	\$ 10,087.94
Depreciation Expense - Auto		\$ -
TOTAL ADMIN EXPENSES	\$ 714,370.00	\$ 712,169.42
Meeting Expense	\$ 7,500.00	\$ 8,247.42
**Members Day	\$ 18,000.00	\$ 19,169.28
Member Relations	\$ 19,500.00	\$ 32,623.51
Web/Press	\$ 10,000.00	\$ 6,883.19
Staff Travel	\$ 35,000.00	\$ 48,954.42
IRFA Memberships	\$ 5,000.00	\$ 3,195.00
Research & Development	\$ 83,500.00	\$ 89,181.33
Lobbying	\$100,000.00	\$ 162,928.01
Promo	\$215,000.00	\$ 113,679.23
**Summit	\$ 85,000.00	\$ 76,780.82
**Ethanol	\$115,000.00	\$ 98,531.15
**BioD	\$ 35,000.00	\$ 52,303.54
**Tour	\$ 60,000.00	\$ 75,183.41
**Retailer Outreach	\$ 99,000.00	\$ 92,334.23
PAC-administration	\$ 3,000.00	\$ 2,293.26
IRFA PAC		\$ 40,714.53
TOTAL INTERNAL PROGRAMS	\$ 890,500.00	\$ 923,002.33
TOTAL EXPENDITURES	\$ 1,604,870.00	\$ 1,635,171.75
PROJECTED INCOME	\$ 1,308,450.00	\$ 1,439,935.37
SURPLUS/(DEFICIT)	\$ (296,420.00)	\$ (195,236.38)
Roll-forward surplus	\$ 400,000.00	
Bottom Line	\$ 103,580.00	

Iowa Renewable Fuels Association
Statement of Financial Position
December 31, 2022

CASH IN BANK	\$	663,689.40	
RESERVE ACCOUNT	\$	527,901.24	
RESTRICTED ASSETS-IRFA PAC	\$	109,546.75	
PREPAID EXPENSE	\$	18,296.00	
ACCOUNTS RECEIVABLE	\$	-	
TOTAL CURRENT ASSETS			\$ 1,319,433.39
FIXED ASSETS			
COMPUTER		\$0.00	
AUTO		\$54,587.85	
ACCUMULATED DEPRECIATION - COMPUTER		\$0.00	
ACCUMULATED DEPRECIATION - AUTO		(\$54,587.85)	
TOTAL FIXED ASSETS			\$0.00
TOTAL ASSETS			\$ 1,319,433.39
CURRENT LIABILITIES			
ACCOUNTS PAYABLE	\$	271,601.27	
ACCRUED INTEREST PAYABLE	\$	-	
DEFERRED REVENUE	\$	161,725.00	
TOTAL CURRENT LIABILITIES			\$ 433,326.27
NET ASSETS			
NET ASSETS - BEGINNING BALANCE	\$	1,081,343.50	
RESTRICTED ASSETS-LEG ED FUND	\$	-	
NET INCOME - YEAR TO DATE	\$	(195,236.38)	
TOTAL NET ASSETS			\$ 886,107.12
TOTAL LIABILITIES AND NET ASSETS			\$ 1,319,433.39

FY2022 "Checkbook"					
	Budget		Year End Projection		Actual
	2022				
REVENUE					
Members	\$977,450		\$999,450		\$999,450
Associate Members	\$95,000		\$99,250		\$99,250
Summit	\$100,000		\$121,760		\$121,760
Members Day	\$18,000		\$21,550		\$21,550
Tour	\$50,000		\$45,000		\$45,000
Other - Misc.	\$68,000		\$105,655		\$101,106
TOTAL REVENUE	\$1,308,450		\$1,392,665		\$1,388,116
EXPENDITURES					
Auto Maintenance	\$2,500		\$2,531		\$2,532
Insurance	\$5,000		\$4,756		\$4,756
Professional Fees	\$20,000		\$16,900		\$19,419
Supplies	\$5,000		\$3,250		\$6,660
Salaries & Benefits	\$592,000		\$560,000		\$581,847
Federal & State Taxes	\$4,000		\$544		\$544
Services Contract	\$67,870		\$67,870		\$67,870
Telephone	\$6,000		\$2,600		\$2,590
Computer	\$12,000		\$10,087		\$10,088
TOTAL ADMIN EXPENSES	\$714,370		\$668,538		\$696,306
Meeting Expense	\$7,500		\$7,500		\$8,247
**Members Day	\$18,000		\$19,169		\$19,169
Member Relations	\$19,500		\$31,000		\$32,624
Web/Press	\$10,000		\$6,500		\$6,883
Staff Travel	\$35,000		\$42,500		\$48,954
IRFA Memberships	\$5,000		\$3,225		\$3,195
Research & Development	\$83,500		\$86,764		\$89,181
Lobbying	\$100,000		\$163,200		\$162,928
Promo	\$215,000		\$105,522		\$113,679
**Summit	\$85,000		\$76,780		\$76,781
**Ethanol	\$115,000		\$105,000		\$98,531
**BioD	\$35,000		\$45,000		\$52,304
**Tour	\$60,000		\$75,183		\$75,183
**Retailer Outreach	\$99,000		\$95,000		\$92,334
PAC-administration	\$3,000		\$2,293		\$2,293
TOTAL INTERNAL PROGRAMS	\$890,500		\$864,636		\$882,287
TOTAL EXPENDITURES	\$1,604,870		\$1,533,174		\$1,578,593
PROJECTED INCOME	\$1,308,450		\$1,392,665		\$1,388,116
SURPLUS/(DEFICIT)	-\$296,420		-\$140,509		-\$190,477
Roll-forward surplus	\$400,000		\$439,000		\$439,000
Bottom Line	\$103,580		\$298,491		\$248,523

**Iowa Renewable Fuels Association
Statement of Revenue and Expense
for the period ending February 28, 2023**

	Budget	Actual	
REVENUE			
Members	\$1,155,600.00	\$ 262,725.00	
Associate Members	\$ 122,400.00	\$ 79,200.00	
Interest Income		\$ 6,212.35	
PAC		\$ -	
Summit	\$ 120,000.00	\$ 114,890.00	
Members Day	\$ 20,750.00	\$ -	
Tour	\$ 65,000.00	\$ -	
Other - Misc.	\$ 15,000.00	\$ 35,000.00	
TOTAL REVENUE	\$ 1,498,750.00	\$ 498,027.35	
EXPENDITURES			
Auto Maintenance	\$ 2,500.00	\$ -	
Insurance	\$ 5,000.00	\$ 2,296.00	
Gain on Sale of Asset		\$ -	
Professional Fees	\$ 20,000.00	\$ 224.61	
Supplies	\$ 5,000.00	\$ 196.24	
Salaries & Benefits	\$ 605,000.00	\$ -	
Federal & State Taxes	\$ 1,500.00	\$ -	
Services Contract	\$ 69,500.00	\$ -	
Telephone	\$ 3,000.00	\$ -	
Computer	\$ 1,000.00	\$ -	
Depreciation Expense - Auto		\$ -	
TOTAL ADMIN EXPENSES	\$ 712,500.00	\$ 2,716.85	
Meeting Expense	\$ 7,500.00	\$ -	
**Members Day	\$ 20,750.00	\$ -	
Member Relations	\$ 20,000.00	\$ 2,295.72	
Web/Press	\$ 10,000.00	\$ 148.54	
Staff Travel	\$ 50,000.00	\$ 3,917.80	
IRFA Memberships	\$ 5,000.00	\$ 350.00	
Research & Development	\$ 106,000.00	\$ 31,725.00	
Lobbying	\$ 140,000.00	\$ 27,387.17	
Promo	\$ 190,000.00	\$ 12,502.00	
**Summit	\$ 85,000.00	\$ 78,228.53	
**Ethanol	\$ 125,000.00	\$ 4,293.00	
**BioD	\$ 45,000.00	\$ 931.94	
**Tour	\$ 70,000.00	\$ -	
**Retailer Outreach	\$ 56,000.00	\$ 8,000.00	
PAC-administration	\$ 3,000.00	\$ -	
IRFA PAC		\$ 6,000.00	
TOTAL INTERNAL PROGRAMS	\$ 933,250.00	\$ 175,779.70	
TOTAL EXPENDITURES	\$ 1,645,750.00	\$ 178,496.55	
PROJECTED INCOME	\$ 1,498,750.00	\$ 498,027.35	
SURPLUS/(DEFICIT)	\$ (147,000.00)	\$ 319,530.80	
Roll-forward surplus	\$ 248,000.00		
Bottom Line	\$ 101,000.00		

Iowa Renewable Fuels Association
Statement of Financial Position
February 28, 2023

CASH IN BANK	\$	567,977.55	
RESERVE ACCOUNT	\$	534,113.59	
RESTRICTED ASSETS-IRFA PAC	\$	103,546.75	
PREPAID EXPENSE	\$	-	
ACCOUNTS RECEIVABLE	\$	-	
TOTAL CURRENT ASSETS			\$ 1,205,637.89
FIXED ASSETS			
COMPUTER		\$0.00	
AUTO		\$54,587.85	
ACCUMULATED DEPRECIATION - COMPUTER		\$0.00	
ACCUMULATED DEPRECIATION - AUTO		(\$54,587.85)	
TOTAL FIXED ASSETS			\$0.00
TOTAL ASSETS			\$ 1,205,637.89
CURRENT LIABILITIES			
ACCOUNTS PAYABLE	\$	-	
ACCRUED INTEREST PAYABLE	\$	-	
DEFERRED REVENUE	\$	-	
TOTAL CURRENT LIABILITIES			\$ -
NET ASSETS			
NET ASSETS - BEGINNING BALANCE	\$	886,107.09	
RESTRICTED ASSETS-LEG ED FUND	\$	-	
NET INCOME - YEAR TO DATE	\$	319,530.80	
TOTAL NET ASSETS			\$ 1,205,637.89
TOTAL LIABILITIES AND NET ASSETS			\$ 1,205,637.89

1e. Executive Director's Report – Monte Shaw

IOWA AG LEADERS DINNER



Secretary Mike Naig cordially invites you
to the 11th Annual Ag Leaders Dinner to celebrate Iowa agriculture.

11th Annual Ag Leaders Dinner
Tuesday, March 21, 2023
Reception: 6 pm | Dinner and Program: 7 pm

FFA Enrichment Center
1055 SW Prairie Trail Parkway
Ankeny, IA 50023

RSVP: www.agleadersiowa.com/ald-rsvp2023



December 9, 2022

Hello Biofuels Research Project Team,

We hope this finds you well! We are aware that you are very busy with your end of year work and preparations for the upcoming holiday season. Please know how honored we remain to have your support and faith in the important research you are making happen – research that will impact the ethanol industry and human health with our discoveries.

As I write this research is underway and progress continues at our three collaborative institutions – The Hormel Institute, UMN-Mayo Clinic, Case Western Reserve University, School of Medicine and Energy Resources Center at University of Illinois, Chicago.

These are specific updates with more to be shared with you (analysis of data post experiments) end of December by Dr Liu:

Dr. Shujun Liu:

- Lab is largely up and running following transition to Case Western; some processes and equipment are still “adapting” to the new environment, i.e., and working with Case Western colleagues in sharing different types/modes of equipment
- Second round of results were shared - still preliminary; need at least three rounds of replication to obtain sufficient preliminary data to draw conclusions – this is key
- Will run as many rounds of experiments as possible before the end of Dec
- Will provide initial analysis for some of the research end of December

Dr. Leena Hilakivi-Clarke:

- No data yet - mice are ordered and experiments will begin as soon as they arrive; inhalation exposure column has been created but BTEX column for exposure analysis has not arrived to the laboratory yet (it was order in early summer 2022)
- Main study will use pregnant dams but pilot study will use non-pregnant adult mice.
- Will begin by exposing adult mice to benzopyrene to induce mammary tumors. Benzopyrene is used to induce lung tumors in mice, but it has not been previously tested whether it also causes mammary tumors in mice. The goal of the study is to generate a model of human breast cancer that is relevant for cancer-inducing toxic chemicals in human environment.
 - If successful, may move on to pairing benzopyrene with E0 exposure
- Starting by small steps to ensure the inhalation exposure study is set up correctly
- Full study will aim to expose pregnant dams to E0, E15, E85 and their offspring to benzopyrene.
- The goal of this study is to determine whether exposure to E0 in the womb will make offspring susceptible for later breast cancer development. Based on earlier studies, exposures to

environmental toxins might affect breast cancer risk most if the exposures take place early in life.

- Next step is to determine whether early life vehicle emission exposures increase breast cancer risk by modifying offspring's epigenome, perhaps by first targeting offspring's microbiome.

Dr. Steffen Mueller:

- Advocating/sharing project at various global meetings/zoom and in person. Major presentation of the project as it relates to the industry will be shared as Dr. Mueller invited to participate in a panel at the RFA's 28th annual National Ethanol Conference held February 28 – March 2, 2023 in Orlando, Florida. *"The "Ready. Set. Go!" theme reflects the renewable fuels industry's eagerness to seize on the opportunities presented by passage of the Inflation Reduction Act, the post-2022 implementation of the Renewable Fuel Standard, the SAF Grand Challenge, and other recent policy developments."* Dr. Liu, Dr Leena Hilakivi-Clarke may attend as needed to meet/thank/share the specific details of their research with industry leaders.

I will be in touch at the end of the month with results and any preliminary data possible.

Please know we are on schedule with our Biofuels Research Project and have added deliverables with Dr. Hilakivi-Clarke's expanded project. With Phase II we estimated research to be done throughout 2022 with some preliminary findings available to share by year end. You and this project are very important to us and know that above all, great and expert research must be the greatest and highest priority and we must rely on our scientists to set the schedule and plan.

Thanks – be well and enjoy this beautiful season in the meantime!

All best
Gail



Gail Dennison, M.A., CFRE
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gaildenn@umn.edu www.hi.umn.edu
Today's RESEARCH,
Tomorrow's CURES



December 30, 2022

Greetings, Biofuels Research Project Team,

Just a short update to let you know that even during holidays our research teams continue to work on our important Biofuels Research Project. It will be exciting to see Phase II be completed in the first quarter with analysis of data shared with you in the next couple months (before publishing research).

As I write this research is underway and progress continues at our three collaborative institutions – The Hormel Institute, UMN-Mayo Clinic, Case Western Reserve University, School of Medicine and Energy Resources Center at University of Illinois, Chicago.

Attached is a specific update for you by Dr. Shujun Liu.

Dr. Shujun Liu:

- See attached presentation for details

Dr. Leena Hilakivi-Clarke:

- No data yet - mice are ordered and experiments will begin as soon as they arrive; inhalation exposure column has been created but BTEX column for exposure analysis has not arrived to the laboratory yet (it was order in early summer 2022)
- Main study will use pregnant dams but pilot study will use non-pregnant adult mice.
- Will begin by exposing adult mice to benzopyrene to induce mammary tumors. Benzopyrene is used to induce lung tumors in mice, but it has not been previously tested whether it also causes mammary tumors in mice. The goal of the study is to generate a model of human breast cancer that is relevant for cancer-inducing toxic chemicals in human environment.
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- Next step is to determine whether early life vehicle emission exposures increase breast cancer risk by modifying offspring's epigenome, perhaps by first targeting offspring's microbiome.

Dr. Steffen Mueller:

- Advocating/sharing project at various global meetings/zoom and in person. Major presentation of the project as it relates to the industry will be shared as Dr. Mueller invited to participate in a

panel at the RFA's 28th annual National Ethanol Conference held February 28 – March 2, 2023 in Orlando, Florida. *"The "Ready. Set. Go!" theme reflects the renewable fuels industry's eagerness to seize on the opportunities presented by passage of the Inflation Reduction Act, the post-2022 implementation of the Renewable Fuel Standard, the SAF Grand Challenge, and other recent policy developments."* Gail Dennison will attend to meet/thank/share the specific details of the research project with industry leaders.

This project is very important to us and know that above all, great and expert research must be the greatest and highest priority and we must rely on our scientists to set the schedule and plan.

Finally, our sincere hopes the New Year is full of great health and joy for each of you. Thank you for your partnership and support!

All best,
Gail



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Today's RESEARCH,
Tomorrow's CURES

March 1, 2023

Greetings Biofuels Research Project Team,

We hope this letter finds you well! As I write this, research continues at a rapid pace at our three collaborative institutions – The Hormel Institute, UMN; Case Western Reserve University, School of Medicine; and Energy Resources Center at University of Illinois, Chicago.

It is exciting to talk with these researchers and witness how your support has facilitated truly ground-breaking and innovative research in the biofuels space. We remain extremely grateful for your dedication to this work and new discoveries that can impact both the ethanol industry and human health worldwide.

Dr. Shujun Liu:

- Preliminary findings from in-vitro experiments demonstrate an increased need to focus on populations with long-term exposure to compounds being studied
- Research continues for additional generations of cancer cells exposed to the studied compounds
- Plans are beginning for the next phase of research

Dr. Leena Hilakivi-Clarke:

- In-vivo exposure research is underway and will be monitored for up to six months for tumor development
- Since inhalation chambers are still on order, alternative research plans are underway and continue to be developed
- Dr. Hilakivi-Clarke will likely hope to begin Phase III earlier/on a different timeline and we will keep all posted for the research proposal for your consideration

Dr. Steffen Mueller:

- Advocating and sharing this project globally at conferences and meetings.
- Presenting overview and preliminary results of this project at the National Ethanol Conference this week in Orlando, FL. I will also be attending to meet/thank/share more details of the research project with industry leaders.

This project remains very important to us and we are on track and on the schedule - and budget - originally proposed.

Thank you for your partnership and support!

All best

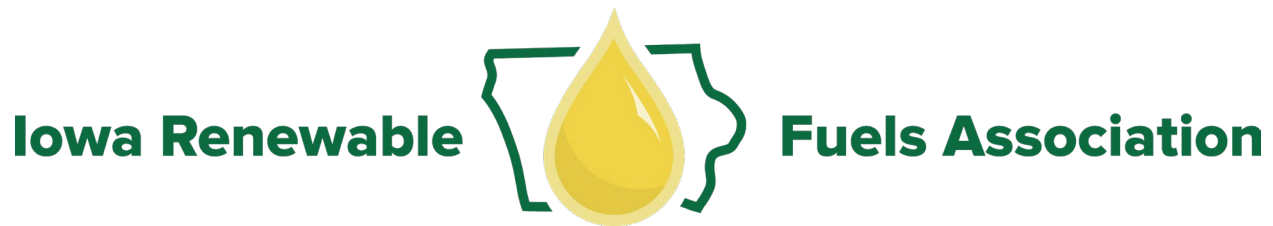


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Today's RESEARCH,
Tomorrow's CURES

1f. Members' Update

2a. 2023 IRFA Board Meeting Dates



2023 IRFA Meeting/Event Dates

Approved

Iowa Renewable Fuels Summit

Tuesday, February 7

Iowa Events Center

Day on the Hill and Quarterly Board Meeting

Wednesday, March 8

IRFA Board Room

Quarterly Board Meeting

Wednesday, May 10

IRFA Board Room

14th Iowa Biofuels: Science and Sustainability Tour

August 14-17

Annual Members Day Event and Quarterly Board Meeting

Wednesday/Thursday, September 6-7

Lake Panorama National Golf Resort & Conference Center

Holiday Reception and Annual Meeting

Tuesday evening/Wednesday, December 5-6

IRFA Board Room

2b. IRFA Member PACs

IRFA Member PAC Status Update

	Plant PAC	Cash on Hand (1/1/2022)	YTD Receipts (2022)	YTD Contributions (2022)	Cash on Hand (12/31/2022)
1	Absolute Energy PAC	\$95,819	\$84,623	\$79,253	\$101,188
2	Golden Grain Energy LLC Political Action Committee (Combined)	\$27,597	\$98,910	\$87,806	\$38,701
3	Lincolnway Energy, LLC PAC	\$2,089	\$10,835	\$4,900	\$8,024
4	LSCP (Little Sioux Corn Processors) PAC	\$20,886	\$200	\$17,200	\$3,886
5	Quad County Corn Processors Cooperative PAC	\$1,580	\$1,870	\$2,685	\$764
6	Siouxland Energy & Livestock Cooperative PAC	\$6,969	\$4,150	\$5,800	\$5,319
7	Southwest Iowa Renewable Energy PAC	\$7,687	\$450	\$6,426	\$1,711
8	Western Dubuque Biodiesel, PAC	\$100,098	\$92	\$26,925	\$73,265
9	Western Iowa Energy LLC PAC	\$27,225	\$7,614	\$21,700	\$13,139
	Plant Total	\$289,950	\$208,743	\$252,696	\$245,998
10	Iowa Renewable Fuels Association PAC	\$106,800	\$43,246	\$46,500	\$103,547
	Industry Total	\$396,750	\$251,990	\$299,196	\$349,544

2c. IRFA Renewable Fuels Summit

Iowa Renewable Fuels Association



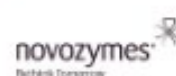
2023 Iowa Renewable Fuels Summit
February 7, 2023
Community Choice Credit Union Convention Center
Des Moines, IA

- 7:30-8:30 am Registration & Trade Show Open
- 8:30 am General Session
- Welcome – Al Giese, President, Iowa Renewable Fuels Association  [Affiliated with @Quad_County2017](#)
- Industry Overview – Monte Shaw, Iowa Renewable Fuels Association  [Affiliated with @iowafuel](#)
- 8:45 am Iowa Governor Kim Reynolds  [@IAGovernor](#)
- 9:00 am Industry Keynote – Geoff Cooper, CEO, Renewable Fuels Association  [Affiliated with @EthanolRFA](#)
- 9:30 am The Path to Low Carbon Ethanol
- Moderator: Mike Jerke, CEO, Southwest Iowa Renewable Energy  [@etohmike](#)
 - Laith Amin, Carbon Capture Storage Team Lead, DNV  [Affiliated with @DNV_Group](#)
 - Dr. Ernie Goss, Chair of Regional Economics, Creighton University  [@erniegoss](#)
 - David Kruse, Chairman, Commstock Investments
 - John Thompson, Technology and Markets Director, Clean Air Task Force  [Affiliated with @cleanaircatf](#)
- 10:45 am Is Russia Finished as an Energy Superpower?
Dr. Yuval Weber, Distinguished Fellow, Marine Corps University  [@yuvalweber](#)
- 11:30 am Beyond Vehicles: New Opportunities for Ethanol
- Moderator: Grant Menke, Deputy Secretary, Iowa Department of Agriculture  [Affiliated with @IADeptAg](#)
 - Lindsay Fitzgerald, Vice President of Government Relations, Gevo, Inc.  [Affiliated with @Gevo_Inc](#)
 - Dr. BJ Johnson, CEO and Co-Founder, ClearFlame Engine Technologies  [Affiliated with @ClearFlameEng](#)
 - John Rosenfeld, Vice President Commercial/Strategic, Proteum Energy
- 12:15 pm Lunch
- 1:30 pm Farah Ahmad, Deputy Under Secretary for Rural Development, USDA  [Affiliated with @usdaRD](#)
- 1:40 pm State and Federal Policy Roundtable
- Moderator: Monte Shaw
 - Geoff Cooper, CEO, Renewable Fuels Association
 - Kurt Kovarik, Vice President for Federal Affairs, Clean Fuels Alliance America  [@kovarikdc](#)
 - Jake Swanson, President, High Yield Strategies and former policy advisor to Gov. Kim Reynolds  [@JSwansonIA](#)
 - Brian Werner, Executive Director, Minnesota Bio-Fuels Association  [Affiliated with @MNBiofuels](#)
- 2:40 pm Crystal Ball: The Future of Biodiesel
- Moderator: Tom Brooks, General Manager, Western Dubuque Biodiesel
 - Scott Fenwick, Technical Director, Clean Fuels Alliance America  [Affiliated with @CleanFuelsAA](#)
 - Matt Herman, Senior Director of Renewable Products Marketing, Iowa Soybean Association  [@Mattherman09](#)
- 3:30 pm Summit & Trade Show Concludes

2023 Iowa Renewable Fuels SUMMIT SPONSORS

Thank You Summit Gold Sponsors!

Baker Group
CTE Global, Inc.
Fluid Quip Technologies
Growth Energy
IFF, Inc.
Iowa Corn
Lallemand Biofuels & Distilled Spirits
Navigator CO₂ Ventures
Novozymes North America
Summit Carbon Solutions



Thank You Summit Silver Sponsors!

360 Energy Solutions, Inc.
American Coalition of Ethanol
Barchart
BetaTec Hop Products
BrownWinick Law Firm
Chevron Renewable Energy Group
CoBank
EcoEngineers
Fagen, Inc.
Farm Credit Services
Growmark, Inc.
H2O Innovation
ICM
Iowa Central Fuel Testing Laboratory
Kemin Industries
Premium Plant Services
Renewable Fuels Association
RSM US LLP
WCR
Wolf Carbon Solutions



Media Sponsors

Biodiesel Magazine
Ethanol Producer Magazine

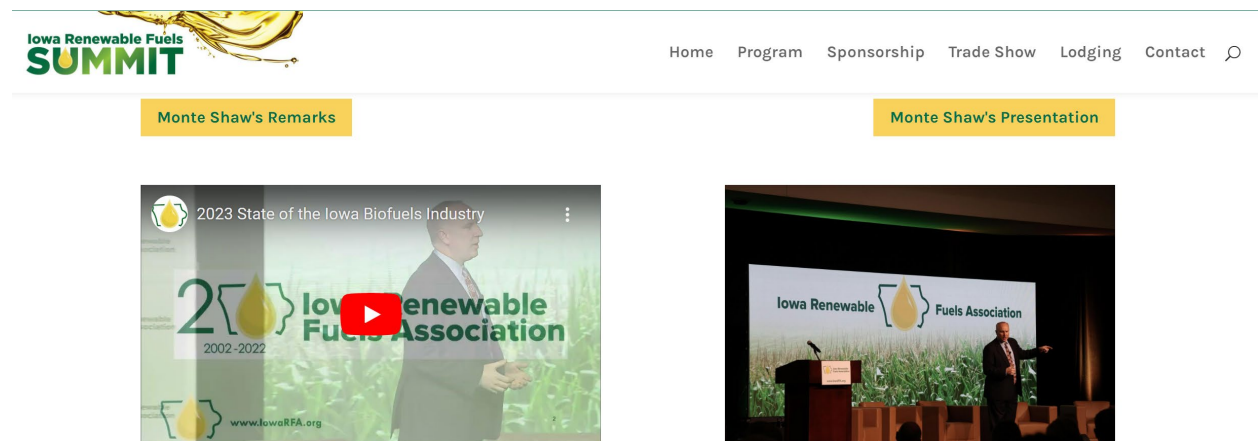


EXHIBITORS

The IRFA thanks the following companies for their support!

Company	Booth	Company	Booth
American Coalition of Ethanol	7	Iowa State University	
Baker Group	14	BioCentury Research Farm	25
Barchart	15	J&D Construction, Inc.	23
BBI International Media & Events	22	Jacobs Global	38
Beta Tech Hop Products, Inc.	46	JC Ramsdell Enviro Services, Inc.	35
Chase Nedrow Industries	18	Keit Spectrometers	44
Chevron Renewable Energy Group	36	Kemin Bio Solutions	17
Cooling Tower Depot, Inc.	26	Lallemand Biofuels & Distilled Spirits	12
CTE Global, Inc.	47	LucasE3	19
DPT Mechanical	43	Navigator CO2	29
EcoEngineers	30	Novozymes North America	28
Enviro-Dyne Industrial Services, Inc.	41	Pinion Global	24
Fagen, Inc.	20	Precision Rotary Equipment	39
Fluid Quip Technologies	10	Premium Plant Services	31
Growmark FS	45	Rasmussen Mechanical Services	21
Growth Energy	8	Renewable Fuels Association	2
H2O Innovation USA, Inc.	3	RSM US, LLP	32
IAC	40	Scott Equipment Company	42
ICM, Inc.	6	Sukup Manufacturing Co.	33
IFF	1	Summit Carbon Solutions	13
Interstates, Inc.	27	WCR, Inc.	4
Iowa Central Fuel Testing Laboratory	16	WCR, Inc.	5
Iowa Corn Growers Association	9	WINBCO	34
Iowa Renewable Fuels Association	11	Wolf Carbon Solutions	37

Link to Summit Recap <https://iowarenewablefuelssummit.org/>



Estimated Financials

Revenue		
	Sponsorships	\$97,000.00
	Exhibitors	\$21,250.00
	Lunch	\$ 3,034.53
Total Revenue		\$121,284.53
Cost		
	Venue/Food/Production	\$90,257.56
Total Cost		\$90,257.56
Net Profit		\$31,026.97

Q4

It might be advantageous to hear about more future ethanol applications and technology



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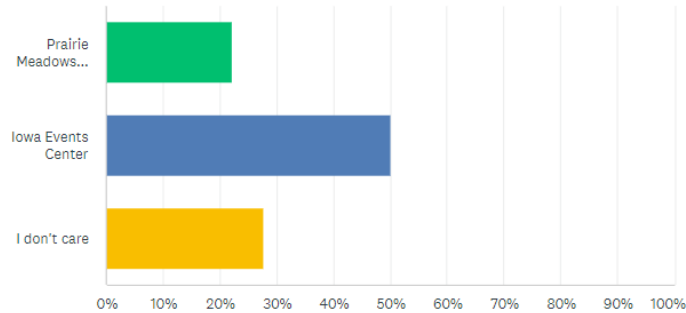
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2/19/2023 01:42 AM

[View respondent's answers](#)[Add tags](#)

The 2023 Summit was the 2nd Summit we held at the Iowa Events Center. Would you prefer the 2024 Summit to be held at the Iowa Events Center or go back to the Prairie Meadows Convention Center?

Answered: 18 Skipped: 0



ANSWER CHOICES	RESPONSES	
▼ Prairie Meadows Convention Center	22.22%	4
▼ Iowa Events Center	50.00%	9
▼ I don't care	27.78%	5
TOTAL		18

Q5

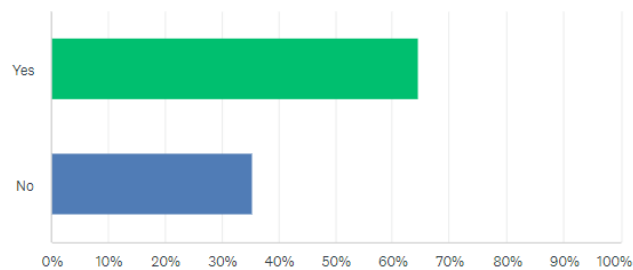


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Historically the Summit has been free and open to the public. If IRFA charged a minimum registration fee of \$50, would you continue to attend the event in 2024?

Answered: 17 Skipped: 1



ANSWER CHOICES	RESPONSES	
▼ Yes	64.71%	11
▼ No	35.29%	6
TOTAL		17

January 2024

January 2024						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February 2024						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Dec 31	Jan 1, 24 New Years Day	2	3	4	5	6
7	8 NCGA	9 Prairie Meadows Available	10	11	12	13
14	15 Potential IA Caucus	16 Prairie Meadows Available	17	18	19	20
21	22	23 Potential NH Primary	24	25	26	27
28	29	30	31 GE - Executive Leadership Cd	Feb 1	2	3

February 2024

February 2024							March 2024						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
4	5	6	7	8	9	10	3	4	5	6	7	8	9
11	12	13	14	15	16	17	10	11	12	13	14	15	16
18	19	20	21	22	23	24	17	18	19	20	21	22	23
25	26	27	28	29			24	25	26	27	28	29	30
							31						

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Jan 28	29	30	31	Feb 1	2	3
				GE - Executive Leadership Conference		
4	5	6	7	8	9	10
NASDA - Winter Policy Conference						
	CFAA - Clean Fuels Conference					
	Prairie Meadows Available					
11	12	13	14	15	16	17
			USGC - Annual Membership Meeting			
18	19	20	21	22	23	24
	NEC - National Ethanol Conference			Iowa Events Center Available		
25	26	27	28	29	Mar 1	2
				NCGA - Commodity Classic		

March 2024

March 2024						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

April 2024						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Feb 25	26	27	28	29	Mar 1	2
					NCGA - Commodity Classic	
3	4	5 Iowa Events Center Available	6	7	8	9
10	11 Iowa Events Center Available Prairie Meadows Available	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27 Iowa Events Center Available	28	29	30
31	Apr 1	2	3	4	5	6

2d. 2023 Biofuels: Science and Sustainability Tour

14th Annual
Bi fuels
Science and Sustainability Tour

Join Us at the Reunion!

June 14, 2023 6-9 PM

near Capitol Hill

Open Bar and Appetizers



Annual Biofuels

Science and Sustainability Tour

SAVE THE DATE!

AUGUST 14-17, 2023



As the nation's leading producer of biofuels, Iowa is *the* place to gain a deeper understanding of how renewable fuels like ethanol and biodiesel are prepared to be a leader toward America's low-carbon future! Join experts for an educational, hands-on, and interactive look at the renewable fuels industry of today – and tomorrow! As the country grapples with big questions like how to combat climate change and ensure energy security, this tour will provide a better understanding of the challenges and exciting opportunities facing America's most dynamic energy sector.

**If you are unable to attend the tour, but someone else from your office might be interested, please send us the additional name(s).*

- Sponsored by Iowa State University, Iowa Renewable Fuels Association, National Biodiesel Foundation, Renewable Fuels Foundation and others
- Invited guests will include Congressional staff, White House staff & officials from EPA, USDA, Department of Energy, and key Iowa officials
- Planned tour locations include an ethanol plant, biodiesel plant, family farm, Iowa State University's BioCentury Farm, the Iowa State Fair, and many others.

This is not an official invitation; Official invitations will be sent out in the coming weeks.

2e. 2023 Members Day



SAVE THE DATES

IRFA MEMBERS' DAY

September 5, 2023

IRFA QUARTERLY BOARD MEETING

September 6, 2023

**LAKE PANORAMA
NATIONAL RESORT & CONFERENCE CENTER**

2f. Iowa Monarch Conservation Consortium

Iowa Monarch Conservation Consortium

Spring Meeting:

- March 10th from 1 to 3 pm

Discussion:

- USFWS listing
- Landowner/business recruitment
- Administrative updates.



Iowa Monarch Conservation Consortium



Monarch Conservation Effort Report

September 27, 2022

Acknowledgement

We would like to express our gratitude and appreciation to the data management committee members who helped prepare the report.

Stephanie Shepherd, Chair (Iowa Department of Natural Resources)
Pamela Bachman (Bayer/Climate LLC)
Chad Boeckman (Corteva Agriscience)
Steve Bradbury (Iowa State University)
James Cronin (USDA - NRCS)
Andrew Diallesandro (U.S. Fish and Wildlife Service)
Alan Dotts (Iowa State University Center for Survey Statistics and Methodology; ex-officio)
Laura Foell (Iowa Corn Growers Association)
Ben Gleason (Iowa Corn Growers Association)
Curt Goettsch (USDA - FSA)
Theo Gunther (Iowa Soybean Association)
Lisa Hein (Iowa Natural Heritage Foundation)
Doug Helmers (U.S. Fish and Wildlife Service)
Karen Kinkead (Iowa Department of Natural Resources)
Susan Kozak (Iowa Department of Agriculture and Land Stewardship)
Jie Li (Iowa State University Center for Survey Statistics and Methodology; ex-officio)
Craig Marshall (Iowa State University Center for Survey Statistics and Methodology; ex-officio)
Pat McGonegle (Iowa Pork Producers Association)
Kristine Nemec (University of Northern Iowa Tallgrass Prairie Center)
Shane Richmand (Iowa Farm Bureau Federation)
Rick Robinson (Iowa Farm Bureau Federation)
Shannon Schmidt (Iowa State University Center for Survey Statistics and Methodology; ex-officio)
Nicole Shimp (Iowa State University)
John Whitaker (Conservation Districts of Iowa)

Thanks to Stephanie Shepherd, Alan Dotts, Jie Li, Craig Marshall, Shannon Schmidt, Nicole Shimp, and Steve Bradbury for preparing drafts of the report and dashboards.

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Provisional Program Goals^a

Table 1. Iowa monarch habitat establishment goals expressed as new acres and milkweed stems through 2038. The range of goals reflects uncertainty in estimates as described in the 2018 Iowa Monarch Conservation Strategy^a.

	Acres of Habitat	Acres of Habitat	Milkweed Stems ^b	Milkweed Stems ^b
Sector	Low End Goal	High End Goal	Low End Goal	High End Goal
Right of Way Land	19,000	21,000	6,156,000	6,804,000
Other ^c	62,749	67,049	12,549,800	13,409,800
Public Lands ^c	144,041	156,674	28,527,789	31,030,041
Urban/Suburban	39,774	198,870	1,300,000	5,600,000
Agriculture	523,269	694,337	74,000,000	138,000,000
Totals	788,883	1,137,930	122,533,589	194,843,841

^a <https://monarch.ent.iastate.edu/files/file/iowa-monarch-conservation-strategy.pdf> In the 2018 Iowa Monarch Conservation Strategy, it was assumed that the majority of new monarch habitat in the agricultural sector would be realized by interseeding the then existing CP25, CP38, and CP42 acres with high diversity seed mixes. We have no data on the extent to which interseeding has been implemented from 2018 through 2020. There was, however, a significant and unexpected increase in new CP25, CP38, and CP42 acres through 2020, albeit planted with seed mixes that likely had lower milkweed and forb densities than anticipated in the Strategy. Tentative adjustments to the agricultural sector goals (and total goals) account for these new CP25, CP38, and CP42 acres, with associated milkweed stems estimated assuming a lower density seed mix. The Consortium will be updating the Strategy and all sector-specific targets in 2023.

^b New stems include stems derived from new seeding, restoration activities, and subsequent propagation. Biologically reasonable stem densities of 10 to 50, 197 to 199, 200, 200 to 324, and 150 to 600 stems/acre were assumed for Urban/Suburban; Public Lands; Other; Road Rights-of-Ways and Agriculture, respectively. See Appendix N for a summary of category-specific analyses.

^c These sectors include stems planted since 2015 through US Fish and Wildlife Service and other public programs. Details of stems planted from 2015 through 2017 appear in the summary of category-specific analyses in Appendix N.

Introduction and Methodology

In 2018, the Iowa Monarch Conservation Consortium released Version 2.1 of the [Iowa Monarch Conservation Strategy](#). The Iowa Monarch Conservation Strategy identifies the information and resources needed to sustain and advance monarch butterfly conservation efforts in Iowa. The strategy includes information about the monarch butterfly, including a summary of its range, its dependence on milkweed and other native plants; current habitat availability; Iowa's goal to increase habitat; and best management practices for planting and maintaining habitat.

The Strategy's goal is to establish 788,883 to 1,137,930 acres of habitat (122,533,589 to 194,843,841 milkweed stems) by 2038 (see Table 1, above), with specific goals for different land-use sectors (urban/suburban, public, road-rights of ways, and agriculture). The overall Iowa goal is consistent with those of other North Central states (see [Mid-America Monarch Conservation Strategy](#)). For more details about the sector goals and how they were set, please see Section 4.0 and Appendix F in the Strategy.

After release of the Strategy, the Consortium created an information management workgroup, whose charge is to provide the Consortium periodic reports on the status and trends of habitat establishment in the state. Technical support is provided to the workgroup by staff in Iowa State University's Center for Survey Statistics and Methodology (ISU's CSSM).

Consistent with the Strategy goals, this first report summarizes progress through December 31st, 2020. In the main body of the report, the data presented are primarily habitat acres. Milkweed stems data are presented in the appendix.

Data Sources

Monarch Conservation Database (MCD)

The primary data source for the report is the USFWS- managed Monarch Conservation Database (MCD). Consortium members have been encouraged to upload all monarch habitat establishment and maintenance acres into the MCD. The MCD holds data, including the organization undertaking habitat conservation, the type of habitat practice (management, creation), location of the habitat (minimum - county level; greater spatial resolution – voluntary), and the number of acres for a project. The MCD converts acres of habitat to milkweed stems based on assumptions provided by [Thogmartin et al. \(2017\)](#) in most, but not all, cases.

Conservation Reserve Program

The MCD does not currently include data from the USDA's Farm Service Agency (FSA) on the numbers of acres enrolled in monarch/pollinator friendly Conservation Reserve Program (CRP) practices. Iowa FSA staff provided the workgroup with state wide and county-specific CRP acres for the following practices: CP25, CP38, CP42, and CP43. The data were provided at state and county levels for Federal fiscal years 2018, 2019, 2020, and 2021.

Natural Resources Conservation Service Programs

The Natural Resources Conservation Service (NRCS) administers habitat programs that benefit monarch butterflies, including the Environmental Quality Incentives Program (EQIP), Easements, and Conservation Stewardship Program (CSP). To date, NRCS habitat data through November 2018 is in the MCD. NRCS has separately provided statewide acres for Federal fiscal years 2019, 2020 and 2021 for the following programs: Agricultural Conservation Easement Program (ACEP), Conservation Stewardship Program (CSP), and the Environmental Quality Incentives Program (EQIP).

HabiTally

HabiTally is a mobile application designed to facilitate data entry into the MCD in a more user-friendly manner. The application became available throughout the United States for iOS on May 8th, 2019 and android users on July 2nd, 2020. HabiTally data for Iowa is included in this report. Uploaded data are maintained by ISU's CSSM, which in turn submits the information to USFWS. The application is most appropriate for individual landowners who have created small habitat patches using their own resources. HabiTally collects the geographic location where the habitat was established. The HabiTally users enter a polygon that encircles the habitat under management. This polygon is stored and used to identify the location and area of the habitat. HabiTally records the National Land Cover Database (NLCD) land cover of the first point entered for the habitat polygon and stores this cover information in the database. For this report, data are summarized at the county level.

Additional Sector Caveats

Public Lands and Other: Consistent with the Iowa Monarch Conservation strategy, the amount of public land habitat acres established since 2015 contribute to Iowa's overall goal. For most other sectors, habitat established since January 1, 2018 contribute to the state's goal (although see note below regarding CRP and NRCS data). There has been no data entered into the MCD by Consortium member organizations since January 1, 2021.

Farm Bill: The acres reported here from the Farm Service Agency and Natural Resources Conservation Service are based on federal fiscal years (October 1 – September 30); however, for presentation purposes, these acres are presented in the equivalent calendar years. For example, the first year of data from FSA and NRCS included in this report is from October 1, 2017, through September 30, 2018, and is included as the 2018 data.

Right-of-Ways: Represents habitat acres established along secondary roadsides. Utility right of ways are not included in the Strategy, hence they are not included in the summaries provided in this report. There are approximately 30,000 acres of Iowa utility-habitat entered into the MCD; these acres are associated with the Nationwide Candidate Conservation Agreement for Monarch Butterfly on Energy and Transportation Lands.

Habitat Established through December 2020

Trending Data

STATE OF IOWA GOAL: Add 160 Million New Stems of Milkweed translating to between 789,000 and 1,137,000 acres of habitat by 2038.

Chart 1: The chart shows total habitat acres by year for the state of Iowa. Horizontal lines indicate low (788,833) and high (1,137,930) acres habitat goals for all sectors and all data sources.

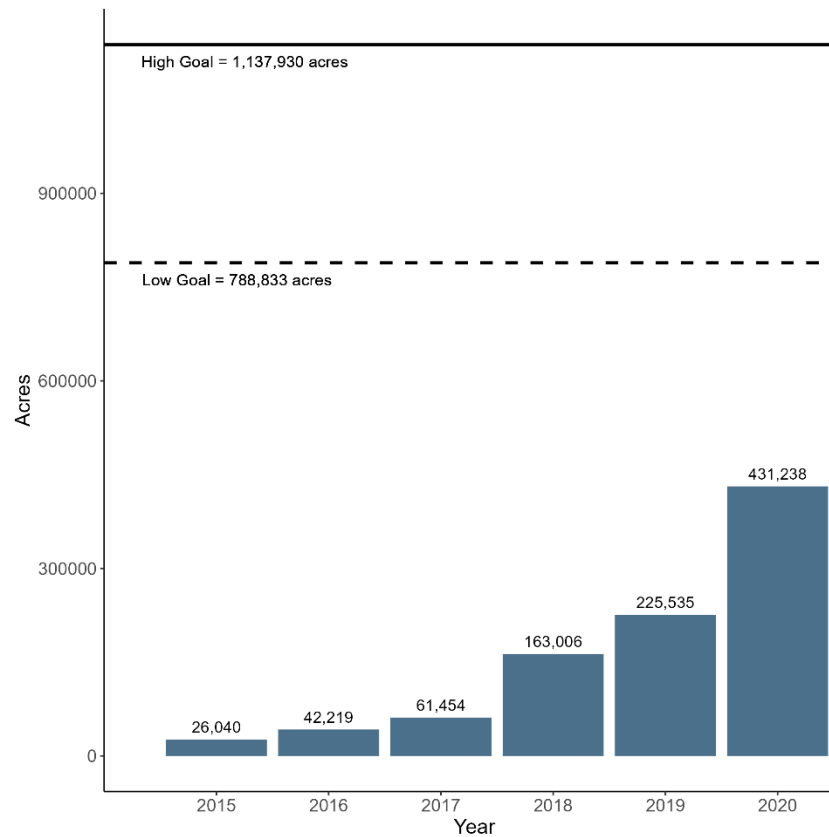


Table 2: New habitat acres and milkweed stems by sector, established as of December 31, 2020, compared to 2038 goals established in the Iowa Monarch Conservation Strategy¹. Milkweed stems are based on densities established for each sector in Appendix F of the strategy¹.

SECTOR	GOAL (Low) HABITAT ACRES	GOAL (high) HABITAT ACRES	CURRENT HABITAT ACRES (Dec. 31, 2020)	GOAL (Low) MILKWEED STEMS*	GOAL (High) MILKWEED STEMS*	CURRENT MILKWEED STEMS* (Dec. 31, 2020)
Right of Way Land	19,000	21,000	3,013	6,156,000	6,804,000	789,501
Other	62,749	67,049	19,209	12,549,800	13,409,800	3,841,861
Public Land	144,041	156,674	105,992	28,527,789	31,030,041	21,198,446
Urban	39,774	198,870	808	1,300,000	5,600,000	24,232
Agriculture	523,269	694,337	302,216	74,000,000	138,000,000	9,444,591
Totals	788,883	1,137,930	431,238	122,533,589	194,843,841	35,298,631

¹ <https://monarch.ent.iastate.edu/files/file/iowa-monarch-conservation-strategy.pdf> In the 2018 Iowa Monarch Conservation Strategy, it was assumed that the majority of new monarch habitat in the agricultural sector would be realized by interseeding the then existing CP25, CP38, and CP42 acres with high diversity seed mixes. We have no data on the extent to which interseeding has been implemented from 2018 through 2020. There was, however, a significant and unexpected increase in new CP25, CP38, and CP42 acres through 2020, albeit planted with seed mixes that likely had lower milkweed and forb densities than anticipated in the Strategy. Tentative adjustments to the agricultural sector goals (and total goals) account for these new CP25, CP38, and CP42 acres, with associated milkweed stems estimated assuming a lower density seed mix. The Consortium will be updating the Strategy and all sector-specific targets in 2023.

* New stems include stems derived from new seeding, restoration activities, and subsequent propagation. Biologically reasonable stem densities of 10 to 50, 197 to 199, 200, 200 to 324, and 150 to 600 stems/acre were assumed for Urban/Suburban; Public Lands; Other; Road Rights-of-Ways and Agriculture, respectively. See Appendix N for a summary of category-specific analyses.

Chart 2: Cumulative acres of new habitat by sector and year. The dark gray bar shows low end goal by 2038; the light gray bar shows high end goal by 2038.

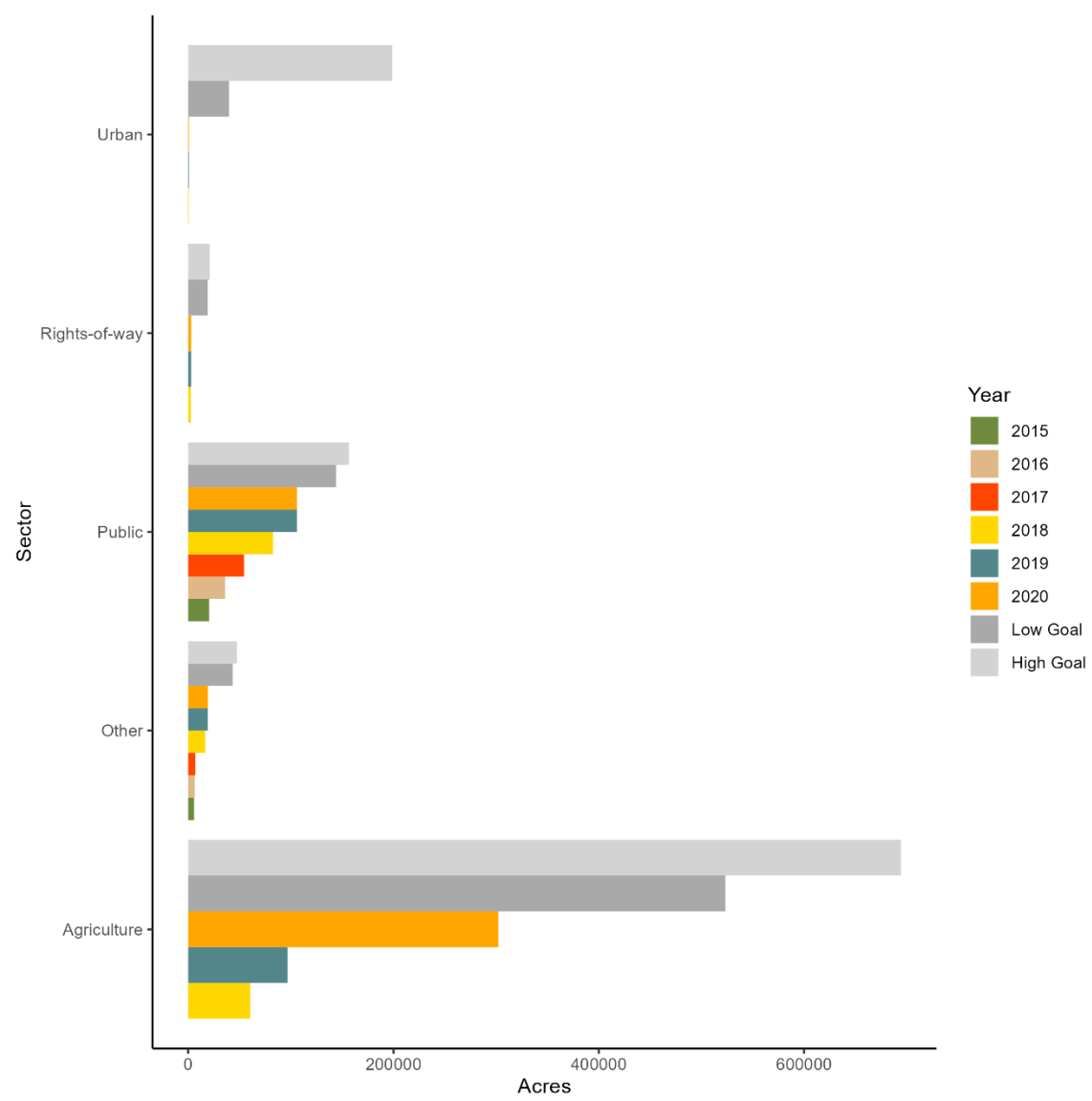


Figure 1: New habitat acres established in Iowa counties as of December 31, 2020. Data were obtained from the Monarch Conservation Database and provided by FSA and NRCS staff for acres established under Farm Bill programs.

New Habitat Acres established in Iowa Counties as of December 31, 2020

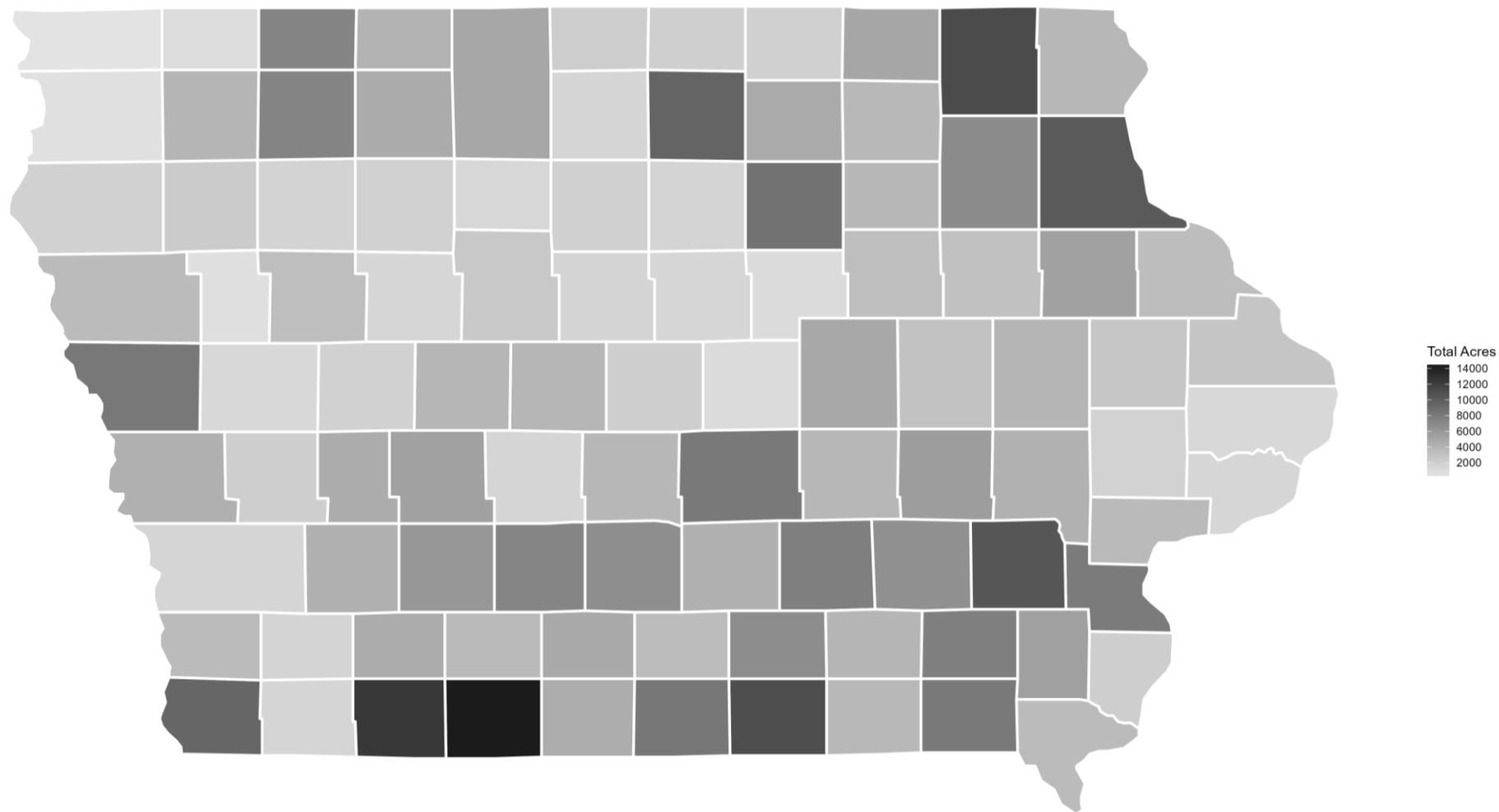


Figure 2: New habitat acres established in Iowa counties by sector as of December 31, 2020. Data were obtained from the Monarch Conservation Database and provided by FSA and NRCS staff for acres established under Farm Bill programs.

New Habitat Acres established in Iowa Counties by sector as of December 31, 2020

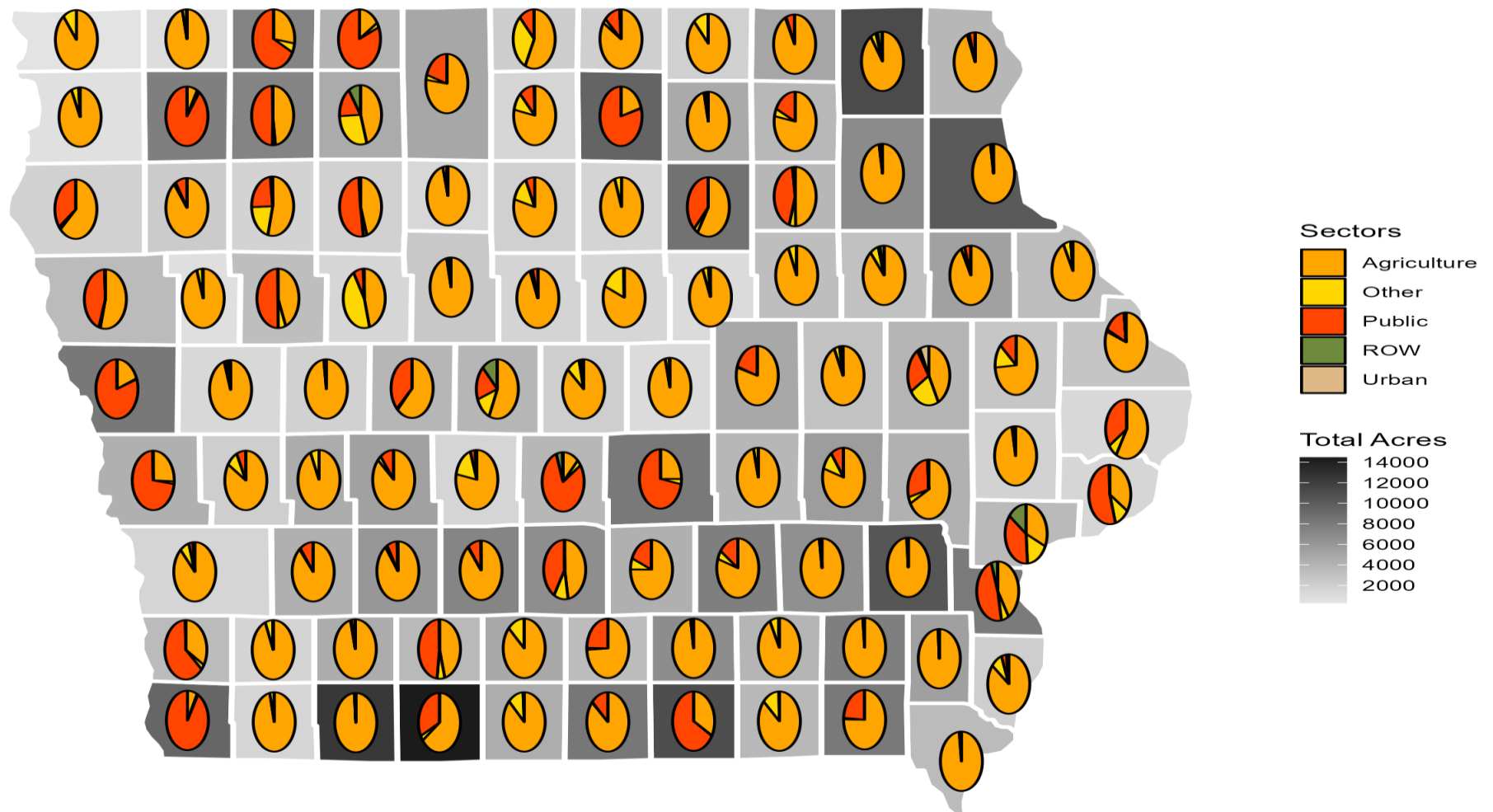


Table 3: A summary of acres of habitat established and restored in Iowa counties as of December 31, 2020.

County Name	Habitat Acres
Adair	6,081
Adams	4,576
Allamakee	3,815
Appanoose	10,979
Audubon	4,568
Benton	2,999
Black Hawk	3,286
Boone	3,890
Bremer	3,826
Buchanan	3,083
Buena Vista	1,712
Butler	8,610
Calhoun	1,479
Carroll	1,810
Cass	4,330
Cedar	1,771
Cerro Gordo	9,500
Cherokee	2,330
Chickasaw	3,719
Clarke	4,809
Clay	7,366
Clayton	10,193
Clinton	1,284
Crawford	1,286
Dallas	1,560

County Name	Habitat Acres
Davis	3,745
Decatur	4,539
Delaware	5,391
Des Moines	2,055
Dickinson	7,405
Dubuque	3,378
Emmet	4,133
Fayette	6,872
Floyd	4,765
Franklin	1,578
Fremont	9,427
Greene	3,886
Grundy	1,022
Guthrie	5,351
Hamilton	1,592
Hancock	1,558
Hardin	1,480
Harrison	4,298
Henry	5,441
Howard	5,015
Humboldt	1,396
Ida	719
Iowa	5,614
Jackson	2,800
Jasper	8,143

County Name	Habitat Acres
Jefferson	7,693
Johnson	4,279
Jones	2,698
Keokuk	6,541
Kossuth	4,918
Lee	3,493
Linn	3,989
Louisa	7,984
Lucas	3,427
Lyon	298
Madison	7,272
Mahaska	7,708
Marion	4,295
Marshall	1,010
Mills	3,483
Mitchell	1,894
Monona	8,219
Monroe	6,750
Montgomery	1,571
Muscatine	3,604
O'Brien	3,928
Osceola	959
Page	1,502
Palo Alto	4,704
Plymouth	1,863

County Name	Habitat Acres
Pocahontas	1,869
Polk	3,810
Pottawattamie	1,525
Poweshiek	3,819
Ringgold	14,463
Sac	3,275
Scott	1,471
Shelby	2,084
Sioux	568
Story	2,042
Tama	4,843
Taylor	12,482
Union	3,659
Van Buren	8,117
Wapello	3,957
Warren	6,667
Washington	10,456
Wayne	8,225
Webster	2,566
Winnebago	2,159
Winneshiek	11,183
Woodbury	3,516
Worth	2,006
Wright	1,933

Conclusions

These data, summarized through the end of 2020, show clear progress towards statewide goals. New and restored habitat acres established thus far are 54.7% of the low-end goal for acres and approximately 28.8% of the low-end goal for new milkweed stems.

At the habitat sector level, agriculture and public land in particular have made significant contributions towards the strategy's objectives. Right of Ways and Other are also making slower but acceptable progress. Accelerated progress in the urban sector may be needed in future years.

Looking forward there are a number of opportunities and barriers that may help or hinder the Consortium's efforts to track and achieve monarch conservation in Iowa.

Barriers

- It is likely that the growth of new habitat beyond these initial years may slow. Most of the "easy" new habitat acres may have been achieved in the first 3-6 years; adding more habitat may become progressively harder.
- Tracking individual landowner habitat efforts is very difficult and likely contributes to the apparent slow progress in the Urban sector. Increased efforts to identify and record these private acres will need.
- Policy changes at the national and state level may impact entities' ability to create monarch habitat. Support of habitat creation for pollinators is currently a priority at all levels but the focus could shift in the future.

Appendix

Data Quality Assessment and Curation Steps

- Data Records are filtered by MCD “Sub Activity” type, specifically including records indicating an increase in habitat. Sites that included any of the following “Sub Activity” types were considered new habitat area:
 - Prescribed Burning
 - Planting
 - Early Successional Habitat Development/Management
 - Native Grassland Management
 - Land Purchase
 - Herbicide Treatment to Enhance
 - Brush Management
 - Strip Disking/Tillage to Enhance
 - Conservation Mowing
 - Conservation Grazing
 - Other (Please specify in Notes)
 - Range Planting
 - Early Successional Habitat Development/Management
 - Establish Field Border
 - Establish Riparian Herbaceous Cover
 - Implement Integrated Vegetation Management
- Acres information was processed to determine appropriate usable new acres for each site as follows:
 - Aggregate acres fields. The MCD contains two acres fields, one which specifies total site acres and a second which specifies the number of acres managed. The site acres are fully populated for all records in the MCD, while the managed acres are sparsely populated. If managed acres are not populated, then it is assumed that all site acres were managed. If managed acres are populated, then that area is used.
 - Some sites were specified as covering multiple counties but did not specify how the managed acres were split between counties. In this case, the site acres were evenly distributed across the counties listed. Note that this does not affect state total or sector specific totals. It only comes into play for the county estimates and tables.

- Date information was modified to separate new program acres from established acres. Note that this remains a work in progress. This report represents our best understanding of the data at the moment.
There are a number of start date errors in the MCD. The MCD uses a default start date of Jan. 1st, 2014, and a large percentage of records have that start date in the MCD. Where additional information was available, these dates were corrected. For the Public land and Other sectors, a start date of Jan. 1st, 2015 is assumed. Jan. 1st, 2018 is assumed for the remaining sectors. Other dates are assumed correct.

Accomplishments in Terms of Milkweed Stems

Chart 3: The chart shows total milkweed stems by year for the state of Iowa. Horizontal lines indicate low (122,533,589) and high (194,843,841 stems) goals for all sectors and all data sources.

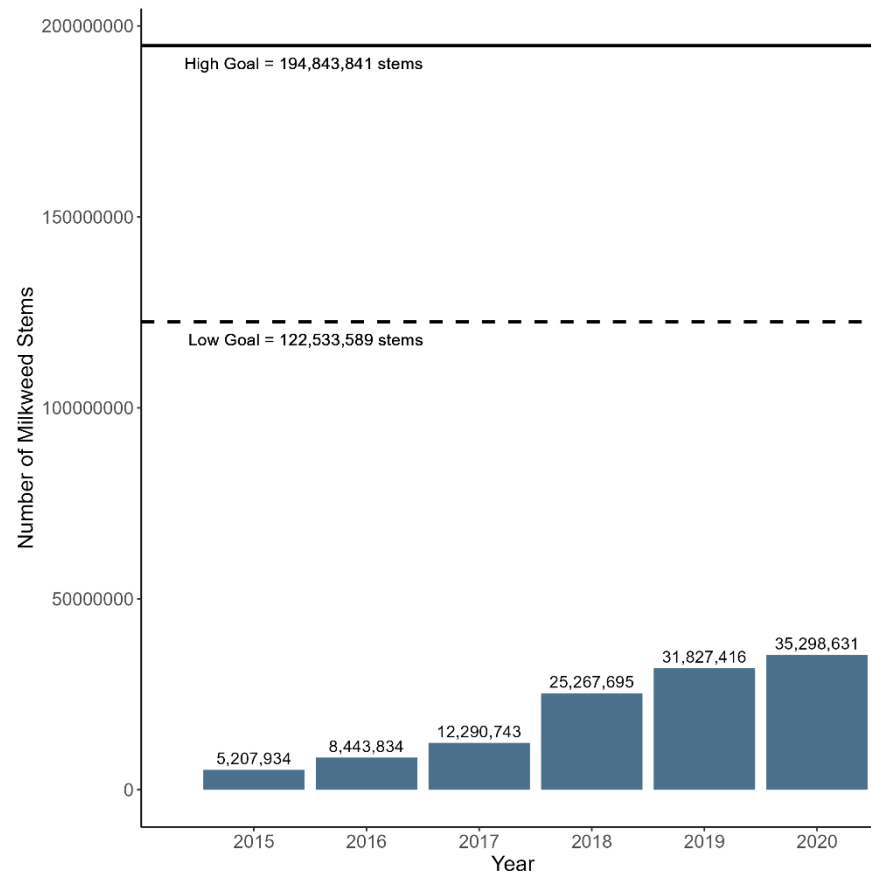
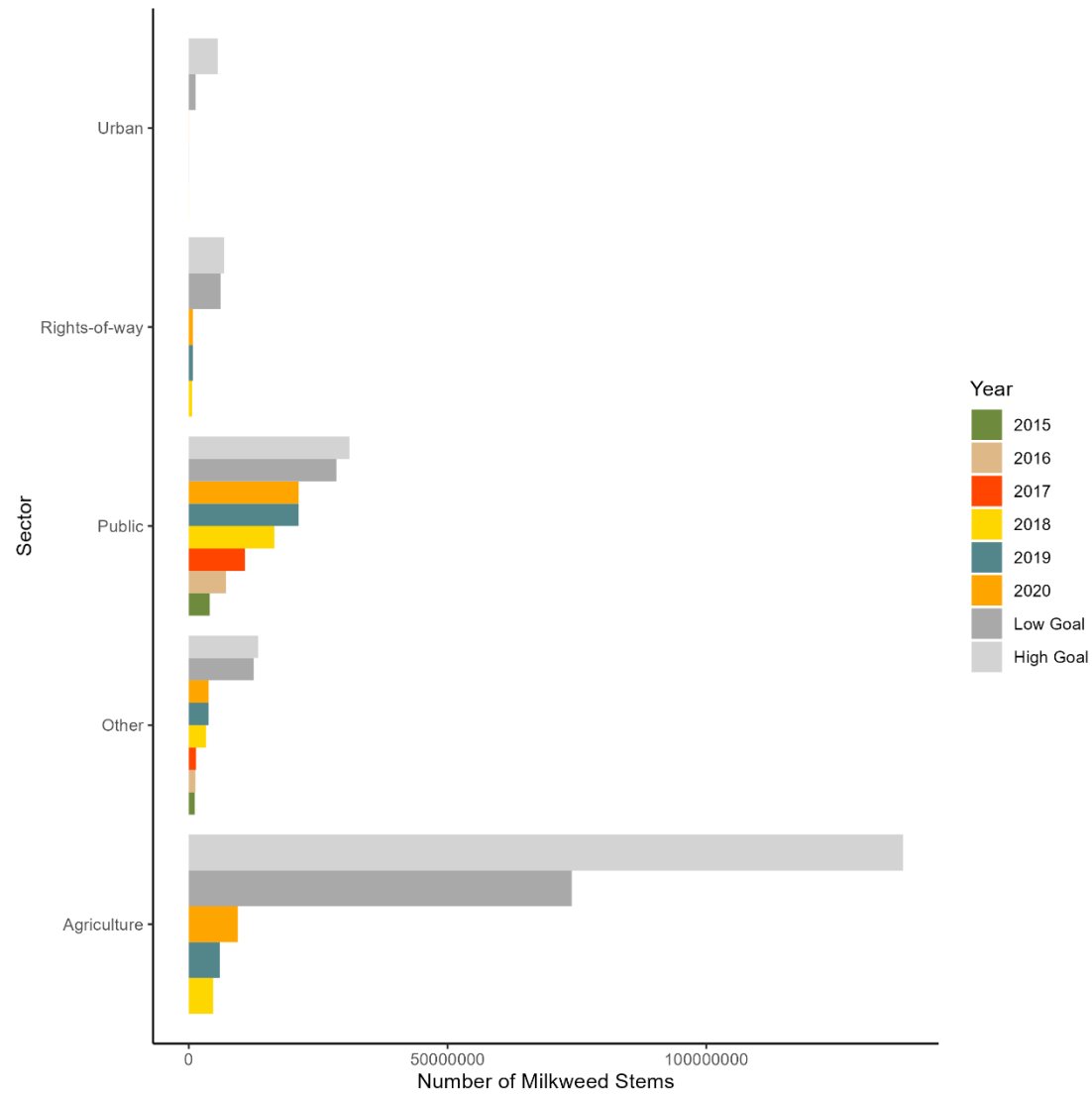


Chart 4: Cumulative new milkweed stems by sector and year. The dark gray bar shows low end goal by 2038; the light gray bar shows high end goal by 2038.¹



¹ <https://monarch.ent.iastate.edu/files/file/iowa-monarch-conservation-strategy.pdf>

Figure 3: New milkweed stems by Iowa county as of December 31, 2020. Data were obtained from the Monarch Conservation Database and provided by FSA and NRCS staff for acres established under Farm Bill programs.

New Milkweed Stems Added in Iowa Counties as of December 31, 2020

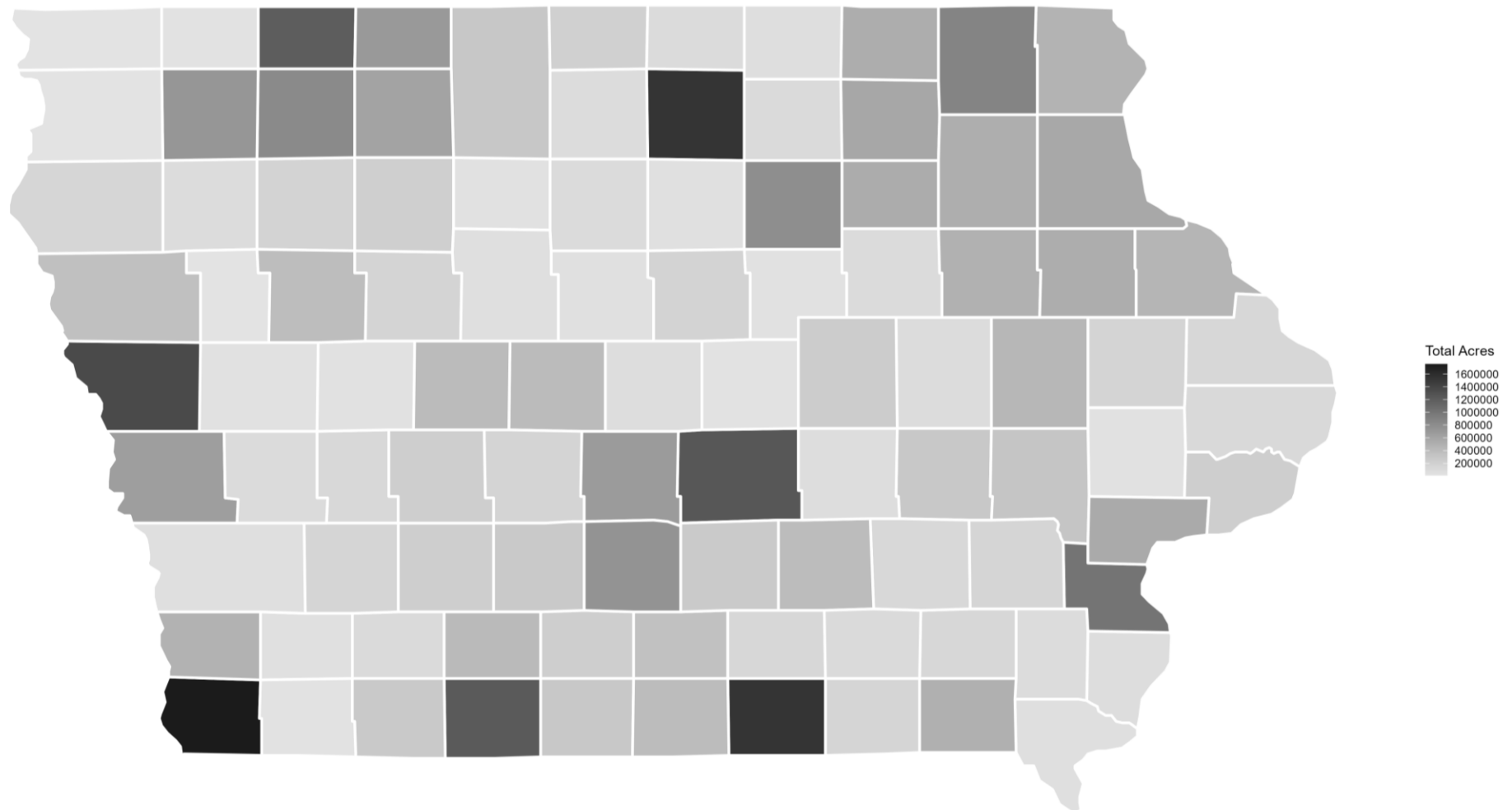


Figure 4: New milkweed stems by Iowa county, breakdown by sector as of December 31, 2020. Data were obtained from the Monarch Conservation Database and provided by FSA and NRCS staff for acres established under Farm Bill programs.

New Milkweed Stems Added in Iowa Counties breakdown by sector as of December 31, 2020

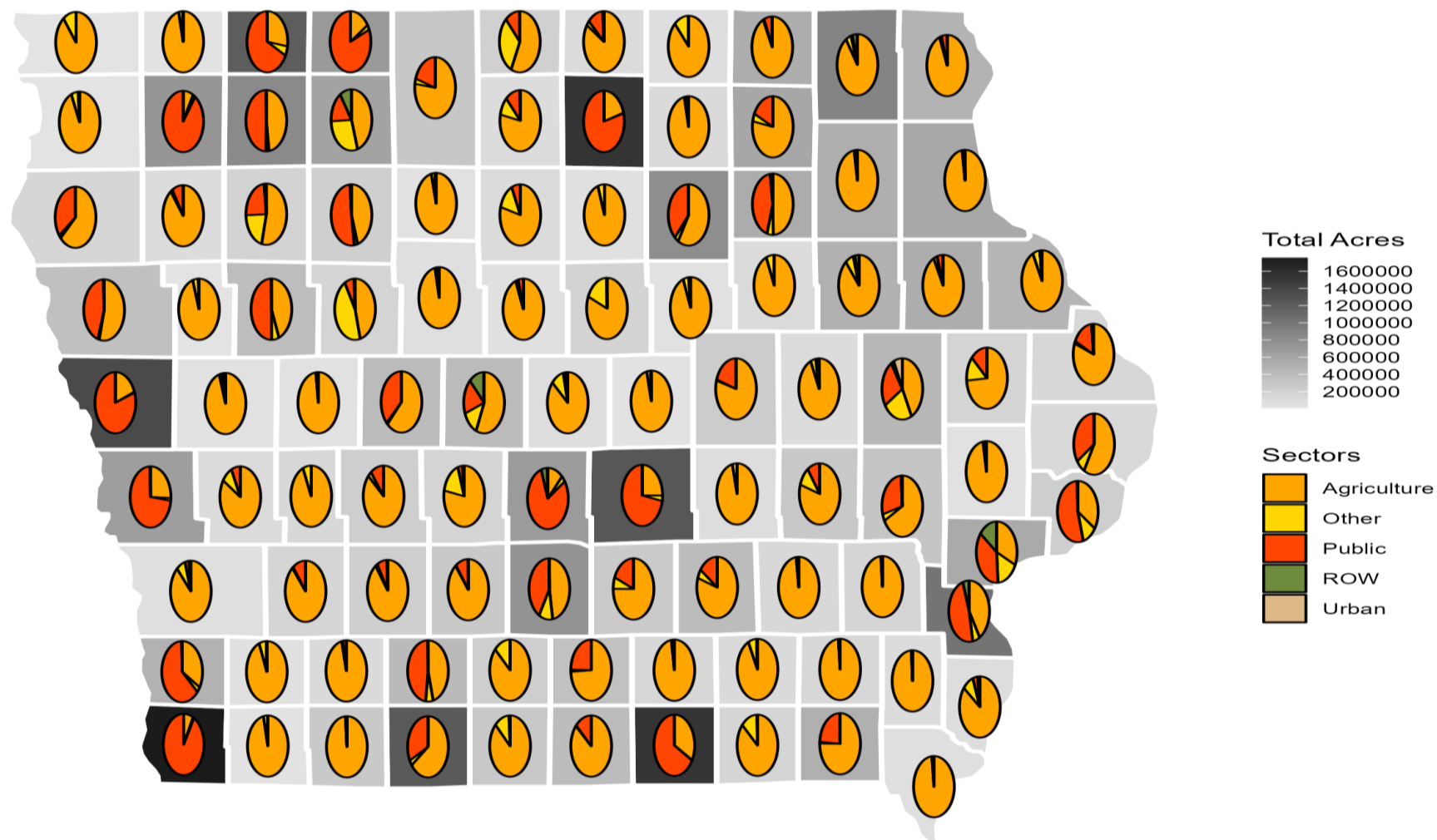


Table 4: A summary of new milkweed stems established by Iowa county as of December 31, 2020.

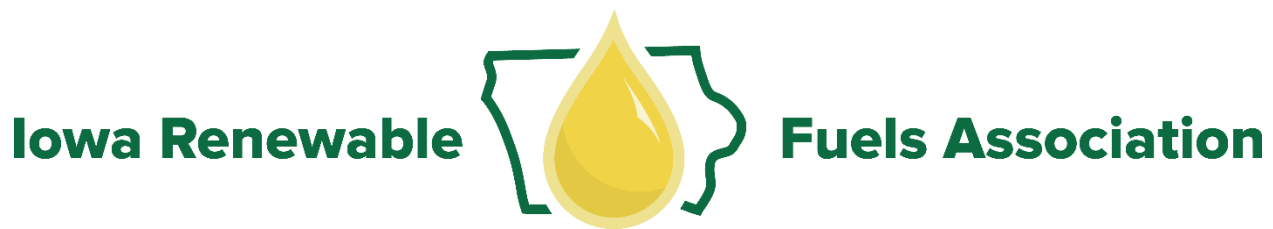
County Name	Habitat Stems
Adair	227,323
Adams	116,678
Allamakee	476,636
Appanoose	1,542,797
Audubon	130,394
Benton	87,506
Black Hawk	100,823
Boone	406,540
Bremer	537,467
Buchanan	492,212
Buena Vista	180,339
Butler	792,019
Calhoun	169,826
Carroll	36,803
Cass	160,452
Cedar	33,909
Cerro Gordo	1,544,473
Cherokee	90,219
Chickasaw	584,936
Clarke	224,869
Clay	829,294
Clayton	575,945
Clinton	122,639
Crawford	32,200
Dallas	170,262

County Name	Habitat Stems
Davis	165,051
Decatur	288,754
Delaware	527,731
Des Moines	78,793
Dickinson	1,200,701
Dubuque	459,825
Emmet	706,276
Fayette	522,218
Floyd	111,617
Franklin	42,152
Fremont	1,755,256
Greene	410,813
Grundy	32,025
Guthrie	228,134
Hamilton	44,883
Hancock	88,756
Hardin	178,251
Harrison	657,508
Henry	88,912
Howard	528,981
Humboldt	33,564
Ida	19,543
Iowa	292,006
Jackson	145,397
Jasper	1,256,224

County Name	Habitat Stems
Jefferson	145,905
Johnson	317,628
Jones	166,444
Keokuk	127,059
Kossuth	296,742
Lee	60,754
Linn	442,108
Louisa	1,016,807
Lucas	353,199
Lyon	9,822
Madison	274,414
Mahaska	396,675
Marion	264,142
Marshall	23,997
Mills	484,181
Mitchell	70,615
Monona	1,356,744
Monroe	140,047
Montgomery	44,547
Muscatine	553,419
O'Brien	726,034
Osceola	21,912
Page	31,037
Palo Alto	614,129
Plymouth	152,790

County Name	Habitat Stems
Pocahontas	218,127
Polk	683,702
Pottawattamie	56,287
Poweshiek	83,093
Ringgold	1,226,174
Sac	389,813
Scott	230,257
Shelby	100,921
Sioux	18,319
Story	79,940
Tama	253,595
Taylor	276,705
Union	418,997
Van Buren	507,673
Wapello	112,832
Warren	749,715
Washington	162,425
Wayne	395,338
Webster	57,715
Winnebago	205,020
Winneshiek	883,344
Woodbury	364,658
Worth	101,242
Wright	101,660

2g. Communications Update



PRESS RELEASE

FOR IMMEDIATE RELEASE
January 9, 2023

Press Contact: Jared Palmer
515-322-0435

2022 Another Record Year for Iowa Ethanol Production

JOHNSTON, IA – In 2022, Iowa ethanol production increased to a record-breaking 4.5 billion gallons, up from the previous record of 4.4 billion gallons in 2021. Observers credit fuel demand returning to pre-pandemic levels, Iowa ethanol plant efficiencies, and the ample local corn supply as factors in the upward trend.

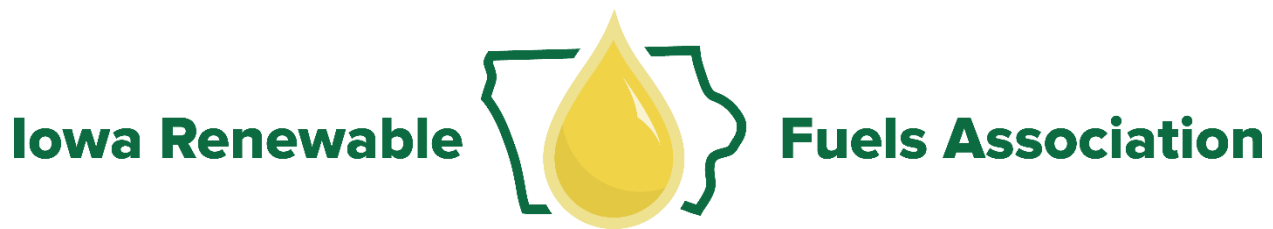
Iowa Renewable Fuels Association (IRFA) Executive Director Monte Shaw feels optimistic about increasing ethanol production in 2023 as well.

“Iowa continues to set the pace for ethanol production around the world,” stated Shaw. “The attractive price of E15 and E85 drove sales during the 2022 gas price spike. Barring a recession, we expect ethanol demand to grow each year as Iowa and other states make progress in increasing access to E15, often marketed as Unleaded 88. The Governor’s E15 access bill was a large step forward in increasing access to cheaper, cleaner fuel for Iowans. As demand grows, Iowa ethanol plants are well positioned to continue breaking records.”

The IRFA compiled production information from an industry survey, public reports, and other industry sources.

The Iowa Renewable Fuels Association represents the state’s liquid renewable fuels industry and works to foster its growth. Iowa is the nation’s leader in renewable fuels production with 42 ethanol refineries capable of producing 4.5 billion gallons annually – including 34 million gallons of annual cellulosic ethanol production capacity – and 11 biodiesel facilities with the capacity to produce over 410 million gallons annually. For more information, visit the Iowa Renewable Fuels Association website at: www.IowaRFA.org.

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PRESS RELEASE

FOR IMMEDIATE RELEASE
January 12, 2023

Press Contact: Jared Palmer
515-322-0435

Iowa Biodiesel Production Ticks Up in 2022

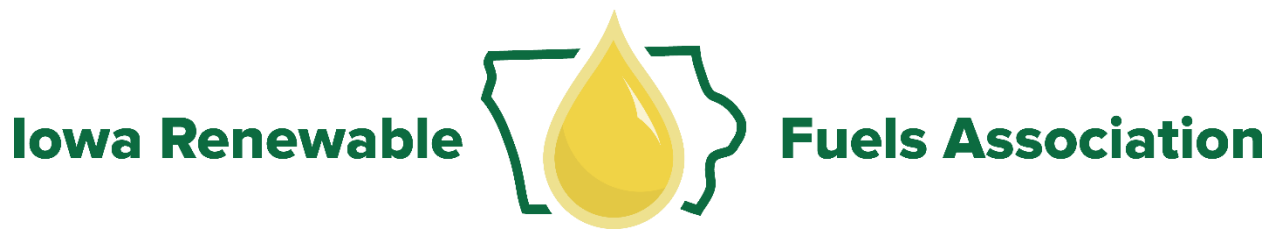
JOHNSTON, IA – According to a recent survey conducted by the Iowa Renewable Fuels Association (IRFA), Iowa's 11 biodiesel plants produced a combined 349 million gallons of biodiesel 2022, up from 340 million gallons in 2021. Last year's production was the third highest reported, with a record 365 million gallons produced in Iowa in 2018.

"Iowa continues to lead the nation in biodiesel production," stated IRFA Executive Director Monte Shaw. "Biodiesel continues to be a good market for adding value for Iowa farmers. Even with growing renewable diesel production around the country, we see exciting new opportunities for biodiesel in addition to traditional on-road and agricultural markets. Home-heating oil, rail, and even marine applications are emerging that we believe will grow biodiesel demand in future years."

Soybean oil, with 71 percent of production, remained the feedstock of choice for Iowa biodiesel producers. Likewise, animal fats remained in second place at 11 percent. Canola oil usage increased markedly to barely edge corn oil for third place. Both accounted for roughly 7 percent of production. Used cooking oil dropped to 4 percent of production.

The Iowa Renewable Fuels Association represents the state's liquid renewable fuels industry and works to foster its growth. Iowa is the nation's leader in renewable fuels production with 42 ethanol refineries capable of producing 4.5 billion gallons annually – including 34 million gallons of annual cellulosic ethanol production capacity – and 11 biodiesel facilities with the capacity to produce 410 million gallons annually. For more information, visit the Iowa Renewable Fuels Association website at: www.IowaRFA.org.

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PRESS RELEASE

FOR IMMEDIATE RELEASE
February 7, 2023

Press Contact: Jared Palmer
515-322-0435

Iowa Renewable Fuels Producers are “Energized, but a Little Angry”

New Economic Impact Study Show Biofuels Power More Than Just Iowa Vehicles

JOHNSTON, IA- During his state of the industry address at the 2023 Iowa Renewable Fuels Summit today, Iowa Renewable Fuels Association (IRFA) Executive Director Monte Shaw said that the Iowa biofuels industry is “energized, but a little bit angry.” The mixed mood derives from the expanding opportunities to grow renewable fuels use coupled with ongoing efforts by some elected officials and interest groups to block those very possibilities.

“The Iowa renewable fuels industry is energized, but a little bit angry,” stated Shaw. “Producers are energized because the world is demanding clean, affordable, renewable energy, and we can deliver. Why a bit angry? To put it simply, we are sick and tired of the unnecessary roadblocks from elected officials and interest groups that want to protect their cherry-picked forms of energy – whether that be supporters of fossil fuels or electric vehicles.”

One source of frustration cited by Shaw was when “the White House broke its promise” to have the Midwest E15 solution finalized in time for the 2023 summer driving season. “Someone in the White House put the brakes on. This will cause irreparable harm to thousands of fuel retailers and millions of consumers. To put it bluntly, we were told to be patient and keep quiet, and everything would be fine for this summer...So, yes, we’re a little bit angry.”

Another challenge are groups who want to completely block Iowa ethanol producers from utilizing carbon capture and sequestration (CCS). Shaw remarked, “I’m not here today to ask you to support carbon policies or clean fuel tax credits. I am here to ask you to honestly consider the real-world impact they have on Iowa’s ethanol plants. If we want to maintain or grow Iowa ethanol production, it will require CCS.”

To view Shaw's full prepared remarks, [click here](#).

Shaw also highlighted the results of new research quantifying the impact of renewable fuels production on the Iowa economy. The new study, authored by John Urbanchuk of ABF Economics, found the production of ethanol and biodiesel accounts for over \$7.2 billion in state GDP, supports nearly 57,000 jobs throughout the economy, and boosts Iowa household income by more than \$3.5 billion.

"Renewable fuels have changed the economic trajectory of Iowa," stated Shaw. "I believe that is an impact worth fighting to maintain and expand. We will roll up our sleeves and get to work energized by the nearly limitless possibilities for renewable fuels and renewable products as we look to the horizon."

To view the whole study, [click here](#).

The Iowa Renewable Fuels Association represents the state's liquid renewable fuels industry and works to foster its growth. Iowa is the nation's leader in renewable fuels production with 42 ethanol refineries capable of producing 4.5 billion gallons annually – including 34 million gallons of annual cellulosic ethanol production capacity – and 11 biodiesel facilities with the capacity to produce 410 million gallons annually. For more information, visit the Iowa Renewable Fuels Association website at: www.iowaRFA.org.

###

CONTRIBUTION OF THE RENEWABLE FUELS INDUSTRY TO THE ECONOMY OF IOWA

Prepared for the Iowa Renewable Fuels Association

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EXECUTIVE SUMMARY

The renewable fuels industry is multifaceted, adding substantial value to agricultural commodities produced in Iowa. Based on its size and scope, the renewable fuels industry had the following impacts on Iowa's economy in 2022.

- Accounts for nearly \$7.2 billion, or about 3 percent, of Iowa GDP
- Generates \$3.5 billion of income for Iowa households; and
- Supports more than 57,000 jobs throughout the entire Iowa economy. This is equivalent to more than 3 percent of total state employment.

BACKGROUND

The U.S. renewable fuels industry continues to recover from substantial challenges and posted growth in 2022. These challenges included residual economy-wide effects of the COVID pandemic, weak economic environment, and rampant inflation. The economy rebounded in the second half from recessionary levels and posted a modest 2.2 percent real growth for all of 2022. Growth in real output was accompanied by modest gains in real disposable income. Despite a recovering economy, motor fuel demand was restrained by sharply higher crude oil and gasoline prices. However, these factors supported small increases in gasoline, diesel, ethanol and biodiesel demand during the year.

Iowa's 42 ethanol plants had operating capacity of 4.6 billion gallons at years end, 3.6 percent above 2021 capacity while Iowa's 11 operating biodiesel plant had capacity of 410 million gallons. Iowa remains the nation's leading ethanol and biodiesel producer, accounting for nearly 30 percent of U.S. ethanol and 20 percent of biodiesel capacity.

The most significant economic problem facing renewable fuels producers and consumers during 2022 was inflation, which reached a 40-year high of 8 percent for 2022. The impact of this on the ethanol industry was the sharp increase in feedstock (notably corn), natural gas, and other input costs. Iowa corn prices were up 6.1 percent in 2022. Biodiesel producers benefitted from modestly lower crude soybean oil (the largest biodiesel feedstock) prices even as prices for other biodiesel inputs increased. Higher energy prices were an impediment for renewable fuels producers illustrated by a nearly 30 percent increase in Iowa industrial natural gas prices. Consumers faced gasoline prices that increased nearly 32 percent.

The upside of inflation was that the prices of ethanol and biodiesel, as well as prices of corn dry mill co-products distillers dried grains (DDGS) and distiller's corn oil (DCO), and wet mill co-products corn gluten feed (CGF) and corn gluten meal (CGM), also surged and outpaced increases in total operating costs. Consequently, returns over operating costs for Iowa biodiesel producers turned positive in 2022, averaging an estimated \$0.81 cents per gallon while returns for ethanol producers averaged an estimated \$0.29 per gallon, 25 percent less than 2021.

On the regulatory front, one of the major positives for the ethanol industry was the emergency waiver to allow year-round use of E15 by the U.S. Environmental Protection Agency in May 2022. With E15 prices routinely averaging more than 15 cents per gallon less than standard E10 prices, many retailers reported record sales of E15 throughout the Midwest.

ECONOMIC IMPACT OF RENEWABLE FUELS ON IOWA

Biofuels plants purchase agricultural raw materials, other inputs, and a wide range of goods and services such as industrial chemicals; electricity, natural gas, and water; labor; and services such as maintenance, insurance, and general overhead. The primary feedstock for ethanol remains corn while the biodiesel industry uses a wider variety of fats and oils as feedstocks. The 4.5 billion gallons of ethanol produced in Iowa last year utilized nearly 1.6 billion bushels of corn, or 62 percent of Iowa's 2022 2.48-billion-bushel corn crop. The 1.9 billion pounds of soybean oil used to produce biodiesel in Iowa were the equivalent of the oil from nearly 162 million bushels of soybeans, nearly 28 percent of Iowa's soybean crop.

Expenditures on these goods and services represent the purchase of output of other industries. A substantial share of these dollars is spent in Iowa, and the economic impact stays in the state. Spending associated with renewable fuels production circulates throughout the entire economy several-fold. Consequently, this spending stimulates aggregate demand, supports jobs not only in biofuels production but also jobs throughout the entire economy, generates additional household income, and provides tax revenue for the state and local governments.

The renewable fuels industry is multifaceted. Ethanol and biodiesel producers are part of a manufacturing sector that adds substantial value to agricultural commodities produced in Iowa. The first and second-generation feedstocks used to produce renewable fuels are produced primarily by Iowa farmers. Combined, these activities make a significant contribution to the Iowa economy. Based on its size and scope, the renewable fuels industry had the following impacts on Iowa's economy in 2022.¹

¹ This study estimates the impact of producing 4.5 billion gallons of ethanol and 349 million gallons of biodiesel on Iowa's economy.

- Accounts for nearly \$7.2 billion, or about 3 percent, of Iowa GDP
- Generates \$3.5 billion of income for Iowa households; and
- Supports more than 57,000 jobs throughout the entire Iowa economy. This is equivalent to more than 3 percent of total state employment.

The annualized contribution of the ethanol and biodiesel industries is summarized in Table 1.

Table 1
Total Economic Impact of the Renewable Fuels Industry for Iowa: 2022

	Purchases (Mil 2022\$)	GDP (Mil 2022\$)	Income (Mil 2022\$)	Employment (Jobs)
Ethanol*	\$13,110	\$6,129	\$3,024	50,007
Biodiesel	\$2,040	\$1,022	\$506	7,278
Total	\$15,149	\$7,151	\$3,531	57,285

* Includes agriculture, investment in R&D, and exports

Methodology

The spending associated with renewable fuels production and construction of new capacity circulates throughout the entire Iowa economy several-fold. Consequently, this spending stimulates aggregate demand, supports the creation of new jobs, generates additional household income, and provides tax revenue for state and local governments. We estimate the impact of the renewable fuels industry on the Iowa economy by applying expenditures by the relevant supplying industry to the appropriate final demand multipliers for value added output, earnings, and employment.

This study utilizes the IMPLAN (Impact Analysis for Planning) economic model to develop this understanding of the economy, including the sectors that support the ethanol industry, the links between them, and the level of economic activity. IMPLAN is a commonly used economic input-output (I-O) model. I-O models are constructed based on the concept that all industries

within an economy are linked together; the output of one industry becomes the input of another industry until all final goods and services are produced. I-O models can be used both to analyze the structure of the economy and to estimate the total economic impact of projects or policies. For this analysis, a model for the Iowa economy was constructed using current IMPLAN software and data to estimate economic impacts of the ethanol and biodiesel industries. The IMPLAN data are based on the most recent available national benchmark input-output data and regional data published by the U.S. Bureau of Economic Analysis. As such the IMPLAN data reflect changes in the economy post-COVID. Detail regarding the IMPLAN model and how it was used is presented in Appendix A.

The treatment of industry net earnings for the ethanol industry marks a departure from previous years. In the past, we treated industry earnings as an addition to the household sector since the income is paid to owners of operating biofuel plants. This year we separated revenue by the share of ethanol and co-products accounted for by dry and wet mills and estimated the impact of net industry earnings using multipliers for the corn dry mill ethanol (other basic organic chemicals) and wet corn mill industries. Biodiesel earnings were treated the same as in previous years.

We continue to incorporate the explicit impact of ethanol and DDGS exports into the analysis using updated USDA Agricultural Trade multipliers for output and employment in the biofuels industry to estimate the impact of exports. These results were added to the IMPLAN results. Since Iowa is the nation's largest ethanol producer, the Iowa industry participates in the export market. Reflecting this, we applied Iowa's share of total production to the total national export impact.

Contribution of the Renewable Fuels Industry

The contribution of the renewable fuels industry to the economy of Iowa is detailed in Table 2.

Table 2
Contribution of the Renewable Fuels Industry to Iowa: 2022

	GDP (Mil 2022\$)	Jobs (FTE)	Income (Mil 2022\$)
Ethanol Manufacturing *			
Direct	\$1,018	2,572	\$372
Indirect	\$614	6,147	\$371
Induced	\$284	3,488	\$151
Subtotal	\$1,915	12,207	\$894
Biodiesel Manufacturing			
Direct	\$306	1,212	\$115
Indirect	\$555	4,100	\$305
Induced	\$161	1,966	\$86
Subtotal	\$1,022	7,278	\$506
Agriculture			
Direct	\$1,945	7,919	\$581
Indirect	\$920	13,877	\$768
Induced	\$519	5,612	\$278
Subtotal	\$3,384	27,409	\$1,626
New Construction			
Direct	\$96	1,450	\$94
Indirect	\$26	232	\$15
Induced	\$42	498	\$22
Subtotal	\$163	2,179	\$131
Exports	\$667	8,213	\$373
Total			
Direct	\$3,364	13,153	\$1,161
Indirect	\$2,781	32,568	\$1,832
Induced	\$1,005	11,564	\$537
Grand Total	\$7,151	57,285	\$3,531
Change from 2021	37.8%	24.8%	33.3%

* Includes R&D

The renewable fuels industry provides a significant contribution to the Iowa economy, with ethanol producers spending more than \$13.1 billion on raw materials, other inputs, goods, and services to produce 4.5 billion gallons of ethanol. Biodiesel producers spent \$2.0 billion to produce 349 million gallons of biodiesel. The largest share of this spending is for corn used as the raw material to make ethanol and co-products, and soybean oil and other fats and oils to produce biodiesel.

Ethanol

The ethanol industry provides an attractive domestic market for Iowa farmers as well as the opportunity for farmers to enjoy some of the value added to their commodity by further processing.

The remainder of the spending is for a wide range of inputs such as industrial chemicals, electricity, natural gas, water, labor, transportation and services such as maintenance, insurance, and general overhead. Spending for these goods and services represents the purchase of output of other industries, mostly in Iowa. For example, the Iowa ethanol industry used 1.6 billion bushels of corn, or 62 percent of Iowa's corn crop.² This amounts to more than \$11.2 billion of revenue to Iowa corn farmers.

Every dollar spent by an ethanol (or biodiesel) producer on feedstocks, electricity, natural, gas, labor, and other inputs produced in Iowa represents demand for goods and services produced by Iowa farmers and firms. This demand provides the maximum economic impact since most of the value stays in Iowa. To the extent that goods used by Iowa biofuels producers are

² The 4.56 billion gallons of ethanol production required 1.6 billion bushels of corn. This amounts to 62 percent of the 2022 Iowa corn crop. Without the demand for corn provided by the ethanol industry Iowa farmers would likely plant fewer acres to corn, purchase fewer inputs, and produce a smaller crop, thereby reducing the economic contribution provided by the corn industry.

procured from out-of-state the Iowa economy still benefits because these goods generally reflect activity by the wholesale sector.

Reflecting this, the sharp increase in ethanol's contribution to Iowa GDP, jobs and income is in large part directly the result of ethanol producers spending a great deal more to buy corn from Iowa farmers in 2022.

Most ethanol produced in Iowa (86 percent) is by dry mills that also produce valuable co-products in the form of DDGS and DCO.³ Iowa's corn wet mill plants produce corn gluten feed (CGF), corn gluten meal (CGM) and edible corn oil as co-products. The Iowa ethanol industry produced an estimated 11.1 million short tons of DDGS, nearly 1.1 billion pounds of DCO, 1.3 million tons of CGF and 270,000 tons of CGM in 2022 with an aggregate market value of nearly \$3.8 billion. These co-products are used by Iowa livestock producers and the Iowa biodiesel industry. It is notable that these co-products are produced with little additional expenditure.

The value of the ethanol industry output (ethanol and co-products) amounts to more nearly \$15 billion at 2022 prices. Based on the IMPLAN model, the ethanol and supporting agriculture industries account for \$6.1 billion of Iowa GDP.

Jobs are created from the economic activity supported by ethanol production. While ethanol production is not a labor-intensive industry, accounting for nearly 2,600 fulltime-equivalent direct jobs in Iowa⁴, the economic activity resulting from the full activities of the ethanol industry supports a much larger number of jobs in the overall economy. The direct jobs supported by the ethanol industry are concentrated primarily in manufacturing and agriculture.

³ DDGS and DCO production is reported monthly in the USDA Grain Crushings and Co-Products Production report. <http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1899>.

⁴ The Census Bureau does not report employment in ethanol production. The number of direct jobs associated with ethanol production is based on an estimated industry average of 50 jobs per plant.

When the indirect and induced effects of ethanol manufacturing are considered, the industry accounts for more than 9,500 fulltime-equivalent jobs throughout the entire economy.

Since renewable fuels production uses feedstocks produced by Iowa farmers, the ethanol and biodiesel industries have the largest impact on agriculture, supporting more than 7,900 direct farm and farm-related jobs. Most of the agriculture jobs supported by the ethanol industry are farm workers and laborers associated with grain production. However, a wide range of jobs in support activities related to crop production, ranging from farm managers and bookkeepers to farm equipment operators, are supported by ethanol production.

As the impact of the direct spending by the ethanol and biodiesel industries expands throughout the economy, the employment impact expands significantly and is spread over many sectors. The indirect and induced jobs supported by the agriculture output used by renewable fuels amount to an additional 19,500 jobs throughout the entire Iowa economy for a total impact from agriculture of nearly 27,409 jobs.

Increased economic activity and new jobs result in higher levels of income for Iowa households. The ethanol and supporting agriculture industry generated nearly \$3 billion of income for Iowans in 2022.

Biodiesel

The Iowa biodiesel industry also makes sizable contributions to the Iowa economy. According to the Iowa Renewable Fuels Association (IRFA), Iowa's 11 operating biodiesel plants had capacity of 410 million gallons of biodiesel in 2022.⁵

The Iowa biodiesel industry spent \$2 billion on raw materials, other inputs, goods, and services in 2022. The largest share of this spending is for fats and oils used as the raw material to make

⁵ http://www.iowarfa.org/biodiesel_refineries.php

biodiesel. The Iowa biodiesel industry used more than 2.6 billion pounds of fats and oils to produce 349 million gallons of B100. The Iowa biodiesel industry used 1.87 billion pounds of soybean oil in 2022 to produce biodiesel, accounting for 71 percent of total feedstock use. Animal fats was the second largest biodiesel feedstock in 2022 at 290 million pounds. Smaller amounts of canola, distillers corn oil, and used cooking oil were also used. Most of the feedstocks for Iowa biodiesel production are procured locally. The remainder of the spending by the biodiesel industry is for a wide range of inputs such as industrial chemicals, electricity, natural gas, water, labor, and services such as maintenance, insurance, and general overhead. As with ethanol, spending for these goods and services represents the purchase of output of other industries.

The spending associated with biodiesel production also circulates throughout the entire Iowa economy stimulating aggregate demand, supporting jobs, generating additional household income, and creating tax revenue. The following summarizes the economic contribution of the Iowa biodiesel industry at the end of 2022.

- The gross value of the biodiesel and glycerin produced in Iowa totaled more than \$2.3 billion. When the impact of manufacturing is considered, the biodiesel industry accounts for more than \$1.0 billion of Iowa GDP.
- Jobs are created as a consequence of increased economic activity caused by biodiesel production. The increase in economic activity generated by biodiesel production supports nearly 7,300 fulltime-equivalent jobs in all sectors of the Iowa economy.
- Increased economic activity and jobs result in higher levels of income for Iowa households. The biodiesel industry accounts for about \$506 million of household income for Iowans.

Conclusion

The renewable fuels industry continued to make a significant contribution to the Iowa economy in terms of GDP, job creation, and income. The importance of the renewable fuels industry to agriculture and rural economies such as Iowa is particularly notable. Growth and expansion of the biofuels industry through the application of new technologies and feedstocks will enhance the industry's ability to support American energy independence and solidify its position as the original creator of green jobs while enabling America to make further strides toward reducing greenhouse gas emissions and positively dealing with climate change.

Further, policy and regulatory actions taken by Iowa, and other Midwestern states, to boost the use of biofuels locally, particularly statewide use of E15 and higher blends, provide substantial support for this important industry.

APPENDIX A

IMPLAN Methodology

We estimate the impact of the ethanol industry on the economy of Iowa by applying expenditures by the relevant supplying industry to the appropriate final demand multipliers for value added output (GDP), earnings, and employment.

To understand how the economy is affected by an industry such as renewable fuels production, it is necessary to understand how different sectors or industries in the economy are linked. For example, in the renewable fuels production sector, the ethanol industry buys corn from the agriculture sector; which in turn, buys inputs from other suppliers such as fertilizer and pesticide producers that also purchase products from a range of other industries. These are referred to as backward linkages. Use by other sectors of natural gas as an input, such as manufacturing operations, is a forward linkage. Natural gas production and transmission industries are linked through both forward and backward linkages to other economic sectors in each state's economy.

The household sector is linked to all sectors as it provides the labor and management resources. In turn, changes that affect incomes of the household sector typically have significant impacts compared to a change in the sales of other sectors. This is because households typically spend most of their income on both retail and service goods and this is a critical component of the economy

This study uses economic data from IMPLAN (Impact Analysis for Planning) to develop a model of the Iowa economy, including sectors that support the ethanol and biodiesel industries, the links between them, and the level of national economic activity. IMPLAN is a commonly used economic input-output (I-O) model. I-O models are constructed based on the concept that all industries in an economy are linked together; and the output (i.e., sales) of one

industry becomes the input of another industry until all final goods and services are produced. I-O models can be used both to analyze the structure of the economy and to estimate the total economic impact of projects or policies. For this analysis, a model for the Iowa economy was constructed using current IMPLAN data. These data are based on the most recent available national input-output data and regional data published by the U.S. Bureau of Economic Analysis.

IMPLAN models provide three economic measures that describe the economy: value added, income, and employment.

- Value added is the total value of the goods and services produced by businesses in the country and is generally referred to as GDP.
- Labor income is the sum of employee compensation (including all payroll and benefits) and proprietor income (income for self-employed work). In the case of this analysis, demand for corn and other feedstocks to produce ethanol and biodiesel supports farm income through higher crop receipts than would be the case without ethanol and biodiesel production.
- Employment represents the annual average number of employees, whether full or part-time, of businesses producing output.

Three types of effects measured with a multiplier: direct, indirect, and induced effects.

Direct effects are the known or predicted changes in the economy. Indirect effects are the business-to-business transactions required to produce direct effects (i.e., increased output from businesses providing intermediate inputs). Finally, induced effects are derived from spending on goods and services by people working to satisfy direct and indirect effects (i.e., increased household spending resulting from higher income).

2h. Biofuels Vision 2024

2024 Renewable Fuels Coalition Iowa Caucus Project Overview

Note: This document represents a preliminary draft of the 2024 Iowa Caucus Project. Final goals, strategy, organization, and tactics will be decided by the Steering Committee.

Overview

The 2024 Iowa Caucus Project will be a statewide effort designed to bring renewable fuels supporters together in a unified effort to engage candidates seeking the GOP presidential nomination. The Project's main goal will be to move each presidential candidate to the most pro-renewable fuels position possible. Ultimately, candidates will be held accountable through the broad distribution of a candidate voter guide to renewable fuels supporters throughout Iowa. The Project will not rank, grade, or target specific candidate(s) for support or defeat. The Project will run from February 2023 through February 2024.

Organization

The 2024 Iowa Caucus Project will be overseen and directed by the **Renewable Fuels Steering Committee**. The Committee will be comprised of one representative of each participating entity that provides a minimum of \$50,000 in direct funding to the Project. The Committee will meet regularly to receive updates, provide strategic guidance to the Project Staff, and to approve all plans and major expenditures. While the Iowa Renewable Fuels Association has offered to have their Executive Director serve as the liaison between the Committee and Staff, this would ultimately be a decision of the Committee.

The **Project Staff** will ultimately be determined by the Committee and by budget considerations. The Staff will be headed by an **Executive Director**, who will oversee all campaign operations and staff, will ensure Project goals are met while abiding by budget and legal guidelines, and will serve as the point of contact to the Committee to provide timely reports and to receive direction. A **Field Staffer(s)** will assist the Executive Director in the grassroots and outreach phases of the Project.

Project Co-Chairs will be recruited by the Committee to bring gravitas to the organization, to serve as the Project's public face and voice, and to engage directly with candidates/staff to deliver the Project's message. The goal is for a minimum of two co-chairs who are actively involved in Iowa Republican politics. If the Democrats start actively campaigning in Iowa, additional chair position will be filled by an active Democrat.

Project Allies will be recruited and organized to assist in achieving Project goals. Allies could be the federal delegation, renewable fuels plant employees or investors, farm leaders, or elected (or former) Iowa officials. The allies will be utilized for direct engagement with candidates, from asking questions at public events to private issue briefings and plant/farm tours.

Project Tactics

The primary focus of the project will be to educate and influence candidates with regards to the most important policy issues facing renewable fuels, including the Renewable Fuel Standard, higher blends, IRA implementation, and other issues as determined by the Committee. A wide variety of tactics will be employed to achieve this goal.

Candidate Intercepts: The primary function of Project Staff will be to ensure that renewable fuels are a ubiquitous presence at every public event for all candidates, and that a renewable fuels question is asked at every public event. (While this is the goal, budget/staffing issues and/or limited cooperation from Steering Committee entities and/or allies could require a more focused approach.) All the intercepts will be recorded and transmitted back to Project Staff for use in Project media efforts.

Candidate Education: The Project will also strive to educate candidates and their staff members about the benefits of renewable fuels by providing informational materials and organizing meetings between campaigns and Project co-chairs/steering committee/staff.

Plant Tours: The Project will invite and coordinate candidate tours of participating renewable fuels plants. The focus of tours will be for the candidates to meet the plant employees and see the level of technology in the plants. Tours will also serve as a potential opportunity for candidate education meetings as referenced above.

Candidate Questionnaire: A questionnaire, designed and approved by the Steering Committee, will be sent to all candidates. The questionnaire will provide another opportunity for candidate/staff education and will be used to help determine the candidate voter guide.

Candidate Voter Guide: The Project will utilize voting records, public statements, and the candidate questionnaire to create a candidate voter guide. The voter guide will be publicized via mailings, website, social media, and the press.

Caucus Training at Plants: The Project will conduct caucus training for interested plant employees/board/investors in order to familiarize them with caucus procedures and the issues at stake.

Engaging Iowa Elected Officials/Others: The Project, primarily through its Steering Committee, will engage Iowa's elected officials and other thought leaders (political leaders/media commentators/etc.) to ensure they are highlighting renewable fuels when approached by candidates or out-of-state media.

Rs and Ds: The focus of the Project will be on Republican candidates. If a competitive caucus develops on the Democrat side and/or President Biden campaigns in Iowa, the Project goals and tactics will be adjusted accordingly.

Business Insider
February 28, 2023

Ron DeSantis' past views could come back to bite him in Iowa, a critical state for any GOP challenger to Trump



Florida Gov. Ron DeSantis Paul Hennessy/SOPA Images/LightRocket via Getty Images

- **Ron DeSantis supported killing a federal mandate that is prized by the ethanol industry.**
- **DeSantis' past votes are being scrutinized ahead of an expected presidential campaign.**
- **The ethanol industry is huge in Iowa, and Iowa is key to any Republican hoping to defeat Trump.**

Florida Gov. Ron DeSantis' potential bid to dethrone former President Donald Trump could hit a critical snag in Iowa, home to the first-in-the-nation caucuses.

DeSantis, like many other House conservatives, was previously opposed to a federal mandate that has helped spur domestic ethanol production. As a Floridian, he faced little to no cost for such a view.

As a now likely future presidential candidate, he will have some explaining to do.

DeSantis voting record is already a punching bag

DeSantis' potential rivals have already begun tearing into his record. He hasn't even announced a campaign yet.

Former President Donald Trump and President Joe Biden have made it clear that they'll go after his votes to fundamentally change Medicare and Social Security. Former UN Ambassador Nikki Hayley, the only other major GOP candidate at the moment, blasted DeSantis for not going far enough with a parental education rights bill that critics tagged as "Don't say gay." While New Hampshire Gov. Chris Sununu went after the Floridian for targeting private businesses, a likely nod to Florida's efforts to punish Disney after the company criticized the parental rights bill.

But primaries are not won in debates; they're won in states. One of those states is Iowa, and one bill in particular could jeopardize his fate there.

Less than a year before he announced his gubernatorial run, the then-Florida congressman co-sponsored legislation in 2017 that would have immediately ended the Renewable Fuel Standard, a mandate that requires renewable fuel to be blended into the nation's fuel supply.

The federal mandate applies to multiple categories of biofuels, but its main requirements are met by corn starch ethanol. Iowa produces more corn than any other state, and a majority of that crop is processed into ethanol along with the byproducts such as livestock feed.

"If you come to Iowa, you're going to talk about agriculture," Monte Shaw, the executive director of the Iowa Renewable Fuels Association, told Insider. "Over 60% of Iowa's corn crop, which is, of course the largest in the country, goes into an ethanol plant."

The bill, written by then-Rep. Bob Goodlatte of Virginia, would have immediately ended the mandate. The mandate is not without its detractors. Some conservatives have long loathed it since it's a government mandate on private industry, while some environmentalists question if boosting ethanol is the most environmentally sound policy.

"He was a congressman from Florida, probably hadn't been to Iowa, probably hadn't toured an ethanol plant, probably hadn't talked to a whole lot of corn growers, quite frankly," Shaw said. "Do I like the fact that this is track record? No. I don't want anyone to dislike ethanol. Is that a deal-breaker? Hell no."

Iowa looms large over the modern presidential primary and caucus calendar. At the very least, any candidate who wants to topple Trump will need to finish near the top in the state.

DeSantis won't be alone in facing questions

Trump's own administration was hammered over its handling of the renewable fuel standard. Both of Iowa's Republican senators, Chuck Grassley and Joni Ernst, repeatedly sought to play the then-president against his EPA administrators. The Environmental Protection Agency is responsible for setting standard. The agency also fields requests from smaller oil refiners, which are allowed to ask for waivers if they can prove that the mandate is financially harmful.

"Once again, EPA is playing games and not helping President Trump with farmers. An agreement was reached on September 12 in an Oval Office meeting between several Midwest leaders, President Trump and other members of his Administration," Grassley and Ernst said in a 2019 statement. "This does not reflect what we agreed to in that meeting."

Shaw deemed Trump a "mixed bag." He praised the Trump administration for moving to allow a higher-blend of ethanol to be sold at gas stations year-round. Like Iowa's senators, he was also deeply frustrated by how Trump's EPA enforced the renewable fuel standard.

Then again, Donald Trump did win the 2016 nomination without Iowa.

Former Secretary of State Mike Pompeo, who is weighing a 2024 campaign, may be in more hot water among Iowans.

Pompeo took a strong position against a key tax credit for wind energy during his time in Congress. Pompeo delighted in leading the struggle against the Wind Production Tax Credit, a policy so close to Grassley that the Iowa senator is often called the "father" of it. Iowa is also the nation's second-largest producer of wind energy. The then-Kansas lawmaker took a strong philosophical stance against government support of specific renewable sources.

No state produces ethanol — or headaches for the GOP — like Iowa does

Iowa is the nation's largest ethanol producer. Forty-one plants are based in the state, stretching all the way from Council Bluffs and the Nebraska border to the West to Muscatine and the Illinois border to the East. Last year, the Iowa Renewable Fuels Association said that the state set another record as it produced 4.5 billion barrels of ethanol. In 2021, the last year for which there is full data, the US in total produced 15 billion barrels.

The marriage between a once-nascent industry and Iowa's raw political power is so well known that The West Wing devoted a whole episode to the question of whether aspiring presidents would shuck aside their past views for a chance to win.

Shaw said that there are many "myths" about the standard and the caucuses, rejecting that there are any sort of "kiss the ring" moments. Instead, he said his organization uses the caucuses as a tool to educate candidates.

"Believe me, I wish it was that easy, right?" he said. "It's not what it's like at all. The ethanol industry isn't here because of the Iowa caucuses, we're here because we're the world's cheapest source of fuel octane."

McCain spent years ripping federal support of ethanol, including a now-expired subsidy before slightly softening his stance. As McCain would often say in the state, "I do have a glass of ethanol every morning with Chuck Grassley."

But the era of "King Corn" may be ending.

Texas Sen. Ted Cruz was hammered for months on the campaign trail for wanting to phase out the Renewable Fuel Standard. He appeared to soften his position, though his campaign pushed back on the idea he was changing his views. Ultimately, he emerged victorious, the only Republican not named Donald Trump to win one of the four early states in 2016. He also did so without ever explicitly promising the entirety of what the biofuels industry would want.

Iowa is all about the expectations game. Media attention on the top finishers is only likely to increase amid the prospect that it will be Trump's first time on a ballot since losing the 2020 election. Delegate allocation rules mean that no candidate is anywhere close to the nomination even if they emerge victorious, but a poor finish could doom a campaign.

For now, whether DeSantis has changed his mind since his time in Congress remains unclear. Representatives for the governor did not respond to Insider's request for comment.

3a. State Legislative Issues
i. E15 Regulations



PRESS RELEASE

FOR IMMEDIATE RELEASE
February 20, 2023

Press Contact: Monte Shaw
515-252-6249

IRFA: Legislation Creating De Facto Ban on Iowa Ethanol Carbon Capture Technology Hurts State, Doesn't Protect Landowners

Bill Would Further Efforts by Sierra Club to Prevent Liquid Fuels From Competing with Electric Vehicles

JOHNSTON, IOWA – According to multiple news reports, today members of the Iowa House are expected to introduce legislation that would create a de facto ban on new projects that allow Iowa ethanol producers to install carbon capture technology. Based on a draft of the bill posted on the *Des Moines Register* website, the bill singles out CO2 pipelines for strict regulations that would not be applied to pipelines carrying flammable or explosive liquids.

"The difference between the rhetoric and reality on this bill is truly staggering," stated Iowa Renewable Fuels Association (IRFA) Executive Director Monte Shaw. "We hear about property rights, but this bill wouldn't impact the next Dakota Access oil pipeline or Rock Island Clean Line Transmission project. We hear about safety, but this bill doesn't apply to pipelines that carry explosive or flammable liquids while CO2 is neither. Instead, this bill singles out for destruction the single most important technology we have to keep liquid fuels like ethanol competitive with electric vehicles in the rapidly growing low carbon transportation markets. It is no surprise that anti-agriculture groups like the Sierra Club support preventing carbon capture and sequestration from going forward."

IRFA recently released a [new study](#) that found without viable access to carbon capture and sequestration (CCS), Iowa could see 75 percent of its ethanol production migrate to states that facilitate sequestration. Losing nearly 3.5 billion gallons of Iowa ethanol production would reduce the local corn grind by over one billion bushels, thereby lowering Iowa corn prices and harming the entire Iowa agricultural economy. This scenario is closer to reality as just last week both the South Dakota and North Dakota legislatures overwhelmingly rejected bills to restrict CO2 pipelines.

“The bill is a veritable cornucopia of unreasonable regulations narrowly targeted at CCS technology,” continued Shaw. “For example, section three of the bill would allow just two people to effectively veto an interstate CCS project even if that project had 100 percent voluntary easements. It would only take two county supervisors to enact an ordinance, like a setback requirement that is physically impossible to meet, and then the Iowa Utilities Board (IUB) would be prevented from issuing a final permit.”

IRFA does not object to the provisions in the bill that clarify and expand landowner rights that apply to all projects that come before the IUB.

“IRFA continues to urge all Iowans to unite to find a fair and equitable path forward for carbon capture and sequestration (CCS) projects – fair and equitable to landowners, CCS projects and communities,” stated Shaw. “Further, any changes to the IUB permitting process should apply to all applicants, not just CO2 pipelines.”

The Iowa Renewable Fuels Association represents the state’s liquid renewable fuels industry and works to foster its growth. Iowa is the nation’s leader in renewable fuels production with 42 ethanol refineries capable of producing 4.5 billion gallons annually – including 34 million gallons of annual cellulosic ethanol production capacity – and 11 biodiesel facilities with the capacity to produce 410 million gallons annually. For more information, visit the Iowa Renewable Fuels Association website at: www.iowaRFA.org.

###

Analysis of HF 368 to Increase Regulatory Hurdles on Carbon Capture and Sequestration Projects

IRFA Position

1. Iowans should unite to find a fair and equitable path forward for carbon capture and sequestration (CCS) projects – fair and equitable to landowners, CCS projects and communities.
2. Any changes to Iowa Utilities Board (IUB) permitting process should apply to all applicants, not just CO2 pipelines.
3. Any changes should not apply to projects that have already filed with the IUB. Projects have spent literally hundreds of millions of dollars in good faith under Iowa law. To change the rules midway through the process is unfair and quite possibly illegal.

HF 368 Overview

This bill fails all criteria set forth by IRFA. The bill would single out pipelines transporting a nonexplosive, nonflammable gas for much more stringent requirements. It would create a de facto ban on CCS projects, putting the future on Iowa ethanol production at a severe disadvantage.

This bill is the literal wish list of anti-ag, anti-ethanol, anti-internal combustion engine extremist groups like Sierra Club. While claiming to be a “property rights” bill, nothing could be further from the truth as it limits changes to solely CO2 sequestration projects. Rather, the bill would create a Big Government web of unnecessary and overreaching regulations with the effect of undercutting Iowa agriculture and the ability of liquid fuels like ethanol to compete with electric vehicles.

HF 368 Details

All Sections: This bill specifically and continuously applies new burdensome requirements to ONLY CO2 pipeline projects.

Fact: Any claim that this bill is about “property rights” rings completely hollow. Rather, it singles out CCS projects for unique and unreasonable restrictions. The bill does not address any of the generic concerns that have been raised about the current IUB permitting process.

Section 2: This section would prevent CCS projects from moving forward until the federal Pipeline and Hazardous Materials Safety Administration (PHMSA) adopted additional safety standards for CO2 pipelines.

Fact: PHMSA already has safety standards in place for CO2 pipelines. Like many federal regulations, they are constantly under review and updated. It is vital to note that under PHMSA regulations, any new safety standards that might be adopted in the future will apply to ALL CO2 pipelines – there is no grandfathering of existing projects or pipelines.

In short, this section would freeze projects for an indefinite period of time at the whims of a federal agency while not providing a single safety benefit to Iowans. This is an example of government at its worst.

Section 3: This section would prevent the Iowa Utilities Board (IUB) from granting a permit to a CO2 pipeline unless it is in compliance with all county, municipal, and local zoning ordinances and permits.

Fact: This is simply a de facto ban on CO2 pipelines. It would authorize new levels of government to regulate CO2 pipelines. We have already seen counties attempt to adopt zoning that is physically impossible to comply with.

This provision would allow only two Iowans to kill a CO2 project even if the project acquired 100% voluntary easements from landowners. Two members of a three-member county board of supervisors could vote to enact an unworkable zoning standard. It is simply ridiculous to empower two Iowans in this manner on projects of statewide importance.

This would also be a new and potentially seismic shift in how Iowa permits statewide projects. In the past, Iowa in general, and Iowa Republicans in particular, have supported statewide standards for projects and industries that compete throughout the state. Examples would be the master matrix for livestock, IUB for infrastructure projects, and Iowa Dept. of Education for statewide education standards. This bill would strike a major departure from this principle and unleash a hodgepodge of county, municipal, and local regulations and ordinances – any one of which could kill the entire interstate project.

Section 5: This provision would require a CO2 pipeline project to acquire 90% of the needed route (in miles) by voluntary easement before eminent domain could be authorized.

Fact: This is a de facto ban on CO2 pipeline projects. By requiring a project to obtain 90% voluntary easements, it empowers a small number of people to veto a project – even if it has supermajority support. Knowing that they will never be asked to find a reasonable settlement, rogue landowners can rebuff a project without even engaging in meaningful dialog. It is important to note that this would not apply to other projects using eminent domain, such as oil pipelines, solar farms, electricity transmission, or explosive and flammable liquids and gases.

Further, future CCS projects by ethanol producers or other industries would be at particular risk, as short feeder pipelines (leading from the new projects to existing CO2 pipelines) could be left at the mercy of literally one landowner.

Section 5: This section would also prevent IUB from permitting an interstate project until it had been permitted by all other states where the project will have a footprint.

Fact: This provision would unnecessarily delay vital Iowa projects by leaving them to the timelines of other states. For example, a CO2 project may have a relatively large footprint in Iowa and a relatively minor footprint in Missouri. What benefit is there in

empowering Missouri to “veto” or delay the entire project? Isn’t a good law, one that we would want other states to admire and adopt? If other states adopted this provision it would create a Catch-22 whereby nothing could ever be done. IUB permits are currently issued contingent on a project acquiring all permits for the entire project. So the change here is subtle, but potentially deadly to projects.

Section 11: This section applies the new CCS regulations to all permits filed with the IUB on or after July 1, 2021. This would be applicable to the three projects with permits pending before the IUB.

Fact: This provision is both unfair and likely illegal. CCS projects in Iowa have been working in good faith under the laws and regulations of Iowa, spending literally hundreds of millions of dollars. To change the rules at this point risks Iowa’s reputation as “open for business.”

Vote on HF 368 in House Judiciary Committee

Dunwell Amendment:

Yes

- Wilburn
- Dunwell
- James
- Lohse
- Meyer
- Olson
- Scheetz
- Wessel-Kroeschell

Abstain

- Jones
- Srinivas

No

- Holt
- Gustoff
- Collins
- Gustafson
- Kaufmann
- Nordman
- Meyer
- Stone
- Thompson
- Thomson
- Wheeler

Failed by 11-8 vote.

Lohse Amendments:

All were voted on via short form (voice vote)

Failed on the voice votes.

Final Vote on Legislation:

Yes

- Holt
- Gustoff
- Collins
- Gustafson
- Kaufmann
- Nordman
- Meyer
- Stone
- Thompson
- Thomson
- Wheeler
- Wessel-Kroeschell

Abstain

- Jones
- Srinivas

No

- Wilburn
- Dunwell
- James
- Lohse
- Meyer
- Olson
- Scheetz

Passed by 12-7 vote.



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PHONE 202.545.4000 FAX 202.545.4001

GrowthEnergy.org

February 27, 2023

Chairman Holt, Vice-Chair Gustoff, Ranking Member Wilburn and members of the House Judiciary Committee:

Thank you for your work to grow Iowa's economy. My name is Emily Skor and I serve as CEO of Growth Energy. Growth Energy is the world's largest association of biofuel producers representing 90 U.S. plants that produce nearly nine billion gallons of cleaner-burning, renewable fuel annually; 106 businesses associated with the production process; and tens of thousands of biofuel supporters across the country. Our ultimate objective is to work together to bring better and more affordable choices at the fuel pump, improve air quality, and protect the environment for future generations.

I am writing to you today to respectfully ask for your support of Carbon Capture Utilization and Storage (CCUS) projects in the state and oppose House File 368. These projects are vital to the long-term competitiveness of our industry in the carbon economy and CO₂ has the potential to be just as valuable as a commodity of ethanol production as any of the co-products that come from our facilities. Iowa's ethanol industry supports thousands of jobs, generates hundreds of millions of dollars for our economy, and, critically, purchases approximately 60 percent of the corn grown in the state. Bioprocessing facilities have long been pioneers in carbon capture technology, providing pure streams of clean CO₂ for use by a range of industries and for multiple purposes, including for food, beverages, and dry ice. CCUS systems will be an important tool for many bioprocessing facilities allowing them to cut their carbon intensity by half, driving significantly more value for their product and making them more competitive. The biofuel industry, farmers, and rural communities are inextricably linked, and these projects will help the entire supply chain compete in a low-carbon economy. With better transport and storage infrastructure, ethanol plants can connect to a larger network of CCUS systems to get CO₂ where it is needed.

Ultimately, low-carbon biofuels coupled with CCUS will create thousands of high-quality clean energy jobs across the supply chain, in rural America and throughout the country, while helping us meet our climate targets as quickly as possible. We hope that you will support our industry's ability to thrive and support the state's vibrant ag economy by carefully considering the unintended consequences of any legislation and allowing important CCUS projects the opportunity to add more value to the great state of Iowa.

We hope that you will help keep Iowa's ethanol industry competitive and maintain its reputation as a state that welcomes business investment.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "Emily Skor". The signature is fluid and cursive, with the first name "Emily" written in a larger, more prominent script than the last name "Skor".

Emily Skor, CEO
Growth Energy



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February 27, 2023

Members of Iowa House Judiciary Committee -

It is my pleasure to introduce you to Gevo, Inc., a Sustainable Aviation Fuel (SAF) company that turns corn ethanol into a replacement for jet fuel.

Gevo's mission is to transform renewable energy and carbon into energy-dense liquid hydrocarbons. These liquid hydrocarbons can be used for drop-in transportation fuels such as gasoline, jet fuel and diesel fuel, that when burned have potential to yield net-zero greenhouse gas emissions when measured across the full life cycle of the products. Gevo uses low-carbon corn as raw materials and is in an advanced state of developing renewable electricity and renewable natural gas for use in production processes, resulting in low-carbon fuels with substantially reduced carbon intensity (the level of greenhouse gas emissions compared to standard petroleum fossil-based fuels across their life cycle).

In September of 2022, Gevo broke ground on our first production facility called Net-Zero 1 in Lake Preston, South Dakota. This plant is expected to produce approximately 60 million gallons of SAF annually. We intend to hire 90 full-time employees and have 1,500 construction workers employed over the next three years. The plant is expected to utilize 35 million bushels of corn annually and also produce 475 million pounds of high protein animal feed and 38 million pounds of corn oil. The SAF plant is expected to have a capital expenditure of approximately \$850 million and an additional \$150 million for a 90-megawatt wind farm to power the plant. I mention this project because Gevo plans to build more than just our Lake Preston plant. In fact, we have a goal to produce 1 billion gallons of SAF by 2030 and there are several Iowa locations we are looking at.

We call this plant Net-Zero 1 because of our efforts to de-fossilize the plant inputs to the greatest extent possible. To achieve a net-zero carbon plant, Gevo is focused on reducing fossil emissions by using renewable electricity from our wind farm, producing green hydrogen on-site, and using renewable natural gas from dairy methane digesters.

Additionally, we intend to de-carbonize the plant by reducing as much of the carbon emissions as possible through the entire ethanol to SAF production process. The first step will be working directly with farmers to incentivize climate smart agricultural practices that reduce their carbon emissions for the corn we will buy.

Carbon Capture and Sequestration (CCS) is also an important part of reducing the carbon intensity of our fuels. Gevo's SAF process converts corn into jet fuel and just like any ethanol process, we will have renewable CO₂ as an emission. Capturing and sequestering

this biogenic CO₂ is a significant portion of our carbon reductions valued by the markets where we will sell our fuel. It is the single largest method we have to achieve net-zero and below.

We are concerned legislation before this committee (HF 368) will prohibit the ultimate construction of CCS pipelines in Iowa and impact renewable development opportunities in Iowa.

CCS pipelines are not just about limiting the carbon intensity of renewable fuels in the transportation sector, but it will lead to economic growth opportunities in SAF and renewable chemicals. As new technologies in carbohydrate fermentation for future fuels or renewable chemicals develop, CCS will be a valuable tool to decarbonize these production processes. Preventing a CCS pipeline will stifle innovation, growth, and decarbonization in Iowa and allow exciting new projects to leak into other states with viable carbon sequestration options.

As I mentioned before, Gevo plans to produce 1 billion gallons of SAF by 2030. We are looking for future locations across the country, including Iowa. If a CCS pipeline is unable to be built here, it is unlikely we would consider sites in the state as viable options.

Respectfully,



Kent Hartwig
Director of State Government Affairs



Gevo, Inc.

Iowa's Ethanol Production *is at a* **CROSSROADS**



The newly established Clean Fuel Production Tax Credit is a game changer for the ethanol industry. But it means sequestering carbon is now a must for ethanol plants to compete.



Neighboring states have moved forward with facilitating carbon capture projects. If Iowa does not allow similar projects to move forward, it will put the entire Iowa ethanol industry at a severe disadvantage.



Blocking or slowing down these projects would have a detrimental impact on Iowa's economy. Support Iowa farmers and the ethanol industry by supporting the carbon capture pipeline projects in our state.

SUPPORT RURAL IOWA: CONTACT YOUR LEGISLATOR TODAY!

Iowa Senate Switchboard: 515-281-3371



To find your legislator online visit: www.legis.iowa.gov/legislators/find



Iowa House Switchboard: 515-281-3221



Clean Fuel Production Tax Credit

- Provides up to \$1 per gallon for fuels with carbon intensity scores under 50.
- Carbon capture and sequestration (CCS) reduces an ethanol plant's carbon intensity by approximately 30 points; which equates to 60 cents per gallon.
- For every 100 million gallons with CCS, the tax credit generates 60 million dollars in additional value for the ethanol plant which means higher corn prices and a more vibrant economy.

Support a fair and equitable path forward for carbon sequestration
The future of Iowa ethanol and your corn prices depends on it.

Paid for by Iowa Renewable Fuels Association



**CONTACT YOUR
LEGISLATOR TODAY!**

Iowa Senate Switchboard: 515-281-3371

Iowa House Switchboard: 515-281-3221

To find your legislator online visit: www.legis.iowa.gov/legislators/find

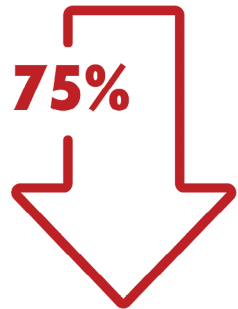
North and South Dakota recently DEFEATED legislation that was aimed at stopping carbon capture pipelines in their states.

But in Iowa, LEGISLATION ADVANCED in the statehouse that will decimate Iowa ethanol production and Iowa's economy if it's enacted.

New Study: Iowa Ethanol Industry Would be Decimated

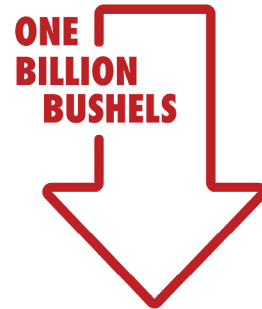
Iowa's premier ag economic research and analysis firm, Decision Innovation Solutions, found that without Carbon Capture & Sequestration (CCS), the Iowa ethanol industry will be devastated sending shockwaves throughout the Iowa agriculture community.

Ethanol Production



Iowa ethanol production could contract by 75 percent (nearly 3.5 billion gallons per year) by the end of the decade leading many Iowa ethanol plants to shut down.

Corn Markets



**ONE
BILLION
BUSHELS**

Iowa farmers would lose local markets for over 1 billion bushels of corn annually, depressing local corn basis that has grown with the rise of the Iowa ethanol industry.

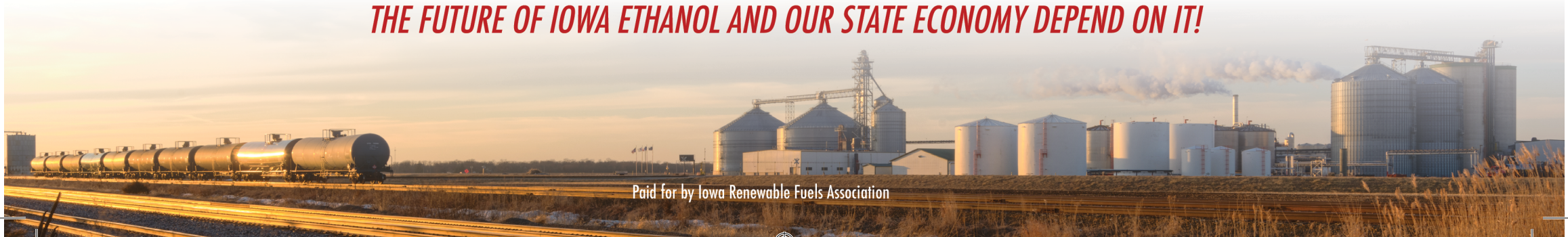
Economic Impact



**\$10
BILLION**

Eventual decline in revenues from ethanol plants of more than \$10 billion per year.

***SUPPORT A FAIR AND EQUITABLE PATH FORWARD FOR CARBON SEQUESTRATION IN IOWA.
THE FUTURE OF IOWA ETHANOL AND OUR STATE ECONOMY DEPEND ON IT!***



Paid for by Iowa Renewable Fuels Association

Des Moines Register

Opinion: The future of Iowa ethanol production depends on carbon capture

I do not want my son, and his generation of farm kids, to come of age during an Iowa farm crisis of the 2020s. This time it would be self-inflicted.

Monte Shaw

Guest columnist

- Monte Shaw is executive director of the Iowa Renewable Fuels Association.

Growing up in the small town of Shenandoah, I came of age during the farm crisis of the 1980s. Simply put, it was not a fun time to be a farm kid.

The single biggest force making things better for ag over the last 40 years was the explosive growth of the renewable fuels industry during the first decade of this century. In high school, I remember getting 30 cents under the Chicago price for corn at the local elevator. Today, our local ethanol plant routinely offers 30 to 40 cents over Chicago. That change in farm income did not happen by accident, and we should not assume it won't go away if ethanol production does.

After a 30-year hiatus, my family recently started farming our own land again. To be fair, my brother and dad do most of the work. Basically, they let me drive the grain cart. It was great to get my son back home last fall to "help" as three generations brought in the harvest. Isn't that why we are here? To utilize the ground the good Lord provided, to do so in a sustainable and profitable way, and to try to leave the place a little better than we found it for the next generation?

I understand the deep connection farmers feel for their land. I share it, and I appreciate the emotions that arise when the topic of carbon capture and sequestration, or CCS, comes up. The farm I grew up on now has a pipeline running under it and a runway going over it. Believe me, I understand eminent domain.

I also know that agriculture has always been successful by staying aligned with its customers' needs. Today's ethanol plants are no different. The largest domestic and export markets are demanding low carbon ethanol.

Last year's passage of federal clean fuel tax credits were also an absolute game changer, equating to up to 60 cents per gallon of ethanol with CCS. That equates to \$60 million a year to a 100-million-gallon ethanol plant. Ethanol production will migrate to plants that can access these incentives. I don't think it's hyperbole to say that capturing and sequestering carbon will be life or death for most ethanol plants over the next five years.

The Iowa Renewable Fuels Association is not asking you to support carbon policies or clean fuel tax credits. We are asking you to honestly consider the real-world impact they have on Iowa's ethanol plants. If we want to maintain or grow Iowa ethanol production, it will require CCS.

If Iowa enacts laws that make CCS a practical impossibility for its ethanol plants, it will be a massive blow to our farm economy and the entire Iowa economy.

Renewable fuels production pulled Iowa out of the farm crisis of the 1980s and the stagnation of the 1990s. I do not want my son, and his generation of farm kids, to come of age during an Iowa farm crisis of the 2020s. Not only would it be a bad time to be a farm kid, but this time it would be self-inflicted.

Iowa Renewable Fuels Association members urge all Iowans to pull together and to find a fair and equitable path forward for CCS. The future of Iowa ag depends on it.

TELEGRAPH HERALD

Giese: Legislation an attack on Iowa ethanol producers

BY AL GIESE Iowa Renewable Fuels Association

Mar 1, 2023

After a 30-year executive leadership career with CHS and Land O'Lakes in the Twin Cities, I returned to my roots in Northwest Iowa to raise crops and cattle. As a farmer, I fully understand and share a farmer's deep connection for the land.

My move home just happened to coincide with the buildup phase of our great biofuels industry. I liked what I saw, so I invested in it. Today I serve on the board of an ethanol company and am the president of the Iowa Renewable Fuels Association.

Agriculture has always been successful by staying aligned with its customers' needs. Today's ethanol plants are no different as they work to lower the carbon intensity of their products.

While folks have different views of carbon policies and credits, every Iowan needs to fully understand the real-world impact they have on Iowa's ethanol plants. If we want to maintain or grow Iowa ethanol production, it will require CCS.

So, if you are a farmer and you are honestly willing to accept a very low corn price and negative basis reminiscent of the 1990s and you still oppose CCS, that's your right. But if you assume you can oppose CCS and there won't be a huge economic price to pay, then I politely suggest that you think again.

If you are an Iowa legislator and you honestly believe our current laws don't provide enough landowner protections, that's your right. But if you support legislation that singles out CO₂ or liquid fuel pipelines instead of applying new standards to all eminent domain requests, then I politely suggest you're not really interested in property rights.

There is no other way for Iowa ethanol producers to interpret such legislation, whether intended or not, than as a direct attack to the benefit of those trying to eliminate liquid fuels. Is it any wonder that the anti-ag, anti-ethanol, anti-internal combustion engine Sierra Club is leading the charge to support such bills? CCS is the best tool we have to keep liquid fuels viable in the competition with electric vehicles.

If you are an activist that shouts "no eminent domain for private companies" and you live off the natural gas and electric grid, good for you. But if you heat your home with gas and light your rooms with electricity, then I politely suggest that your words and deeds don't align. The electric and gas providers

are all private companies. How do you think the distribution networks got built?

Finally, if you consider yourself an environmentalist and want drastic measures to prevent catastrophic climate change, by all means take your stand. But if you call CCS “green washing” then I politely suggest that you’re not serious about science. Taking carbon already in the atmosphere from past fossil fuel use and putting it back underground should not only be considered an incredible achievement from your supposed point of view, but it is a central tenet of every country’s plan to meet 2050 carbon reduction goals.

If Iowa enacts laws that make CCS a practical impossibility for its ethanol plants, it will be a massive blow to our farm economy and the entire Iowa economy. IRFA members urge all Iowans to pull together and to find a fair and equitable path forward for CCS because capturing and sequestering carbon will be life or death for most Iowa ethanol plants over the next five years.

Al Giese is a northwest Iowa farmer, a board member of Quad County Corn Processors and president of the Iowa Renewable Fuels Association.



Al Giese

Margins Matter: Iowa Ethanol Production **at a Crossroads**

Background: Legislation potentially impacting the ability of Iowa ethanol plants to utilize carbon capture and sequestration technology (CCS) is being discussed in the Iowa Legislature. The outcome of this debate could have a major impact on the future of Iowa ethanol production and the Iowa economy.

Scenario: The Iowa Renewable Fuels Association commissioned Decision Innovation Solutions (DIS) to conduct an all-encompassing economic impact study of the following scenario:

- Iowa ethanol plants are precluded from utilizing CCS technology via pipelines while surrounding states allow such projects to move forward.

Phase 1 Results: The study determined that current market and policy dynamics would result in Iowa ethanol production becoming noncompetitive with catastrophic result for Iowa ethanol producers, Iowa farmers and the Iowa economy.

- Production will migrate out of state. By the end of the decade, Iowa ethanol production could contract by 75% (nearly 3.5 billion gallons per year) leading many plants to shut down.
- Iowa farmers would lose local markets for over 1 billion bushels of corn annually, depressing local corn prices.
- Iowa would realize an eventual decline in revenues from ethanol plants of more than \$10 billion per year.

DIS Key Conclusion: “Margins matter. And the 45Z tax credits are a game changer. Clean fuels such as ethanol which are produced with CO2 capture and sequestration via pipeline are the future for the renewable fuels industry. Iowa’s ethanol industry is at a crossroads – will it be positioned to be the leader in ethanol and other clean fuels or watch that future move over the horizon?”

Phase 2: DIS is working on phase 2 of the report, which should be concluded in a few weeks. Phase 2 will determine the negative impact on local corn prices from the projected reduction in the Iowa corn grind outlined in phase 1.

Report Author: Decision Innovation Solutions (DIS) is the premier economic research and analysis firm for agriculture in Iowa. The leading author was David Miller, Consulting Chief Economist at DIS and former long-time chief economist and researcher for the Iowa Farm Bureau Federation.

Comparative Economics of Carbon Sequestration for Iowa Ethanol Plants

February 2023

Prepared For:



**Iowa Renewable
Fuels Association**

Prepared By:



**Decision
Innovation
Solutions**

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Legal Disclaimer

Decision Innovation Solutions, LLC (“DIS”) has prepared this analysis (the “Project”) for review and use. The Project consists of analysis of the comparative economics of ethanol plants that are expected to have access to carbon capture and sequestration via pipeline to those that are at risk of not having access to carbon capture sequestration via pipeline.

While DIS has made every attempt to obtain the most accurate data and include the most critical factors in preparing the Project, DIS makes no representation as to the accuracy or completeness of the data and factors used or in the interpretation of such data and factors included in the Project. The responsibility for the decisions made by you based on the Project, and the risk resulting from such decisions remains solely with you; therefore, you should review and use the Project with that in mind.

While the Project does include certain estimates and possible explanations for ethanol plant operating margins and the impacts of tax credit changes on ethanol plant operating margins, it cannot be ascertained with certainty the extent to which these estimates are entirely accurate. The following factors, among others, may prevent complete accuracy of the estimation of ethanol plant operating margins and the impacts of tax credit changes on ethanol plant operating margins, estimates of potential dislocations of future ethanol production and explanations for the same: Inadvertent errors and omissions related to data collection, data summarization, and visual display of data.

Table 1. Acronyms

Acronym	Description
CI	Carbon Intensity
CO2	Carbon dioxide
CCS	Carbon Capture and Storage
CCSvP	Carbon Capture and Storage via Pipeline
CCUS	Carbon Capture, Utilization, and Storage
DAC	Direct Air Capture
EOR	Enhanced Oil Recovery
GHG	Greenhouse gas
GREET	Greenhouse gases, Regulated Emissions, and Energy use in Technologies
gCO2e/MJ	Grams of CO2 equivalent per megajoule of energy
LCFS	Low Carbon Fuel Standard
LUC	Land use change
45Q	Section 45Q of the U.S. Internal Revenue Code
45Z	Section 45Z of the U.S. Internal Revenue Code

1 Executive Summary

Iowa currently has 42 ethanol plants with listed annual capacity of 4.669 billion gallons per year. Iowa's ethanol plants produced an estimated 4.5 billion gallons of ethanol in 2022. There are several wet mill plants, but most of them are dry mill plants. Iowa's ethanol production currently is very competitive with ethanol production in other states and even in other countries. Iowa's ethanol plants have great access to corn as a feedstock for ethanol production and relatively good access to truck and rail distribution of ethanol to end markets. In addition, Iowa has significant feed demand for the dried and wet distiller's grains that are co-products of ethanol production and has good demand for the corn oil and distiller's corn oil co-products of its ethanol plants. Iowa currently has four ethanol plants that capture CO₂ for utilization (beverage, dry ice, refrigeration, etc.). Iowa has 34 ethanol plants representing 3.892 billion gallons per year of ethanol production that are on the announced CO₂ pipeline projects that are expected to service Iowa.

The recently enacted Inflation Reduction Act contains provisions in Section 45Z that create tax credits for clean fuel production. These credits apply to clean fuels produced after 2024 and generally sold before 2028. It is a new general business credit for clean transportation fuel that is produced at a qualifying facility and sells for qualifying purposes. These fuels must meet certain emissions standards. For ethanol, the credit-per-gallon amount can be up to \$1.00 if wage and apprenticeship requirements are met. The credits are based on the fuel's carbon intensity score with a CI score of 50 (based on the GREET model) being the trigger point, and the credit potential increasing as the CI score declines toward zero. So, essentially, each reduction in the CI score of the fuel below 50 generates a 2 cents per gallon production tax credit with the tax credit being maximized at \$1.00 per gallon if the CI score is zero. The estimated average CI score for Iowa's dry mill ethanol plants is in the mid-50s and it is widely believed that the CI score for Iowa's ethanol plants can be reduced by 30 CI points through carbon capture and sequestration via a pipeline to secure underground storage facilities. Two of the proposed CO₂ pipelines that would service Iowa transport the CO₂ to storage facilities in Illinois. The other CO₂ pipeline would transport the CO₂ from Iowa ethanol facilities (and some other facilities such as nitrogen fertilizer production) to a storage facility in North Dakota.

The production tax credit for clean fuels production referred to as the 45Z credit has the potential to be a "game-changer" for the location of ethanol production. The incentive to capture up to 60 cents per gallon of tax credit incentive (\$60 million per year for a 100 million gallon per year production facility) by implementing CCUS strategies could stimulate new plant development at locations that enable implementation of CCUS strategies but could also stimulate expansion of ethanol capacity at existing plants that would have access to CCUS capability.

Over the past 13-plus years, gross operating margins for Iowa's ethanol plants have varied from a high of \$1.35 per gallon to a low of -\$0.06 per gallon. The average gross operating margin over the past 13.5 years has been \$0.31 per gallon. Operating margins have declined over the full 15-year period of 2007-2022 but have shown a flat trend since the middle of 2014 with quite a bit of variability during that period. The most recent calculated gross operating margin based on data from January 2023 indicates a gross operating margin of \$0.147 per gallon.

The producer tax credits created by section 45Z can be earned by ethanol producers who produce ethanol with a CI score less than 50. While the exact manner in which the credit will be allocated has yet to be determined by the regulating agency, it is assumed for this analysis that it will be calculated based on a sliding scale as the CI score of the ethanol plant declines below the threshold level of 50 CI. For a 100 million gallon per year ethanol plant that can achieve a CI score of 26 via a combination of enhancements of plant operations, carbon capture and sequestration, the value of the 45Z tax credit could be \$48 million per year $((50-26)*\$0.02/\text{gallons produced})$, assuming that all gallons of ethanol produced at the facility qualify for the bonus credit. If extended to all 4.5 billion gallons of ethanol production in the state of Iowa through broad access to carbon capture and storage via pipeline, the credits would be worth up to \$2.16 billion at a CI score of 26 and \$2.7 billion if the ethanol plants can reach an average CI score of 20.

Value of the 45Z Tax Credit at Various CI Scores 100 Million Gallon Per Year Ethanol Plant and for all of Iowa's Ethanol Plants		
CI Score	100 mgy Plant	Iowa's Ethanol Plants
50	\$0	\$0
47	\$6,000,000	\$270,000,000
44	\$12,000,000	\$540,000,000
41	\$18,000,000	\$810,000,000
38	\$24,000,000	\$1,080,000,000
35	\$30,000,000	\$1,350,000,000
32	\$36,000,000	\$1,620,000,000
29	\$42,000,000	\$1,890,000,000
26	\$48,000,000	\$2,160,000,000
23	\$54,000,000	\$2,430,000,000
20	\$60,000,000	\$2,700,000,000
17	\$66,000,000	\$2,970,000,000
14	\$72,000,000	\$3,240,000,000
11	\$78,000,000	\$3,510,000,000
8	\$84,000,000	\$3,780,000,000
5	\$90,000,000	\$4,050,000,000
2	\$96,000,000	\$4,320,000,000
Assumes that implementation of the 45Z credit is incremental below 50 CI and producers qualify for bonus credit. CI 26 highlighted as feasible target for drymill plants with sequestration.		



But there is a downside to the 45Z tax credits. The credits are available to clean fuel production anywhere in the United States. As many as 65 ethanol plants in the U.S. have access to carbon capture and sequestration through direct injection at the ethanol plant site and need no pipeline for transportation. A number of ethanol plants are already doing this, such as the ADM ethanol plant in Decatur, Illinois. In addition, there are 38 ethanol plants outside of Iowa representing 3.3 billion gallons of ethanol per year that are on the CO2 pipelines that have been announced.

The 45Z tax credits create a tremendous incentive for ethanol plants to capture and sequester CO2. It is estimated that the additional gross margin that can be generated by accessing the full value of 45Z tax credits through CO2 sequestration via pipeline will enable existing ethanol plants that will have pipeline access to expand production by 30% with a payback period of 1.5 to 2.5 years and new construction of ethanol plants to have a full payback within 5 to 7 years. If Iowa's ethanol plants are not able to get access to CO2 capture and sequestration via pipeline, then the scenario in which 75 percent of Iowa's ethanol production is displaced by ethanol production in states outside of Iowa that have access to carbon capture and sequestration via pipeline could occur within 5 to 10 years.

Iowa ethanol plants are competitive within the current market structure of energy and ethanol markets and are well positioned to provide feed byproducts of ethanol to local livestock and poultry feeders. But long periods of potentially negative operating margins due to competitors having access to the 45Z tax credits and Iowa's ethanol producers not having access would eventually "right-size" the ethanol market by forcing producers with negative margins to shutter their plants and reduce the supply of ethanol produced in Iowa.

Loss of 75% of the Iowa ethanol industry would result in an eventual decline in revenues from ethanol plants (ethanol, DDGs, and DCO) of more than \$10.3 billion per year. These losses would reverberate throughout the Iowa economy as corn prices would adjust downward, costs to get DDGs delivered to Iowa feeders would increase and DCO would be less available (or more costly) to Iowa-produced biodiesel and renewable diesel production facilities and for feed use.

Relocation of Economic Activity - Ethanol Plants					
Change in Annual Sales Value of Ethanol Plants					
Million \$ Per Year					
	Iowa	Illinois	Minnesota	Nebraska	South Dakota
Iowa Down 15%	-\$1,957	\$0	\$505	\$535	\$915
Iowa Down 25%	-\$3,436	\$304	\$743	\$1,156	\$1,220
Iowa Down 50%	-\$6,873	\$911	\$1,485	\$2,167	\$2,287
Iowa Down 75%	-\$10,309	\$911	\$2,228	\$3,612	\$3,506
Includes sales value of ethanol, DDGs, and DCO					
Projected using January 2023 prices					



Margins matter. And the 45Z tax credits are a game changer. Clean fuels such as ethanol which are produced with CO2 capture and sequestration via pipeline are the future for the renewable fuels industry. Iowa's ethanol industry is at a crossroads – will it be positioned to be the leader in ethanol and other clean fuels or watch that future move over the horizon?

2 Introduction

2.1 Background

First introduced in 2008, Section 45Q of the United States Internal Revenue Code provides a tax credit for CO₂ storage. The policy is intended to incentivize deployment of carbon capture, utilization and storage (CCUS), and a variety of project types are eligible. In 2022, the US introduced a significant stimulus for CCUS investment with the passage of legislation (the Inflation Reduction Act) to expand and extend the 45Q tax credit. 45Q is a section of the tax code that provides incentives, in the form of tax credits, to encourage companies to invest in carbon capture and storage solutions that reduce carbon emissions to the atmosphere. Captured carbon dioxide must be either stored underground in secure geologic formations, used for carbon dioxide-enhanced oil recovery (EOR) or utilized in other projects that permanently sequester carbon dioxide.

Table 2. Summary of 45Q Tax Credits

Summary of 45Q Tax Credits				
Category	Base Credit \$ Per Metric Ton of CO ₂ e	Base Credit \$ Per Gallon of Ethanol Equivalent	Bonus Credit \$ Per Metric Ton of CO ₂ e	Bonus Credit \$ Per Gallon of Ethanol Equivalent
Carbon captured and used for enhanced oil recovery (EOR) or utilization	\$12	\$0.0342	\$60	\$0.1710
Carbon captured and sequestered	\$17	\$0.0485	\$85	\$0.2423
Direct air captured and used for EOR or utilization	\$26	\$0.0741	\$130	\$0.3705
Direct air captured and sequestered	\$36	\$0.1026	\$180	\$0.5130
This credit will be available for direct pay for the first 5 years under broad conditions and the credits are transferable. The annual thresholds of carbon a facility must capture to qualify are:				
• 18,750 tons of CO₂ for power plants • 12,500 tons of CO₂ for industrial facilities (like ethanol plants) • 1,000 tons of CO₂ for direct air capture (DAC) facilities				

The 2022 changes to 45Q provide up to \$85 per metric ton of CO₂ permanently stored and \$60 per metric ton of CO₂ used for enhanced oil recovery (EOR) or other industrial uses of CO₂, provided emissions reductions can be clearly demonstrated¹. The credit amount significantly increases for direct

¹ In GREET 2021 the carbon balance approach was replaced with a stoichiometry approach: one mole ethanol will yield one mole CO₂ (2.85 kg CO₂/gallon of ethanol) for fermentation CO₂ estimation.

air capture (DAC) projects to \$180 per metric ton of CO₂ permanently stored and \$130 per metric ton for used CO₂. In addition, the 2022 changes reduce the capacity requirements for eligible projects: 18,750 metric tons per year for power plants (provided at least 75% of the CO₂ is captured), 12,000 metric tons per year for other facilities, and 1,000 metric tons per year for Direct Air Capture (DAC) facilities. Finally, the 2022 changes include a seven-year extension to qualify for the tax credit, meaning that projects have until January 2033 to begin construction.

In Part 2 of Subtitle D of the Inflation Reduction Act, tax credits for clean fuel production are contained in section 45Z. This credit applies to clean fuels produced after 2024 and generally sold before 2028. It is a new general business credit for clean transportation fuel that is produced at a qualifying facility and sells for qualifying purposes. These fuels must meet certain emissions standards. For ethanol the credit-per-gallon base amount is \$0.20 (non-aviation fuel) and the credit amount increases to \$1.00 per gallon (non-aviation fuel) if wage and apprenticeship requirements are met and are based on the fuel's carbon intensity score with a CI score of 50 (based on the GREET model) being the trigger point, and the credit potential increasing as the CI score declines toward zero. So, essentially, each reduction in the CI score of the fuel below 50 generates a 2 cents per gallon production tax credit with the tax credit being maximized at \$1.00 per gallon if the CI score is zero.

Table 3. Summary of 45Z Tax Credits - Clean Fuel Production Credit

Summary of 45Z Tax Credits – Clean Fuel Production Credit		
Category	Base Credit (\$ Per Gallon)	Bonus Credit Base Credit Multiplied by 5 (\$ Per Gallon)
Base Credit Transportation Fuel	\$0.20	Up to \$1.00
Base Credit Sustainable Aviation Fuel (SAF)	\$0.35	Up to \$1.75
Beginning on Dec 31, 2024, existing fuel credits will transition to the Clean Fuel Production Credit. The credit is set to expire on Dec 31, 2027. In order to receive the full credit the fuel must have a life-cycle emission level of less than 50 The base credit is adjusted downward based on the emission factor of the fuel. The bonus credit is available (base credit multiplied by five) if production meets prevailing wage and apprenticeship requirements.		

No credit under the 45Z tax credit can be claimed at a facility that includes property for which a credit is claimed under sections 45Q, 45X, or section 48 ITC for clean hydrogen production facilities during the taxable year. Producers do, however, have the choice of which credit to claim as long as they qualify for the tax credit.

Currently, most of the corn-starch-based ethanol production in Iowa has published CI scores between 59 – 82 based on the lowest published corn starch score under the California version of the GREET model (Figure 1).

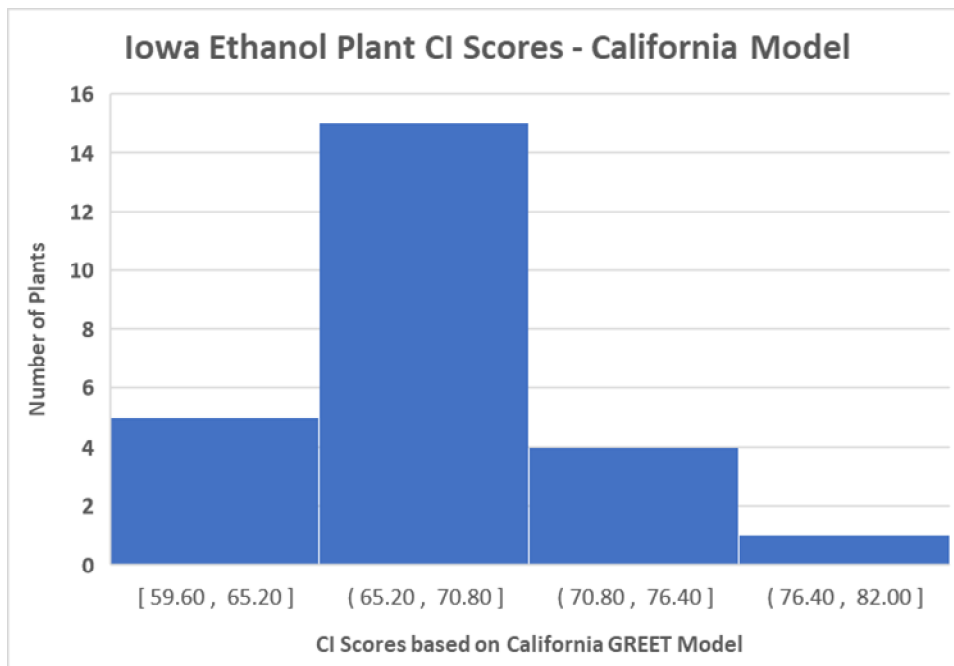


Figure 1. Iowa Ethanol Plant CI Scores - California Model

While there are numerous production techniques and methodologies that can be implemented to incrementally reduce the carbon emissions of ethanol production, the use of CCUS is the most effective means of dramatically reducing the carbon emissions of ethanol production from corn with the implementation of CCUS estimated to typically reduce the CI score of an ethanol facility by approximately 30 CI points.

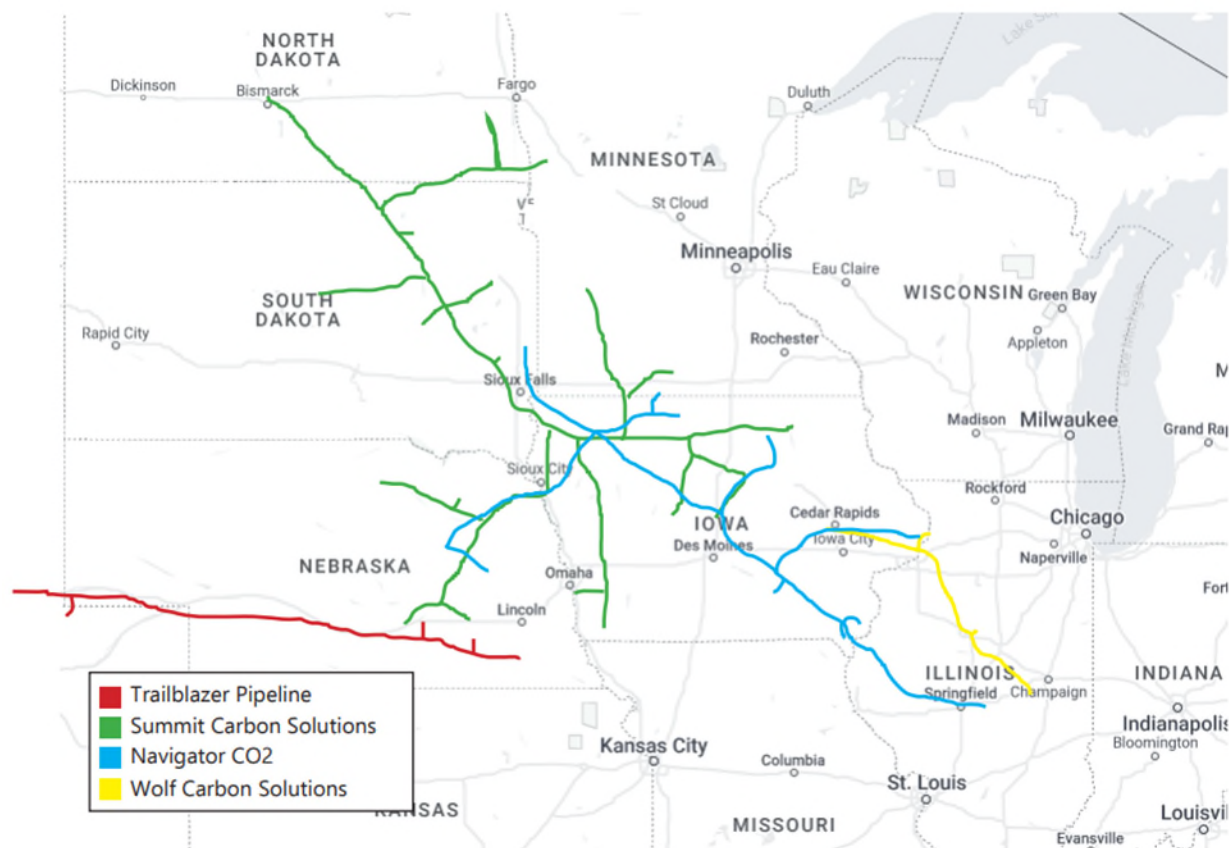
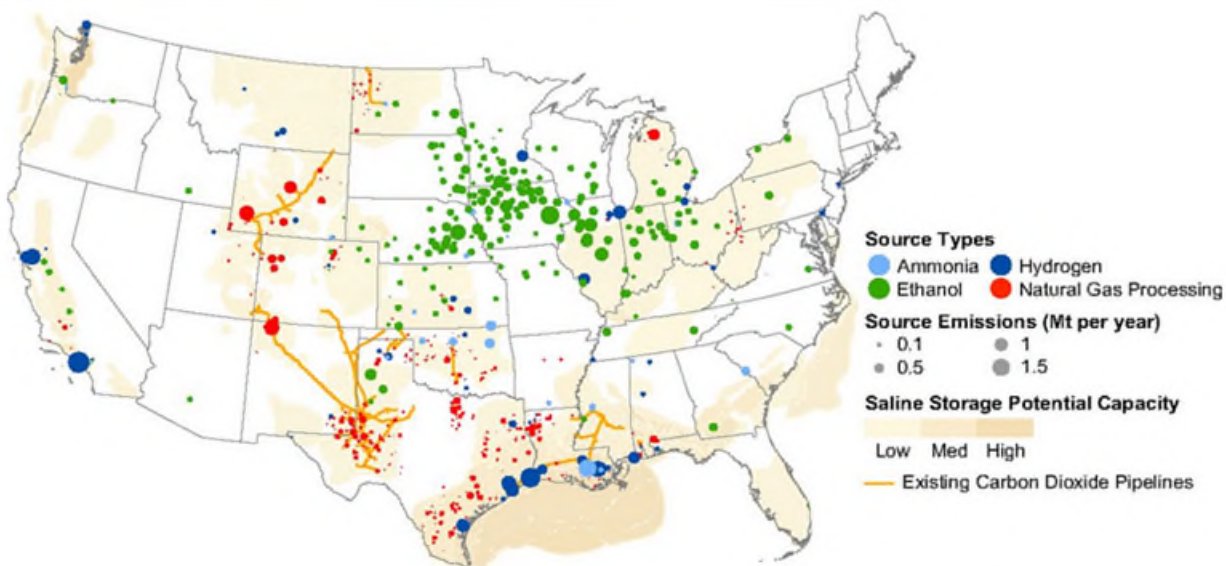


Figure 2. Map of Proposed Carbon Capture Pipelines

Figure 2 shows the carbon pipelines that have been proposed which would transport CO₂ from ethanol plants. The Navigator CO₂ pipeline collects CO₂ from plants in Iowa, Illinois, Minnesota, Nebraska, and South Dakota and transports that CO₂ to a storage site in Illinois. The Summit Carbon Solutions pipeline captures CO₂ from ethanol plants in Iowa, Minnesota, Nebraska, South Dakota, and North Dakota and transports that CO₂ to a storage site in North Dakota. The Wolf Carbon Solutions pipeline collects CO₂ from plants in Iowa and transports that CO₂ to a storage site in Illinois.

2.2 Overview

The production tax credit for clean fuels production referred to as the 45Z credit has the potential to be a “game-changer” for the location of ethanol production. The incentive to capture up to 60 cents per gallon of tax credit incentive (\$60 million per year for a 100 million gallon per year production facility) by implementing CCUS strategies could stimulate new plant development at locations that enable implementation of CCUS strategies but could also stimulate expansion of ethanol capacity at existing plants that would have access to CCUS capability. The Trailblazer pipeline connects with an abandoned natural gas pipeline and proposes to transport CO₂ from Nebraska and Colorado ethanol plants to a storage site in Wyoming.



Low-capture-cost carbon dioxide emissions in the United States, existing carbon dioxide pipelines, and potential saline storage formations. Colocated sources are summed so that the total emissions are observable. Total emissions are 87 Mt per year, including 43 Mt from ethanol fermentation at biorefineries, 22 Mt from hydrogen production, 5 Mt from ammonia production, and 17 Mt from natural gas processing.

Figure 3. Low-Capture-Cost CO₂ Emissions in the U.S., Existing CO₂ Pipelines and Saline Storage Potential Capacity Source:
<https://www.pnas.org/doi/10.1073/pnas.1806504115>

Figure 3 shows the existing CO₂ pipelines in the U.S., locations of saline storage potential (with a capacity estimate), and major sources of industrial CO₂ such as ammonia plants, ethanol plants, hydrogen production facilities, and natural gas processing facilities.

One of the barriers to implementation of CCUS strategies may be the ability of pipelines to be constructed that connect ethanol facilities with the identified carbon sequestration injection sites and storage. There is a concentration of ethanol production facilities in Iowa and surrounding states, but most of these plants do not have direct access to the areas with good CO₂ storage capacity. It will require a transportation system to transport the CO₂ that can be collected at these plants to the storage areas. The most likely vehicles for such transport are dedicated CO₂ pipelines. Such pipelines exist in some of the most prominent natural gas processing areas. Several pipelines have been proposed in the major ethanol production areas, but state and local laws and regulations can create barriers to the construction of such pipelines. If states neighboring Iowa facilitate the construction of CO₂ pipelines, but Iowa regulations are considered sufficiently burdensome that CO₂ pipelines are not built in Iowa, the incentives created by 45Z and 45Q tax credits could result in expansion of ethanol production in locations with pipeline access through new construction or expansion of existing ethanol plants with access and abandonment of plants without access. If that occurs, then it is likely that production of ethanol at some existing plants that do not achieve CCUS capabilities may operate at a disadvantage and may ultimately become uncompetitive.

Phase 1 of this project is to conduct a comparative economic analysis of ethanol plant operations with and without access to CCUS with the existence of the 45Q and 45Z tax credits. This analysis will compare

ethanol plant operational economics in Iowa *without* access to CCUS with ethanol plant operations in Nebraska, South Dakota, Minnesota and Illinois *with* CCUS access.

Phase 2 of the project will examine the impacts of potential movement of ethanol production from areas without access to CCUS technology to areas with CCUS technology on corn commodity flows in the states within the study area and the estimated impacts on corn basis levels in Iowa and will be released in a forthcoming report.

3 Comparative Economic Analysis of Ethanol Production with and without CCUS in the Prescence of 45Q and 45Z Tax Credits Methodology

3.1 Primary Set of Assumptions

- All the corn, sorghum and wheat-based ethanol produced in the U.S. meets the qualifying standards for participation in the Clean Fuels Production Credit (45Z) program².
- For the purposes of this study, it is assumed that the ethanol plants and pipeline operators will figure out the legal criteria in a manner that allows the pipelines and ethanol plants to utilize the 45Q and 45Z tax credits in the most advantageous manner.
- The structure of 45Z tax credit implementation is likely to be a simple 0.4 cents per point of reduction in CI score under base credit and 2 cents per point of reduction in CI score with the bonus credit. This assumes that the 20 cents referenced in 45Z(a)(2) covers emission reductions from 50 kgCO₂e/CI to zero and that the alternative amount (\$1.00) referenced in 45Z(a)(2)(B) is a simple 5-times multiplier of the base amount for production that meets the Prevailing Wage requirements.
- For the purposes of this study, rounding of CI scores was to the nearest 1 kg of CO₂e per mmBTU, although the statute would allow Secretarial discretion to round to the nearest 5 kg CO₂e/mmBTU.
- The current national average CI score for ethanol produced in the U.S. (at the refueling station) using the defaults in the GREET 3.0 model is calculated as 55.333 based on the GHG-100 grouping. This calculation uses CO₂ from Land Use Change (LUC) of 7.382 which is 12.62 g CO₂/MJ of ethanol lower than that used in the California GREET scores.

3.2 CI Scores

Like corn and ethanol production, refineries with LCFS approved ethanol fuel pathways are spread out around the country but are generally concentrated in the Midwest. Currently, Iowa has the highest number of registered ethanol fuel pathways from corn, corn fiber, corn stover, grain sorghum, and/or wheat and wheat residues with 81; these pathways have an average CI of 60.09. After Iowa, the States with the most approved pathways are Nebraska (61 pathways; average CI of 66.60), South Dakota (50 pathways; average CI of 62.04), Kansas (43 pathways; average CI of 69.17), California (33 pathways; average CI of 62.51), and Minnesota (25 pathways; average CI of 62.5). All other States have fewer than 20 ethanol fuel pathways (Table 4).

² This assumes that the production facilities in the U.S. meet the requirements of a qualified facility as defined in section 45Z and that the ethanol produced at the facilities meet the ASTM standards delineated in section 45Z and that the fuel is not derived from palm fatty acid distillates or petroleum.

Table 4. Number of Certified LCFS Corn, Sorghum, and Wheat ethanol Pathways and Average CI Scores

Number of Certified LCFS Corn, Sorghum, and Wheat Ethanol Pathways and Average CI Scores		
State	Number of Pathways	Average CI All Pathways
Arizona	3	62.82
California	33	62.51
Colorado	3	64.32
Idaho	1	66.44
Illinois	1	76.27
Indiana	15	56.63
Iowa	81	60.09
Kansas	43	69.17
Michigan	3	55.67
Minnesota	25	62.50
Missouri	7	57.26
Nebraska	61	66.60
North Dakota	7	66.57
Ohio	9	56.35
South Dakota	50	62.04
Texas	19	70.65
Wisconsin	1	72.25
Grand Total	362	63.32
Source: LCFS Pathway Certified Carbon Intensities, California Air Resource Board		
		

Table 5 shows the state average CI scores for lowest published corn starch ethanol CI score from all plants with published scores. Currently, Iowa has the lowest state-average corn-starch California carbon intensity (CA-CI) score at 68.25 followed by Nebraska with 68.59, South Dakota at 69.15, Minnesota at 70.58, and Illinois at 76.27. When the CA-CI scores are adjusted for the difference in the CA-Greet LUC amount versus the LUC amount in the GREET 3.0 default model, the adjusted scores are IA: 55.83; NE: 55.97; SD: 56.53; MN: 57.96; and IL: 63.65. The distribution of these state averages compared to the simple average of all plants with published CA-CI scores is: Iowa 1.2% below the average, Nebraska 0.9% below the average, South Dakota 0.1% above the average, Minnesota 2.6% above the average, and Illinois 12.7% above the average.

Table 5. Comparison of State Average CA-CI Scores

Comparison of State Average CA-CI Scores			
State	CA-CI Score	CA-CI Score Adj for LUC	CA-CI Score Adjusted for LUC Pct Difference from Avg
IA	68.25	55.83	-1.2%
IL	76.27	63.65	12.7%
MN	70.58	57.96	2.6%
NE	68.59	55.97	-0.9%
SD	69.15	56.53	0.1%
Average	69.04	56.50	
Based on lowest published CI score for a corn starch ethanol pathway			
Source: LCFS Pathway Certified Carbon Intensities, California Air Resources Board			

The CI score for corn ethanol has significantly decreased between 2005 and the current time. Figure 4 shows the reductions for the total ethanol CI scores from 58 to 45 gCO₂e/MJ of corn ethanol (a 23% reduction) since 2005. This is due to several factors. Corn grain yield has increased continuously, reaching 190 bushels/acre in the five Midwestern major ethanol producing states (a 17.8% increase in the 3-year weighted average yield since 2005-08) while fertilizer inputs per acre have remained relatively constant, resulting in decreased intensities of fertilizer inputs (e.g., 7% and 18% reduction in nitrogen and potash use per bushel of corn grain harvested, respectively). A 6.7% increase in ethanol yield, from 2.70 to 2.88 gal/bushel corn, and a 24% reduction in ethanol plant energy use, from 32,000 to 25,000 Btu/gal ethanol (9.0 to 6.9 MJ L⁻¹ ethanol) also helped reduce the CI score.

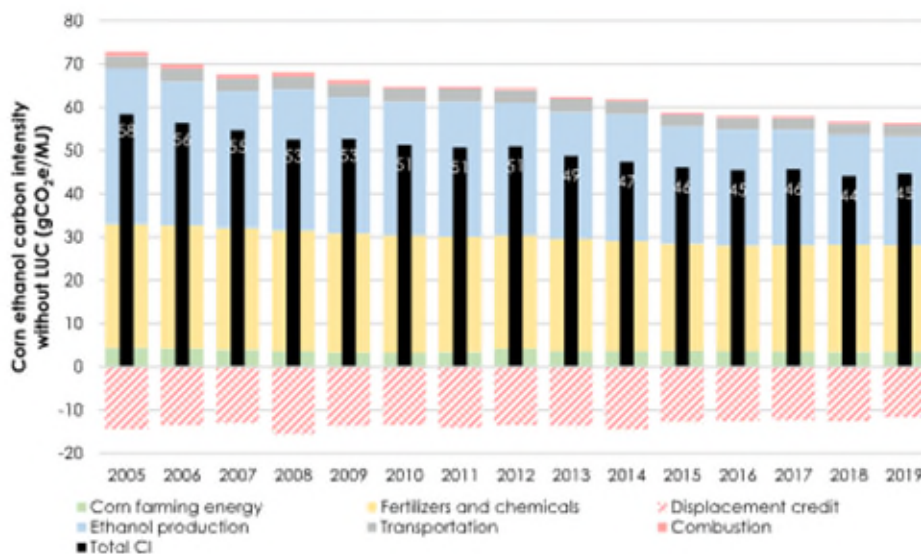


Figure 4. Carbon Intensity (gCO₂e/MJ undenatured ethanol) of Corn Ethanol Without LUC for 2005-2019 ³

³ Source: Modeling and Analysis -- Retrospective Analysis of the U.S. Corn Ethanol Industry for 2005-2019: Implications for Greenhouse Gas Emission Reductions

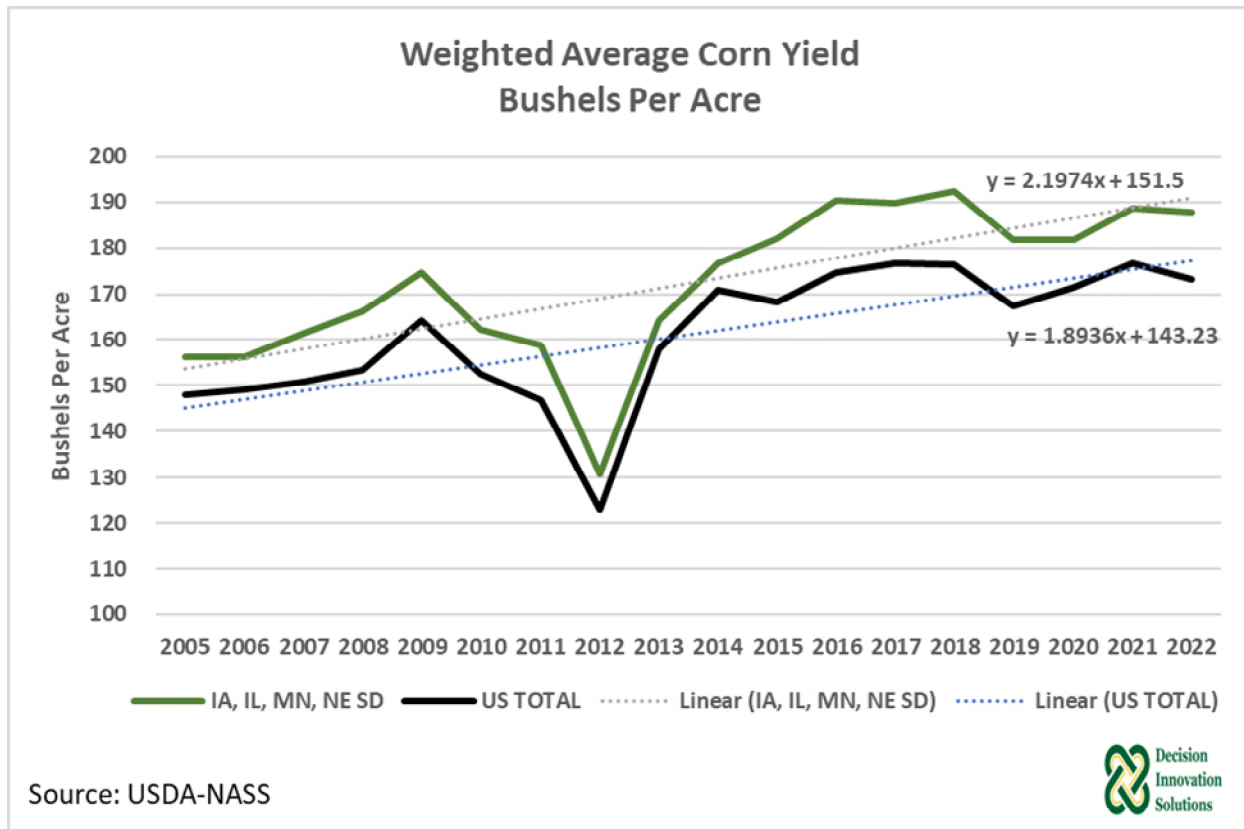


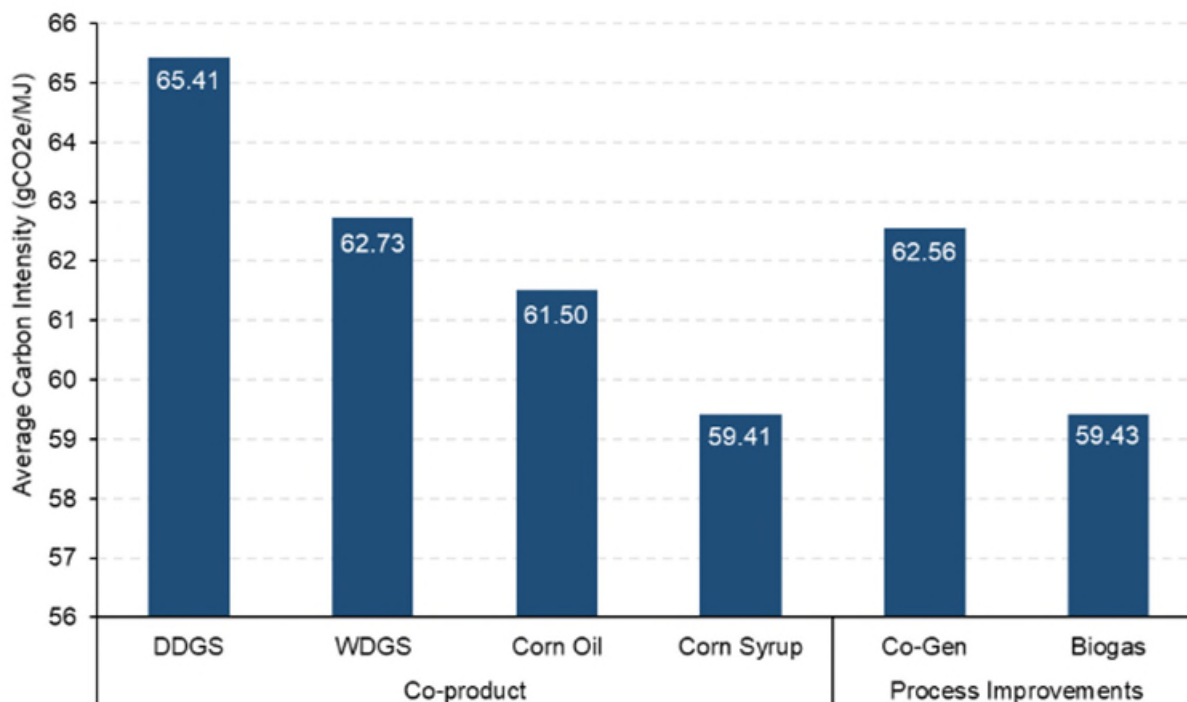
Figure 5. Weighted Average Corn Yield

The total GHG emission reduction benefits through the reduction in the CI and increased ethanol production volume are estimated at 140 million metric tons (MMT) from 2005 to 2019 in the ethanol industry. Displacement of petroleum gasoline by corn ethanol in the transportation fuel market resulted in a total GHG emission reduction benefit of 544 MMT CO₂e during the period 2005 to 2019.

The national average CI score for ethanol production (at the refueling station) is estimated by Argonne National Laboratory to be 55.333 gCO₂e/MJ of ethanol using factors that represent 100-year global warming potential⁴.

Further reductions in CI scores for ethanol plants can be achieved through modifications of the ethanol plant and/or changes in operations of the plants and the co-products produced. For example, changing from dried distiller's grains to wet distiller's grains can reduced the CI score by 2.68 points, on average, and removing corn oil from the corn before processing can reduce the score another 1.23 CI points, and producing corn syrup can reduce the CI score 2.09 CI points.

⁴ GREET 2022



Note: DDGS = Distiller's Dried Grains with Solubles; WDGS = Wet Distillers Grains with Solubles

Figure 6. Average CI Score Associated with Facility Modifications⁵

Net lifecycle emissions reductions from the capture of biogenic CO₂ from ethanol fermentation can be significant. The application of carbon capture to corn ethanol plants in the U.S. has the potential to reduce the carbon intensity of resulting biofuels production by upwards of 55 percent if the captured CO₂ is stored in saline geologic formations⁶. In the case of storing captured CO₂ in oilfields through EOR, large net emissions reductions still result, even after accounting for the additional oil produced. Analysis from the International Energy Agency (IEA) shows that, after accounting for the additional oil produced and global market effects, every ton of anthropogenic CO₂ delivered for CO₂-EOR results in a 63 percent emissions reduction⁷.

Carbon capture, compression and dehydration systems were installed at the Arkalon and Bonanza ethanol plants in Kansas in 2009 and 2012, respectively, together with the construction of pipelines to transport the CO₂ to Texas and Kansas for use in EOR. These commercial operations continue successfully today. However, a combination of conditions made these projects feasible in the market place—close proximity to suitable oilfields and higher oil prices—that cannot be replicated elsewhere today. For production of biogenic CO₂ from the fermentation of ethanol to expand and become a major

⁵ The California Low Carbon Fuel Standard: Incentivizing Greenhouse Gas Mitigation in the Ethanol Industry, USDA, Office of the Chief Economist, November 2020.

⁶ Reduction from 55.3 CI score to 25.3 CI score through capture and sequestration.

⁷ International Energy Agency, "Storing CO₂ through Enhanced Oil Recovery, combining EOR with CO₂ storage (EOR+) for profit," 2015.

source of supply for oil production with geologic storage, that CO₂ must be delivered to the oilfields at a market price compatible with the economics of EOR projects⁸.

Similarly, ADM's current efforts at its Decatur ethanol facility in Illinois to capture CO₂ and store it in a saline formation depends on federal funding provided by the U.S. Department of Energy (DOE) for the purposes of first-time commercial-scale demonstration. Red Trail Energy in Richardton, ND, also is underway with its plans to store 180,000 MT of CO₂ annually from ethanol fermentation in the Broom Creek saline formation. They have been actively sequestering CO₂ since the middle of 2022. Further commercial-scale deployment of saline storage of CO₂ from ethanol production will be greatly enhanced and accelerated by the enactment of the 45Z tax credits whereas prior to such enactment, additional CO₂ sequestration from ethanol plants into saline formations would have been challenging without financial incentives.

Ethanol plants constitute the largest single-sector source of CO₂ for U.S. merchant gas markets, and the CO₂ produced enters a wide variety of markets, including food, beverage and dry ice applications. A valuable commodity, it averages \$95 per ton with a large number of applications led by food and beverages and dry ice applications. Light industrial users in the merchant market include metal welding, chemicals, pH reduction, and CO₂ fracking applications in oil and gas⁹.

Nearly 43 percent of domestic CO₂ by-product for refinement and liquefaction is derived from 48 ethanol plants, mostly in the Midwest. While several regions in the U.S. are saturated, more ethanol plants will be tapped for carbon dioxide feedstock in the future as the U.S. food industry continues to expand. For example, Continental Carbonic opened a new CO₂ plant in 2017 that is co-located with ethanol producer Pennsylvania Grain Processing in Clearfield, Pennsylvania. The Pennsylvania project is an example of a strategically located CO₂ source that cannot be replaced by other sources in an affordable and clean manner.

The 2016 U.S. CO₂ merchant market was estimated at 9.63 million short tons, the largest in the global 22 million-tons-per-year market. Domestic prices average \$95 per delivered ton, sold in a wide range of containers from 105-ton rail cars to 24-ton, over-the-road tankers, as well as smaller 500-pound microbulk tanks and 20-pound cylinders.

The captive market is led by enhanced oil recovery (EOR) with White Energy, Russell, Kansas, the only dedicated source. Captive supply of CO₂ has been evaluated for other projects such as delivery into the EOR pipeline infrastructures owned by Denbury Resources in the mid-South, and Kinder Morgan in the Southwest. Other captive markets include enhanced coal bed methane, sodium bicarbonate, methanol and, potentially, urea.

⁸Capturing And Utilizing CO₂ from Ethanol: Adding Economic Value and Jobs to Rural Communities While Reducing Emissions, White paper prepared by the Wyoming State CO₂-EOR Deployment Work Group, December 2017.

⁹ <https://ethanolproducer.com/articles/14122/ethanol-industry-provides-critical-co2-supply>

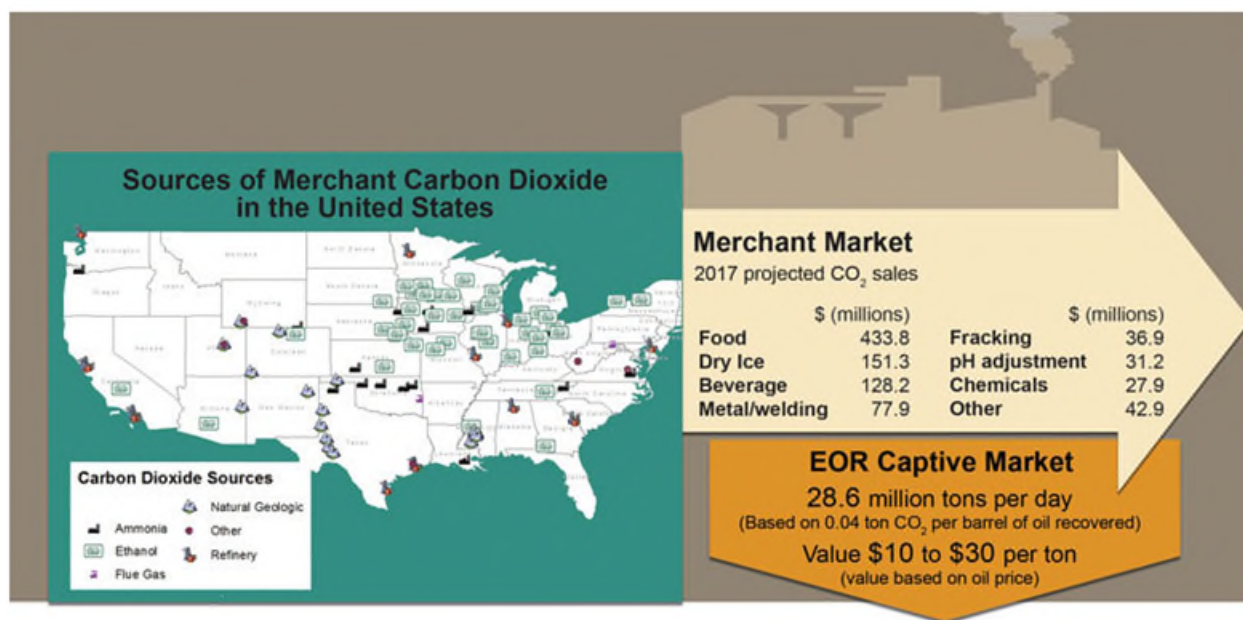


Figure 7. Sources of Merchant Carbon Dioxide in the United States (2016)¹⁰.

3.3 Ethanol Plant Economics

The profitability of ethanol plants is a function of the price of the outputs (ethanol and the combination of byproducts (wet distiller's grains (WDG), distillers dried grains (DDG), distillers grains with solubles (DDGS), corn oil, condensed distiller's solubles (CDS), de-oiled distiller's grains (DODG), and carbon dioxide (CO₂)) minus the cost of the inputs, which are primarily corn, electricity, and natural gas.

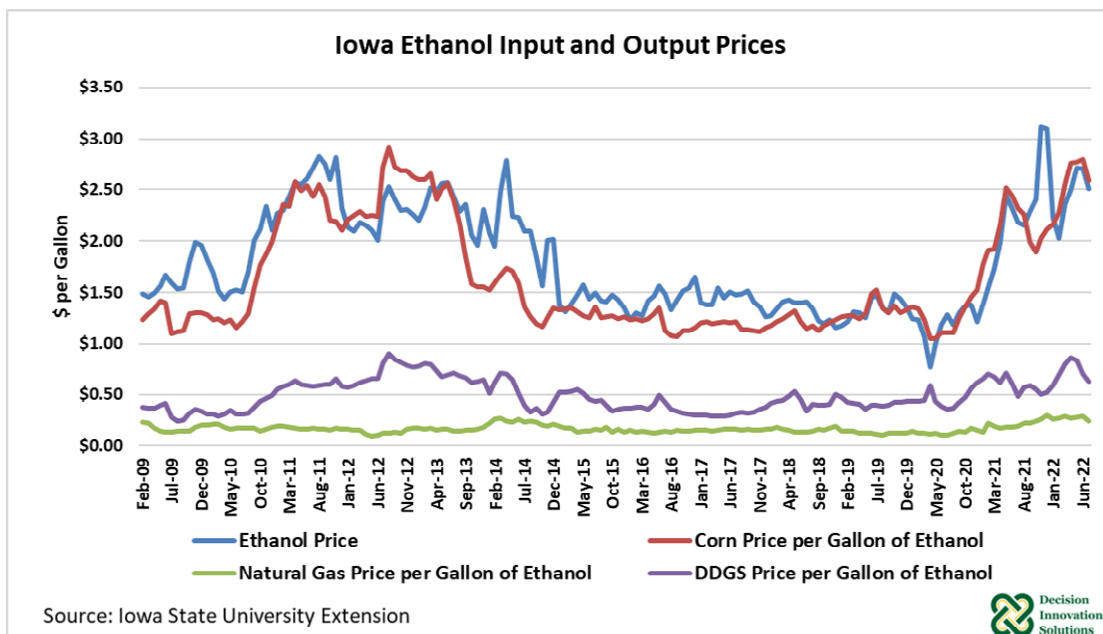


Figure 8. Iowa Ethanol Input and Output Prices

¹⁰ <https://ethanolproducer.com/articles/14122/ethanol-industry-provides-critical-co2-supply>

Both ethanol prices and corn prices have been quite variable over the past 15 years and occasionally do not move together, although the correlation coefficient between the price of ethanol and the price of corn is 0.81. Natural gas prices vary month to month but are not as volatile as either ethanol prices or corn prices. In Figure 8, the corn and natural gas values are shown on a ‘per gallon of ethanol’ production basis.

3.3.1 Operating Margins

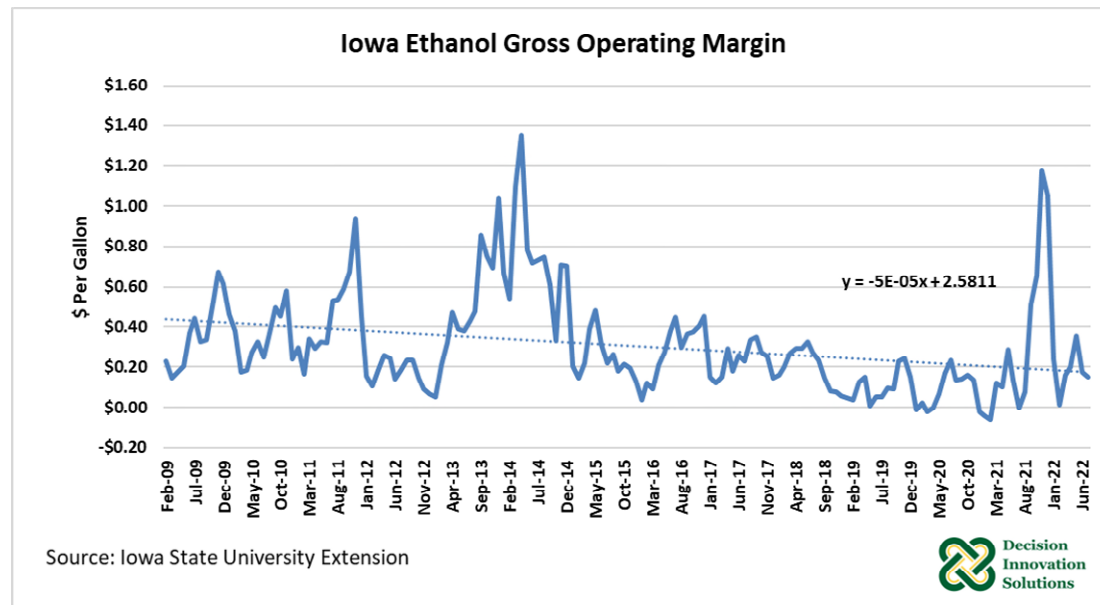


Figure 9. Iowa Ethanol Gross Operating Margin

Gross operating margins in Iowa as shown in Figure 9 have varied from a high of \$1.35 per gallon to a low of -\$0.06 per gallon. The average gross operation margin over the past 13.5 years has been \$0.31

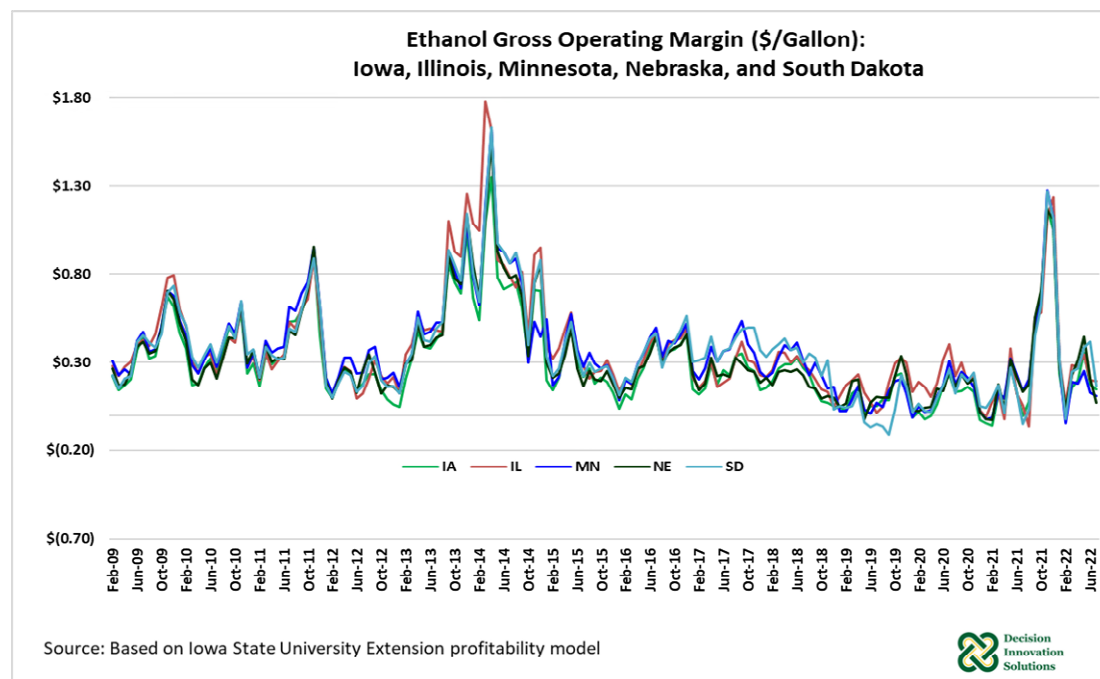


Figure 10. Ethanol Gross Operating Margin (\$/Gallon): Iowa, Illinois, Minnesota, Nebraska, and South Dakota

per gallon. Operating margins have declined over the full 15-year period of 2007-2022 but have shown a flat trend since the middle of 2014 with quite a bit of variability during that period. The most recent gross operating margin based on data from January 2023 indicates a gross operating margin of \$0.147 per gallon. Graphs similar to Figure 9 for Illinois, Minnesota, Nebraska and South Dakota are in the appendix.

Based on 13.5 years of data (February 2009-July 2022), operating margins in the five states (Figure 10) included in the study have averaged from \$0.31/gallon in Iowa, to \$0.38 in Illinois. The lowest operating margin among these states was registered in South Dakota at \$-0.11/gallon, whereas the highest operating margin was experienced in Illinois at \$1.78/gallon (see Figure 10 and Table 6).

Table 6. Summary of Operating Margins (Feb 2009-Jul 2022, \$/Gallon): Iowa, Illinois, Minnesota, Nebraska, South Dakota

Gross Operating Margins (Feb 2009- Jul 2022, \$/Gallon)					
Statistic	IA	IL	MN	NE	SD
Minimum value	-\$0.06	-\$0.06	-\$0.04	-\$0.03	-\$0.11
Maximum value	\$1.35	\$1.78	\$1.62	\$1.57	\$1.64
Average value	\$0.31	\$0.38	\$0.37	\$0.34	\$0.37
Source: Based on Iowa State University Extension profitability model					

3.3.2 Impacts of 45Z Tax credits

The producer tax credits created by section 45Z can be earned by ethanol producers who produce ethanol with a CI score less than 50. While the exact manner in which the credit will be allocated has yet to be determined by the regulating agency, it is assumed for this analysis that it will be calculated based on a sliding scale as the CI score of the ethanol plant declines below the threshold level of 50 CI. For a 100 million gallon per year ethanol plant that can achieve a CI score of 26 via a combination of enhancements of plant operations, carbon capture and sequestration, the value of the 45Z tax credit could be \$48 million per year $((50-26)*\$0.02/\text{gallons produced})$, assuming that all gallons of ethanol produced at the facility qualify for the bonus credit.

Table 7. Value of 45Z Tax Credit at Various CI Scores

Value of the 45Z Tax Credit at Various CI Scores 100 Million Gallon Per Year Ethanol Plant					
	Pct CO2 Captured & Sequestered				
CI Score	20%	40%	60%	80%	100%
50	\$ -	\$ -	\$ -	\$ -	\$ -
47	\$ 1,200,000	\$ 2,400,000	\$ 3,600,000	\$ 4,800,000	\$ 6,000,000
44	\$ 2,400,000	\$ 4,800,000	\$ 7,200,000	\$ 9,600,000	\$ 12,000,000
41	\$ 3,600,000	\$ 7,200,000	\$ 10,800,000	\$ 14,400,000	\$ 18,000,000
38	\$ 4,800,000	\$ 9,600,000	\$ 14,400,000	\$ 19,200,000	\$ 24,000,000
35	\$ 6,000,000	\$ 12,000,000	\$ 18,000,000	\$ 24,000,000	\$ 30,000,000
32	\$ 7,200,000	\$ 14,400,000	\$ 21,600,000	\$ 28,800,000	\$ 36,000,000
29	\$ 8,400,000	\$ 16,800,000	\$ 25,200,000	\$ 33,600,000	\$ 42,000,000
26	\$ 9,600,000	\$ 19,200,000	\$ 28,800,000	\$ 38,400,000	\$ 48,000,000
23	\$ 10,800,000	\$ 21,600,000	\$ 32,400,000	\$ 43,200,000	\$ 54,000,000
20	\$ 12,000,000	\$ 24,000,000	\$ 36,000,000	\$ 48,000,000	\$ 60,000,000
17	\$ 13,200,000	\$ 26,400,000	\$ 39,600,000	\$ 52,800,000	\$ 66,000,000
14	\$ 14,400,000	\$ 28,800,000	\$ 43,200,000	\$ 57,600,000	\$ 72,000,000
11	\$ 15,600,000	\$ 31,200,000	\$ 46,800,000	\$ 62,400,000	\$ 78,000,000
8	\$ 16,800,000	\$ 33,600,000	\$ 50,400,000	\$ 67,200,000	\$ 84,000,000
5	\$ 18,000,000	\$ 36,000,000	\$ 54,000,000	\$ 72,000,000	\$ 90,000,000
2	\$ 19,200,000	\$ 38,400,000	\$ 57,600,000	\$ 76,800,000	\$ 96,000,000
Assumes that implementation of the 45Z credit is incremental below 50 CI and producers qualify for bonus credit CI 26 highlighted as feasible target for drymill plants with sequestration 					

The values in Table 7 represent the potential differential in gross revenues that ethanol plants which have the ability to capture carbon and sequester it through means such as a pipeline may have over plants which cannot access such opportunities. Given that the gross operating margin for 100 mgy ethanol plant has averaged \$28 million per year, competing with an ethanol plant that can boost its revenues by \$48 million per year (271%) by accessing carbon capture and sequestration technology creates a substantial disadvantage for an ethanol plant which cannot access the technology.

Continuing to assume a CI reduction to 26 and a gross margin of \$48 million per year, if the cost to build an ethanol plant on a location that has the capability to access carbon capture and sequestration technology is between \$2 to \$2.50 per gallon of capacity, it would only take 4 to 5 years for a new plant to fully recover the cost of building a plant in a location that enables access to carbon capture and sequestration.

Expansion of ethanol production capacity is estimated to cost \$0.50 to \$1.00 per gallon of additional capacity. Continuing to assume a CI reduction to 26, ethanol plants with access to carbon capture and sequestration, and thus the 45Z tax credit will have significant incentives to expand capacity since the cost of expansion may be fully recovered in 1 to 2 years.

Ethanol plants that do not have access to either direct injection of CO₂ or carbon capture and sequestration via a pipeline may have an opportunity to participate in the 45Q tax credits for carbon capture and utilization. In this case, there are two variables that affect the overall value of the carbon captured and used. One is the percentage of the carbon produced that is captured and utilized. The second variable is the value of the carbon dioxide that is being used in the merchant markets or for Enhanced Oil Recovery (EOR). If the captured carbon has no commercial value (for example when sequestered), then the 45Q tax credit for a 100 mgy ethanol plant could be \$17.1 million per year just for the capture and sequestration.

Table 8. Value of the 45Q Tax Credit at Various Pct of CO₂ Capture & Use Values

Value of the 45Q Tax Credit at Various Pct of CO₂ Capture & Use Values					
100 Million Gallon Per Year Ethanol Plant					
	Pct CO₂ Captured & Utilized				
CO₂ Market Value	20%	40%	60%	80%	100%
\$0.00	\$ 3,420,000	\$ 6,840,000	\$ 10,260,000	\$ 13,680,000	\$ 17,100,000
\$10.00	\$ 3,990,000	\$ 7,980,000	\$ 11,970,000	\$ 15,960,000	\$ 19,950,000
\$20.00	\$ 4,560,000	\$ 9,120,000	\$ 13,680,000	\$ 18,240,000	\$ 22,800,000
\$30.00	\$ 5,130,000	\$ 10,260,000	\$ 15,390,000	\$ 20,520,000	\$ 25,650,000
\$40.00	\$ 5,700,000	\$ 11,400,000	\$ 17,100,000	\$ 22,800,000	\$ 28,500,000
\$50.00	\$ 6,270,000	\$ 12,540,000	\$ 18,810,000	\$ 25,080,000	\$ 31,350,000
\$60.00	\$ 6,840,000	\$ 13,680,000	\$ 20,520,000	\$ 27,360,000	\$ 34,200,000
\$70.00	\$ 7,410,000	\$ 14,820,000	\$ 22,230,000	\$ 29,640,000	\$ 37,050,000
\$80.00	\$ 7,980,000	\$ 15,960,000	\$ 23,940,000	\$ 31,920,000	\$ 39,900,000
\$90.00	\$ 8,550,000	\$ 17,100,000	\$ 25,650,000	\$ 34,200,000	\$ 42,750,000
\$100.00	\$ 9,120,000	\$ 18,240,000	\$ 27,360,000	\$ 36,480,000	\$ 45,600,000
Assumes that plants can access 100% of the bonus credit level for 45Q for Capture and Use for the percentages of capture modeled					



As the value of the captured and utilized carbon increases, the combined value of the 45Q tax credit and the CO₂ sold into merchant markets (industrial use or EOR) increases. At a market value of \$30/ton for CO₂, the ethanol plant gross revenues could be increased by \$25.65 million per year. If the value of merchant carbon rises to \$100 per metric ton of CO₂, then the combined value of the 45Q tax credit and the sale of the CO₂ becomes equivalent to an ethanol plant with a CI score of 27 to 28.

3.3.3 Transport Costs for CO₂

The cost of capturing carbon dioxide at the ethanol plant should be similar whether the carbon is being sent to a pipeline or being captured in an on-site storage facility for transfer to commercial use by either truck or rail. The cost of transportation, regardless of its end use, is likely to be much higher for non-pipeline transport methods.

CO₂ resulting from ethanol production can be captured and either compressed for transport via pipeline or liquified for transport by truck or rail. Pipeline CO₂ can then be injected directly underground when it reaches the storage site. Liquified CO₂, which is kept at about -40°C and 20 bar of pressure, must be warmed and compressed before injection into a pipeline (90-145 bar and ambient temperature). The cost of CO₂ transport via pipeline declines rapidly as flow rate of the pipeline increases (Figure 11).

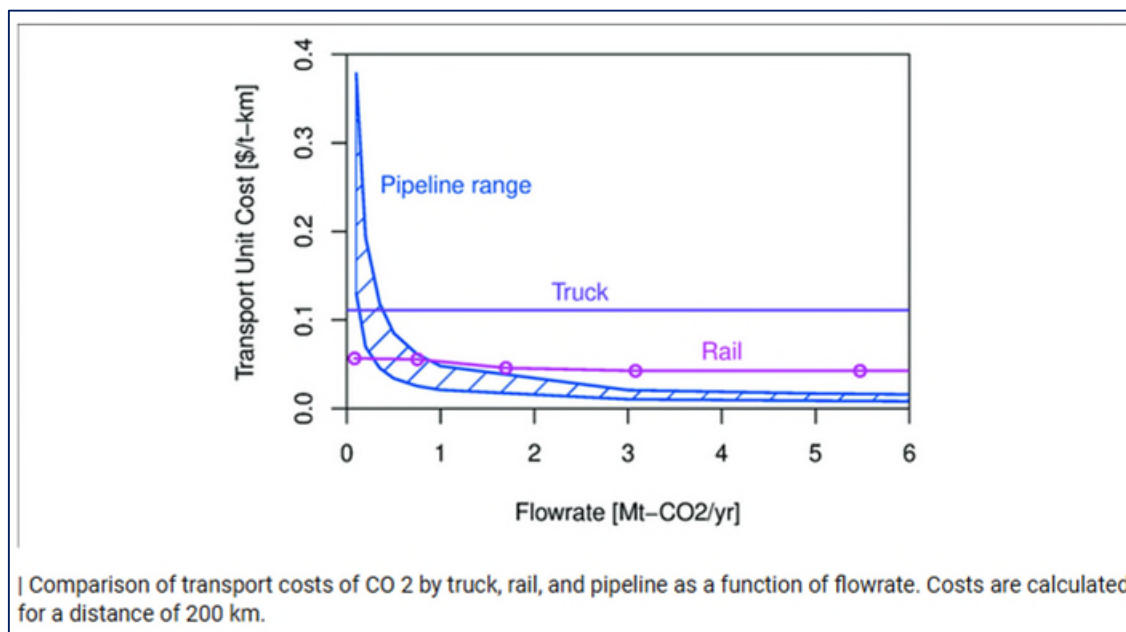


Figure 11. Comparison of Transport Cost for CO₂ by Truck, Rail, and Pipeline as a function of Flowrate, Calculated for a Distance of 200 km¹¹.

CO₂ pipelines are a mature technology and have been widely used globally for decades, with over 5,000 miles of CO₂ pipelines in the United States in 2017 (Righetti, 2017). CO₂ pipelines in the United States are used primarily to transport CO₂ to oil fields for use in enhanced oil recovery. As mentioned, data for the cost of transporting different quantities of CO₂ are limited, but natural gas pipelines are a useful analog by which to understand the cost components and variability underpinning CO₂ pipelines. Both depend largely on pipeline diameter and distance and differ little in land construction costs, though CO₂ pipelines may cost slightly more due to greater pipe thickness needed to transport CO₂ at higher pressure (Heddle, 2003). The feasibility of repurposing natural gas pipelines for CO₂ transport is not practical for transporting large quantities of CO₂ (e.g., 20 Mtpa) over long distances (100 miles or more). This is because CO₂ requires a higher pressure than natural gas to be kept in a liquid state for pipeline transport, and thus thicker pipelines are generally needed (NPC, 2019)¹².

(Erin E Smith 2021) Many integrated assessment modeling studies assume a combined cost for CO₂ transport and storage that is uniform in all regions of the world, commonly estimated at \$10/tCO₂. Realistically, the cost of CO₂ transport and storage is not fixed at \$10/tCO₂ and varies across geographic, geologic, and institutional settings. A survey of the literature to identify key sources of variability in transport and storage costs was done and a method to quantify and incorporate these elements into a cost range was developed. Onshore pipeline transport and storage costs vary from \$4 to \$45/tCO₂ depending on key sources of variability including transport distance, scale (i.e., quantity of CO₂ transported and stored), monitoring assumptions, reservoir geology, and transport cost variability such as pipeline capital costs.

¹¹ Transport Cost for Carbon Removal Projects With Biomass and CO₂ Storage, Frontiers in Energy Research, May 12, 2021. Sec. Carbon Capture, Utilization and Storage Volume 9 - 2021

¹² <https://globalchange.mit.edu/sites/default/files/Smith-TPP-2021.pdf>

Liquified CO₂ can be transported in insulated tanker railcars (assumed to carry 105 tons per car) that are similar between truck and rail. It is assumed the near-full capacity of 22 tons is retained for trucks, however, costs are somewhat higher because the trailers are more expensive and the trucks are slightly more expensive to operate and maintain.

Two studies have used techno-economic models to estimate the cost of CO₂ by rail for CO₂ storage case studies. Gao et al. (2011) calculated \$13/ton in 2018 US dollars to transport 1.5 Mt/yr over 600 km for a project in China¹³. This included \$0.88/t for staging and loading facilities. Roussanaly et al. (2017) estimated \$5/ton and \$13/ton to transport CO₂ for 50 km and 200 km, respectively, for a project in the Czech Republic. That includes slightly more than \$1/ton for loading and unloading facilities¹⁴. The staging operation thus appears to be a minor part of transport costs. Overall, it is estimated that the staging and loading operation adds \$2/ton-CO₂ to the cost of transport by rail. Thus, the unit costs for CO₂ transport by truck are estimated to be \$0.176/ton-mile and \$0.0704/ton-mile plus \$2 per ton for rail. So, a 200-mile truck shipment to commercial use is estimated to cost \$35.20 per ton and a 400-mile rail shipment to commercial use is estimated to cost \$30.16 per ton (including staging at both ends).

The cost of CO₂ transport by pipeline is more variable than for other modes since it depends on local construction costs and securing rights of way. Even with these challenges, pipelines are strongly preferred for large volumes of CO₂. There are over 7,000 km of CO₂ pipelines in the U.S. as well as a vastly larger network of natural gas pipelines that also informs the cost of pipeline construction.¹⁵

A spreadsheet-based model was developed by the National Energy Technology Laboratory¹⁶ to estimate CO₂ transport costs via pipeline which in turn implements several earlier models from the literature.^{17 18} When validating the model against recent CO₂ pipeline projects, the authors found that the variant based on Parker tended to overestimate costs, while the variant based on McCoy and Rubin underestimated it. We thus take these to be the upper and lower bounds of the pipeline costs in further analysis. In Figure 12, “Parker” represents the model with the Parker (2004) variant, and the other lines show results for the McCoy and Rubin (2008)¹⁹ variant for the respective regions of the U.S.

¹³ Cost Analysis of CO₂ Transportation: Case Study in China, Lanyu Gao, Mengxiang Fang, Hailong Li, and Jens Hetland, Energy Procedia Volume 4, 2011. Pages 5974-5981.

¹⁴ Roussanaly, S., Skaugen, G., Aasen, A., Jakobsen, J., and Vesely, L. (2017). Techno-economic evaluation of CO₂ transport from a lignite-fired IGCC plant in the Czech Republic. *Int. J. Greenh. Gas Control* 65, 235–250. doi: 10.1016/j.ijggc.2017.08.022.

¹⁵ Wallace, M., Goudarzi, L., and Wallace, R. (2015). *A Review of the CO₂ Pipeline Infrastructure in the U.S.* DOE/NETL-2014/1681. Pittsburgh, PA: National Energy Technology Laboratory.

¹⁶ NETL (2018). *FE/NETL CO₂ Transport Cost Model: Description and User’s Manual* DOE/NETL-2018/1877. Pittsburgh, PA: National Energy Technology Laboratory.

¹⁷ Parker, N. (2004). *Using Natural Gas Transmission Pipeline Costs to Estimate Hydrogen Pipeline Costs*. UCD-ITS-RR-04-35. Davis, CA: Institute of transportation Studies.

¹⁸ McCoy, S. T., and Rubin, E. S. (2008). An engineering-economic model of pipeline transport of CO₂ with application to carbon capture and storage. *Int. J. Greenh. Gas Control* 2, 219–229. doi: 10.1016/S1750-5836(07)00119-3

¹⁹ McCoy, S. T., and Rubin, E. S. (2008). An engineering-economic model of pipeline transport of CO₂ with application to carbon capture and storage. *Int. J. Greenh. Gas Control* 2, 219–229. doi: 10.1016/S1750-5836(07)00119-3

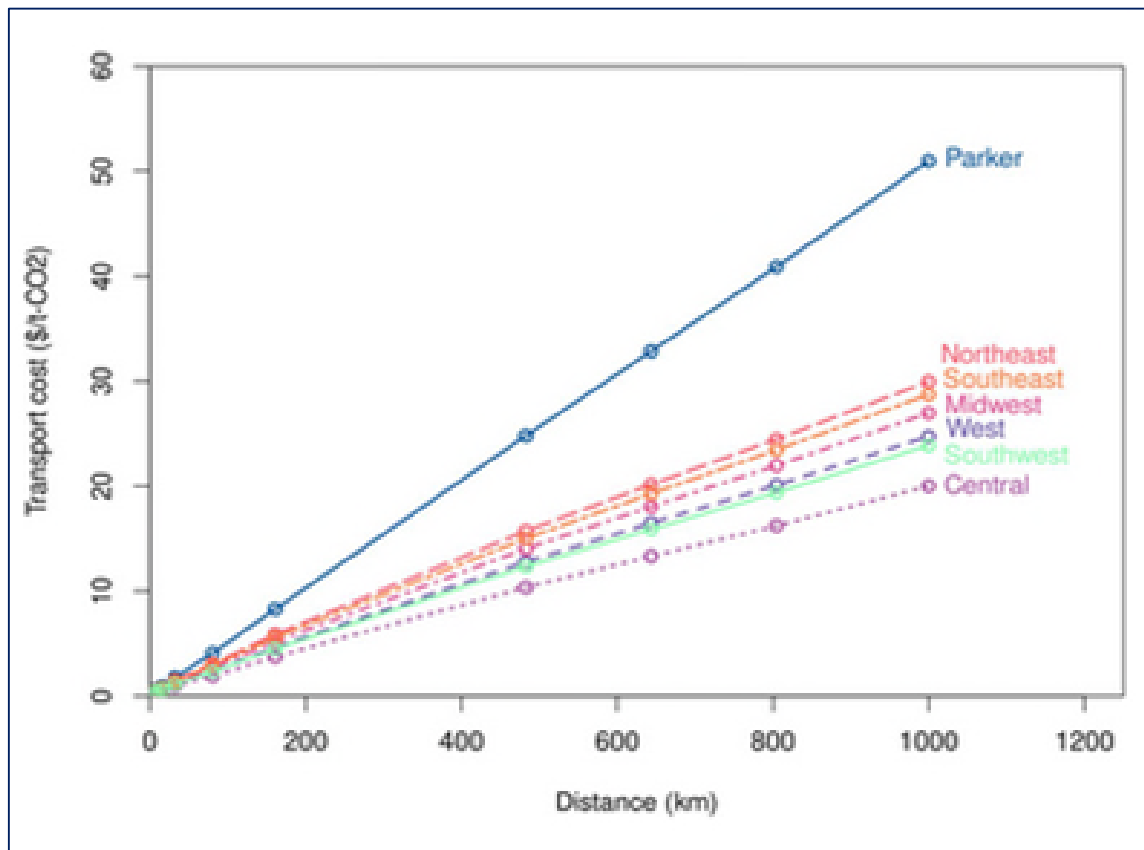


Figure 12. Cost of CO2 Transport by Pipeline in the U.S. by Model and Region with a Flow of 1 Million tons/year in 2014 dollars.

(Erin E Smith 2021) calculated the combined costs of CO2 transport and storage for various combinations of scale, transport distance, monitoring requirements, and cost assumptions. Table 9 summarizes the “mean cost” and the “high cost with monitoring” for three different pipeline capacities and for 100-mile and 500-mile transport distances. Smith notes that the “high cost with monitoring” scenario is more apt to be representative of storage and transport costs in the United States. For transport of CO2 for 500 miles in the U.S. Midwest, the estimated cost would be about \$20 per ton.

Table 9. Combined Pipeline and Storage Costs

Combined Pipeline and Storage Costs				
Pipeline Capacity	Mean Cost		High Cost with Monitoring	
	100 Miles	500 Miles	100 Miles	500 Miles
3.2 Mtpa	\$11.20	\$24.10	\$23.10	\$43.80
6 Mtpa,	\$9.00	\$17.90	\$18.60	\$33.00
15 Mtpa	\$7.40	\$12.20	\$15.60	\$23.40

Source: The Cost of CO2 Transport and Storage in Global Integrated Assessment
High cost with monitoring is more representative of the U.S.



3.3.4 Impact of Various Carbon Capture Scenarios on Gross Margins of Ethanol Plants

The potential for capturing CO₂ at ethanol plants and sequestering that CO₂ with transport by pipeline greatly enhances the gross margins of an ethanol plant. Table 10 shows the gross margins as calculated using the ISU Extension Ethanol Margin Calculator for a 100 million gallon per year (mgy) Iowa ethanol plant under five scenarios. The first scenario is an ethanol plant that is operating with no CO₂ capture. Using the latest data (January 2023) in the ISU calculator and state-average efficiency factors from Christianson Benchmarking LLC, it is estimated that the gross margin for a 100 mgy ethanol plant is 14.87 cents per gallon which translates to \$14.87 million per year if the plant is running at capacity. That margin does not change with a change in the value of carbon and with an estimated CI score near 55 without capture and sequestration, there is no direct benefit for either the 45Q or the 45Z tax credits.

Table 10. Iowa Annual Gross Margins - 100 mgy Plant (\$Million)

Iowa Annual Gross Margins - 100 mgy Plant (\$Million)					
Carbon Price	No CCS	CCS45Z Pipeline	CCS45Q Pipeline	CC&U Rail 45Q	CC&U Truck 45Q
Tax Credit Rate/gal	\$0.00	\$48.00	\$24.20	\$17.10	\$17.10
Pct Participation	100%	100%	100%	75%	75%
\$0.00	\$14.87	\$57.17	\$33.40	\$21.29	\$20.22
\$10.00	\$14.87	\$57.17	\$33.40	\$23.42	\$22.35
\$20.00	\$14.87	\$57.17	\$33.40	\$25.56	\$24.49
\$30.00	\$14.87	\$57.17	\$33.40	\$27.70	\$26.63
\$40.00	\$14.87	\$57.17	\$33.40	\$29.84	\$28.77
\$50.00	\$14.87	\$57.17	\$33.40	\$31.97	\$30.90
\$60.00	\$14.87	\$57.17	\$33.40	\$34.11	\$33.04
\$70.00	\$14.87	\$57.17	\$33.40	\$36.25	\$35.18
\$80.00	\$14.87	\$57.17	\$33.40	\$38.39	\$37.32
\$90.00	\$14.87	\$57.17	\$33.40	\$40.52	\$39.45
\$100.00	\$14.87	\$57.17	\$33.40	\$42.66	\$41.59
\$110.00	\$14.87	\$57.17	\$33.40	\$44.80	\$43.73
\$120.00	\$14.87	\$57.17	\$33.40	\$46.94	\$45.87
\$130.00	\$14.87	\$57.17	\$33.40	\$49.07	\$48.00
\$140.00	\$14.87	\$57.17	\$33.40	\$51.21	\$50.14
\$150.00	\$14.87	\$57.17	\$33.40	\$53.35	\$52.28
\$160.00	\$14.87	\$57.17	\$33.40	\$55.49	\$54.42
\$170.00	\$14.87	\$57.17	\$33.40	\$57.62	\$56.55
\$180.00	\$14.87	\$57.17	\$33.40	\$59.76	\$58.69
Gross Margin calculated using ISU Extension Ethanol Margin Calculator Carbon tax credit and costs calculated by DIS					



The second scenario (shown in the highlighted line in Table 10) is a 100 mgy ethanol plant that can capture its CO₂ and achieves a CI score of 26 due to full access to carbon capture and sequestration via connection to a saline-formation storage facility via a CO₂ pipeline. In this case, the gross margin rises to 57.17 cents per gallon which is equal to \$57.17 million per year at capacity. That is a 284% increase in the gross operating margin of the ethanol plant. Since the Section 45Z tax credits are a function of the volume of ethanol produced and the CI score of that ethanol production, the value does not change with the price of carbon, but the gross margin would change based on the percentage of production capacity at which the plant operates and the CI score of the ethanol produced. For each 1-point change in the CI score, the gross margin would change by \$2 million. Thus, there is a significant incentive for an

ethanol plant to adopt processes and methodologies which would result in lowered CI scores. In a similar light, the enhanced margins that will be seen with section 45Z tax credits not only will greatly incentivize the adoption of processes and methodologies that result in lowered CI scores, but it creates incentives for production migration through construction of new production with access to 45Z tax credits and eventual abandonment of production at plants that do not qualify for 45Z tax credits.

Scenario 3, also reflected in Table 10, reflects the gross margin that is estimated for an ethanol plant that has the capability to capture carbon and transport it to sequestration via pipeline but is doing so under the conditions of Section 45Q tax credits. In this scenario, the tax credit is based on the number of tons of CO₂ sequestered with the tax credit (assuming the bonus level is achieved) being \$85 per metric ton of CO₂ which translates to 24.2 cents per gallon of ethanol produced.

The value of the credit does not change with changes in the price of CO₂ and it is assumed that since the carbon is being sequestered that the carbon itself generates no direct value to the ethanol plant. In this scenario, the gross operating margin is 33.4 cents per gallon which equates to \$33.40 million per year for a 100 mgy plant. The difference between sequestering carbon via pipeline using either the 45Q or 45Z tax credits is estimated to be 23.77 cents per gallon or \$23.8 million per year.

The 4th scenario in Table 10 is a 100 mgy ethanol plant that captures 75% of its carbon and needs to use rail to transport that carbon to either industrial end users or for use in Enhanced Oil Recovery (EOR)²⁰. In this case, the 45Q tax credit is paid on the tons of CO₂ captured and used at a rate of \$60 per metric ton (bonus credit rate). In this case the operating margin is dependent on the price of carbon and is 21.29 cents per gallon if the carbon has no value and could be as high as 59.76 cents per gallon if CO₂ can be sold at \$180 per metric ton. If CO₂ can be sold near the prices reported by Ethanol Producer magazine in 2017 (around \$90 per ton) then the operating margin would be 40.52 cents per gallon. The ability to monetize the CO₂ partially offsets the lowered tax credit rates of 45Q versus 45Z tax credits.

Even with no value for the CO₂, the 4th scenario still generates a gross operating margin that is 6.4 cents per gallon better than the base case with no carbon capture, but it is 63 percent less than the operating margin that can be obtained through full participation in carbon capture and sequestration via pipeline and the 45Z tax credit. However, at \$90 per metric ton for CO₂, the gross operating margin is still 29% less than the 45Z case, but 172% better than the base case with no carbon capture.

It should be noted that if railroads are to be used for the movement of captured CO₂, it will take an estimated 1,357 railcars per year (which is 26 railcars per week) to move the CO₂ away from one 100 mgy plant and to its end use. If all the ethanol plants in Iowa had to try to use this method to capture CO₂ and move it, an additional 61,071 railcars of CO₂ would need to be moved year in Iowa, and would require an additional 2,350 CO₂ railcars assuming they could complete a round trip once every two weeks and 4,700 new CO₂ railcars if it took a month for each railcar to make the round trip with the CO₂. It should be noted that enough railcars to move CO₂ from Iowa's ethanol plants currently do not exist and the lead time to develop a fleet of these cars is likely to extend years into the future.

Another issue with the assumption that railcars can provide the transportation of the CO₂ from Iowa's ethanol plants is that rail service is already stretched to provide sufficient and timely transportation for

²⁰ In the cases of rail or truck transport of CO₂, we have only calculated the impacts of the 45Q tax credits, and not the 45Z tax credits because the CI scores for sequestration via rail or truck transport of CO₂ from an ethanol plant has not been determined. The 45Q tax credit is based on the tonnage of CO₂ sequestered or used, not on the CI score.

the ethanol that moves from Iowa's plants via rail tankers. Expecting railroads to be able to meet this new demand may be a significant stretch of the assumptions. Another issue with this scenario is that there may not be rail lines or rail services to the end users of CO₂, either merchant use of CO₂ or CO₂ used for EOR. In this case, many of the issues with permitting and construction of pipelines may be manifest if new rail lines are needed which will permanently affect surface road transportation, land easements and environmental considerations. To be perfectly clear, reliance on rail and truck movements to transport all of Iowa's CO₂ to sequestration points is just not feasible. There is already a shortage of rail engineers, the lead time to build all the trackage, tank cars, and/or tank trucks would mean plants are doomed before the system could reasonably build out that infrastructure and adjust to the idea of moving all that CO₂ via surface transportation.

The 5th scenario in Table 10 is a 100 mgy ethanol plant that captures 75% of its carbon and needs to use trucks to transport that carbon to either industrial end users or for use in EOR. In this case, the captured CO₂ is eligible for the 45Q tax credit and the captured CO₂ is assumed to have positive value since it is being used for constructive purposes and not just sequestered. In this case, the higher costs of transportation of CO₂ via truck versus either rail or pipeline, lowers the operating margin to 20.22 cents per gallon if CO₂ has no value and to 39.45 cents per gallon at \$90 per metric ton.

It should be noted that if trucks are to be used for the movement of captured CO₂, it will take an estimated 6,477 trucks per year (which is 25 trucks per day in a 5-day shipping week) to move the CO₂ away from one 100 mgy plant and to its end use. If all the ethanol plants in Iowa had to try to use this method to capture CO₂ and move it, it would put an additional 291,500 trucks on the road per year in Iowa and would require an additional 1,121 CO₂ trailers assuming they could complete a round trip per day with the CO₂. Each trailer is likely to cost between \$150,000 to \$250,000.

It is possible that the plants represented by scenarios 4 and 5 could capture and monetize all of their CO₂, but according to data from Christianson Benchmarking, LLC about 30% of ethanol plants capture some level of CO₂ and the range for those that capture CO₂ is between 22% of total emissions to 100% of total emissions. The average is 65% of total CO₂ emissions available are being captured by plants that capture CO₂.

According to the Global CCS Institute, "Pipelines are – and are likely to continue to be – the most common method of transporting the very large quantities of CO₂ involved in CCS. There are already millions of kilometers of pipelines around the world that transport various gases, including CO₂. Transport of CO₂ by truck and rail is possible for small quantities. Trucks are used at some project sites, moving the CO₂ from where it is captured to a nearby storage location. Given the large quantities of CO₂ that would be captured via CCS in the long-term, it is unlikely that truck and rail transport will be significant²¹."

With regards to geographic distribution of CO₂ capture at ethanol plants, there are a few plants within the primary corn belt states (Iowa, Illinois, Nebraska, Minnesota, South Dakota, and Nebraska) that capture CO₂ for sale into the merchant carbon market (industrial uses and EOR). The majority of ethanol plants that currently capture CO₂ are in states outside that region (tending toward the eastern area of the U.S.) and there does not seem to be an observable geographic pattern beyond this. It is likely that the facilities that currently capture CO₂ for sale are located relatively near a consumer of CO₂.

²¹ https://www.globalccsinstitute.com/wp-content/uploads/2018/12/Global-CCS-Institute-Fact-Sheet_Transporting-CO2-1.pdf

3.3.5 Potential State-level Impacts of the 45Z and 45Q Tax Credits

For the state of Iowa, the estimated gross margin of the ethanol industry which produced 4.5 billion gallons of ethanol in 2022 is \$669 million. If all of the ethanol plants in Iowa were able to access pipelines and capture 100% of their CO₂ emissions thus dropping their CI scores to a state-wide average of 26, then the operating margin would increase to \$2.57 billion, a gain of \$1.904 billion. In the case in which rail or trucks would be used to transport captured CO₂ into the merchant CO₂ market, the gross operating margin could still be greater than the base case with no CCS, ranging from \$910 million (trucking with \$0 price on CO₂) to \$1.82 billion (rail transport at \$90/mt CO₂ price).

Table 11. Annual Gross Margins - Iowa 4,500 mgy Production (\$Million)

Annual Gross Margins - Iowa 4,500 mgy Production (\$Million)					
Carbon Price	No CCS	CCS45Z Pipeline	CCS45Q Pipeline	CC&U Rail 45Q	CC&U Truck 45Q
Pct Participation	100%	100%	75%	75%	75%
\$0.00	\$669	\$2,573	\$1,503	\$958	\$910
\$10.00	\$669	\$2,573	\$1,503	\$1,054	\$1,006
\$20.00	\$669	\$2,573	\$1,503	\$1,150	\$1,102
\$30.00	\$669	\$2,573	\$1,503	\$1,246	\$1,198
\$40.00	\$669	\$2,573	\$1,503	\$1,343	\$1,295
\$50.00	\$669	\$2,573	\$1,503	\$1,439	\$1,391
\$60.00	\$669	\$2,573	\$1,503	\$1,535	\$1,487
\$70.00	\$669	\$2,573	\$1,503	\$1,631	\$1,583
\$80.00	\$669	\$2,573	\$1,503	\$1,727	\$1,679
\$90.00	\$669	\$2,573	\$1,503	\$1,824	\$1,775
\$100.00	\$669	\$2,573	\$1,503	\$1,920	\$1,872
\$110.00	\$669	\$2,573	\$1,503	\$2,016	\$1,968
\$120.00	\$669	\$2,573	\$1,503	\$2,112	\$2,064
\$130.00	\$669	\$2,573	\$1,503	\$2,208	\$2,160
\$140.00	\$669	\$2,573	\$1,503	\$2,304	\$2,256
\$150.00	\$669	\$2,573	\$1,503	\$2,401	\$2,353
\$160.00	\$669	\$2,573	\$1,503	\$2,497	\$2,449
\$170.00	\$669	\$2,573	\$1,503	\$2,593	\$2,545
\$180.00	\$669	\$2,573	\$1,503	\$2,689	\$2,641

Gross Margin calculated using ISU Extension Ethanol Margin Calculator
Carbon tax credit and costs calculated by DIS



Developing a merchant CO₂ market for CO₂ captured from Iowa ethanol plants is not as straightforward as planning for CO₂ capture and delivery to a pipeline. There is substantially more uncertainty involved with development of merchant carbon markets that would require creating relationships and marketing channels with hundreds if not thousands of disparate, relatively small users of CO₂ compared to planning for a single point-of-service hook-up to a pipeline. In addition, there would need to be construction of storage and loading, unloading facilities as well as CO₂ injection facilities capable of handling hundreds of trucks and/or groups of rail cars as juxtaposed to a single point of injection access from a pipeline at the injection point.

3.3.6 Competitive Ethanol Production

Comparing ethanol production with CO₂ capture and sequestration via pipeline (CCSvP) versus ethanol production with no carbon capture sets up a competitive advantage for producers who can do the CCSvP. With 40+ cents per gallon of enhanced gross margins (See Table 10 columns 2 and 3), there is a substantial incentive to expand production in locations that will facilitate the conditions in which that enhanced margin can be garnered. Based on news releases and data regarding expansion of ethanol

production capacity at existing plants, the range of capital expenditure needed on a cost per gallon basis for expanded production is \$0.50 to \$1.00 per gallon. This range of capital costs appears to hold for recent expansions of production capacity in the range of 10-25% of existing plant capacity and may be applicable to up to 50% expansion of plant production capacity. For new construction, current capital expenditures needed to build dry mill plants sized at 100 mgd or greater range is \$2.00 to \$2.50 per gallon of production capacity.

As noted in Table 12 South Dakota and Iowa tentatively have the greatest shares of their ethanol production that is likely to have access to CCSvP. If in a state such as Iowa, ethanol plants are unable to access CO₂ transport via pipeline, then there will be incentives for expansion of production in areas where such access is feasible. Many ethanol plants in Illinois will have access to carbon capture and direct injection at or near the plant site (such as is currently done by ADM in Decatur, IL) and thus there is less need for pipeline transport of CO₂ in Illinois. Similar conditions (capability for direct injection) exist for many, if not most, of the ethanol plants in Indiana, Ohio, Michigan, and Kansas (see the map in Figure 3).

Table 12. Summary of CO₂ Pipeline Volumes

Summary of CO ₂ Pipeline Volumes						
	Pipeline Name					
State	Navigator	Summit	Wolf	Pipeline Total	State Total	Pipeline Share of State Total
IA	6,329,850	3,773,400.0	2,214,450	12,317,700	13,329,450	92.4%
IL	370,500	-	-	370,500	5,449,200	6.8%
MN	929,100	1,319,550.0	-	2,248,650	3,975,750	56.6%
ND	-	498,750.0	-	498,750	1,539,000	32.4%
NE	997,500	1,427,850.0	-	2,425,350	6,697,500	36.2%
SD	2,166,000	1,710,000.0	-	3,876,000	3,876,000	100.0%
Grand Total	10,792,950	8,729,550	2,214,450	21,736,950	34,866,900	62.3%
Source: DIS Estimates of CO ₂ production capacity per ethanol plant Pipeline match-up with ethanol plants based on publicly available maps						



Using the midpoint of the costs for expansion of capacity, existing ethanol plants in areas where CO₂ pipelines are enabled, the margin differential is sufficient to cover the capital expenditures associated with expansion in 1.5 to 2.5 years. At this payback rate, it is estimated that a 30% expansion of ethanol production at existing plants with CCSvP capacity would occur, assuming the plants in Iowa did not have CCSvP access. This would result in an estimated 690 million gallons of additional ethanol production just from the expansion of existing plants and could eventually result in an offsetting reduction in production at ethanol plants based in Iowa.

Table 13. Potential Expansion of Ethanol Production at Plants with CCSvP Capability

Potential Expansion of Ethanol Production at Plants with CCSvP Capability			
State	Navigator	Summit	Total
MN	70,815	100,575	171,389
ND	-	38,014	38,014
NE	76,028	108,829	184,857
SD	165,090	130,334	295,424
Grand Total	311,933	377,752	689,685
			

In addition to expansion of ethanol production at existing plants, a 40+ cent per gallon differential in the gross operating margin of plants with CCSvP and plants that do not have it, there will be incentives to build more capacity with such access. The payback time for these plants if they use all the enhanced gross margin difference is 4.25 to 5.7 years. This is a long enough timeframe that immediate new construction is not likely given the level of uncertainty that exists for potential construction of CO₂ pipelines in Iowa and uncertainty about the extension of 45Z tax credits beyond the initial authorization period²², but the longer that uncertainty with regards to construction of CO₂ pipelines in Iowa persists, the greater the incentives for new construction that can capture the higher gross operating margins and that would lead to the reduction in production in areas where the margins are lower. Inasmuch as there is more than 3.67 billion gallons of ethanol production in Iowa that is proposed to be on the CO₂ pipelines, it is not out of the realm of possibility that all that production could be displaced by production just beyond the borders of Iowa where access to a CO₂ pipeline is achievable or could be achievable with rerouting of planned pipelines.

Some may question how much migration of production might occur since the 45Z tax credit is currently only authorized for 3 years (through the end of 2027). While the 45Z tax credit is only authorized through 2027 and likely to be extended, it should be noted that the 45Q tax credit already extends to 2030 in current law. At \$85/ton of CO₂, which equates to about 24 - 25 cents per gallon of ethanol. Plants that initially qualify for and elect to take the 45Z tax credit could then switch to 45Q tax credits if the 45Z tax credits were allowed to expire. But even so, there would still be nearly 25 cents of value per gallon to those that had access to a pipeline. The rapid payback for new construction with access to CCSvP and the certainty of significant tax credits for sequestration that extend to at least 2030 increases the likelihood of migration of production, and the quicker that migration begins the more certainty those new plants would have of benefitting from the 45Z and/or the 45Q tax credits.

Table 14 summarizes the comparison of annual gross margins (using annualized January 2023 data) for production of ethanol with no CCS and with CCSvP for Iowa, Illinois, Minnesota, Nebraska, and South Dakota. It also includes a summary of the comparative advantage Illinois, Minnesota, Nebraska, and South Dakota would have over Iowa if they can access CCSvP and Iowa cannot. Table 14 also shows just

²² It is widely expected that the 45Z tax credits will be extended beyond the initial authorization period, but there is no certainty that an extension will be forthcoming.

how quickly the capital costs of new construction of ethanol production in those states could be paid back using just the additional margin that those plants would have because of access to the 45Z tax credits and access to CCSvP.

Table 14. Comparison of annual Gross Margins - 100 mgy Plants (\$Million)

Comparison of Annual Gross Margins - 100 mgy Plants (\$Million)					
	Iowa	Illinois	Minnesota	Nebraska	South Dakota
No CCS	\$14.87	\$11.97	\$15.86	\$19.05	\$25.86
CCS45Z Pipeline	\$57.17	\$54.27	\$58.16	\$61.35	\$68.16
Comparative Advantage CCSvP vs No CCS		\$39.40	\$43.29	\$46.48	\$53.29
Payback Time New Plant with CCSvP from	Years	5.71	5.20	4.84	4.22
Assumes \$2.25 per gal construction cost					

3.3.7 Projected Impacts on Iowa Ethanol Production

Four scenarios are presented here with regard to construction of new production of ethanol in areas where CCSvP is facilitated versus areas that are not facilitative of CCSvP (Table 15). The quickest relocation of ethanol production would come from expansion of existing plants that have greater certainty that they can access a CO2 pipeline. The first scenario is the production that could come from expansion of production at existing plants in four state that adjoin Iowa (IL, MN, NE and SD) that have relative certainty about CCSvP. The second scenario is the level of relocation of production that could come in 3-4 years as companies build new ethanol facilities on CO2 pipelines. The third scenario could happen in as few as 4-6 years as the certainty over carbon emissions policy (tax incentives) becomes more certain that it would last beyond the current termination date in the Inflation Reduction Act. And the fourth scenario is what may be feasible if the CO2 pipelines are built with excess capacity and the ability to absorb even more new development.

Table 15. Scenarios of Relocation of Ethanol Production (Million Gallons Per Year)

Scenarios of Relocation of Ethanol Production						
Million Gallons Per Year						
	Iowa	Illinois	Minnesota	Nebraska	South Dakota	Feasibility Period
Iowa Down 15%	(655)		170	185	300	Expansion 1-3 yrs
Iowa Down 25%	(1,150)	100	250	400	400	3-4 yrs
Iowa Down 50%	(2,300)	300	500	750	750	4-6 yrs
Iowa Down 75%	(3,450)	300	750	1250	1150	5-10 yrs

While there is some room for expansion of ethanol capacity over the next few years without crashing operating margins for all ethanol plants, the ability to collect the 45Z tax credit by plants that are sequestering CO2 via pipeline will create huge incentives for those plants to expand and for investors to build capacity that is on a pipeline. It is that expansion that will push ethanol margins down overall which will result in ethanol plants without access to the 45Z credits to have their operating margins turn negative while the plants with the credits will still have very positive operating margins. This pressure will build until nearly all ethanol plants that are operating are those with access to the tax credits. There is historical evidence of ethanol plants with negative operating margins shutting down.

High corn prices that resulted in negative margins were cited as a reason that Southwest Georgia Ethanol shut down in 2012. Flint Hills acquired the 120 mgy plant in 2015 and after shutting the plant down during COVID-19, determined that it would not re-open the plant.

Iowa ethanol plants are competitive within the current market structure of energy and ethanol markets and are well positioned to provide feed byproducts of ethanol to local livestock feeders. But long periods of potentially negative operating margins would eventually “right-size” the ethanol market by forcing producers with negative margins to shutter their plants and reduce the supply of ethanol.

Loss of 75% of the Iowa ethanol industry would result in an eventual decline in revenues from ethanol plants (ethanol, DDGs, and DCO) of more than \$10.3 billion per year (Table 16). These losses would reverberate throughout the Iowa economy as corn prices would adjust downward, costs to get DDGs delivered to Iowa feeders would increase and DCO would be less available (or more costly) to biodiesel and renewable diesel production facilities and for feed use.

Table 16. Relocation of Economic Activity - Ethanol Plants

Relocation of Economic Activity - Ethanol Plants					
Change in Annual Sales Value of Ethanol Plants					
Million \$ Per Year					
	Iowa	Illinois	Minnesota	Nebraska	South Dakota
Iowa Down 15%	-\$1,957	\$0	\$505	\$535	\$915
Iowa Down 25%	-\$3,436	\$304	\$743	\$1,156	\$1,220
Iowa Down 50%	-\$6,873	\$911	\$1,485	\$2,167	\$2,287
Iowa Down 75%	-\$10,309	\$911	\$2,228	\$3,612	\$3,506
Includes sales value of ethanol, DDGs, and DCO					
Projected using January 2023 prices					



3.3.8 Summary of the Impacts of No Carbon Pipelines in Iowa

Margins matter. And with even a moderate time horizon, margin advantages of 40+ cents per gallon will stimulate movement of ethanol production to locales that enable capturing those margins. Not facilitating access to CCSvP in Iowa could lead to a significant reduction in ethanol production within Iowa. Under the scenario in which Iowa ethanol production contracts by 75% (within 5-10 years) the loss in direct revenue from ethanol production is more than \$10.3 billion per year. The 45Z tax credits significantly change the operating environment for all ethanol production. Iowa's ethanol plants cannot afford to miss out on \$2.16 billion in tax credits that would be available to plants that have access to CCSvP.

The difference in margins for plants with access to CCSvP will create incentives for rapid and significant expansion of production in those areas and corresponding reductions in ethanol production in areas without such access. Currently, Iowa processes 1.58 billion bushels of corn for ethanol. If Iowa loses 75% of its ethanol production over the next 5-10 years due to non-competitive margins with ethanol plants that can successfully capture carbon and transport it economically to storage facilities, Iowa farms stand to lose local markets for 1.18 billion bushels of corn. That corn may still have a market, either ethanol in a neighboring state or export markets, but the value of that corn will be less as the transportation differentials for local demand versus demand that may be a hundred or a thousand miles away will reduce local basis by that transportation differential.

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5 Appendices

5.1 Feedstock Carbon Intensity Calculator (FD-CIC)²³

The carbon intensities (CIs) of biofuels are determined with the life cycle analysis (LCA) technique, which accounts for the energy/material uses and emissions during the complete supply chain of a biofuel including feedstock production and fuel conversion stages.

Besides biofuel conversion stage, different farming practices for feedstock growth can result in significant CI variations for feedstocks, thus for biofuels. To provide evidence-based research findings, the U.S. Department of Energy's Advanced Research Projects Agency–Energy (ARPA-E) has supported the Systems Assessment Center of the Energy Systems Division at Argonne National Laboratory to examine CI variations of different farming practices to grow agricultural crops for biofuel production. Meanwhile, the ARPA-E has launched the Systems for Monitoring and Analytics for Renewable Transportation Fuels from Agricultural Resources and Management (SMARTFARM) program to develop technologies and data platforms that enable an accurate measurement of key farming parameters that can help robust accounting of the GHG benefits of sustainable, low-carbon agronomic practices at farm level.

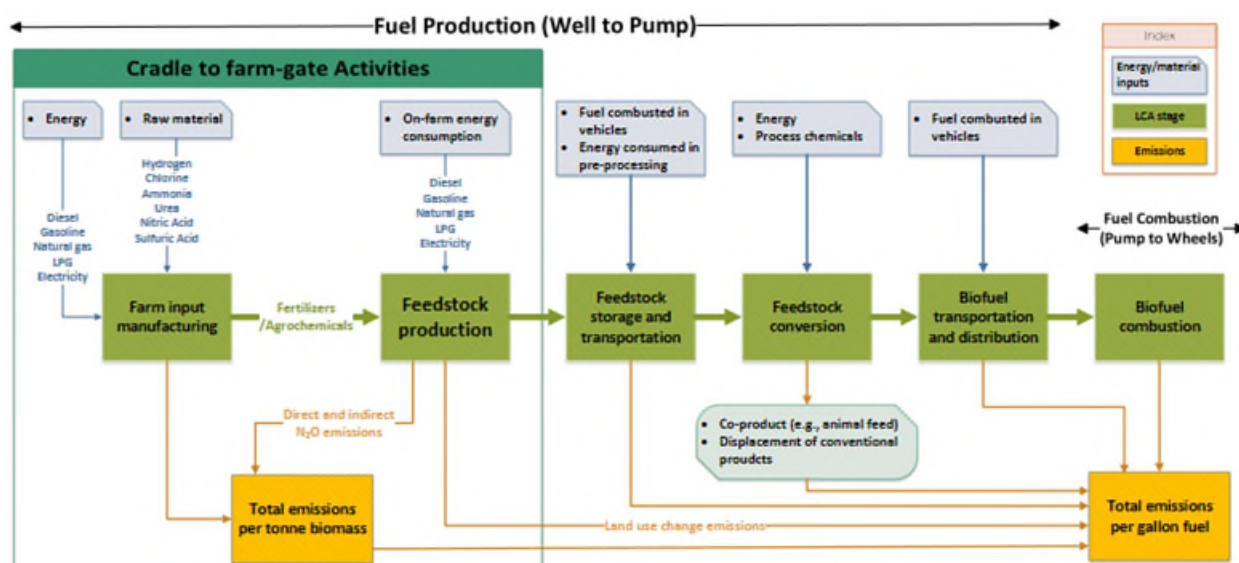


Figure 13. The System Boundary of FD-CIC (i.e. cradle-to-farm-gate activities) compared to a complete supply chain of a biofuel

A transparent and easy-to-use tool for feedstock-specific, farm-level CI calculation of feedstocks is especially helpful. With the ARPA-E support, the Systems Assessment Center has developed a tool - the Feedstock Carbon Intensity Calculator (FD-CIC). The first version of the FD-CIC with the Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) model 2020 release accounts for user-specific, farm-level input data for corn production, coupled with the life-cycle inventory (LCI) data

²³ Argonne National Laboratory, <https://greet.es.anl.gov/files/fd-cic-tool-2020>

of key farming inputs from the GREET model (Wang et al 2020). The FD-CIC tool helps stakeholders to assess the effects of changing farm-level input parameters on corn CI scores in the biofuel LCA context.

Key parameters affecting biofuel feedstock CI include corn yield, fertilizers/chemicals application rates, and agronomic practices. Corn yield is related to the total volume of ethanol produced per area of land by coupling with the corn-grain-to-ethanol conversion rate (2.88 gallon of ethanol per bushel of corn). The corn yield also determines the amount of corn residue left on the farm field, which affects N₂O emission and soil organic carbon (SOC) sequestration potentials.

Inclusion of agronomic practice as a key parameter in FD-CIC reflects the current interest in evaluating the CI of the biofuel feedstock produced by various sustainable land management practices such as: i) nitrification inhibitor use to reduce fertilizer-induced N₂O emissions, ii) conservation tillage adoption to increase SOC and reduce on-farm energy uses in tilling, iii) manure application to improve soil quality by adding organic carbon and nutrients, and iv) cover cropping to increase residue carbon and nutrients in soils and reduce soil erosion.

As an important component in biofuel LCA, land use change (LUC) -induced emissions have been incorporated into biofuel CI calculation to account for SOC sequestration/GHG emissions associated with the shift in land-use and land-cover for large-scale biofuel feedstock production. However, since the FD-CIC focuses on the cradle-to-farm-gate activities, it does not include LUC emissions in CI calculation but has a lookup table for SOC sequestration potentials of diverse farming practices to address great opportunities for CI reductions.

Currently, two versions of FD-CIC are available, namely the dynamic version and the standalone version. The dynamic version interacts with the GREET model (in particular, GREET1, the fuel cycle model of GREET) by directly reading the LCI data of key farming inputs from the model. The dynamic version suits well when users want to change the default settings of the GREET model as related to farming inputs. For example, if the users want to assess the impact of using regional electricity grid mix, instead of the U.S. average grid mix, they can modify the grid mix in the GREET model and utilize the interacting feature in the FD-CIC to re-read the updated CI values for key farming inputs. The interacting feature also enables the CI values to be updated with annual GREET release. The standalone version suits well for users who are not familiar with the GREET model and contains the default LCI data for key farming inputs from the GREET model. It is worth mentioning that the interacting feature will only work if users have GREET version 2020 or later and keep the GREET1 excel file in the same folder as with the FD-CIC tool.

The structure of the FD-CIC tool is presented in Figure 14 and defines the color schemes of cells for different types of parameters used in the FD-CIC tool.

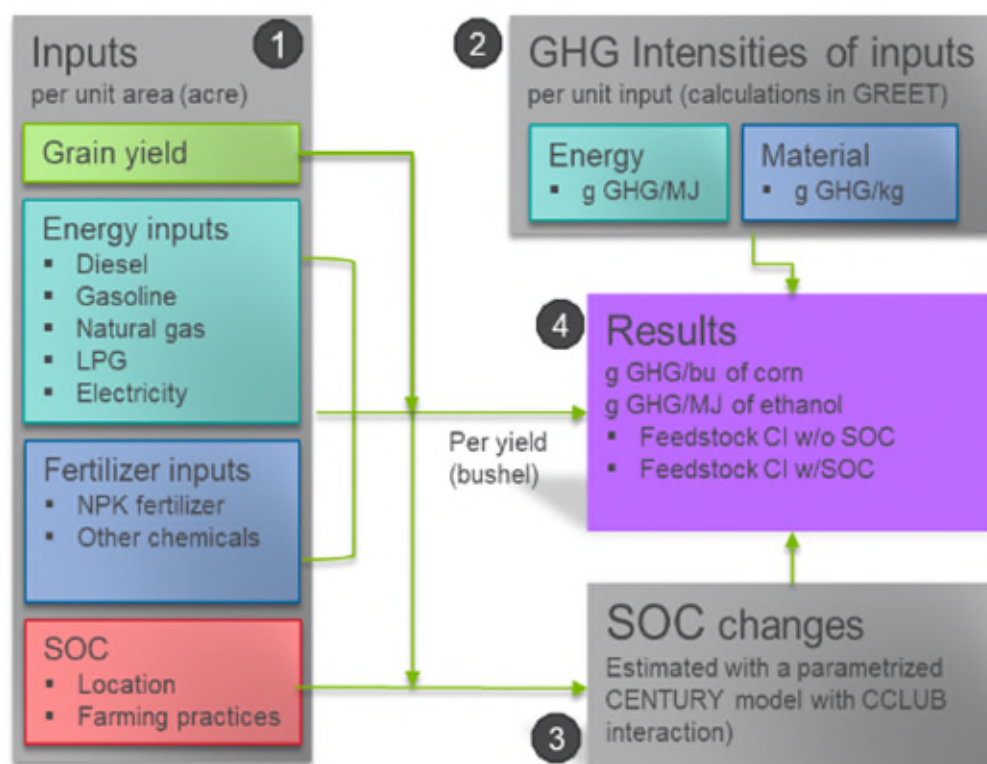


Figure 14. Structure of FD-CIC Calculator Model

In the Inputs worksheet, users need to provide key information on corn yield, energy consumption, and fertilizer/chemical uses Table 17. In particular, the energy use from all on-farm operations, including field preparation, tilling, fertilizer/chemical application, grain drying, and corn irrigation, should be included. If farms have not used a specific energy/fertilizer type, as defined in FD-CIC, the value for the specific type should be set to zero.

The FD-CIC tool uses U.S. customary units by default (e.g. pound per acre or bushel per acre), followed by intermediate calculations to translate them into the GREET customary units for CI calculation (i.e. grams of GHG emitted per short ton of fertilizer or per British Thermal Unit of energy), so that the CI coefficients obtained from the GREET model can be utilized. It is noteworthy that herbicide and insecticide types are not differentiated because of their small contribution to the overall feedstock CI (< 2%).

As shown in Table 17, GREET default values reflecting US average corn farming are provided as the baseline scenario. Users can modify the blue cells to build their specific case and compare the results with the GREET default scenario. Please note that in the GREET model, the amount of fertilizers applied is measured by the amount of nutrients in fertilizer; but in FD-CIC, the amount of fertilizers applied is the actual compound application rates.

Table 17. Farm-Level Inventory Required by FD-CIC Calculator

1) Farming input parameters			
1.0) Farm size	User Specific Value	GREET Default Value	Unit
1.0.1) Farm size	1000	1000	acre
1.1) Yield	User Specific Value	GREET Default Value	Unit
1.1.1) Corn yield	166	166	Bushels/acre
1.2) Energy	User Specific Value	GREET Default Value	Unit
1.2.1) Diesel	4.4	4.4	Gallons/acre
1.2.2) Gasoline	1.5	1.5	Gallons/acre
1.2.3) Natural gas	158.4	158.4	ft3/acre
1.2.4) Liquefied petroleum gas	2.4	2.4	Gallons/acre
1.2.5) Electricity	15.5	15.5	kWh/acre
1.3) Nitrogen Fertilizer	User Specific Value	GREET Default Value	Unit
1.3.1) Ammonia	52.7	52.7	lbs/acre
1.3.2) Urea	69.0	69.0	lbs/acre
1.3.3) Ammonium Nitrate	8.0	8.0	lbs/acre
1.3.4) Ammonium Sulfate	13.2	13.2	lbs/acre
1.3.5) Urea-ammonium nitrate solution	44.8	44.8	lbs/acre
1.4) Phosphorus Fertilizer	User Specific Value	GREET Default Value	Unit
1.3.6)/1.4.1) Monoammonium Phosphate	51.0	51.0	lbs/acre
1.3.7)/1.4.2) Diammonium Phosphate	52.6	52.6	lbs/acre
1.5) Potash Fertilizer	User Specific Value	GREET Default Value	Unit
1.5.1) K2O	53.6	53.6	lbs/acre
1.6) Lime	User Specific Value	GREET Default Value	Unit
1.6.1) CaCO3	472.2	472.2	lbs/acre
1.7) Herbicide	User Specific Value	GREET Default Value	Unit
1.7.1) Herbicide	971.6	971.6	g/acre
1.8) Insecticide	User Specific Value	GREET Default Value	Unit
1.8.1) Insecticide	2.1	2.1	g/acre

Soil organic carbon lookup

Currently, the corn ethanol CI calculated for regulations does not account for SOC changes in corn farms due to different land management practices, which is either sequestered as SOC (i.e., increase in SOC) or emitted as CO₂ (i.e., decrease in SOC). The change in SOC due to the change in practices in corn farms can be significant and consideration of SOC in CI scoring can incentivize conservation practices that are tied to carbon sequestration and abatement. For example, growing of cover crops and application of manure in corn farms contribute positively to SOC stock increase, leading to net carbon sequestration compared to cases where cover crops and manure are not applied. On the other hand, the growth of cover crops and manure applications are associated with additional herbicide/energy use and associated emissions due to herbicide/energy manufacturing. These emission burdens also need to be accounted for (Liu et al 2020).

The FD-CIC provides a lookup table for the SOC sequestration potentials corresponding to different farming practices based on default simulation results using county-level corn yield record, soil, and climate information (Liu et al 2020). Therefore, the farm-level yields of cover crop and major crops (e.g., corn and soybean) provided by users would not affect the SOC change per hectare but the SOC change

per bushel of corn. That is, SOC estimates in the FD-CIC are developed at the U.S. county level, not at the farm level. As indicated by the SOC lookup table (Figure 15), the users can look up the potential SOC changes. It should be noted that positive SOC values represent CO₂ emissions while negative values represent SOC sequestration.

3) Soil organic carbon lookup		CCLUB Default Value
2.0.) Location - State		SD
2.0.1) Location - County		Aurora
2.0.2) Location - FIPS		46003
2.1.) Cover crop		Cover crop
		Cover crop
		No cover crop
2.2.) Manure		Manure
		Manure
		No manure
2.2.) Tillage		Conventional tillage
		Conventional tillage
		Reduced tillage
		No tillage
2.4.) SOC	User Specific Value	-48.2
		-48.2 kg C/ha/yr

Figure 15. Soil Organic Carbon Look-up Table

The FD-CIC tool estimates the emissions of CO₂, CH₄, and N₂O combined with their 100-year global warming potentials (GWP) of 1, 30, and 265, respectively. N₂O emissions from soils and biomass are calculated mainly on the basis of the emission factors approach developed by the Systems Assessment Center (Wang et al 2012, Xu et al 2019) and Intergovernmental Panel on Climate Change (Dong et al 2006), using emission factors from various nitrogen sources defined by the GREET model. As an example, to calculate the N₂O emission due to ammonia fertilizer application, the application rate of ammonia is multiplied by the ratio of nitrogen in ammonia to calculate the application rate of ammonia-nitrogen. The emission factor of 1.325% is then applied, which is the percentage of nitrogen in nitrogen fertilizer and biomass that is converted to nitrogen in N₂O (N₂O-N), which can be further converted to N₂O (Xu et al 2019). For those who are familiar with GREET N₂O calculations for biofuels, nitrogen fertilizer usage there in GREET is presented in the mass of nutrients, not the mass in compounds as in FD-CIC. The latter was done intentionally so that farming inputs can be entered into the FD-CIC by users without any conversion outside of it. For Monoammonium Phosphate (MAP) and Diammonium Phosphate (DAP), which serve as both nitrogen and phosphorus sources, the tool employs more complex calculations (Figure 16).

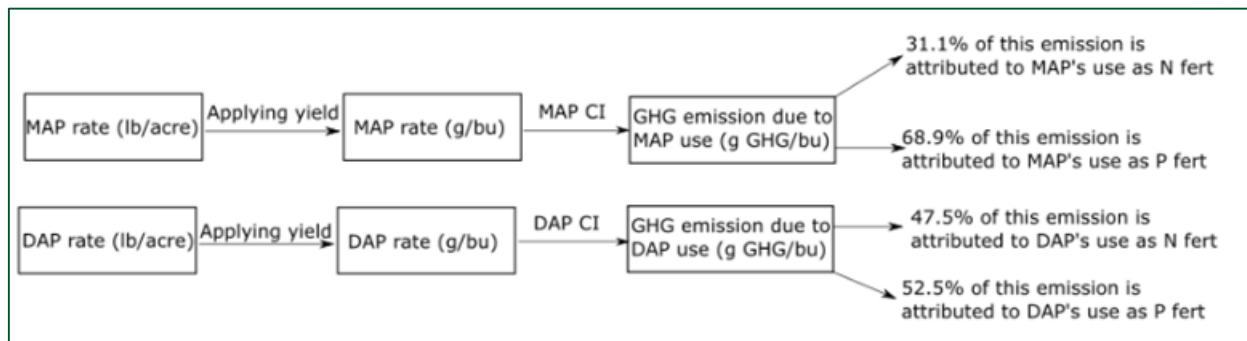


Figure 16. Calculations Associated with MAP and DAP

In the Results worksheet, the FD-CIC tool reports both GREET default and user-specific CI for corn for comparison. The tool provides figures for comparison as well. The contribution from each emission source is also calculated and depicted in a pie chart. The FD-CIC tool also translated the feedstock CI into ethanol CI based on per MJ of corn ethanol produced by applying the corn-grain-to-ethanol conversion rate (2.88 gallon of ethanol per bushel of corn) and the lower heating value of ethanol (80.5 MJ per gallon, lower heating value based) as the volume-to-energy unit conversion factor. This feature helps users to understand how the variations in feedstock-level CI can propagate through the bioethanol supply chain.

5.2 Operating Margins: IL, MN, NE, SD

Consistent with Iowa's ethanol industry, prices for both corn and ethanol have fluctuated during the last 14 years in the states of Illinois, Minnesota, Nebraska, and South Dakota. Correlation coefficients between these price series have varied from 0.809 for Illinois to 0.841 for Nebraska from February 2009 to July 2022. The correlation for Iowa was estimated at 0.840 during the same period. For all states, natural gas price per gallon of ethanol shows variations during the last 13.5 years, but not as much as the prices of ethanol, corn, or DDGS (see Figure 17, Figure 19, Figure 21, and Figure 23).

Similarly to the trend in Iowa, operating margins have dropped over the full 13.5-year period of 2007-2022, with substantial decline since middle of 2014, but continued variability during that period (see Figure 18, Figure 20, Figure 22, Figure 24).

Illinois Operating Margins

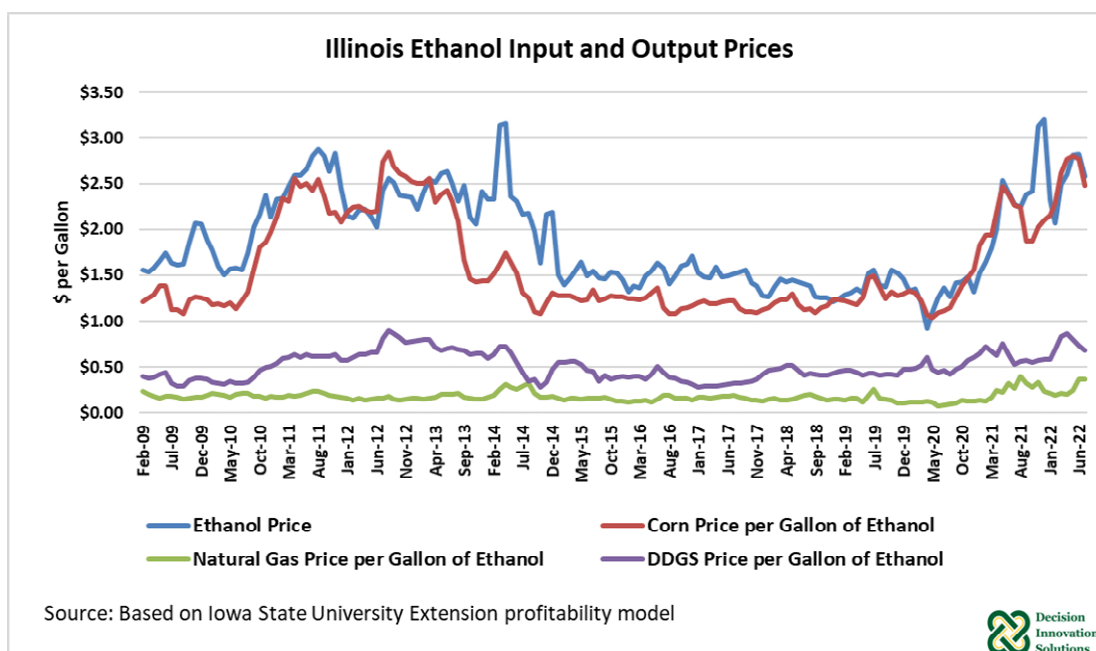


Figure 17. Illinois Ethanol Input and Output Prices

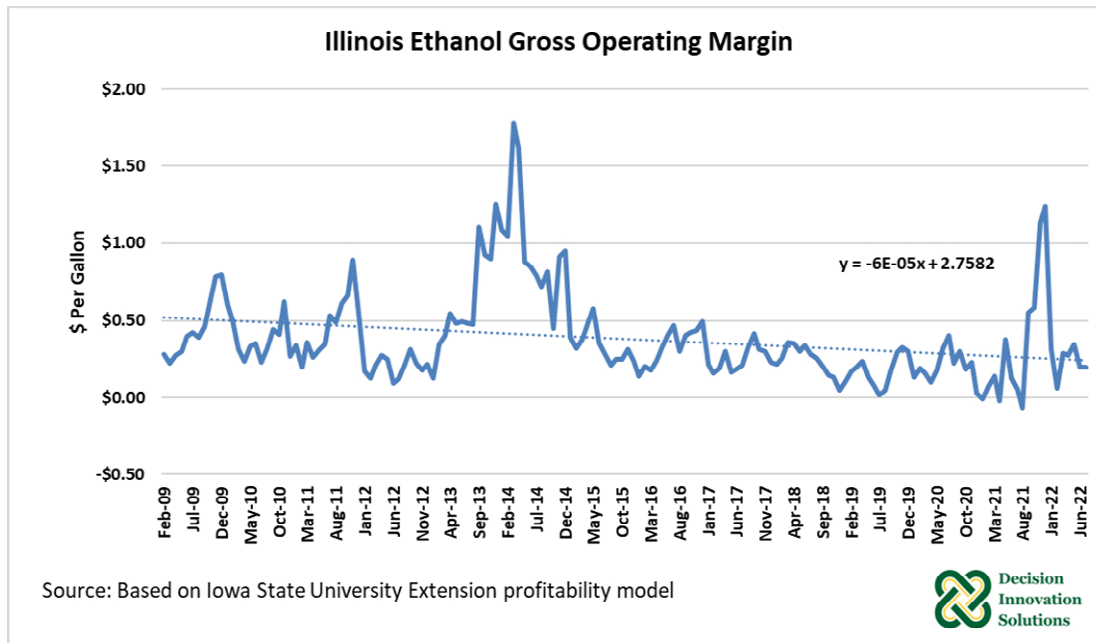


Figure 18. Illinois Ethanol Gross Operating Margin

Minnesota Operating Margins

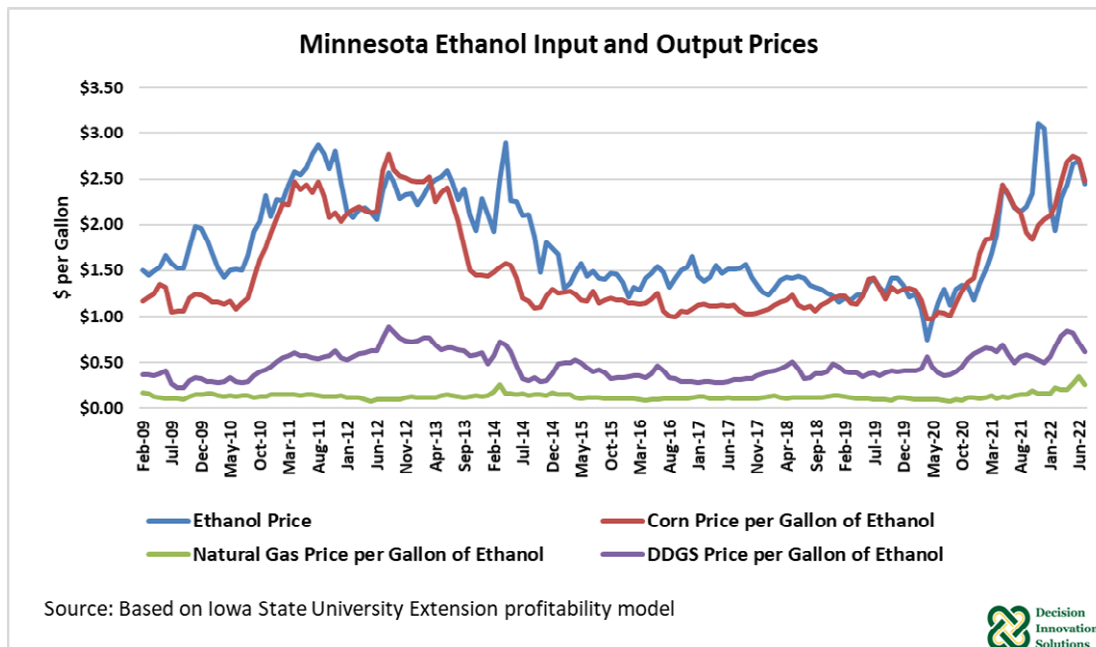


Figure 19. Minnesota Ethanol Input and Output Prices

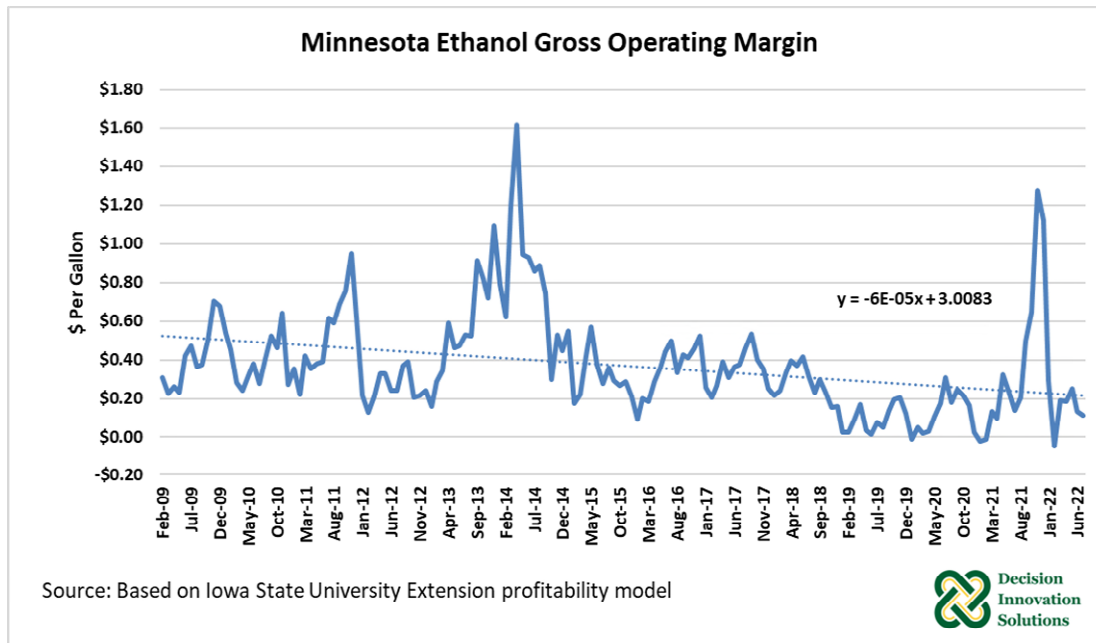


Figure 20. Minnesota Ethanol Gross Operating Margin

Nebraska Operating Margins

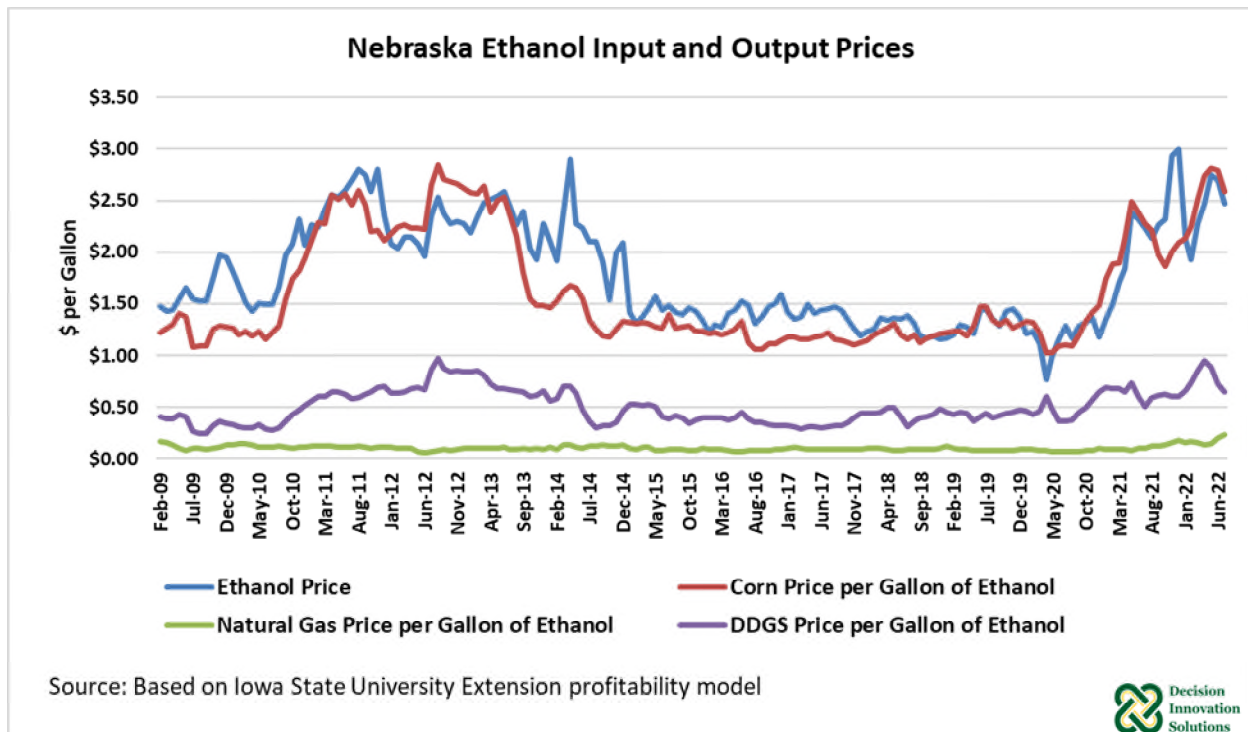


Figure 21. Nebraska Ethanol Input and Output Prices

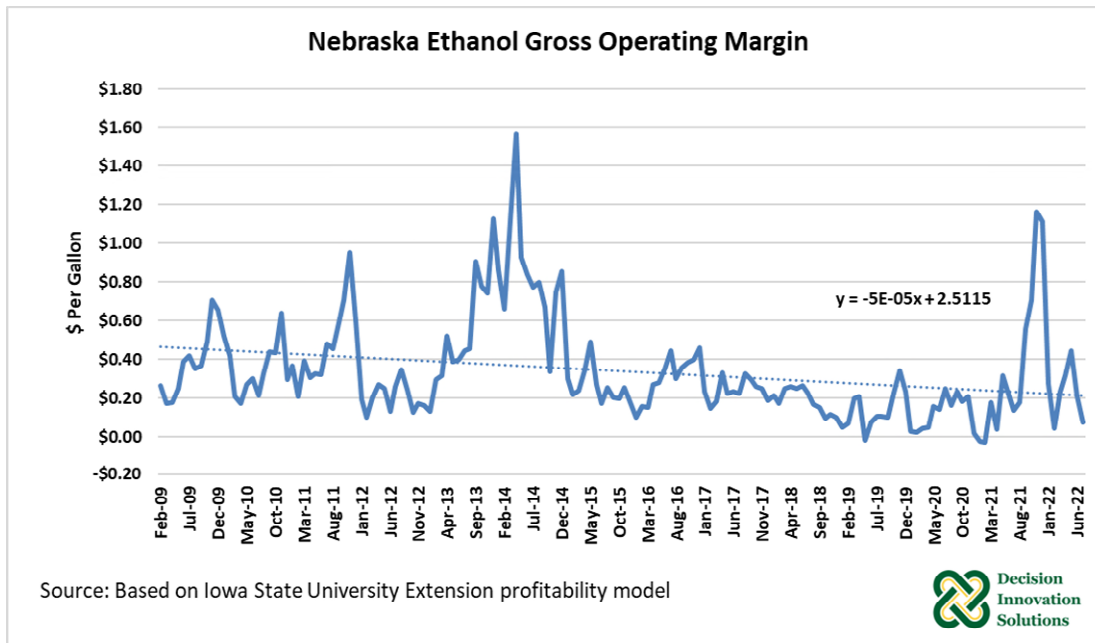


Figure 22. Nebraska Ethanol Gross Operating Margin

South Dakota Operating Margins

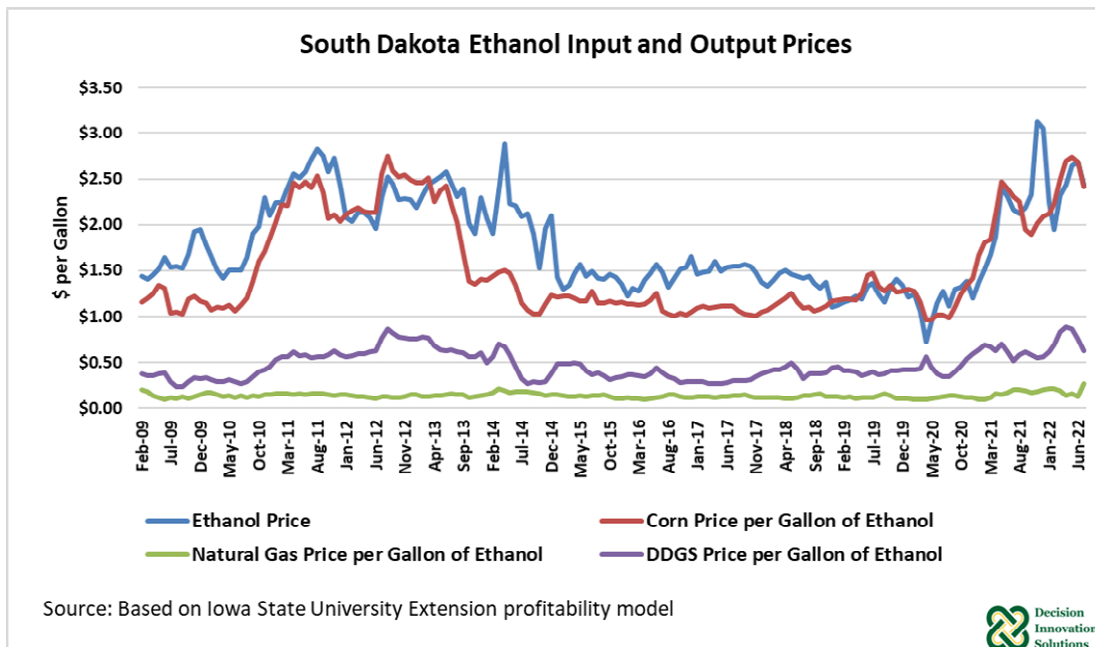


Figure 23. South Dakota Ethanol Input and Output Prices

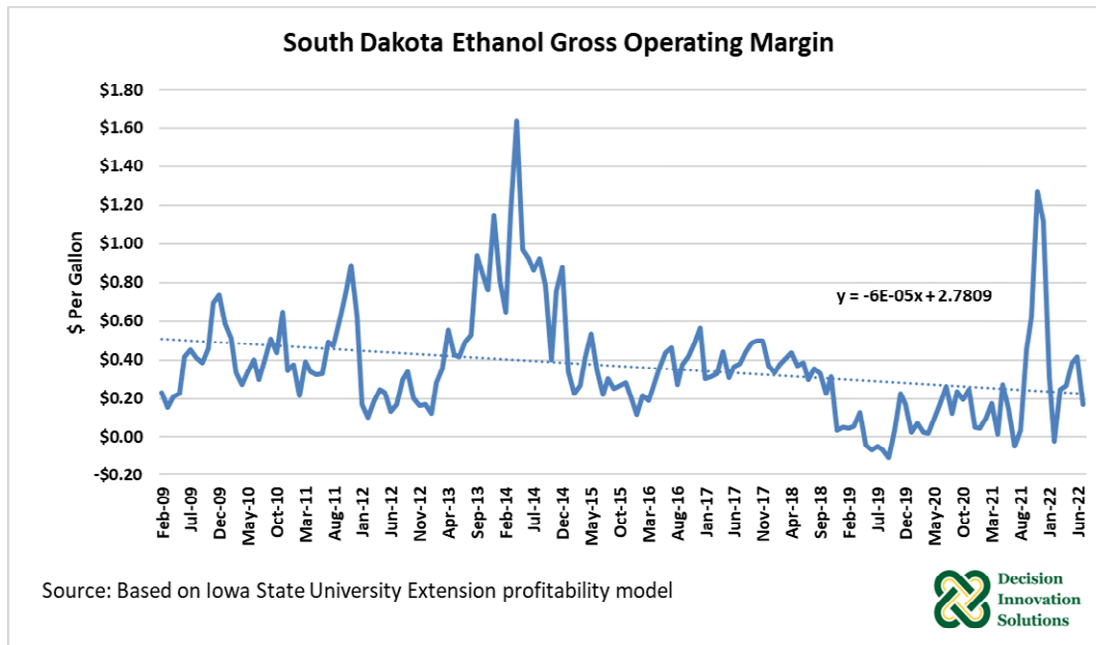


Figure 24. South Dakota Ethanol Gross Operating Margin

5.2.1 Summary of Annual Gross Margins for Ethanol Plants in IL, MN, NE, and SC

Table 18. Illinois Gross Margins - 100 mgy Plant (\$Million)

Illinois Annual Gross Margins - 100 mgy Plant (\$Million)					
Carbon Price	No CCS	CCS45Z Pipeline	CCS45Q Pipeline	CC&U Rail 45Q	CC&U Truck 45Q
Pct Participation	100%	100%	100%	75%	75%
\$0.00	\$11.97	\$54.27	\$30.49	\$18.38	\$17.31
\$10.00	\$11.97	\$54.27	\$30.49	\$20.52	\$19.45
\$20.00	\$11.97	\$54.27	\$30.49	\$22.65	\$21.59
\$30.00	\$11.97	\$54.27	\$30.49	\$24.79	\$23.72
\$40.00	\$11.97	\$54.27	\$30.49	\$26.93	\$25.86
\$50.00	\$11.97	\$54.27	\$30.49	\$29.07	\$28.00
\$60.00	\$11.97	\$54.27	\$30.49	\$31.20	\$30.14
\$70.00	\$11.97	\$54.27	\$30.49	\$33.34	\$32.27
\$80.00	\$11.97	\$54.27	\$30.49	\$35.48	\$34.41
\$90.00	\$11.97	\$54.27	\$30.49	\$37.62	\$36.55
\$100.00	\$11.97	\$54.27	\$30.49	\$39.75	\$38.69
\$110.00	\$11.97	\$54.27	\$30.49	\$41.89	\$40.82
\$120.00	\$11.97	\$54.27	\$30.49	\$44.03	\$42.96
\$130.00	\$11.97	\$54.27	\$30.49	\$46.17	\$45.10
\$140.00	\$11.97	\$54.27	\$30.49	\$48.30	\$47.24
\$150.00	\$11.97	\$54.27	\$30.49	\$50.44	\$49.37
\$160.00	\$11.97	\$54.27	\$30.49	\$52.58	\$51.51
\$170.00	\$11.97	\$54.27	\$30.49	\$54.72	\$53.65
\$180.00	\$11.97	\$54.27	\$30.49	\$56.85	\$55.79
Gross Margin calculated using ISU Extension Ethanol Margin Calculator Carbon tax credit and costs calculated by DIS					



Table 19. Annual Gross Margins - Illinois 1,661 mgy Production (\$Million)

Annual Gross Margins - Illinois 1,661 mgy Production (\$Million)					
Carbon Price	No CCS	CCS45Z Pipeline	CCS45Q Pipeline	CC&U Rail 45Q	CC&U Truck 45Q
Pct Participation	100%	100%	75%	75%	75%
\$0.00	\$539	\$2,442	\$1,372	\$827	\$779
\$10.00	\$539	\$2,442	\$1,372	\$923	\$875
\$20.00	\$539	\$2,442	\$1,372	\$1,019	\$971
\$30.00	\$539	\$2,442	\$1,372	\$1,116	\$1,068
\$40.00	\$539	\$2,442	\$1,372	\$1,212	\$1,164
\$50.00	\$539	\$2,442	\$1,372	\$1,308	\$1,260
\$60.00	\$539	\$2,442	\$1,372	\$1,404	\$1,356
\$70.00	\$539	\$2,442	\$1,372	\$1,500	\$1,452
\$80.00	\$539	\$2,442	\$1,372	\$1,597	\$1,548
\$90.00	\$539	\$2,442	\$1,372	\$1,693	\$1,645
\$100.00	\$539	\$2,442	\$1,372	\$1,789	\$1,741
\$110.00	\$539	\$2,442	\$1,372	\$1,885	\$1,837
\$120.00	\$539	\$2,442	\$1,372	\$1,981	\$1,933
\$130.00	\$539	\$2,442	\$1,372	\$2,078	\$2,029
\$140.00	\$539	\$2,442	\$1,372	\$2,174	\$2,126
\$150.00	\$539	\$2,442	\$1,372	\$2,270	\$2,222
\$160.00	\$539	\$2,442	\$1,372	\$2,366	\$2,318
\$170.00	\$539	\$2,442	\$1,372	\$2,462	\$2,414
\$180.00	\$539	\$2,442	\$1,372	\$2,558	\$2,510
Gross Margin calculated using ISU Extension Ethanol Margin Calculator Carbon tax credit and costs calculated by DIS					



Table 20. Minnesota Annual Gross Margins - 100mg Plant (\$Million)

Minnesota Annual Gross Margins - 100 mg Plant (\$Million)					
Carbon Price	No CCS	CCS45Z Pipeline	CCS45Q Pipeline	CC&U Rail 45Q	CC&U Truck 45Q
Pct Participation	100%	100%	100%	75%	75%
\$0.00	\$15.86	\$58.16	\$34.39	\$22.27	\$21.21
\$10.00	\$15.86	\$58.16	\$34.39	\$24.41	\$23.34
\$20.00	\$15.86	\$58.16	\$34.39	\$26.55	\$25.48
\$30.00	\$15.86	\$58.16	\$34.39	\$28.69	\$27.62
\$40.00	\$15.86	\$58.16	\$34.39	\$30.82	\$29.76
\$50.00	\$15.86	\$58.16	\$34.39	\$32.96	\$31.89
\$60.00	\$15.86	\$58.16	\$34.39	\$35.10	\$34.03
\$70.00	\$15.86	\$58.16	\$34.39	\$37.24	\$36.17
\$80.00	\$15.86	\$58.16	\$34.39	\$39.37	\$38.31
\$90.00	\$15.86	\$58.16	\$34.39	\$41.51	\$40.44
\$100.00	\$15.86	\$58.16	\$34.39	\$43.65	\$42.58
\$110.00	\$15.86	\$58.16	\$34.39	\$45.79	\$44.72
\$120.00	\$15.86	\$58.16	\$34.39	\$47.92	\$46.86
\$130.00	\$15.86	\$58.16	\$34.39	\$50.06	\$48.99
\$140.00	\$15.86	\$58.16	\$34.39	\$52.20	\$51.13
\$150.00	\$15.86	\$58.16	\$34.39	\$54.34	\$53.27
\$160.00	\$15.86	\$58.16	\$34.39	\$56.47	\$55.41
\$170.00	\$15.86	\$58.16	\$34.39	\$58.61	\$57.54
\$180.00	\$15.86	\$58.16	\$34.39	\$60.75	\$59.68
Gross Margin calculated using ISU Extension Ethanol Margin Calculator Carbon tax credit and costs calculated by DIS					

Table 21. Annual Gross Margins - Minnesota 1,212 mg Production (\$Million)

Annual Gross Margins - Minnesota 1,212 mg Production (\$Million)					
Carbon Price	No CCS	CCS45Z Pipeline	CCS45Q Pipeline	CC&U Rail 45Q	CC&U Truck 45Q
Pct Participation	100%	100%	75%	75%	75%
\$0.00	\$714	\$2,617	\$1,547	\$1,002	\$954
\$10.00	\$714	\$2,617	\$1,547	\$1,099	\$1,050
\$20.00	\$714	\$2,617	\$1,547	\$1,195	\$1,147
\$30.00	\$714	\$2,617	\$1,547	\$1,291	\$1,243
\$40.00	\$714	\$2,617	\$1,547	\$1,387	\$1,339
\$50.00	\$714	\$2,617	\$1,547	\$1,483	\$1,435
\$60.00	\$714	\$2,617	\$1,547	\$1,579	\$1,531
\$70.00	\$714	\$2,617	\$1,547	\$1,676	\$1,628
\$80.00	\$714	\$2,617	\$1,547	\$1,772	\$1,724
\$90.00	\$714	\$2,617	\$1,547	\$1,868	\$1,820
\$100.00	\$714	\$2,617	\$1,547	\$1,964	\$1,916
\$110.00	\$714	\$2,617	\$1,547	\$2,060	\$2,012
\$120.00	\$714	\$2,617	\$1,547	\$2,157	\$2,109
\$130.00	\$714	\$2,617	\$1,547	\$2,253	\$2,205
\$140.00	\$714	\$2,617	\$1,547	\$2,349	\$2,301
\$150.00	\$714	\$2,617	\$1,547	\$2,445	\$2,397
\$160.00	\$714	\$2,617	\$1,547	\$2,541	\$2,493
\$170.00	\$714	\$2,617	\$1,547	\$2,638	\$2,589
\$180.00	\$714	\$2,617	\$1,547	\$2,734	\$2,686
Gross Margin calculated using ISU Extension Ethanol Margin Calculator Carbon tax credit and costs calculated by DIS					

Table 22. Nebraska Annual Gross Margins - 100 mgy Plant (\$Million)

Nebraska Annual Gross Margins - 100 mgy Plant (\$Million)					
Carbon Price	No CCS	CCS45Z Pipeline	CCS45Q Pipeline	CC&U Rail 45Q	CC&U Truck 45Q
Pct Participation	100%	100%	100%	75%	75%
\$0.00	\$19.05	\$61.35	\$37.57	\$25.46	\$24.39
\$10.00	\$19.05	\$61.35	\$37.57	\$27.60	\$26.53
\$20.00	\$19.05	\$61.35	\$37.57	\$29.73	\$28.67
\$30.00	\$19.05	\$61.35	\$37.57	\$31.87	\$30.80
\$40.00	\$19.05	\$61.35	\$37.57	\$34.01	\$32.94
\$50.00	\$19.05	\$61.35	\$37.57	\$36.15	\$35.08
\$60.00	\$19.05	\$61.35	\$37.57	\$38.28	\$37.22
\$70.00	\$19.05	\$61.35	\$37.57	\$40.42	\$39.35
\$80.00	\$19.05	\$61.35	\$37.57	\$42.56	\$41.49
\$90.00	\$19.05	\$61.35	\$37.57	\$44.70	\$43.63
\$100.00	\$19.05	\$61.35	\$37.57	\$46.83	\$45.77
\$110.00	\$19.05	\$61.35	\$37.57	\$48.97	\$47.90
\$120.00	\$19.05	\$61.35	\$37.57	\$51.11	\$50.04
\$130.00	\$19.05	\$61.35	\$37.57	\$53.25	\$52.18
\$140.00	\$19.05	\$61.35	\$37.57	\$55.38	\$54.32
\$150.00	\$19.05	\$61.35	\$37.57	\$57.52	\$56.45
\$160.00	\$19.05	\$61.35	\$37.57	\$59.66	\$58.59
\$170.00	\$19.05	\$61.35	\$37.57	\$61.80	\$60.73
\$180.00	\$19.05	\$61.35	\$37.57	\$63.93	\$62.87
Gross Margin calculated using ISU Extension Ethanol Margin Calculator					
Carbon tax credit and costs calculated by DIS					
					

Table 23. Annual Gross Margins - Nebraska 2,041 mgy Production (\$Million)

Annual Gross Margins - Nebraska 2,041 mgy Production (\$Million)					
Carbon Price	No CCS	CCS45Z Pipeline	CCS45Q Pipeline	CC&U Rail 45Q	CC&U Truck 45Q
Pct Participation	100%	100%	75%	75%	75%
\$0.00	\$857	\$2,761	\$1,691	\$1,146	\$1,098
\$10.00	\$857	\$2,761	\$1,691	\$1,242	\$1,194
\$20.00	\$857	\$2,761	\$1,691	\$1,338	\$1,290
\$30.00	\$857	\$2,761	\$1,691	\$1,434	\$1,386
\$40.00	\$857	\$2,761	\$1,691	\$1,530	\$1,482
\$50.00	\$857	\$2,761	\$1,691	\$1,627	\$1,579
\$60.00	\$857	\$2,761	\$1,691	\$1,723	\$1,675
\$70.00	\$857	\$2,761	\$1,691	\$1,819	\$1,771
\$80.00	\$857	\$2,761	\$1,691	\$1,915	\$1,867
\$90.00	\$857	\$2,761	\$1,691	\$2,011	\$1,963
\$100.00	\$857	\$2,761	\$1,691	\$2,108	\$2,059
\$110.00	\$857	\$2,761	\$1,691	\$2,204	\$2,156
\$120.00	\$857	\$2,761	\$1,691	\$2,300	\$2,252
\$130.00	\$857	\$2,761	\$1,691	\$2,396	\$2,348
\$140.00	\$857	\$2,761	\$1,691	\$2,492	\$2,444
\$150.00	\$857	\$2,761	\$1,691	\$2,588	\$2,540
\$160.00	\$857	\$2,761	\$1,691	\$2,685	\$2,637
\$170.00	\$857	\$2,761	\$1,691	\$2,781	\$2,733
\$180.00	\$857	\$2,761	\$1,691	\$2,877	\$2,829
Gross Margin calculated using ISU Extension Ethanol Margin Calculator					
Carbon tax credit and costs calculated by DIS					
					

Table 24. South Dakota Annual Gross Margins - 100 mgy Plant (\$Million)

South Dakota Annual Gross Margins - 100 mgy Plant (\$Million)					
Carbon Price	No CCS	CCS45Z Pipeline	CCS45Q Pipeline	CC&U Rail 45Q	CC&U Truck 45Q
Pct Participation	100%	100%	100%	75%	75%
\$0.00	\$25.86	\$68.16	\$44.39	\$32.27	\$31.21
\$10.00	\$25.86	\$68.16	\$44.39	\$34.41	\$33.34
\$20.00	\$25.86	\$68.16	\$44.39	\$36.55	\$35.48
\$30.00	\$25.86	\$68.16	\$44.39	\$38.69	\$37.62
\$40.00	\$25.86	\$68.16	\$44.39	\$40.82	\$39.76
\$50.00	\$25.86	\$68.16	\$44.39	\$42.96	\$41.89
\$60.00	\$25.86	\$68.16	\$44.39	\$45.10	\$44.03
\$70.00	\$25.86	\$68.16	\$44.39	\$47.24	\$46.17
\$80.00	\$25.86	\$68.16	\$44.39	\$49.37	\$48.31
\$90.00	\$25.86	\$68.16	\$44.39	\$51.51	\$50.44
\$100.00	\$25.86	\$68.16	\$44.39	\$53.65	\$52.58
\$110.00	\$25.86	\$68.16	\$44.39	\$55.79	\$54.72
\$120.00	\$25.86	\$68.16	\$44.39	\$57.92	\$56.86
\$130.00	\$25.86	\$68.16	\$44.39	\$60.06	\$58.99
\$140.00	\$25.86	\$68.16	\$44.39	\$62.20	\$61.13
\$150.00	\$25.86	\$68.16	\$44.39	\$64.34	\$63.27
\$160.00	\$25.86	\$68.16	\$44.39	\$66.47	\$65.41
\$170.00	\$25.86	\$68.16	\$44.39	\$68.61	\$67.54
\$180.00	\$25.86	\$68.16	\$44.39	\$70.75	\$69.68
Gross Margin calculated using ISU Extension Ethanol Margin Calculator					
Carbon tax credit and costs calculated by DIS					
					

Table 25. Annual Gross Margins - South Dakota 1,181 mgy Production (\$Million)

Annual Gross Margins - South Dakota 1,181 mgy Production (\$Million)					
Carbon Price	No CCS	CCS45Z Pipeline	CCS45Q Pipeline	CC&U Rail 45Q	CC&U Truck 45Q
Pct Participation	100%	100%	75%	75%	75%
\$0.00	\$1,164	\$3,067	\$1,997	\$1,452	\$1,404
\$10.00	\$1,164	\$3,067	\$1,997	\$1,549	\$1,500
\$20.00	\$1,164	\$3,067	\$1,997	\$1,645	\$1,597
\$30.00	\$1,164	\$3,067	\$1,997	\$1,741	\$1,693
\$40.00	\$1,164	\$3,067	\$1,997	\$1,837	\$1,789
\$50.00	\$1,164	\$3,067	\$1,997	\$1,933	\$1,885
\$60.00	\$1,164	\$3,067	\$1,997	\$2,029	\$1,981
\$70.00	\$1,164	\$3,067	\$1,997	\$2,126	\$2,078
\$80.00	\$1,164	\$3,067	\$1,997	\$2,222	\$2,174
\$90.00	\$1,164	\$3,067	\$1,997	\$2,318	\$2,270
\$100.00	\$1,164	\$3,067	\$1,997	\$2,414	\$2,366
\$110.00	\$1,164	\$3,067	\$1,997	\$2,510	\$2,462
\$120.00	\$1,164	\$3,067	\$1,997	\$2,607	\$2,559
\$130.00	\$1,164	\$3,067	\$1,997	\$2,703	\$2,655
\$140.00	\$1,164	\$3,067	\$1,997	\$2,799	\$2,751
\$150.00	\$1,164	\$3,067	\$1,997	\$2,895	\$2,847
\$160.00	\$1,164	\$3,067	\$1,997	\$2,991	\$2,943
\$170.00	\$1,164	\$3,067	\$1,997	\$3,088	\$3,039
\$180.00	\$1,164	\$3,067	\$1,997	\$3,184	\$3,136
Gross Margin calculated using ISU Extension Ethanol Margin Calculator					
Carbon tax credit and costs calculated by DIS					
					

5.3 Transporting CO₂



FACT SHEET

TRANSPORTING CO₂

Safely and reliably transporting CO₂ from where it is captured to a storage site is an important stage in the carbon capture and storage (CCS) process. Transport of CO₂ occurs daily in many parts of the world however, significant investment in transportation infrastructure is required to enable large-scale deployment.

HOW IS CO₂ TRANSPORTED?

Pipelines are – and are likely to continue to be – the most common method of transporting the very large quantities of CO₂ involved in CCS. There are already millions of kilometres of pipelines around the world that transport various gases, including CO₂.

Transport of CO₂ by truck and rail is possible for small quantities. Trucks are used at some project sites, moving the CO₂ from where it is captured to a nearby storage location. Given the large quantities of CO₂ that would be captured via CCS in the long-term, it is unlikely that truck and rail transport will be significant.

Ship transportation can be an alternative option for many regions of the world. Shipment of CO₂ already takes place on a small scale in Europe, where ships transport food-quality CO₂ (around 1,000 tonnes) from large point sources to coastal distribution terminals.

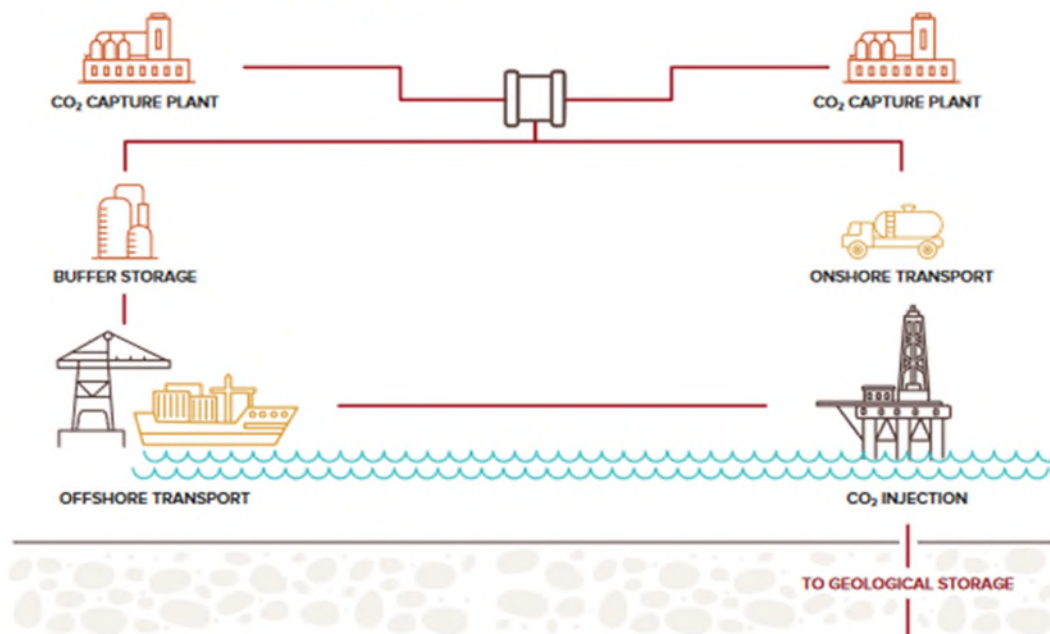
Larger-scale shipment of CO₂, with capacities in the range of 10,000 to 40,000 cubic metres, is likely to have much in common with the shipment of liquefied petroleum gas (LPG). There is already a great deal of expertise in transporting LPG, which has developed into a worldwide industry over a period of 70 years.

IS TRANSPORT OF CO₂ SAFE?

There is significant experience with CO₂ pipeline development and operation on land and under the sea. There are around 50 CO₂ pipelines currently operating in the US, which transport approximately 68 million tonnes per annum of CO₂.

CO₂ pipelines and ships pose no higher risk than is already safely managed for transporting hydrocarbons such as natural gas and oil. International standards are being developed to further promote safe and efficient operation of CO₂ infrastructure.

Figure 1: Transport overview of CCS technologies



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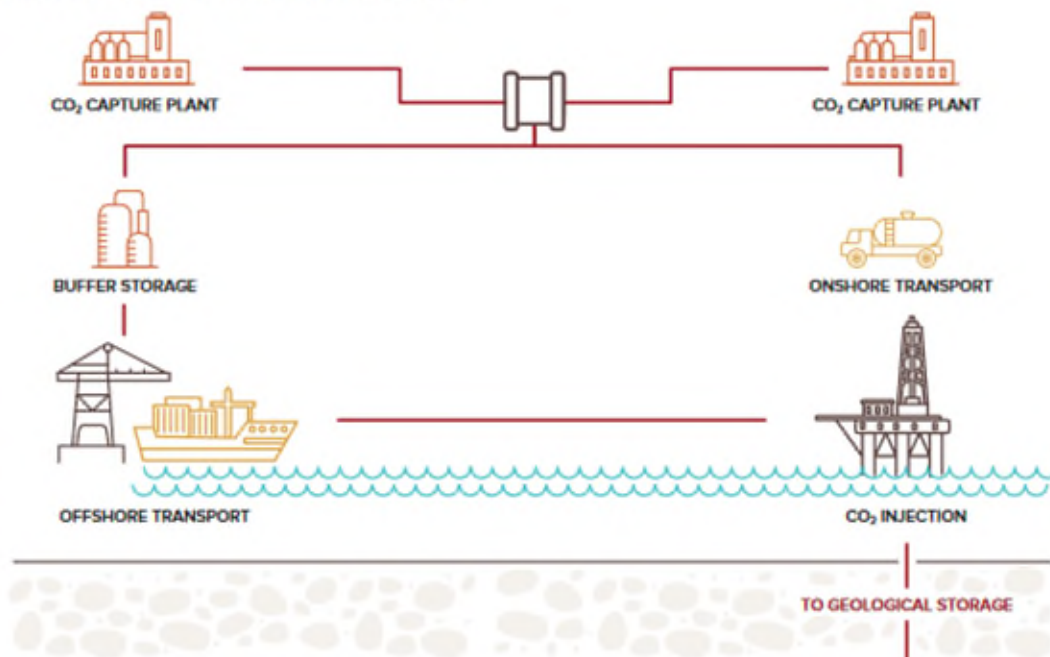
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DOES THE INFRASTRUCTURE NEEDED TO SUPPORT CO₂ TRANSPORT EXIST?

Extensive networks of pipelines already exist around the world, both on land and under the sea. In the United States (US) alone, there are about 800,000 km of hazardous liquid and natural gas pipelines, in addition to 3.5 million km of natural gas distribution lines. Some 6,500 km of pipelines actively transport CO₂ today.

That said, the scale of pipeline infrastructure needed to support longer-term CCS deployment around the world is considerable. The estimated CO₂ transportation infrastructure to be built in the coming 30-40 years (consistent with the International Energy Agency's least-cost pathway to halve energy-related CO₂ emissions by 2050) is roughly 100 times larger than currently exists.

CO₂ HUBS, CLUSTERS AND TRANSPORTATION NETWORKS

The initial demand for additional CO₂ transportation capacity will likely unfold in an incremental and geographically dispersed manner as new dedicated capture plants, storage and enhanced oil recovery (EOR) facilities are brought online.

Large-scale deployment of CCS is likely to result in the linking of proximate CO₂ sources, through a hub, to clusters of storage 'sinks', either by ship or so-called 'back bone' pipelines. While hubs, clusters, and networks are terms used somewhat interchangeably, their use to describe projects highlights subtle differences.

A CO₂ cluster may refer to a grouping of individual CO₂ sources, or to storage sites such as multiple fields within a region. The Permian Basin in the US has several clusters of oilfields undergoing CO₂-EOR fed by a network of pipelines.

A CO₂ hub collects CO₂ from various emitters and redistributes it to single or multiple storage locations. For example, the South West Hub project in Western Australia seeks to collect CO₂ from various sources in the Kwinana and Collie industrial areas for storage in the Lesueur formation in the Southern Perth Basin.

A CO₂ network is an expandable collection and transportation infrastructure providing access for multiple emitters.

The incentives for CCS projects to be developed as part of a hub, cluster, or network include economies of scale (lower per unit costs for constructing and operating CO₂ pipelines). The costs per project are lower than can be achieved with stand-alone projects, where each CO₂ point source has its own independent and smaller scale transportation or storage requirement. A coordinated network approach can also lower the barriers of entry for all participating CCS projects, including for emitters, that do not need to develop their own separate transportation and storage solutions.



FOR MORE INFORMATION

Visit globalccsinstitute.com or email info@globalccsinstitute.com

5.3.1 Trailer Requirements for Transporting CO₂ by Truck

Trailers used to haul CO₂ are regulated by the U.S. Department of Transportation (DOT). To haul cryogenic or industrial gases such as CO₂, these are the main types of tankers to use when hauling hazardous and nonhazardous materials.

MC331: For transportation of compressed gases, MC 331 cargo tank is the option. Generally speaking, this trailer must be a DOT specification tank, so it must always have a trailer data plate that displays information on the manufacturer, capacity and construction material. Here's its requirements:

- Must be made of steel or aluminum however, if aluminum is used, the tank can be insulated or non-insulated, and the hazardous material must be compatible (some products are corrosive with certain metals).
- Must have an outer jacket if the tank is insulated and used to transport flammable gas or pressurized gas.
- Vapor pressure inside the vessel ranges between 100-500 psi.
- If insulated, must have a barrier of at least 2-4 inches depending on combustibility and material .
- Every uninsulated cargo tank attached to a motor vehicle, unless covered with an aluminum or stainless steel jacket, must be painted white, aluminum or similar reflective color on the upper two-thirds of the cargo tank.
- All valves, fittings, pressure relief devices, and other accessories on the tank must be protected against crashes and rollovers.
- A single shell carbon steel construction with circular cross-section, and rounded ends.
- The capacity of the tanks ranges from 2,500 gallons and 11,500 gallons, depending on the type of vehicle and trailer.

The MC 331 is only used for gases that are liquefied under extremely high pressures such as: butane, propane (liquefied natural gas), chlorine, anhydrous ammonia, and liquid carbon dioxide (CO₂).



Figure 25. 10,600-gallon, 265 PSI, MC 331 Liquid Tanker

5.3.2 Rail Requirements for Shipping CO₂

Title 49 (Transportation) of the Federal Code of Regulations (FCR) in Part 179 details the specifications for rail tank cars. Section 179.102-1 has the requirements for tank cars that carry CO₂ as a refrigerated liquid.

(a) Tank cars used to transport carbon dioxide, refrigerated liquid must comply with the following special requirements: (1) All plates for tank, manway nozzle and anchorage of tanks must be made of carbon steel conforming to ASTM A 516/A 516M (IBR, see § 171.7 of this subchapter), Grades 55, 60, 65, or 70, or AAR Specification TC 128-78, Grade B. The ASTM A 516/A 516M plate must also meet the Charpy V-Notch test requirements of ASTM A 20/A 20M (see table 16) (IBR, see § 171.7 of this subchapter) in the longitudinal direction of rolling. The TC 128 plate must also meet the Charpy V-Notch energy absorption requirements of 15 ft.-lb. minimum average for 3 specimens, and 10 ft.-lb. minimum for one specimen, at minus 50 °F in the longitudinal direction of rolling in accord with ASTM A 370 (IBR, see § 171.7 of this subchapter). Production-welded test plates prepared as required by W4.00 of AAR Specifications for Tank Cars, appendix W (IBR, see § 171.7 of this subchapter), must include impact test specimens of weld metal and heat-affected zone. As an alternate, anchor legs may be fabricated of stainless steel, ASTM A 240/A 240M Types 304, 304L, 316 or 316L, for which impact tests are not required.



Figure 26. 21,964 gallon non-coiled, insulated car designed to operate at a 286,000 lbs. gross rail load for the transportation of carbon dioxide.

- 3a. State Legislative Issues
- ii. Iowa Business Energy Coalition

The background of the top half of the page is a photograph of three people wearing hard hats and work clothes, walking away from the camera down a long aisle in a factory or industrial setting. The image is tinted with a dark blue color. The acronym 'IBEC' is overlaid in the top left corner in a large, white, sans-serif font.

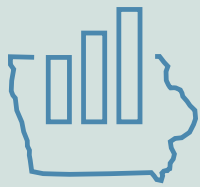
IBEC

Advancing Iowa Manufacturing Through Better Energy Policies

OVERVIEW

Formed in 2015, the Iowa Business Energy Coalition (IBEC) is an association of some of Iowa's largest and most energy-intensive employers with operations in over 25 counties.

IBEC advocates for reliable energy at competitive rates. Combined together, the organization's members employ tens of thousands of Iowans that consume over 3,500,000,000 kWh of electricity per year which is a considerable cost for our members. IBEC members are drivers of economic growth across the state as an energy system in balance with reliability and affordability can help or hinder job creation.



18%

of Iowa's total GDP is produced by manufacturing, Iowa's largest industry

Source: iowaeda.com/advanced-manufacturing

13%

of Iowa's workers are employed by the manufacturing sector



Source: bls.gov/eag/eag.ia.html

VISION

Our vision is for Iowa's largest and most energy-intensive employers to have a decisive voice in the formation and implementation of Iowa's energy policies.

MISSION

We will engage in the energy policy process from conception to final implementation, including:

- Development and articulation of positions based upon sound rate making principles.
- Enumeration of Administration policies and objectives with strong intersection with energy policies.
- Legislative initiatives pertaining to energy Regulatory matters.

PURPOSE

- Maintain relationships with Iowa policy makers and stakeholders that impact energy policy
- Advance IBEC Member interests through effective intervention in energy matters before the Iowa Utilities Board and Iowa Judicial System.
- Monitor regulatory, legislative, and judicial developments intersecting with energy policy and keep IBEC Members current.
- Keep IBEC Members engaged on all relevant ongoing matters via regular meetings that share current information, obtain feedback and guidance, and prioritize follow-up actions.

SUSTAINABILITY

IBEC member companies are recognized leaders in their respective industry sectors with sustainability commitments of their own. Many have explicit goals, with metrics, to support responsible growth in renewable energy and decarbonization.

SUCCESS

IBEC's efforts in participation in utility cases at the IUB and in the legislative process has resulted in substantial energy cost savings for member companies.

In 2021, IBEC was involved in fifteen Iowa Utilities Board proceedings, multiple meetings with Iowa Utilities Board (Board), Board staff, and the Office of Consumer Advocate (OCA), as well as dozens of interactions with Iowa utilities, utility stakeholders and policymakers, including the Governor's office, state legislators, and state agencies.

INTERSTATE POWER & LIGHT

IPL Derecho Cost Recovery

Significantly limited scope of the Board's approval, saving ratepayers **\$11.9M** per year in carrying costs.

IPL Electric Subsequent Proceeding

Adjustments made to IPL's actual costs and revenues resulted in **\$3.7M** of EADIT preserved, to be refunded to ratepayers in the future. Also saved on not paying outside counsel costs.

MIDAMERICAN ENERGY COMPANY

MEC Depreciation Deferral Cap

IBEC coordinated with the OCA in filing its response and was successful in ensuring that the Board's decision focused on the interests of ratepayers. Allowing the cap to continue saves ratepayers **\$1.5M** per year as the depreciation is applied to assets with a higher ROE from advanced ratemaking projects and the deferred depreciation cap will earn a lower ROE, currently **9.5%**.

MEMBERS

ADM

Arconic

Cargill

Gerdau

JBS Foods

John Deere

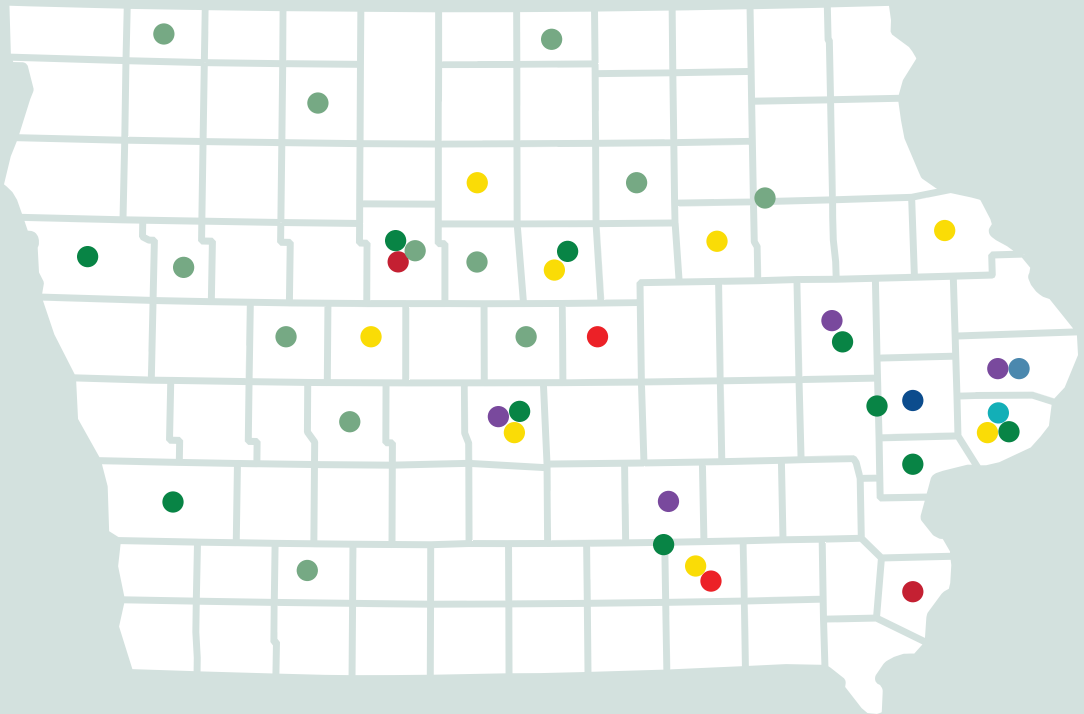
POET

USG



LOCATIONS

- ARCONIC
- ADM
- CARGILL
- DEERE
- GERDAU
- EQUISTAR
- JBS
- POET
- USG



GUIDING PRINCIPLES

IBEC seeks policies that promote energy that is affordable, reliable, stable, predictable, and sustainable.

CONTACT US

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(515) 883-0925



Innovative Rates

The Iowa Business Energy Coalition (IBEC) has prioritized legislation for the 2023 legislative session. This was a recommendation coming out of the Carbon Sequestration Task Force to help utility customers. IBEC members believe innovative rates could greatly expand the opportunity for customers and utilities alike to create alternative and inventive means to meet energy demand while also helping to reach customer goals of sustainability, reliability, and predictability. The members of IBEC are seeing increasing demand from their customers to meet these goals.

Programs outlined by this legislation are entered into on a voluntary basis and is drafted to ensure these programs will not impact customers who chose not to participate. This legislation is designed to create authority for the Iowa Utilities Board (IUB) to approve tariffs and still requires the regulatory process of the IUB. There is an expedited review that is likely for programs that have agreement between customers and utilities but there is always the ability for intervention by other interested stakeholders.

IBEC has prioritized this legislation as a means to provide public utilities with regulatory flexibility to respond to customer needs, while also ensuring that nonparticipating customers are not negatively impacted. Participants will be empowered to make informed long-term decisions when it comes to energy planning, creating market opportunities. Innovation in the energy market is imperative, and energy producers and users need room to maneuver in this field to be able to keep up with the ever-changing economic landscape. This bill provides flexibility to encourage investment in existing Iowa companies and be utilized as a marketing tool for new economic growth.

List of Potential Programs:

The language is designed to be broad in order to encourage innovation between utilities and customers but examples from other states have seen interest in programs such as:

Renewable Subscription Programs: The language is broad enough to include all customers so that utilities could develop programs where customers could invest in certain generation.

Sleeved Power Purchase Agreements (PPAs) Sleeving is a term used to describe the act of transferring energy through a utility company. Working on behalf of the customer, the utility company facilitates the transfer of both the money and energy to and from an energy generating project. The utility company is responsible for the directing of energy from the project and sleeving it to the buyer.

Demand Response: When pricing and reliability signals dictate that energy usage may peak, customers may be called upon by MISO to scale back on energy usage during those times to help reduce the overall load on the grid. In turn, participating customers would receive compensation for their assistance and responsiveness.

3b. Federal Issues Update
i. RFS2



PRESS RELEASE

FOR IMMEDIATE RELEASE
January 11, 2022

Press Contact: Jared Palmer
515-322-0435

IRFA to EPA: Biodiesel Blending Levels “Woefully Low”

JOHNSTON, IOWA – This morning, Nathan Hohnstein, Policy Director with the Iowa Renewable Fuels Association (IRFA), urged EPA to boost proposed blending levels for biodiesel during a hearing on the proposed rule for Renewable Fuel Standard blending levels for 2023, 2024, and 2025.

After thanking EPA for proposing a “solid foundation” for conventional blending, with levels at 15 billion gallons in 2023, and 15.25 billion gallons for 2024 and 2025, Hohnstein stated, “To be blunt, the biomass-based diesel number is woefully low.”

Hohnstein pointed to U.S. Energy Information Administration reports showing that biodiesel and renewable diesel production today already exceed EPA’s proposed blending level for 2025.

Hohnstein also addressed concerns that the proposed rule appears to shift the benefit of new “eRINs” from the renewable fuel producer to electric vehicle manufacturers.

“Between the de-emphasis of advanced biofuels and rewarding electric vehicles with eRINs, critics have called this draft rule the first step to the electrification of the RFS,” Hohnstein stated. He went on to urge the EPA to follow the intent of Congress that the RFS be a market moving mechanism.

Hohnstein’s full comments can be viewed at XXXXXXXXXXXX.

The Iowa Renewable Fuels Association represents the state’s liquid renewable fuels industry and works to foster its growth. Iowa is the nation’s leader in renewable fuels production with 42 ethanol refineries capable of producing 4.5 billion gallons annually – including 34 million gallons of annual cellulosic ethanol production capacity – and 11 biodiesel facilities with the capacity to produce 410 million gallons annually. For more information, visit the Iowa Renewable Fuels Association website at: www.iowaRFA.org.

###

**Remarks to EPA's public hearing on the
Renewable Fuel Standards for 2023, 2024, and 2025 Proposed Rule**

**Provided by Nathan Hohnstein
Policy Director, Iowa Renewable Fuels Association
January 11, 2023**

I am Nathan Hohnstein, Policy Director with the Iowa Renewable Fuels Association.

Today is the first opportunity to speak about the new era of the RFS where the EPA has increased discretion over its implementation. As Congress intended though, we must ensure that this rule expands the use of low carbon biofuels generated from biomass. The RFS should be, and always was intended to be, a market moving mechanism.

Given the increased demand from the public and private sector for low carbon fuels, it is important to remember that biofuels like biomass-based diesel, ethanol and renewable natural gas represent energy sources that can reach a net-negative carbon threshold. This is something other energy sources like wind or solar cannot claim.

With that in mind, this proposed draft rule sets a solid foundation for conventional biofuels like ethanol, and IRFA thanks you for that the commitment. For the second year in a row starting in 2023, the EPA has proposed setting the conventional blending at 15 billion gallons and for the first time ever in 2024-25 the baseline will be higher than 15 billion gallons.

However, there are some serious red-flags when looking at the draft rule. To be blunt, the biomass-based diesel number is woefully low. In recent years we have seen biodiesel and renewable diesel production rapidly increasing which this rule must have ignored.

In fact, the Department of Energy's Energy Information Agency (EIA) projects the use of biodiesel and renewable diesel to hit 3.9 billion gallons in 2023. When looking at the proposed draft rule, the biomass-based blending target only reaches 2.82 billion gallons in 2023, rising to 2.95 billion gallons in 2025, nearly one billion gallons below where we already are.

Not only does this not incent increased biodiesel use, but the new renewable diesel consumption driven by state policies, such as California, will generate RINs that could flow down into the conventional pool and displace what was going to be record ethanol blending.

The next red flag is the new idea of so called, "eRINs." While IRFA is supportive of "eRINs," when the underlying electricity is produced from renewable biomass, the benefit should lie with the renewable fuel producer.

We will continue to analyze the draft rule, but it appears that the rule shifts the eRIN benefit to automakers, entities that do not produce renewable fuels from biomass.

Between the de-emphasis of advanced biofuels and rewarding electric vehicles with eRINs, critics have called this draft rule the first step to the electrification of the RFS. That was never the intent of Congress, and it should not be the result of the final rule.

In closing, we applaud your commitment to set a solid foundation for conventional biofuels by pushing past 15 billion gallons. But, we implore you to please reconsider what this proposed rule will mean to biomass-based diesel producers while being mindful of the potential pandora's box you may open with eRINs for automakers.

February 10, 2022

Docket ID No. EPA-HQ-OAR-2021-0427

David Korotney
U.S. Environmental Protection Agency,
1200 Pennsylvania Avenue NW,
Washington, DC 204

Re: Renewable Fuel Standard (RFS) Program: Standards for 2023-2025 and Other Changes

Dear Mr. Korotney,

The Illinois Corn Growers Association, the Indiana Corn Growers Association, the Iowa Corn Growers Association, the Kansas Corn Growers Association, the Kentucky Corn Growers Association, the Michigan Corn Growers Association, the Missouri Corn Growers Association, the Ohio Corn and Wheat Growers Association, and the Wisconsin Corn Growers Association submit the following comments on the Environmental Protection Agency's proposed rule titled "Renewable Fuel Standard (RFS) Program: Standards for 2023-2025 and Other Changes," 87 Fed. Reg. 80,582 (Dec. 30, 2022). The proposed rule would set applicable volumes and percentage standards for 2023 through 2025 for cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuel while also allowing for the generation of RINs from renewable electricity (eRINs).

We are happy to see the continued expansion of renewable fuel volume targets, which would build on the previous good work of the RFS. Each year more than 20 billion gallons of renewable fuels are used in the United States, reducing greenhouse gas emissions, lowering costs, and supporting local jobs and agriculture. But we are deeply concerned about the proposed rule's eRINs program, which is qualitatively different from the portion of the rule setting volume targets.

The proposal's preferred method for generating eRINs would be through contractual relationships between renewable electricity generators and electric vehicle manufacturers. Biogas producers would first produce biogas under existing EPA-approved pathways, and electricity generators would use this biogas to generate

electricity for the grid. Electric vehicle manufacturers would then determine the electricity consumption of both new and previously sold light-duty electric vehicles and enter contracts with renewable electricity generators for energy sufficient to cover that consumption, generating eRINs along the way. Refiners, importers, and blenders could purchase these eRINs alongside other RINs to meet their renewable volume obligations.

There are a few things make this part of the proposal dubious. First, there is no clear congressional authorization for EPA's eRINs innovation. The only time that Congress spoke on the topic, it only instructed EPA to study the *feasibility* of eRINs, which EPA has failed to do. And the plain text of the RFS—which requires that the credits to be generated by “fuels” displacing “fossil fuels” “*in motor vehicles*” (emphasis added)—precludes the elaborate regulatory fiction that EPA proposes for eRINs. While EPA asserts that is not “proposing to reopen” its determination that eRINs are allowed under the RFS, the proposal's formal development of the eRIN program would likely alter the legal landscape sufficiently for courts to consider the issue constructively reopened. More fundamentally, it is simply not good administrative governance for an agency to not consider its authority to act, especially when, as here, the prior actions were never in subject to judicial review. An “agency, to engage in informed rulemaking, must consider varying interpretations and the wisdom of its policy on a continuing basis.” *Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 863–64 (1984).

Even if the text of the RFS could be stretched to accommodate eRINs, the proposal repeatedly makes clear that it is not really intended to further the RFS's goal of “increase[ing] the production of clean renewable fuels” at all but is instead just one more part of the “whole-of-government approach” to “increased vehicle electrification,” with a goal of phasing out internal combustion cars and trucks by 50% by 2035 and entirely thereafter. To further this latter end, the rule stacks the deck in favor of electric vehicles in at least five ways—each alone would render the proposal arbitrary and capricious—and appears designed to chill dissent from biofuels manufacturers by asserting that, while every other provision of the rule is severable, vacatur of eRINs provisions would require the volume targets the biofuels industry relies on to be set aside. This improperly takes the short-term interests of biofuels stakeholders hostage to dissuade such stakeholders from seeking judicial review of perhaps the most significant change in the RFS program's structure since its inception.

A better solution, and one in line the goals of the RFS and within EPA's authority, would be for EPA to set a higher minimum octane standard. Raising the

minimum Research Octane Number (RON) of gasoline to 95, would have immediate impact. Existing vehicles would, overnight, become more fuel efficient. *See* Thomas G. Leone, et al., *The Effect of Compression Ratio, Fuel Octane Rating, and Ethanol Content on Spark-Ignition Engine Efficiency*, Env't Science & Technol. (Aug. 24, 2015), <https://doi.org/10.1021/acs.est.5b01420>. With calibration, the entire existing U.S. fleet would gain up to 4.4% in engine efficiency and see larger reductions in CO₂. *Id.* Future vehicles would see even greater improvements. *Id.* The greenhouse gas emissions reductions from high-octane vehicles could rapidly outstrip of electric vehicles and eliminate nearly 700 million tons of CO₂ by 2035. Steffen Mueller, *Greenhouse Gas Emissions and Cost Analysis of High Octane Fuel Technologies and Battery Electric Vehicles through 2035*, Working Paper (June 20, 2021). These benefits would come for only marginal increases in fuel costs: likely less than \$0.03 per gallon, which would be more than offset by decreased fuel consumption. Hirschfeld, et al., *Refining Economics of U.S. Gasoline: Octane Ratings and Ethanol Content*, Env't Science & Technol. (Aug. 21, 2014), <https://doi.org/10.1021/es5021668>.

We urge EPA to separate its eRINs proposal from the volume targets and instead issue the congressionally required report to Congress so that that branch can consider whether and how to develop a workable standard for incentivizing the use of renewable electricity for vehicles. In the meantime, EPA should continue with its proposed volume targets and consider other more effective ways it could address the goals of the RFS.

I. There Is No Clear Congressional Authorization for The Creation of eRINs.

A. EPA was only ever instructed to “conduct a study on the feasibility” of eRINs, not to unilaterally create such a program.

An agency seeking to exercise significant powers must identify “something more than a merely plausible textual basis for the agency action” and “instead must point to clear congressional authorization for the power it claims.” *West Virginia v. EPA*, 142 S. Ct. 2587, 2609 (2022) (cleaned up). The proposed rule’s introduction of eRINs is clearly new and significant. As the proposal acknowledges, “EPA has no history projecting the generation of eRINs under the RFS” and “the inclusion of a new regulatory program for eRINs” would “significantly increases the uncertainty” of bio-fuel projections. 87 Fed. Reg. 80,587. Indeed, EPA believes the eRINs program to be so important that—unlike the other portions of the rule—its vacatur would require *all* the 2024 and 2025 RVOs to be set aside. *Id.* at 80,591.

But for this asserted power, there is no corresponding “clear authorization.” Section 211(o) of the Clean Air Act never mentions electric vehicles. The only time that Congress explicitly contemplated “issuing credits under the program established under section 211(o) of the Clean Air Act to electric vehicles” was in Energy Independence and Security Act of 2007 (EISA) § 206. But section 206 only instructed that EPA “shall conduct a study on the feasibility” of such a program, not create or implement one. *Id.* After conducting the study, EPA was instructed to submit a “report” to Congress, presenting information on existing programs for the use of renewable fuels, and “designing a pilot program to determine the feasibility of using renewable electricity to power electric vehicles as an *adjunct* to a renewable fuels mandate,” including “electricity generated from nuclear energy.” *Id.* (emphasis added).

This is not an authorization for EPA to incorporate eRINs into the RFS, but a directive for the EPA to exercise its constitutional role of recommending measures to Congress. The Recommendations Clause provides that the President “shall from time to time give to the Congress Information ... and recommend to their Consideration such Measures as he shall judge necessary and expedient.” U.S. Const. art II, § 3. Implicit in the Recommendations Clause, is the notion that the President—and his agencies—will have information that is unavailable to Congress, and that the President should use that information to recommend legislation. Thus, when directed to provide a recommendation, it is incumbent on the executive to supply the necessary information and to make recommendations as appropriate so that Congress can better fulfill its constitutionally designated role of passing new laws.

*

EPA has stated that “[t]here was no study [for electricity fuel under EISA 206(c)] because EPA put in place a mechanism for credit generation in the March 26, 2010 final rule.” FOIA Response to Request No. EPA-HQ-2016-003334 from W. Charmley (EPA Office of Air and Radiation OTAQ) to J. Lemon (Biogas Researchers) (March 3, 2016). This response makes little sense. While EPA examined the possibility of eRINs in the 2010 rulemaking, that rulemaking was not responsive to the requirements of section 206. The disregard of Congressional commands is truly astonishing, especially from an agency that routinely requires regulated parties to comply with extensive study and reporting obligations. *Cf.* EPA, How to Register a New Renewable Fuel Producer for the Renewable Fuel Standard (RFS), <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/how-register-new-renewable-fuel-producer-renewable> (detailing the seven-to-nine step process that regulated parties must accomplish in order to participate in the RFS program).

EPA’s claim that, in essence, “we took care of this on our own” impugns the plausibility of the agency’s claim to have found in the RFS permission to enact eRINs on its own.

Further, while Congress has enacted many electric vehicle subsidies in the intervening years, it has never again legislated about the possibility of eRINs or a similar program. Any inquiry into congressional authorization ends there. The EPA does not have the statutory authority to pilot an eRINs proposal today, let alone institute a program “designed to last for years.” *See* 87 Fed. Reg. 80,591. At the very least, before taking any steps further down the road to eRINs, EPA should perform the study and provide a report to Congress.

B. The plain meaning of the statute prohibits the proposed rule’s mechanism for generating eRINs.

The plain text of the RFS also precludes EPA’s proposed eRINs program. The RFS requires that EPA “ensure that transportation fuel ... contains at least the applicable volume of renewable fuel.” 42 U.S.C. § 7545(o)(2)(A)(i). The statute defines “transportation fuel” as “fuel for use *in* motor vehicles,” and “renewable fuel” as “fuel that is produced from renewable biomass and that is used to replace or reduce the quantity of fossil fuel present in a transportation fuel.” 42 U.S.C. § 7545(o)(1)(L) (emphasis added). As relevant here, the word “replace” means to “take the place of.” *Mexichem Fluor, Inc. v. EPA*, 866 F.3d 451, 458–59 (D.C. Cir. 2017) (quoting *The American Heritage Dictionary of the English Language* (5th ed. 2017 online)). “Reduce” means “to make smaller.”

These requirements are not met by the proposed rule. The rule proposes “that qualifying renewable electricity” that is “produced and put on a commercial electrical grid serving the conterminous U.S. could be contracted for eRIN generation” if the vehicles an automaker has produced “have used a corresponding quantity of electricity.” 87 Fed. Reg. 80,633. But this “renewable electricity” cannot be a “renewable fuel” because electricity is not a “fuel” as the term is used in the RFS, and it is never “in [a] motor vehicle.” Section 206 explains that an electric vehicle uses a “rechargeable storage battery” to provide “motive power” to the vehicle, and that it receives its charge from “electric current that is *external* to the vehicle.” EISA § 206 (emphasis added). And because electric vehicles contain no transportation fuels, any electric charge they receive cannot be said to “replace or reduce the quantity of fossil fuel present in a transportation fuel” in the motor vehicle. 42 U.S.C. § 7545(o)(1)(L). And while the introduction of biogas-generated electricity into the grid can change

the generation mix, it in no way *replaces* the quantity of fossil fuels present *in* a transportation fuel.

This aside, the system EPA has proposed does not allow renewable electricity to be traced to the electric vehicles it is powering. Once sold onto the grid, the electric power generated from biogas is mixed with the more than 99% of electric power generated from other sources that may or may not ever be used to power a vehicle. Yet EPA’s regulations unrealistically assume that *all* biogas electricity sold to the grid—so long as an electric vehicle manufacturer has signed a contract—can be deemed to have been used as transportation fuel. This is the Hamlet model of compliance: “There is nothing either [in or out of a motor vehicle] but thinking makes it so.”

What’s more, the plain text of the statute prohibits electric vehicle manufacturers from generating RINs. The statute provides “for the generation of an appropriate amount of credits by any person that refines, blends, or imports gasoline that contains a quantity of renewable fuel; for the generation of an appropriate amount of credits for biodiesel; and for the generation of credits by small refineries in accordance with paragraph (9)(C).” 42 U.S.C. § 7545(o)(5)(A). Electric vehicle manufactures do none of this. Section 7545(o)(5)(A) is not an illustrative list of potential examples, it’s the exclusive set: *expressio unius est exclusio alterius*.

Even the most stretched reading of the statute could only provide for the generation of eRINs at the site of the electricity’s “blending,” *i.e.*, at an electric vehicle charger where the current actually enters an electric vehicle. But EPA dismisses this interpretation as burdensome because “the process of tabulating and crediting charging events under the RFS program would require that each individual charging event be recorded and then audited by a third party prior to generating credits.” Indeed. But that the administrative structure of the RFS would require an eRINs program that is too burdensome to be implemented is not evidence that EPA should ignore those requirements, but evidence that Congress never contemplated eRINs in the first place. *See FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 125 (2000) (An agency “may not exercise its authority in a manner that is inconsistent with the administrative structure that Congress enacted” (internal quotation marks omitted))

Taken together, these conflicts “lead ineluctably to the conclusion” that eRINs are “inconsisten[t] with the design and structure of the statute as a whole.” *Dep’t of Homeland Sec. v. Regents of the Univ. of California*, 140 S. Ct. 1891, 1925 (2020) (Thomas, J., concurring) (quoting *University of Tex. Southwestern Medical Center v. Nassar*, 570 U.S. 338, 353 (2013)).

None of this is to suggest that EPA should not explore additional ways in which biogas can be used in the context of the RFS. On the contrary, we believe there are many ways biogas should be further promoted, not least of which is in producing renewable hydrogen, which could be used in fuel cell vehicles and in aviation fuel. But in each of these uses a derivative of the biogas is being used as a fuel, a characteristic that is not shared by the “renewable electricity” of the proposed eRINs program.

C. If EPA finalizes the eRIN proposal, EPA would reopen the 2010 decision to allow for the generation of RINs from renewable electricity.

The proposed rule tries to avoid these plain statutory conflicts by asserting, “we are not reopening the 2010 decision to allow for the generation of RINs for renewable electricity if it is produced from renewable biomass and can be identified as actually having been used as transportation fuel.” 87 Fed. Reg. 80,633. But the proposed rule blatantly transgresses limits the 2010 rule set. That rule allowed “fuel producers, importers and end users to include electricity, natural gas, and propane made from renewable biomass as a RIN-generating renewable fuel in RFS *only if they can identify the specific quantities of their product which are actually used as a transportation fuel.*” 75 Fed. Reg. 14,686 (emphasis added). The rule went on to explain that “[t]his may be possible for some portion of renewable electricity and biogas since many of the affected vehicles and equipment are in centrally-fueled fleets.” *Id.* In contrast, the proposed rule does not require any specific identification but relies on crude estimates that arbitrarily grant the boon of eRINs to electric vehicle manufacturers.

Additionally, the 2010 rule required that the biogas supplier would need to provide an affidavit stating that the “biogas will not be used for the creation of a Renewable Energy Credit [RECs], or of any other type of environmental or energy attribute or credit.” *Id.* at 14,885. But the proposed rule renounces this limitation: “we do not intend for the sale or transfer of RIN generation agreements by the renewable electricity generator to preclude them from participation in other state or local programs (LCFS, RECs, etc.)” 87 Fed. Reg. 80,652. Instead, the EPA intends “for biogas generated electricity [to] continue to generate RECs in addition to entering into RIN generation agreement.” *Id.* at 80,654. This worsens the double-counting problems that the proposed rule allegedly sets out to remedy. *See id.* at 80,635.

In any event, despite EPA’s protests, promulgation of the proposed rule would reopen the 2010 rule under the “reopening doctrine”. “The reopening doctrine, well

established in [the D.C.] Circuit, is an exception to statutory limits on the time for seeking review of an agency decision.” *Washington All. of Tech. Workers v. U.S. Dep’t of Homeland Sec.*, 395 F. Supp. 3d 1, 11–12 (D.D.C. 2019) (quoting *CTIA-Wireless Ass’n v. FCC*, 466 F.3d 105, 110 (D.C. Cir. 2006)). An issue is reopened when “an agency conducts a rulemaking or adopts a policy on an issue at one time, and then . . . addresses the issue again.” *Id.* “It is designed to ensure that when the agency . . . by some new promulgation creates the opportunity for renewed comment and objection, affected parties may seek judicial review.” *Id.*

If EPA were to promulgate the proposed rule, it will have “constructively reopened” the 2010 rule by “chang[ing] in the regulatory context.” *Kennecott Utah Copper Corp. v. Department of Interior*, 88 F.3d 1191, 1214 (D.C. Cir. 1996). By supplying not just an (unlawful) pathway but a firm timeline and mechanism to generate eRINs, the proposed rule would change the “legal landscape” and “significantly alter the stakes of judicial review.” *Sierra Club*, 551 F.3d at 1025 (quoting *Kennecott*, 88 F.3d at 1227).

II. The Proposed Rule Is About “Increased Vehicle Electrification” and Not The Goals of The RFS.

A. Increased vehicle electrification is not aligned with the goals of the RFS.

The RFS reflects Congress’s policy decision to “move the United States toward greater energy independence and security” by “increas[ing] the production of clean renewable fuels” to be blended with fossil fuels. *Americans for Clean Energy v. EPA*, 864 F.3d 691, 697 (D.C. Cir. 2017) (citation omitted). But as explained above, electric vehicles can be said to use renewable fuels only by distorting the explicit provisions of the RFS. The choice to electrify the American vehicle fleet is directly contrary to “energy independence and security” and is instead a choice to abandon abundant, plentiful liquid fuels in favor of dependence on a fragile supply chain for critical minerals from China and other hostile nations. Unsurprisingly, Congress has not made such a choice.

The United States is the world’s largest producer of oil, and is the world’s largest producer of ethanol, producing over 15 billion gallons of ethanol in 2021. Congress saw that blending biofuels and petroleum products insulates the U.S. from global economic fluctuations, supplies reliable energy to power the American transportation fleet, gives U.S. geopolitical leverage that promotes global security.

Electric vehicles change this calculus, especially when their rapid adoption is effectively mandated through the combination of government subsidy and fiat. An electric vehicle requires six times the mineral inputs of a conventional vehicle, and China dominates these critical mineral supply chains. China controls nearly two-thirds of all lithium, four-fifths of the refined cobalt market, nearly all processed natural graphite, and is the world's leading producer of electric vehicle battery cells. C. Boyden Gray, *American Energy, Chinese Ambition, and Climate Realism*, American Affairs (Winter 2021), <https://americanaffairsjournal.org/2021/11/american-energy-chinese-ambition-and-climate-realism>. In contrast, the United States has nearly no control of critical mineral supply chains and produces less than a tenth of the world's battery cells. *Id.* Vehicle electrification would require a vast expansion of U.S. imports of critical minerals and battery cells, "exposing the United States to a serious threat of economic embargoes from China that could affect U.S. power and transportation sectors." *Id.* This result is antithetical to the goals of the RFS.

B. The proposed rule repeatedly stacks the deck in favor of electric vehicles.

Despite this, the proposal makes clear that it is really intended to "incentivize increased vehicle electrification," 87 Fed. Reg. 80,633, making it just one more part of the this Administration's "whole-of-government" approach. That electrification is the proposal's real intent, and not merely an "ancillary" benefit as it claims, comes through in the way the proposal stacks the deck in favor of electric vehicles and electric vehicle manufacturers.

First, the proposal makes dubious assumptions about how much renewable electricity ends up in electric vehicles. EPA permits electricity generated with biogas to simply be delivered to the electric grid. But this means that the vast majority of this electricity does not end up "in" a vehicle as the RFS requires but is distributed to the grid for use alongside the myriad of other uses of that electricity. Indeed, the Draft Regulatory Impact Analysis projects around 10,000 GWh of electricity will go toward EV charging, *id.* at 339, or only about 0.26 percent of the 3,780,000 GWh of retail consumption every year, *U.S. Energy Facts Explained*, U.S. Energy Information Administration (June 10, 2022), <https://www.eia.gov/energyexplained/us-energy-facts/>. Exacerbating this, only about 35 percent of electric power generated ends up being sold, while 65 percent is lost in transmission and distribution. This means only 0.09 percent of the renewable energy ends up "in" an electric vehicle. And an even smaller fraction of that can even analogically "replace" a "fossil fuel." In 2022, natural gas produced 39% and coal 19% of U.S. electric power, while low carbon

sources like nuclear, wind, hydropower, and solar produced 20%, 12%, 7%, and 4%, respectively. *See Short-Term Energy Outlook*, U.S. Energy Information Administration (Jan. 10, 2023), <https://www.eia.gov/outlooks/steo/report/electricity>. Any biogas-generated electricity likely replaces all these sources equally, meaning that only about 0.052 percent of the biogas-generated electricity can be said to replace fossil-fuel generated electricity in an electric vehicle.

Second, the proposal makes dubious assumptions about the efficiency of electric vehicles. The proposal assumes a uniform electric vehicle efficiency of 0.32 kWh/mile. 87 Fed. Reg. 80,651. But this number is not substantiated beyond a reference to EPA’s 2021 Automotive Trends Report, which does not even contain that number. *See Draft Regulatory Impact Analysis* at 327. The 2022 Automotive Trend Report shows that electric vehicle efficiency varies widely: from as low as 25 kWh/mile to as high as 63/kWh. *Id.* at E-3. Further, these advertised efficiencies do not account for the precipitous drop in efficiency electric vehicles face in cold weather driving. *See EVs: Tesla Faces €2 million Fine Over Undisclosed Drop in Cold Weather Driving Range*, EuroNews (Jan. 3, 2023), <https://www.euronews.com/green/2023/01/03/evs-tesla-faces-2-million-fine-over-undisclosed-drop-in-cold-weather-driving-range> (“driving range of most EVs drop by up to 40 percent in cold temperatures”). By disregarding these elements, the proposal significantly inflates emissions impacts of eRINs.

Third, the proposal makes unsubstantiated assumptions about how many miles electric vehicles are driven. The rule allows electric vehicle manufacturers to estimate vehicle miles traveled at 7,200 miles per year. But the data EPA references do not appear to support this number. More importantly, by even making this estimate, the proposal dispenses with the careful tracking that EPA has always required under the RFS program. As the proposal states:

One aspect of program design we have investigated relates to the tracking of contractual information. When we implemented the requirements for RNG under the current regulations, we did so by requiring that contractual relationships between each and every party in the distribution system be provided and tracked to enable verification of RIN validity. However, we believe that we can design the eRIN program to largely avoid a similar level of complexity. In particular, while we have requirements in place for biogas under the current regulations to track such contractual relationships, *we believe that they could be largely unnecessary in an eRIN program* moving forward.

87 Fed. Reg. 80,644 (emphasis added). This is, to be frank, nonsense. In just the last year the Federal Trade Commission and the Securities and Exchange Commission have each sought comment on proposed rules intending to combat greenwashing, a practice by which companies overstate environmental benefits to curry favor with customers or investors. And, as Principal Deputy Assistant Attorney General Kate Konschnik explained last May, “Criminals fraudulently manufacture RINs and sell them” all the time. Remarks at the American Bar Association’s Federal Environmental & Energy Litigation Updates Regional CLE Program (May 24, 2022), <https://www.justice.gov/opa/speech/principal-deputy-assistant-attorney-general-kate-konschnik-delivers-remarks-american-bar>. “RIN fraud criminal cases have generated more than 2,600 months of jail time, fines exceeding \$3.2 million, and restitution totaling more than \$365 million.” *Id.* By implementing the eRINs program in this way—with none of the usual requirements—EPA seems to be saying, “it is open season for fraud, we won’t even try to catch you.”

Fourth, the proposed rule fails to perform the rigorous lifecycle analysis required by the RFS for eRINs. By statute, EPA is required to assess “the aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes), as determined by the Administrator, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer.” 42 U.S.C. § 7545(o)(1)(H). Because the “use of the finished fuel to the ultimate consumer” involves electric vehicles, this lifecycle analysis must include the greenhouse gas emissions associated with the production of those vehicles and distribution of energy to those vehicles, including the mining of critical minerals, the production of other metals for electric vehicles heavier frames, and all of the new electricity transmission, distribution, and charging infrastructure that electric vehicles require.

That EPA refuses to account for these emissions while persisting in using an “old” framework for other biofuels shows a clear bias in favor of electric vehicles. 87 Fed. Reg. 80,610. EPA acknowledges that its 2010 biofuel GHG modeling framework is “old, and that an updated framework is needed,” but did not bother to include an updated framework in the proposed rule. The proposed rule should have adopted the Department of Energy’s Argonne National Laboratory Greenhouse gases, Regulated Emissions, and Energy use in Transportation (GREET) model for the RFS. The GREET model is robust, accounts for latest information about feedstock carbon

intensity, and reflects the intervening decade’s actual experience with feedstock and biofuel production.

Fifth, the proposed rule seeks to promote electrification by allowing eRINs to be generated solely by electric vehicle manufacturers, instead of by the parties that do the metaphorical blending. As described above, this violates the plain text and purpose of the RFS. But this decision also amounts to yet another subsidy for electric vehicles, instead of for the renewable fuels the RFS was designed to promote. If minimizing the “complexity” of the RIN program is a sufficient justification for an automaker to generate eRINs from the electric vehicles it has sold, why shouldn’t automakers be able to generate RINs from the sale of flex fuel vehicles, or even vehicles which use E10, both of which can far more reliably be said to use renewable fuels? This disparate treatment alone is strong evidence that eRINs are incompatible with the rest of the RFS system.

*

The cumulative effect of this deck stacking is that the proposed rule would be arbitrary and capricious. The APA requires courts to “hold unlawful and set aside agency action, findings, and conclusions” that are “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.” 5 U.S.C. § 706(2)(A), (C)–(D). “The APA’s arbitrary and capricious standard requires that agency action be reasonable and reasonably explained.” *FCC v. Prometheus Radio Project*, 141 S. Ct. 1150, 1158 (2021); *see also Motor Vehicle Mfgs. Ass’n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 50 (1983). While the proposal states it is intended to promote the goals of the RFS, it does not contain the “rational connection between the facts found and the choice made” that the APA requires. *State Farm*, 463 U.S. at 43 (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962)). When there is such a “significant mismatch” between a proposed rule and its justifications, it must be set aside. *Dep’t of Com. v. New York*, 139 S. Ct. 2551, 2565-66 (2019).

C. The proposed rule appears designed to chill dissent from the bio-fuels industry.

The proposal’s bias in favor of vehicle electrification is reinforced by its strange assertion about severability. The proposal makes clear that nearly every provision of the rule is severable, except eRINs. “However, we do not intend for the eRIN regulatory provisions (Section VIII) to be severable from the volumes for 2024 and 2025, such that if a reviewing court were to set aside the eRIN program, the volumes for

2024 and 2025 would also be set aside, as those volumes will take into account considerable volumes of cellulosic biofuel expected to be generated utilizing those regulatory provisions.” 87 Fed. Reg. 80,591. The only plausible explanation for this choice is that EPA is trying to discourage the biofuels industry from speaking up so that eRINs can get a foot in the door, creating precedent that later rulemakings can build on.

III. A Better Solution Is For EPA To Use Its Authority To Increase The Renewable Fuels Present In Engines

The proposal requests comment on “policy changes or additional programmatic incentives that EPA should consider implementing under the RFS program to strengthen or accelerate the transition to a decarbonized transportation sector.” 87 Fed. Reg. 80,587. The most effective policy changes EPA could make would be to increase the volume of “clean renewable fuels” that can be blended with gasoline. As the proposal repeatedly notes, the E10 blendwall *is* an RFS problem because it practically limits the volume of renewable fuels that can be sold. *See, e.g.*, 87 Fed. Reg. 80,629. Raising the blendwall is within EPA’s statutory authority and is squarely aligned with the objectives of the RFS.

One simple step to overcome this limit would be for EPA to complete its 2021 rulemaking on E15 labeling and compatibility. 86 Fed. Reg. 5,094. A recent study conducted by ABF Economics that found that nationwide E15 could save consumers \$20.6 billion in annual fuel costs, support an added 188,000 jobs, and generate \$66.3 billion for the U.S. GDP. John M. Urbanchuk, *Consumer Savings from Year-Round Nationwide E15 Use*, ABF Economics (Oct. 13, 2022), <https://growthenergy.org/wp-content/uploads/2022/10/ABF-E15-Consumer-Savings-101322.pdf>. Expansion of E15 sales would immediately increase the opportunity for ethanol blending supporting the goals of the RFS and lowering RIN costs.

A more effective measure would be for EPA to raise the minimum octane level to 95 RON. A 95 RON fuel is easily achieved with current before-oxygenate-blending gasoline, splash blended to approximately E20. There is no shortage of ethanol and studies confirm that the ethanol supply would be adequate to commercialize E20 blends. This shift would boost the demand for clean fuels, allowing EPA to advance the goals of the RFS, and would also be compatible with EPA’s broader mandates to regulate vehicle tailpipe emissions and gasoline.

Raising the minimum octane rating would enable better, more efficient vehicles to be built immediately. Automobile manufacturers have “recommend[ed] increasing the minimum gasoline octane rating, commensurate with increased use of ethanol” to “help achieve future requirements for the reduction of greenhouse gas emissions.” Letter from Mitch Bainwol, President and CEO, Alliance of Automobile Manufacturers, to Lisa Jackson, Administrator, EPA (Oct. 6, 2011). EPA itself has recognized “the potential that higher-octane fuels, coupled with advanced engine technologies, can provide for improvements to fuel economy and tailpipe CO₂ emissions.” 85 Fed. Reg. 24,389. A 95 RON is the right level to deliver maximum benefits at minimum costs: up to a 5% fuel economy boost, reduced well-to-wheel CO₂ emissions, at a technology cost of only \$75 per vehicle to U.S. consumers. National Research Council, *Cost, Effectiveness, and Deployment of Fuel Economy Technologies for Light-Duty Vehicles* (2015). At the same time, this would also address ethanol’s blending volatility in RVP controlled gasoline, 87 Fed. Reg. 80,613, because E20 and higher blends have lower RVP ratings than E10.

EPA has authority to regulate the minimum octane standard through section 211(c) of the Clean Air Act which authorizes the EPA to adopt regulations controlling or prohibiting a fuel. 42 U.S.C. § 7545. The Courts have held that Congress intended this provision to be a “broad grant of authority,” *Amoco Oil Co. v. Env’t Prot. Agency*, 501 F.2d 722, 745 (D.C. Cir. 1974), and that its authority to regulate fuel extends to “vehicle emissions effects” and all “fuel characteristics and components” affecting emissions. *City of Park City v. Alon USA Energy Inc.*, 341 F. Supp. 2d 386, 408 (S.D.N.Y. 2004).

Congress instructed EPA regulate fuel if the fuel or any emissions product “causes, or contributes, to air pollution” that “endanger[s] the public health or welfare.” 42 U.S. Code § 7545(c)(1). Because of the current low-octane rating of gasoline, vehicles are forced to use less efficient, lower compression ratio engines, consequently emitting additional emissions that contribute to air pollution. Because raising the minimum octane is the most “technically or economically feasible means of achieving [vehicle] emissions standards,” *id.* § 7545(c)(2)(A), and without higher octane fuel engines will “not be able to generate substantial fuel economy and [emissions] reduction benefits,” *id.* § 7545(c)(2)(A), EPA can and should take such a step.

EPA should also set a minimum octane standard because the “emissions products of” low-octane gasoline will “impair to a significant degree the performance of any emission control device or system” in general use or that “has been developed to a point where in a reasonable time it would be in general use were such regulation to

be promulgated.” *Id.* § 7545(c)(1). If high-octane fuel were available, high compression ratio engines would quickly be put to widespread use as an emissions control system reducing greenhouse gas emissions. But such engines cannot currently be deployed because currently available low-octane fuel would knock in these engines “impar[ing] to a significant degree the performance” of these emissions control systems.

As the proposed rule explains, “Higher-level ethanol blends ... are one avenue through which higher volumes of renewable fuels can be used in the transportation sector to reduce GHG emissions and improve energy security over time.” 87 Fed. Reg. 80,626. Facilitating the use of these blends would be a proper use of EPA’s authority in this or another rulemaking in the near future. Certainly if eRINs cannot wait, this cannot wait either.

* * *

For all the reasons give above, we urge the EPA to withdraw or postpone the eRINs program portion of the proposed rule and proceed only with the volume obligations. EPA’s authority under the RFS would be better served by taking measures that promote renewable fuels, not electric vehicles.

February 10, 2023

The Honorable Michael Regan, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Docket ID No. EPA-HQ-OAR-2021-0427-0421

RE: Renewable Fuel Standard Program: Standards for 2023-2025 and Other Changes

Dear Administrator Regan:

Iowa is the undisputed national leader in biofuels production, with 42 ethanol biorefineries and 11 biodiesel facilities producing 4.5 billion gallons of ethanol and 349 million gallons of biodiesel respectively in 2022. Iowa's renewable fuels industry creates value-added markets for corn, soybeans, and other agriculture feedstocks, provides good paying jobs for thousands of Iowans, and offers cleaner burning, more affordable, homegrown fuel to consumers. With that in mind, the Iowa Department of Agriculture and Land Stewardship is uniquely suited to weigh in on EPA's Renewable Fuel Standard proposal for 2023, 2024, and 2025, and I appreciate the opportunity to submit these comments.

On ethanol, we urge EPA to finalize its proposed annual volumes of 15 billion gallons for 2023 (with a supplemental volume of 250 million gallons added to address the remand from *Americans for Clean Energy v. EPA*), 15.25 billion gallons for 2024, and 15.25 billion gallons for 2025. These volumes will set a course for increased domestic ethanol use and greater availability of higher ethanol blends such as E15 and E85 throughout the United States. Higher ethanol blends are not only lower cost, but also lower carbon, and EPA needs to update its greenhouse gas emission modeling accordingly to reflect ethanol's substantial and accelerating carbon reduction benefits. Specifically, we request EPA to embrace the U.S. Department of Energy Argonne National Laboratory's Greenhouse gases, Regulated Emissions, and Energy use in Transportation (GREET) model as the official carbon intensity calculator for the RFS going forward.

On biomass-based diesel, EPA's proposed volumes for 2023, 2024, and 2025 are unacceptably low. In fact, the proposed volume of 2.82 billion gallons for 2023 is nearly 800 million gallons below the actual production of 3.6 billion gallons of biomass-based diesel in 2022. With current production already exceeding EPA's proposed volumes and renewable diesel production

anticipated to grow exponentially in the coming years, we urge EPA to significantly raise both the biomass-based diesel levels (by 500 million gallons each year at a minimum) and the advanced biofuel levels (by 1 billion gallons each year at a minimum) for 2023, 2024, and 2025. Additionally, we ask EPA to withdraw its newly proposed language to limit the volume of separated RINs to only B20 blends, rather than the current limit of B80. This restrictive provision would unnecessarily prevent Iowa biofuel producers and suppliers from benefiting from Iowa's newly enacted retailer tax incentive for B30 blends, further stifling low-carbon biodiesel growth.

Finally, we strongly request EPA to revise its proposal for eRINs and to separate it from the rest of the proposed RFS rule. The eRINs proposal departs significantly from the spirit of the RFS program in a desperate attempt to benefit electric vehicles at the expense of biofuels. A hallmark of the RFS program has always been that a RIN may only be generated by a biofuel producer through the production of qualified biofuel from renewable biomass that is used as transportation fuel. The eRINs proposal turns the RFS program on its head by allowing electric vehicle manufacturers to generate eRINs, rather than the renewable natural gas producers that actually produce renewable electricity. EPA's eRINs proposal is inequitable, inconsistent with the statutory intent of the RFS program, and unenforceable. It disadvantages Iowa biofuel producers and Iowa renewable natural gas producers. The current eRINs proposal should be separated from the RFS volumes and reworked in a manner that is equitable to biofuels and consistent with the RFS law.

Thank you for your consideration of these comments. I urge EPA to embrace the carbon reduction and cost saving benefits of American-made biofuels as it works to get this rulemaking right.

Sincerely,

A handwritten signature in black ink that reads "Mike Naig". The signature is fluid and cursive, with the first name "Mike" and last name "Naig" clearly distinguishable.

Mike Naig
Iowa Secretary of Agriculture

OPIS
2023-02-14

*****Biodiesel Stakeholders Tell EPA That Industry's Survival Could Be at Risk**

A group of biodiesel stakeholders that says it represents every link in the value chain submitted formal comments Friday to the Environmental Protection Agency EPA indicating that the industry's very survival could be at risk unless changes are made.

In remarks regarding the EPA's proposed renewable volume obligations for 2023-2025 under the Renewable Fuel Standard, the **Small Advanced Biofuel Refiners Coalition** wrote that its members "have invested heavily in the RFS program and have a significant interest in the outcome of this proposed rule."

EPA in December released its proposed RVO targets for the 2023, 2024 and 2025 compliance years.

"We have seen biodiesel production under the RFS program shrink and are concerned that biodiesel will soon be almost completely, if not completely, displaced by renewable diesel and SAF (sustainable aviation fuel) unless EPA acts," the group wrote.

The U.S. biodiesel industry has been able to withstand "numerous market distortions and threats to its existence," the group said, and current federal and state policies "have inadvertently diverted incentives away from small businesses to a handful of large petroleum refiners who are leveraging them to convert petroleum refineries to renewable diesel production out west all aimed for a single state."

The refinery conversions are taking offline billions of gallons of refinery capacity and replacing them "with relatively smaller amounts of renewable diesel," the group wrote.

"However, since new gallons of renewable diesel that come online replace biodiesel rather than grow the program, the renewable diesel refinery conversions have done nothing except reduce the nation's total refining capacity," it added.

The biodiesel industry has existing surplus low-carbon refining capacity that it can deploy immediately, according to the coalition.

"But policy signals are incenting petroleum refiners to take conventional refining capacity offline to convert to renewable diesel," it wrote, "which in turn is taking offline more biodiesel capacity, driving up fuel prices and inflation and leading to record profits for petroleum refiners."

The Inflation Reduction Act authorized higher tax credits for SAF production, which is not an obligated fuel under the RFS, the group noted.

"Yet EPA is currently forcing biodiesel to compete with SAF for a set number of gallons in the same RFS category despite this vastly different tax policy treatment and the fact that the fuels serve completely different markets," it said. "These fuels don't 'compete' in the marketplace through customer choice, price and performance; they only compete in the artificial policy realm where they are given very different energy and tax policy treatments."

One of the core objectives of the RFS is to reduce carbon from transportation fuels at the lowest cost to society, the group said.

"But this forced competition between different fuels in different markets with different policy treatment is not leading to more-efficient, lower-cost carbon reduction," it stated. "On the contrary, biodiesel is the lower-cost, lower-carbon, cleaner-burning fuel. When it is cannibalized by higher-cost, higher-carbon fuels because of advantaged policy treatment of those fuels, less carbon is reduced at a higher cost to consumers and taxpayers."

EPA's failure to grow adequately the advanced biofuel programs in recognition of these trends "threatens to accelerate this displacement," the coalition said, "threatening the remaining domestic biodiesel industry -- the very industry Congress sought to promote in the RFS."

The situation was on the minds of some at the recent Clean Fuels Alliance America conference in Florida.

"We are just members of biodiesel refineries that have seen what's going on in our industry and we've questioned why leadership isn't seeing what we're seeing," Tom Brooks, general manager of coalition member Western Dubuque Biodiesel, told OPIS at the conference.

"It's just trying to get the EPA back on what their original focus was: what's best for the environment," he said. "And we're not saying SAF is bad for the environment. We're not saying that renewable diesel is bad for the environment.

They're not better than biodiesel, and the EPA seems to suggest they are by how they released the recent RVOs. Give us a level playing field."

Asked if the biodiesel industry is sustainable without the requested changes, Mike Reed, CEO of coalition member Renewable BioFuels, replied, "At this past RVO setting, I would say it's going to be hard. If there's an inequity in price, there's a disincentive."

Reed described the coalition as "concerned biodiesel producers that have been fighting the good fight to get us to where we are today for a long, long time."

"We're seeing unintended policy consequences that could starve us out," he said. "They could shut us down."

Joe Jobe, the former CEO of the National Biodiesel Board, is leading the coalition's efforts, including advocacy with the White House and Congress, communications and mobilization activities and technical and economic research.

He expressed optimism that the group's endeavors will ultimately bear fruit.

"I am confident that we will make a difference in the long run," he told OPIS on Saturday. "When I first started working on biodiesel 25 years ago, we were trying to build a new industry from scratch and we were told over and over that what we were trying to do was impossible. Sure, it was impossible -- and we did it anyway."

Jobe claimed that task was "a lot harder than what we are trying to do now."

3b. Federal Issues Update

ii. E15



KIM REYNOLDS
GOVERNOR

OFFICE OF THE GOVERNOR

ADAM GREGG
LT GOVERNOR

January 17, 2023

The Honorable Michael Regan
Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue N.W.
Washington, D.C. 20460

The Honorable Shalanda D. Young
Director
Office of Management and Budget
725 17th Street N.W.
Washington, D.C. 20503

Dear Administrator Regan and Director Young,

I write today to urge the U.S. Environmental Protection Agency to expeditiously implement long overdue regulatory action to remove the 1-psi volatility waiver for gasoline-ethanol blends in Iowa, as formally requested nearly nine months ago. With the 2023 summer driving season just around the corner, action is needed *now* to provide certainty and clarity to the marketplace.

On April 28, 2022, I formally notified you that I am using the Clean Air Act authority provided to State Governors to remove the 1-psi volatility waiver, which would improve air quality and allow for the year-round sale of gasoline containing 15% ethanol (E15) in Iowa.

Section 211(h)(5)(B) of the Clean Air Act statute states that the Administrator "shall promulgate regulations" effectuating this action "...not later than 90 days after the date of receipt of a notification from a Governor..." Thus, I expected the removal of the 1-psi waiver would be officially completed no later than July 27, 2022, providing the marketplace with ample lead time to adjust to the changes before the summer volatility control season begins for retail fuel stations on June 1, 2023. I do not understand how or why EPA has missed this non-discretionary statutory deadline, but it is now causing confusion and uncertainty in the marketplace.

It is my understanding that the White House Office of Management and Budget may still be reviewing this action. I urge you to work together to swiftly finalize and release this action no later than the end of January 2023, so that consumers in Iowa can enjoy the economic and environmental benefits of year-round E15 in 2023.

Sincerely,

A handwritten signature in black ink, appearing to read "Kim Reynolds", is written over the word "Sincerely," and extends down over the printed name and title.

Kim Reynolds
Governor of Iowa

BRENNA BIRD
ATTORNEY GENERAL



1305 E. WALNUT ST.
DES MOINES, IA 50319
515-281-5164
www.iowaattorneygeneral.gov

IOWA DEPARTMENT OF JUSTICE
OFFICE OF THE ATTORNEY GENERAL

January 27, 2023

The Honorable Michael Regan
Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue N.W.
Washington, D.C. 20460

The Honorable Shalanda D. Young
Director
Office of Management and Budget
725 17th Street N.W.
Washington, D.C. 20503

**Re: Mandatory Promulgation of Regulations in Response
to Governors' Notice Requesting Year-Round E15**

Dear Administrator Regan and Director Young,

A bipartisan coalition of Governors requested that Administrator Regan disallow the E10 waiver to the Reid vapor pressure (RVP) limit in advance of the upcoming summer driving season, pursuant to Clean Air Act § 211(h). *See* 42 U.S.C. § 7545(h); Governors' Letters (attached). That statute requires the Administrator to promulgate regulations consistent within 90 days of their request. *See* 42 U.S.C. § 7545(h)(5)(A)–(B). Unfortunately, almost 270 days have passed since the notification, accompanied by supporting documents, sent by the Governors to Administrator Regan. We write to urge you to comply with the law and issue the mandated regulations so that E15 ethanol will be available this summer.

American-produced ethanol is a key component in the domestic energy supply chain. Yet despite the air-quality benefits of gasoline blended with 15 percent ethanol (E15), by default the current regulations promulgated under the Clean Air Act apply a more stringent RVP limitation on E15 than on gasoline blended with 10 percent ethanol (E10) during the high ozone season from June 1 to September 15. That prevents access to E15 during the peak-driving summer months.

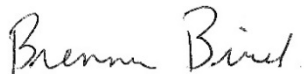
On April 28, 2022, a bipartisan group of eight Governors notified the EPA Administrator about the net-improvement to air quality that follows from lowering the RVP standard for E10 such that gasoline blends can accommodate E15. *See* Governors' Letters (attached); 42 U.S.C. § 7545(h). As required by Section 211(h)(5) of the Clean Air Act, the Governors attached to their letter supporting documentation regarding the positive impact removing the E10 RVP waiver would have on air quality. Additional Governors have since filed similar notifications.

Section 211(h) of the Clean Air Act requires that the Administrator, upon “notification, accompanied by supporting documentation, from the Governor of a State that” the RVP limit will increase emissions that contribute to air pollution, shall promulgate alternative regulations lowering the RVP for *all* gasoline sold. 42 U.S.C. § 7545(h)(5)(A)–(B). Given the popularity and price of E10 gasoline, that will require gasoline producers to supply gasoline with a lower RVP such that, when blended to create E10, will satisfy that more stringent standard. As E10 and E15 have almost identical RVP, that gasoline with a lower RVP will also allow sale of E15.

The Clean Air Act also states that the Administrator “shall” promulgate its amended regulation within 90 days—here, no later than July 27, 2022. Yet the Administrator still has not taken that required action. On January 17, 2023—almost 270 days from the Governors' request—Governor Reynolds sought clarity on EPA's delay. Without prompt action, there is a risk that E15 gasoline will not be available during the 2023 summer driving season and vehicle emissions will be higher than if EPA followed its obligations under the Clean Air Act.

Given the importance of this issue, the undersigned Attorneys General call on the Administrator and the Office for Management and Budget to promulgate regulations as required by the Clean Air Act by the end of January. That deadline will allow each of the undersigned states to enjoy the cost and air-quality benefits of year-round E15 through the 2023 summer driving season.

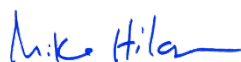
Sincere regards,

A handwritten signature in cursive script that reads "Brenna Bird".

Brenna Bird
Attorney General of Iowa



Kwame Raoul
Attorney General of Illinois



Mike Hilgers
Attorney General of Nebraska



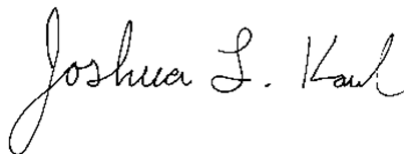
Keith Ellison
Attorney General of Minnesota



Marty Jackley
Attorney General of South Dakota



Andrew Bailey
Attorney General of Missouri



Josh Kaul
Attorney General of Wisconsin

Congress of the United States

Washington, DC 20515

February 9, 2023

The Honorable Michael Regan
Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue N.W.
Washington, D.C. 20460

The Honorable Shalanda D. Young
Director
Office of Management and Budget
725 17th Street N.W.
Washington, D.C. 20503

Dear Administrator Regan and Director Young,

We write today to urge the U.S. Environmental Protection Agency (EPA) swiftly and diligently implement the outstanding regulatory action to remove the 1-psi volatility waiver for gasoline-ethanol blends in Midwest states. The 2023 summer driving season is quickly approaching and action is necessary to provide certainty to the marketplace.

Relying on an annual emergency waiver is not a permanent solution for fuel retailers, consumers, or the environment. On April 28, 2022, several Midwest governors formally notified the EPA of their request to permanently remove the 1-psi volatility waiver to allow their states to sell gasoline containing 15% ethanol (E15) year-round, without restriction¹. Since then, more states have joined this effort. Homegrown, American-produced ethanol strengthens our national security and ensures lower vehicle emissions to achieve the Administration's climate goals.

As Section 211(h)(5)(B) of the Clean Air Act states, the Administrator "shall promulgate regulation" effectuating this action "... not later than 90-days after the date of receipt of a notification from a Governor." Therefore, this rulemaking should have been completed in July 2022 and unfortunately, we still have no regulatory certainty for our fuel retailers, fuel blenders, or biofuel producers. On December 7, 2022, the draft rule from EPA, which would approve the Governors' request, appeared on the Office of Management and Budget (OMB) docket. The Midwest states Attorneys General (AGs) have sent a follow up letter to the EPA and OMB urging them to move quickly with this rulemaking to prevent irreparable harm.

Higher blends of ethanol like E15 are a common-sense solution to lower the cost for consumers at the gas pump and to lower vehicle emissions. As we gear up for the summer 2023 travel season, we have the production and distribution infrastructure to meet consumer demand for this lower cost and environmentally friendly fuel option. By working swiftly to finalize the Governors' requests, you will bring much needed certainty to our corn growers, fuel retailers, and consumers to enjoy the clean-burning, lower cost benefits of year-round E15 through the 2023 summer driving season.

Sincerely,

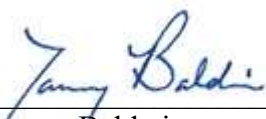


Joni K. Ernst
United States Senator

Tammy Duckworth
United States Senator

¹ Office of the Governor of Iowa. "Governors Letter to EPA on RVP Waiver 4.28.22"

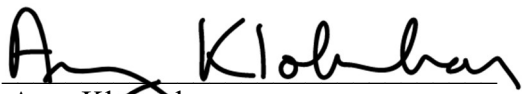
https://governor.iowa.gov/sites/default/files/documents/Governors%20Letter%20to%20EPA%20on%20RVP%20Waiver%204.28.22.pdf?utm_medium=email&utm_source=govdelivery.



Tammy Baldwin
United States Senator



Deb Fischer
United States Senator



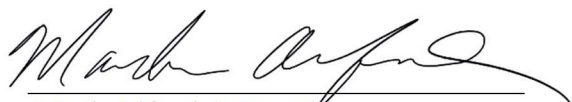
Amy Klobuchar
United States Senator



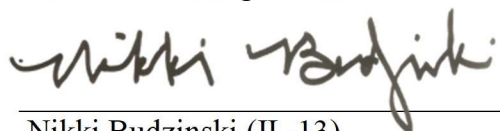
Pete Ricketts
United States Senator



Brad Finstad (MN-01)
United States Representative



Mark Alford (MO-04)
United States Representative



Nikki Budzinski (IL-13)
United States Representative



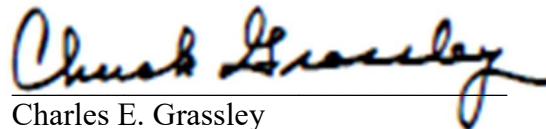
Sharice L. Davids (KS-03)
United States Representative



Randy Feenstra (IA-04)
United States Representative



Sherrod Brown
United States Senator



Charles E. Grassley
United States Senator



Roger Marshall, M.D.
United States Senator



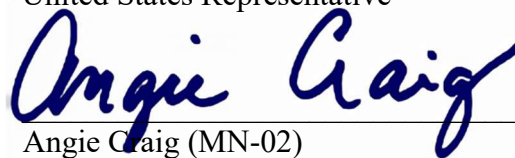
Tina Smith
United States Senator



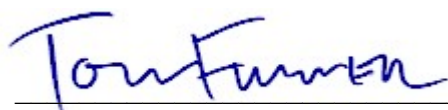
Ashley Hinson (IA-02)
United States Representative



Mike Bost (IL-12)
United States Representative



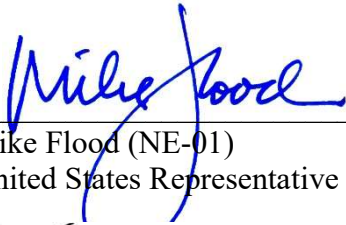
Angie Craig (MN-02)
United States Representative



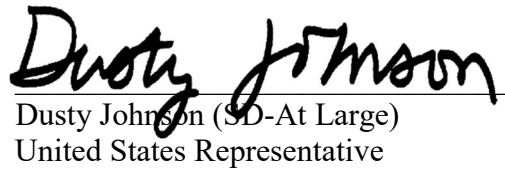
Tom Emmer (MN-06)
United States Representative



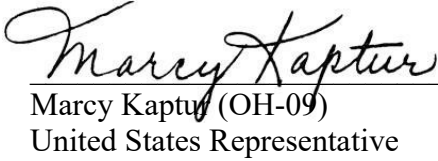
Michelle Fischbach (MN-07)
United States Representative



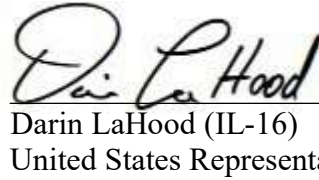
Mike Flood (NE-01)
United States Representative



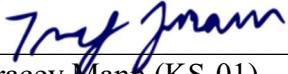
Dusty Johnson (SD-At Large)
United States Representative



Marcy Kaptur (OH-09)
United States Representative



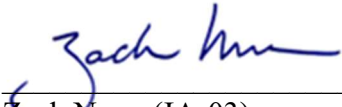
Darin LaHood (IL-16)
United States Representative



Tracey Mann (KS-01)
United States Representative



Mariannette Miller-Meeks (IA-01)
United States Representative



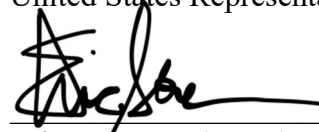
Zach Nunn (IA-03)
United States Representative



Mark Pocan (WI-02)
United States Representative



Adrian Smith (NE-03)
United States Representative



Eric Sorensen (IL-17)
United States Representative



Pete Stauber (MN-08)
United States Representative



Proposed Rule in Response to Request From States for Removal of Gasoline Volatility Waiver

Rule Summary

The Environmental Protection Agency (EPA) is responding to requests from state governors to remove the 1-psi volatility waiver for gasoline-ethanol blends containing 10 percent ethanol in their states. The governors made their request pursuant to CAA section 211(h)(5), which provides that the Administrator shall remove the 1-psi waiver via regulation upon demonstration that the 1-psi waiver increases emissions in their state. After review of the modeling results presented by the governors in their requests, EPA is proposing to remove the 1-psi waiver in the following states: Illinois, Iowa, Minnesota, Missouri, Nebraska, Ohio, South Dakota, and Wisconsin.

EPA also received multiple petitions from stakeholders requesting an extension of the effective date to the summer of 2024. This action proposes to delay the effective date for one year consistent with statutory provisions. EPA proposes an effective date for all states of April 28, 2024. This action also proposes a regulatory process by which a state may request to reinstate the 1-psi waiver.

Public Hearing

EPA will hold a virtual public hearing for the proposed rule on March 21, 2023. This hearing will be held virtually-only (i.e., there will be no in-person hearing).

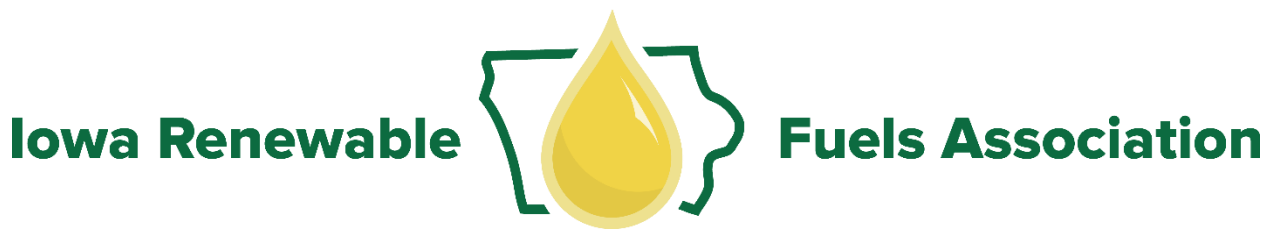
In order to attend the virtual public hearing, all attendees (including those who will not be presenting verbal testimony) must register by sending an email to RFS-Hearing@epa.gov. A separate registration form must be submitted for each person attending the hearing. Please register no later than one week prior to the hearing.

In order to allow everyone to be heard, EPA is limiting verbal testimony to three minutes per person. Speakers will not be able to share graphics via the virtual public hearing. Speakers will be able to request an approximate speaking time as part of the registration process, with preferences considered on a first-come, first-served basis.

If you have further questions or special needs, please contact Nick Parsons at RFS-Hearing@epa.gov.

Additional Resources

- [Proposed rule: Request From States for Removal of Gasoline Volatility Waiver \(pdf\)](#) (494.74 KB, prepublication, signed February 27, 2023)



FOR IMMEDIATE RELEASE
March 1, 2023

Press Contact: Jared Palmer
515-322-0435

EPA Proposed Rule Delays Midwest Governor Fix for Year-Round Until 2024

Contrary to Law, Proposal Would Hurt Fuel Retailers and Consumers

JOHNSTON, IOWA- After a nearly 10-month delay that ran counter to the federal Clean Air Act (CAA) deadlines, the EPA today proposed to approve requests from a bipartisan group of Midwest governors that will effectively allow the year-round sale of E15. Despite public assurances from the EPA Administrator that the rule would be done in time for the 2023 summer driving season, the proposal would not take effect until the summer of 2024. In the absence of changes to the rule or other emergency actions, retailers in the states will not be allowed to offer E15 from June 1 to September 15, costing consumers unnecessary millions in fuel costs.

The coalition of governors, led by Iowa Governor Kim Reynolds, made the decision to equalize regulations for E10 and E15 blends in an April 2022 notice to EPA. Under the CAA, the EPA should have finalized the new regulations within 90 days, thereby allowing plenty of preparation time for the 2023 summer driving season.

"It is unconscionable for me to think that this summer, Midwestern drivers and fuel retailers will be the ones to pay the price for the illegal delay by the Biden EPA to finalize these rules," says Iowa Renewable Fuels Association (IRFA) Executive Director Monte Shaw. "The governors' authority is not in question. The air quality science is not in question. There is no question the EPA failed to meet the statutory deadline. Now they are using their own tardiness to justify putting off the E15 fix until 2024, leaving Midwest consumers to pay 15 cents per gallon or more than necessary."

In January, Midwestern state attorneys general sent letter to White House Office of Management and Budget Director Shalanda Young and EPA Administrator Michaela Regan urging them to "swiftly and diligently implement the outstanding regulatory action."

"We are not done fighting for 2023," stated Shaw. "EPA promised the solution would be in place for 2023 and we intend to hold them to that. We urge the governors and the attorneys general to defend their rights under the Clean Air Act."

OFFICE OF THE GOVERNOR
Governor Kim Reynolds ★ Lt. Governor Adam Gregg

FOR IMMEDIATE RELEASE: Wednesday, March 1, 2023

CONTACT: Kollin Crompton, (515) 745-2840, Kollin.Crompton@Governor.iowa.gov

Gov. Reynolds Statement on EPA Decision

DES MOINES – Gov. Reynolds released the following statement in response to the EPA delaying the implementation of year-round sale of E15:

“While long overdue, I am thrilled that the EPA has approved our multi-state bipartisan RVP waiver request that will pave the way for year-round E15 and bring certainty to the industry.

“However, the arbitrary delay in implementation this summer is unacceptable and disappointing, but hardly surprising. Iowa won’t accept it without a fight. I look forward to requesting another emergency waiver for this year while at the same time asking the courts to require the Administration to grant our request immediately. Iowans, and all Americans, deserve immediate access to lower-cost, American made E15.”

Tomorrow, Governor Reynolds will address the National Ethanol Conference in Orlando, Florida.



IOWA DEPARTMENT OF
**AGRICULTURE &
LAND STEWARDSHIP**

MIKE NAIG
SECRETARY OF AGRICULTURE

FOR IMMEDIATE RELEASE

Contact: Don McDowell
515-326-1616
don.mcdowell@iowaagriculture.gov

Secretary Naig Comments on the Biden Administration's E15 Rule Delay

DES MOINES, Iowa (Mar. 1, 2023) – Iowa Secretary of Agriculture Mike Naig released the following comment today after the Biden Administration unveiled their latest rulemaking on year-round E15:

“Despite delays from the EPA, I appreciate the strong advocacy by Gov. Reynolds and other Midwest governors to push the Biden Administration into finally approving a permanent solution to allow the sale of year-round E15. Iowa is ready to significantly accelerate our state’s use and availability of E15 today. Unfortunately, the Biden Administration is needlessly and unnecessarily stalling the start of this rule until 2024. Unless President Biden changes course to allow summer sales of E15 this year, Iowans can expect fewer fuel choices and higher gas prices at the pump.”

United States Senate

WASHINGTON, DC 20510

February 28, 2023

The Honorable Joseph R. Biden, Jr.
President of the United States
The White House
1600 Pennsylvania Avenue, N.W.
Washington, D.C. 20500

Dear President Biden:

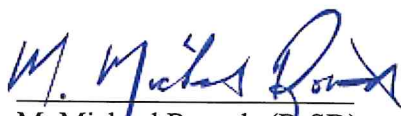
We write to request you again direct the Environmental Protection Agency (EPA) to use existing authority to prevent the disruption of sales of E15 fuel during the 2023 summer driving season by extending the Reid vapor pressure (RVP) allowance from June 1 through September 15.

As you know, enabling full market access for E15 increases the energy security, environmental, and economic benefits of the domestic fuel supply and is a sound component of an all-of-the-above energy strategy. Unfortunately, an underlying justification for your emergency action last summer, the Russian war of aggression against Ukraine, appears likely to continue causing global energy and security issues into this year.¹ Taking early action on E15 will send timely and necessary signals across the energy supply chain so that fuel producers and retailers will have the certainty they need to ensure affordable, reliable, and cleaner fuel options for American consumers throughout the year. Further, U.S. use of E15 will continue to displace Russian oil and finished gasoline products, ease domestic and global supply constraints, and lower net domestic fuel prices.

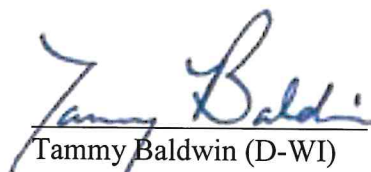
States hold authority under the Clean Air Act (CAA) to request that EPA permit them to effectively require lower volatility fuel in their states during the summer months by eliminating the RVP allowance for standard E10 blends. Numerous states have sought to use this option to enable consumers in their states to permanently access a more affordable and cleaner fuel amidst elevated energy costs. While the regulatory process to implement their request is ongoing, retailers and consumers alike need to know that they can access E15 this summer. Uniformity across the nation's fuel supply chain, resulting from your administration acting again, would provide consumer benefits and regulatory certainty nationwide.

This is why biofuel, oil and gas, agriculture, fuel retailer, and transportation stakeholders have come to Congress in support of a permanent legislative solution that will finally remove outdated and unnecessary barriers to full market access for E15 while respecting states' authority under the CAA. This bill, the Consumer and Fuel Retailer Choice Act, has growing bipartisan, bicameral support. As Congress works to advance this permanent solution, we urge you to again take executive action to ensure consumers can continue to access E15, as they have for four years now, while supporting ongoing legislative efforts.

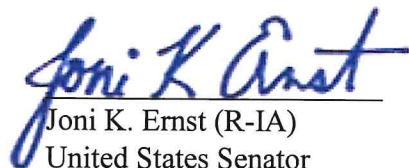
¹ <https://www.epa.gov/system/files/documents/2022-08/extensionof-nationwide-fuel-waiver-allowing-e15-gasoline082622.pdf>



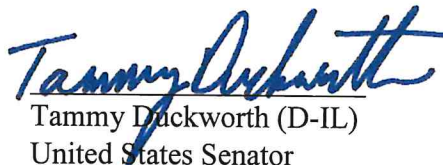
M. Michael Rounds (R-SD)
United States Senator



Tammy Baldwin (D-WI)
United States Senator



Joni K. Ernst (R-IA)
United States Senator



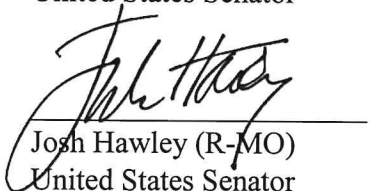
Tammy Duckworth (D-IL)
United States Senator



Kevin Cramer (R-ND)
United States Senator



Tina Smith (D-MN)
United States Senator



Josh Hawley (R-MO)
United States Senator



Roger Marshall, M.D. (R-KS)
United States Senator



Pete Ricketts (R-NE)
United States Senator

cc:

The Honorable Michael S. Regan, Administrator of the Environmental Protection Agency

- 3b. Federal Issues Update
- iii. Low Carbon/Higher Blends/FFVs



December 20, 2022

Ms. Cheryl Laskowski, Branch Chief
Transportation Fuels Branch
California Air Resources Board
1001 I St
Sacramento, CA 95814

Re: Comment on Low Carbon Fuel Standard Workshop November 9, 2022; specifically regarding the classification of Distillers Corn Oil (DCO)

The Iowa Renewable Fuels Association (IRFA) is the independent, state trade association representing ethanol, biodiesel, renewable diesel, and renewable natural gas producers from across Iowa. In total, Iowa has 42 ethanol refineries capable of producing over four and half billion gallons annually, accounting for about a thirty percent of the United States total ethanol production. Iowa is also the largest biodiesel producing state, with 11 plants capable of producing over 400 million gallons annually. Iowa also has a growing number of renewable natural gas producers. California is a major market for each of these low carbon, renewable fuel segments.

IRFA members are confused and alarmed about CARB's proposal to reclassify Distillers Corn Oil (DCO) as a virgin vegetable oil. This move would defy current definitions and practices, as well as past CARB actions. If finalized it could strand millions of dollars of investment – investment made to help California meet its low carbon goals – but worse, it could jeopardize future attainment of aggressive carbon reduction aspirations by unnecessarily restricting the use of one of the most attractive low carbon feedstocks for biofuels production.

As CARB staff should know, ethanol plants produce DCO as a coproduct of ethanol production along with distillers grains livestock feed and biogenic CO₂. The DCO is mostly used as a low-carbon feedstock for biodiesel, renewable diesel, and sustainable aviation fuel (SAF) production. DCO is not fit for human consumption like virgin oils without extensive further refining.

In fact, the U.S. Environmental Protection Agency (EPA) reiterates this understanding of DCO usage under the Renewable Fuel Standard (RFS) with the following definition: *"Distillers corn oil means corn oil recovered at any point downstream of when a dry mill ethanol or butanol plant grinds the corn, provided that the corn starch is converted to ethanol or butanol, the recovered oil is unfit for human food use without further refining, and the distillers grains remaining after the dry mill and oil recovery processes are marketable as animal feed."* (emphasis added)

Though DCO is used as feedstock for the creation of biodiesel, renewable diesel, and sustainable aviation fuel (SAF) like virgin oils that is where similarities end. As the U.S. EPA definition states above, DCO does not compete in these edible oil markets, as it's unfit for human consumption without major, costly upgrades.

The EPA and CARB have long supported the use of DCO as a low carbon, waste oil feedstock. It would be detrimental to California's Low Carbon Fuel Standard (LCFS) program if there is a sudden change in policy to reclassify DCO as a virgin oil, and either capping and/or changing how its carbon intensity is measured. The LCFS has been a major national driver in low carbon fuel use and the push toward net zero energy. However, if the proposed changes are made, we would see a major step backwards to this achieving this ultimate goal. It would also raise questions about the stability of the LCFS program that could undermine future investments in technologies designed to help reduce carbon emissions from not just on-road vehicles, but aviation as well.

IRFA and its members firmly believe California's Low Carbon Fuel Standard should encourage, not prohibit, low carbon feedstocks like DCO along with other inedible fats, oils, and greases.

If you have additional questions, please contact me at mshaw@iowarfa.org or 515-252-6249. Also, if you or any of your staff would ever be interested in touring an Iowa biofuel production facility and other aspects of the biofuels supply chain in Iowa, IRFA and its members would love to host you.

Sincerely,

A handwritten signature in black ink that reads "Monte Shaw". The script is fluid and cursive, with the first name "Monte" and last name "Shaw" clearly distinguishable.

Monte Shaw
Executive Director
Iowa Renewable Fuels Association



December 20, 2022

Ms. Cheryl Laskowski, Branch Chief
Transportation Fuels Branch
California Air Resources Board
1001 I St
Sacramento, CA 95814

Re: Low Carbon Fuel Standard Workshop November 9, 2022

Dear Ms. Laskowski,

The Renewable Fuels Association (RFA) appreciates the opportunity to comment on the workshop on potential changes to the Low Carbon Fuel Standard (LCFS) program held on November 9, 2022. The RFA supports the LCFS and looks forward to continued engagement in this process to strengthen and extend the program beyond 2030. The RFA is also working around the country in collaboration with other stakeholders to develop and implement LCFS and other clean fuel programs in other states.

The RFA commented extensively on the key issues of the LCFS modifications in our letter of August 8, 2022, following the July 27, 2022, LCFS workshop. These new comments should be considered in combination with the earlier comments and are responsive to CARB staff's request at the most recent workshop for stakeholder input on specific topics.

RFA supports strengthening the current LCFS compliance schedule before and after 2030, in conjunction with other regulatory improvements that will make more stringent targets achievable.

The RFA supports both strengthening the 2030 carbon reduction target to 30 percent and steepening the trajectory of the compliance curve starting in 2024. At the workshop the staff presentation outlined that over-compliance with the program has resulted in LCFS carbon credit pricing of around \$60 per metric ton, chilling investments in new technologies and innovations.

The science as summarized in the most recent UN IPCC report points to the urgent need to make immediate and large-scale reductions in GHG emissions in this decade to avoid catastrophic consequences of climate change. Approving E15 as a legal fuel and further incentivizing flex fuels like E85 (through the value of carbon credits) provides a significant new opportunity for credit generation, supporting a much stronger carbon

reduction compliance curve. However, without complementary action (e.g., E15 approval and promotion of E85 and flex fuel vehicles), more stringent future LCFS requirements may be very difficult to achieve.

Modify The CATS model to better reflect current and projected ethanol economics, carbon intensities and volumes.

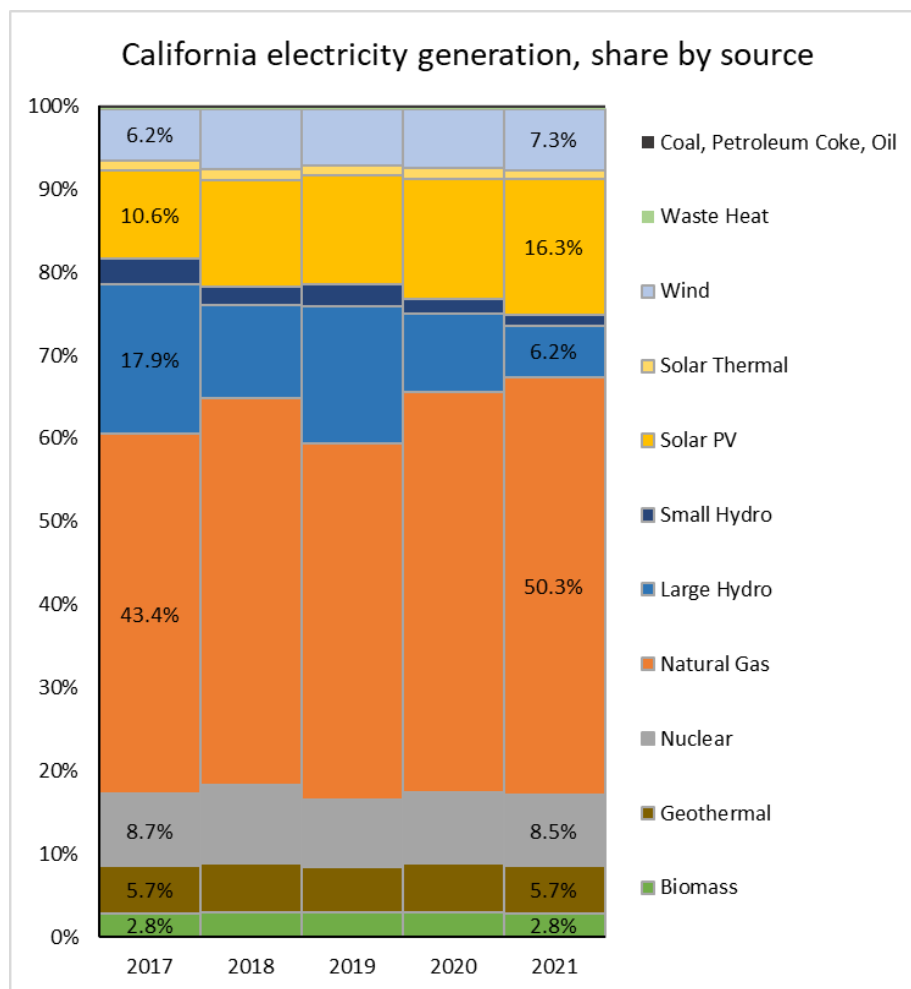
RFA appreciates the release of the CATS model and believes that with the proper assumptions, the model could be a helpful tool for understanding technically and economically viable strategies for improving the LCFS program. Unfortunately, the model was not made available in a timeframe and manner sufficient to facilitate in-depth stakeholder review and input.

Based on the posted CARB Presentation, CATS Model Technical Documentation, CATS Summary Inputs and Supplemental FAQ Documentation, RFA submits for consideration the following comments:

- The CATS model assumes a static 66 gCO_{2e}/MJ (g/MJ) carbon intensity (CI) for ethanol without carbon capture and sequestration (CCS) and a 35 g/MJ CI for ethanol with CCS. The average CI for ethanol in the California market today is 58 g/MJ and has steadily fallen since the inception of the LCFS.¹ The actual values in the market should be used as the starting point and there should be a curve representing the decreasing CI over time for ethanol. RFA members are committed to net zero carbon ethanol production no later than 2050 and have outlined concrete plans and pathways to achieve this result.² Using a declining future trend for ethanol CI would be consistent with both the historical (observed) trend analysis and the model's treatment of electricity, where a declining CI over time is built into the CATS model assumptions. Notably, the model's assumed declining CI for electricity is not necessarily consistent with recent observed trends in California's electricity generation. As shown in the chart below (based on data from the California Energy Commission), the share of California electricity generated from natural gas has increased in recent years, while increases in the solar and wind share of generation have been largely offset by decreases in hydro-electric generation.

¹ <https://ww2.arb.ca.gov/resources/documents/low-carbon-fuel-standard-reporting-tool-quarterly-summaries>

² <https://d35t1syewk4d42.cloudfront.net/file/2146/Pathways%20to%20Net%20Zero%20Ethanol%20Feb%202022.pdf>



- The CATS model assumes an E10 blend in conventional gasoline. Given the significantly lower CI of ethanol relative to CARBOB, and the results of the recent CARB-supported emissions study showing significant criteria pollutant reductions from increasing the blend to E15, the model should run a scenario on higher blends. E15 represents a key strategy for an early acceleration of the LCFS compliance curve.
- E85 represents another significant opportunity for carbon reductions from the light duty vehicle fleet. Given the lower CI of E85 and the fuel's distinct price advantages, California E85 volumes have been increasing at an annual growth rate of approximately 50-60 percent in recent years. From the Technical Documentation, the CATS model is assuming additional costs associated with bringing E85 to market relative to E10 to be reflected by D6 RIN prices (\$1.13 per gallon in the model). This assumption is greatly

overstated given the modest costs of converting existing E10 distribution to E85. We are happy to work with staff to better understand these costs.

- Market prices are used for modelling biofuels, but for electricity the social marginal cost is used; however, the document referenced in the footnote states that “the marginal cost is vastly lower than current rates.” With the need to more than double total electrical production in California to meet state climate objectives and the assumption that the grid CI is dropping, market pricing with some escalation over time seems to be a more appropriate assumption. This would also be more consistent with the treatment of other alternative fuels in the CATS model.
- For ethanol with CCS, the CATS model assumes that the CO2 captured would be used or stored in oil and gas fields qualifying for the \$60 per metric ton 45Q federal tax credit. As a matter of fact, most of the announced ethanol CCS projects will be geologically sequestering the CO2 and qualifying for the higher \$85 per metric ton 45Q credit. The model should be adjusted accordingly.
- A \$7 per bushel corn price assumed in the CATS model is not a representative long-term price for corn. Current corn prices around \$6.50 per bushel are at a multi-year high due to the Russia-Ukraine war and general worldwide commodity price inflation. USDA forecasts that prices will fall to \$4.30 per bushel by 2026 and then remain at that level as shown in the U.S. Feed Grains file in the recent USDA Baseline Projections.³
- The model’s conversion cost for ethanol appears to be higher than actual observed costs. Typical operating costs for ethanol producers are in the public domain and should be used to validate or modify the results of the regression analysis. For example, the Center for Agricultural and Rural Development (CARD) provides weekly updated margin reports that document corn ethanol conversion costs.⁴
- Corn distillers oil from ethanol producers is a coproduct of the production process and is an inedible corn oil (ICO). Consequently, it should not be included on the list of virgin oils. The distillers oil extracted at dry mill ethanol plants is strictly an industrial product and has no human food application. The FAQ supplement stated that it was not included as a waste oil because it had alternative uses as a feed. The same is true of the tallow and used cooking oil, which also have feed market opportunities.

³ <https://www.usda.gov/oce/commodity-markets/baseline>

⁴ https://www.card.iastate.edu/research/biorenewables/tools/hist_eth_gm.aspx

It is critically important for CARB to move quickly and concisely in strengthening the LCFS program. Timely and accurate modelling and scenario development through the CATS model and other analyses is a valuable tool in this regard.

Ethanol has generated the single largest volume of credits in the LCFS program, accounting for roughly four of every 10 credits generated since the program's inception. But constraining ethanol's use to 10 percent blends is sacrificing additional carbon reductions possible today. We urge CARB to move quickly to adopt regulations approving E15, which will allow the ethanol industry to help displace more fossil fuel in California and lower carbon emissions now.

An accurate modelling of ethanol's benefits and an integration of CARB fuels policy to incentivize higher ethanol blends will result in immediate reductions of GHG emissions and criteria pollutants while lowering the cost of compliance to obligated parties and California consumers.

RFA looks forward to working with CARB staff and other stakeholders to strengthen and extend the successful LCFS program.

Sincerely,

Kelly S. Davis
VP of Regulatory Affairs

OPIS
2022-12-20

*****Oregon DEQ Approves Rule Banning Sale of New Gas-Powered Vehicles by 2035**

Oregon's Department of Environmental Quality on Monday approved a ban on the sale of new gasoline-powered passenger vehicles in the state by 2035 as part of its effort to cut greenhouse gas emissions 50% by 2035 and 90% by 2050.

Oregon joins California and New York in the new gasoline-powered vehicle ban. Several other states have similar regulations under review.

Gasoline is not completely out of the picture in Oregon. The sale of new plug-in hybrids will still be permitted in 2035 and customers will still be able to purchase used vehicles with internal combustion engines. Proponents say this will allow for flexibility for drivers in the state, especially those with less access to charging stations.

The new EVs must meet a minimum charging range of 150 miles, include a battery warranty and fast-charging capability.

DEQ said manufacturers will be "strongly encouraged" to produce affordable electric vehicles, adding that community car-share programs could lead to EVs being more accessible to low-income residents.

Beginning in 2028, the DEQ will implement check-ins to evaluate the progress of the program.

Officials opposed to the new rule cite a lack of access to charging infrastructure for rural residents and the more expensive initial costs of EVs.

About 2,000 public and private chargers exist across the state and Rachel Sakata, DEQ senior air quality planner, said more will be built in coming years. Sakata also said she expects the electric grid capacity to be more sufficient by 2035 to meet the additional EV-related demand.

Emissions from transportation and electricity use are Oregon's largest source of greenhouse gas emissions, according to the agency. In 2019, Oregon's transportation sector emitted 22.9 million metric tons of CO₂, followed by the electric power sector with 18.8 million metric tons.

The remaining sectors - natural gas, residential/commercial, industrial and agriculture - combined emitted 22.8 million metric tons.

--Reporting by Christie Citranglo, ccitranglo@opisnet.com; Editing by Jeff Barber, jbarber@opisnet.com



The CAAFI Quarterly

Q4 2022

A Note from the Executive Director

This CAAFI Quarterly newsletter describes the CAAFI activities that occurred October through December 2022. In this issue, we share industry updates and CAAFI team accomplishments.

We appreciate questions, comments, and suggestions at any time. Enjoy!

Steve Csonka and the CAAFI Team

Quick Links

- ⇒ Check out “[What’s New](#)” for a brief review of noteworthy SAF news from the last quarter, including funding opportunities.
- ⇒ Go to “[Ask CAAFI](#)”, a segment that highlights and explains relevant topics that impact the SAF industry.
- ⇒ See “[CAAFI Team Highlights](#)” for a snapshot of CAAFI work teams’ projects and progress last quarter.
- ⇒ Jump to “[SAF State and Regional Efforts](#)” for a summary of select deployment projects around the United States.

Upcoming

- ⇒ CAAFI Webinars:
 - January 25th SAF Grand Challenge Roadmap Progress Update
 - February 1st Regional Projects via RBDG and BDOZ
 - February 8th SAF Work at Sandia National Lab
 - February 15th ASCENT Update

What’s New?

We continue to see significant offtake and commercialization announcements, as well as engagement from new producers.

[Fulcrum Successfully Produced Fuel from Landfill Waste](#)

[Gulfstream, Rolls-Royce Fly on 100% SAF](#)

[Gevo to Provide 10 Million Gallons of SAF to Delta](#)

[Arizona Facility to Make 300 Million Gallons of SAF for United Airlines](#)

[JetBlue and Fidelis Announced MOU for 92 Million Gallons of Blended SAF](#)

[Rolls-Royce, easyJet Successfully Test Use of Green Hydrogen in Jet Engine](#)

[Carbon Engineering Received Investments from Airbus and Air Canada](#)

[Germany Funded Methanol-to-SAF Project](#)

[Global Bioenergies Delivered SAF to French Government for Testing](#)

[India Committed to SAF Blending Mandate](#)

[United to Invest \\$37.5M in Oregon Biofuels Refinery](#)

[JetBlue Signed SAF Agreement with Air Company for 25 Million Gallons Over 5 Years](#)

[Gevo Announced 375 Million Gallons of SAF Supply Agreements](#)

[TotalEnergies Partners with SARIA to Expand SAF Production in France](#)

[Breakthrough Energy Announced \\$50 Million Grant to LanzaJet](#)

[Raven SR and EFT Announced Partnership to Produce SAF](#)

[Korean Air Signed 5-year Deal for SAF with Royal Dutch Shell](#)

[World Energy to Convert Houston Facility to SAF Hub](#)

[Canada Seeking Biomass Supply Chain Project Proposals](#)

[Aemetis Finalized 10 Contracts for Supplying SAF](#)

[Lufthansa Signed MOU with OMV for SAF Supply](#)

[Energy Absolute Facility in Thailand Plans to Produce SAF](#)

[Gevo Broke Ground on SAF Facility in South Dakota](#)

The above are some of the activities that took place in Q4, but many more can be found (e.g. Biofuels Digest, Biofuels International, GreenAir Online, etc.).

Ask CAAFI

Question: What is the FAST-SAF/Tech Program?

Answer: The Inflation Reduction Act (IRA) of 2022 include in Section 40007 the establishment of a new grant program to facilitate aviation decarbonization. The program is to be implemented as a “competitive grant program for eligible entities to carry out projects located in the United States that produce, transport, blend, or store sustainable aviation fuel, or develop, demonstrate, or apply low-emission aviation technologies.”

The FAA Office of Environment and Energy (AEE) is developing the new IRA Section 40007 grant program, to be called Fueling Aviation’s Sustainable Transition (FAST) Sustainable Aviation Fuels and low emission aviation technologies (Tech). The main objective of the program is to make investments that accelerate the production and use of SAF, in support of the SAF Grand Challenge goal of 3 billion gallons of domestic SAF production and use by 2030, to meet U.S. aviation climate goals to reduce carbon emissions from the aviation sector.

Nearly \$300 million in funding is available under the program. \$244.53M for SAF projects and \$46.53M for low-emission aviation technologies. \$5.94M is also available for program oversight.

On December 14, 2022, the FAA hosted a public meeting at the U.S. Department of Transportation’s Headquarters in Washington, DC to introduce and gather feedback on the new program.

The FAA gathered input on the program through January 31, 2023 and plans to issue a Notice of Funding Opportunity (NOFO) in the spring/summer 2023. The first round of grants is intended to be awarded in the fall 2023. It is anticipated that the first round of grants would expend half of the funds available for SAF and all of the funds for Tech. A second round of SAF funds would be awarded in 2024.

Any questions or comments about the program can be emailed to: fast-saftech@faa.gov.

SAF Grand Challenge Update

The agencies participating in the SAF GC are currently involved in two activities of note:

⇒ Inventory analysis of existing funded programs and how such efforts can be folded into SGC efforts or form the basis for execution of SGC tasks. Funding will likely be allocated to a broad group of activities that contribute to the roadmap execution, including the following examples already in execution:

- DOE Award: BETO Scale-Up and Conversion, \$64.7M over 22 projects
- DOE FOA: Waste Feedstock & Conversion, \$34.5M, in review
- USDA Award: Climate Smart Commodities, \$2.8B+, 70+ projects, 2 tranches, 14Sep’22
- USDA RFA: NIFA/AFRI SAS CAPs, \$80M, projects to \$10M, in review
- DOE/SC/BER FOA: Biosystems Design ... Biofuels, \$1-5M for 6-12 projects
- RFI: Biomass Conversion R&D and Analysis
- RFI: Community-Scale Resource and Energy Recovery from Wastes
- RFI/NOI: BETO Scale-Up and Conversion
- DOE BEREC Renewals: 2 of 4 centers have SAF-specific thrusts
- DOT funding in IRA S. 40007

⇒ Various of the action areas will likely be executed by Interagency Working Groups. One such group has already been formed as of Aug 2022, the SAF GC Life Cycle GHG Emissions Working Group. This group is working on Roadmap activity PA.1.1. Its MOU indicates: “..., the parties and EPA, along with other relevant agencies, will define and agree on the appropriate science-based methodology for establishing lifecycle emissions reductions, recognizing the need for credibility and taking note of consistency with international criteria, such as those developed at the International Civil Aviation Organization.” This group will provide information to Treasury for assistance in their crafting of regulation associated with the Blender’s Tax Credit and Producer’s Tax Credit portions of the IRA.

CAAFI Team Highlights

Business —

New producers, new suppliers, new customers, and many adjacent participants continue to contact us for guidance and assistance (now on a weekly basis) or asking for introductions to others who can assist with their commercialization efforts. We are very pleased to see this continued level of engagement from the previous quarter, and to help many! We would like to remind any producer of this available resource document: [Guidance for Selling Alternative Fuels to Airlines](#). Additional tools can be found [here](#).

Certification/Qualification —

The work of the Cert/Qual team is aligned with the activities of ASTM's aviation fuel subcommittee, the [Aviation Technical Committee of the Coordinating Research Council \(CRC\)](#), and the National Jet Fuel Combustion Program. [It is supported by](#) periodic OEM meetings in the US and UK and various ASCENT projects. The qualification process is described in a recently issued paper "[Qualification of Alternative Jet Fuels](#)". This paper may be found at the Frontiers in Energy Research Sustainable Aviation Fuels "Research Topic."

The winter meeting of the ASTM Aviation Fuels subcommittee in Orlando on 5-8 December was led by new chair Mark Rumizen (FAA), with Gurhan Andac (GE) leading the Synthetic Aviation Turbine Fuel section. At the meeting, a significant level of interest in methanol-to-jet pathways was exhibited by several candidate producers resulting in the formation of a new ASTM task force to develop a specification annex. Also, there was interest in expanding the HEFA Annex A2 to allow higher concentrations of aromatics.

ASTM D4054 updates include:

- ⇒ Swedish Biofuels has completed their Phase 1 research report and the final OEM review is nearing completion. It is expected that this new alcohol-to-jet pathway will be submitted for ASTM balloting in late February.
- ⇒ Global BioEnergies has completed their Phase 1 research report and the final OEM review is nearing completion. It is expected that this new alcohol-to-jet pathway will be submitted for ASTM balloting in late February.
- ⇒ The recent interest in unblended, or 100% SAF has reenergized the Virent SAK D4054 effort. Virent SAK is a pure aromatic stream that when blended with other SPKs such as FT or HEFA will result in a fully formulated fuel. Virent has worked with the OEMs to define the remaining qualification tasks and is now conducting the final round of testing.
- ⇒ Shell IH2: Shell has finalized their D4054 Tier 3 & 4 test plan with the OEMs and is now working with the OEMs to identify test facilities. Shell is also working on scaling up production to supply the necessary quantities of test fuel to conduct the testing.
- ⇒ CSIR – Indian Institute of Petroleum has completed an initial round of testing at the FAA/ASCENT D4054 Clearinghouse but more testing will be required. A new fuel sample has been submitted for additional Tier 1 and 2 fuel property testing.
- ⇒ OMV Downstream GmbH has formed an ASTM task group and initiated a D4054 Fast Track testing program with the FAA/ASCENT Clearinghouse.

An ASTM task force is continuing its work to develop specification criteria for an unblended (or 100%) alternative jet fuel. The basic format has been finalized and a proposed revised specification is undergoing final editing before being submitted to the OEM team and the ASTM task group members for review. It is expected that the review and continued editing will take some time before the draft D7566 specification revisions are ready for balloting to the ASTM aviation fuel subcommittee.

We continued to see increased engagement from petroleum refiners and suppliers who are interested in increasing the types and maximum blend levels for SAF co-processing at existing refinery installations. A ballot for incorporation of **co-processing of hydroprocessed biomass** has just been submitted for review by the ASTM membership. That this is the fourth attempt at passing the ballot is evidence of the rigor of the ASTM process. Other task forces have been established to develop specification criteria for **co-processing of pyrolysis oil derived from discarded tires**, and to increase the current approved 5% limit on **co-processing of lipids feedstock to 30%**. Note that these specification provisions will be incorporated into the ASTM D1655 conventional jet fuel specification upon approval.

If you have interest in seeing new pathway approval, or simply getting more engaged in the qualification efforts, consider joining ASTM D02 and participating in its activities. The next meeting will be held in Denver, CO on 26-29 June'23.

Sustainability —

Most of the effort and focus of the Sustainability team continued to support deliberations of ICAO and its work on CORSIA.

- ⇒ Continued participation in the LCA, sustainability and alternative fuels tracking work in the ICAO CAEP Fuels Task Group (FTG), Working Group 4 (CORSIA), and Sustainability Certification Scheme Evaluation Group (SCSEG).
- ⇒ ICAO released an updated [set of sustainability criteria](#) available covering the pilot and voluntary phases, now expanded to include carbon capture and sequestration and to address fossil-based lower carbon aviation fuels as well as SAF.

R&D —

- ⇒ The R&D team continues to support the execution of CAAFI's webinar series and coordinates with the CAAFI leadership and certification/qualification teams regarding emerging companies and fuel qualification.
- ⇒ Reach out to [Josh Heyne](#) on CAAFI's R&D team if you have interest in new SAF candidate [pre-screening efforts](#).

State and Regional Projects

CAAFI principals continue to participate in and foster regional development activity, on feedstocks, supply chain analysis & establishment, and with various entities. Stay tuned for an update from ASCENT (likely Q4 CAAFI Webinar) on ways that they can work with customers to provide keys insights and analysis.

The Mid-Atlantic Sustainable Biomass (MASBio) project held their annual meeting in conjunction with the North American Biochar & Bioenergy Conference in West Virginia in August. MASBio is a USDA NIFA AFRI Coordinated Agricultural Project (CAP) grant project. Many sessions during the conference discussed feedstocks that could be grown on reclaimed mine lands to be used for potential SAF biorefineries. There were ample opportunities to network and develop potential partnerships.

If you are aware of other scenarios that could be appropriate for a regional development effort, please let us know. For more information, see CAAFI's [State Initiatives](#) page.

Please check the [CAAFI website](#) on a regular basis for more detail on pending activities.

Email peter.herzig@dot.gov with any ideas for CAAFI Quarterly items of interest, caafi.org news suggestions, or inquiries about subscription to the CAAFI Membership group.

CAAFI® 2023 Priorities

At a high level, [CAAFI's goals and priorities](#) regarding sustainable aviation fuels (SAF) remain unchanged from previous years. They are:

- **Reinforcement of the Value Proposition of SAF:** communications, outreach, stakeholder engagement.
- **Enhancement of the SAF Fuel Qualification Approach:** participating, advising, and facilitating producer engagement in the ASTM qualification process.
- **Alignment of Efforts to Enable Commercial SAF Deployment:** leveraging research, partnering across U.S. government agencies, facilitating partnerships among supply chain stakeholders, and supporting innovative fuel acquisition processes.
- **Implementing and Sharing Best Practices:** provide tools, share best practices and integrate information to support communication and understanding among diverse stakeholders.
- **Supporting the implementation of the SAF Grand Challenge Roadmap:** Leverage the above activities to facilitate the execution of the work streams and activities in the Roadmap.

The U.S. government has released the [Sustainable Aviation Fuel \(SAF\) Grand Challenge Roadmap](#) which lays out the current state and future research, analysis, commercial, and policy needs to reach the SAF Grand Challenge Goals of three billion gallons of SAF per year by 2030 and full replacement of petroleum-based jet by 2050. In light of this effort, CAAFI will undertake the activities outlined below in 2023.

CAAFI 2023 Work Plan: Leverage CAAFI strengths to align efforts supporting implementation of the U.S. SAF Grand Challenge Roadmap

Given the ambition of the 2030 goal, CAAFI will focus on the immediate needs to reach three billion gallons of annual SAF production by coordinating current and future activities and managing processes for engaging public and private stakeholders from aviation, energy, and agriculture industries, academia, and government, including:

- **Convening a broad exchange of information among SAF stakeholders at:**
 - Our regularly scheduled CAAFI webinars.
 - Conferences and ad hoc meetings.
- **Providing information resources and credible expert technical support** to the SAF community through:
 - An updated and cohesive communications strategy to leverage a range of outlets for technical information and information exchange.
 - An updated CAAFI website with greater functionality, usability across devices, and expanded content.
 - Continued and expanded direct interaction with supply chain participants who seek out CAAFI leadership for information, advice, and coordination with other entities.
 - Continued and expanded dissemination of information through events, conferences, interviews, written articles, and journal publications.

- **Coordinating and aligning with U.S. Government Agencies’ activities in support of the SAF Grand Challenge:**
 - Regularly coordinating with the Federal Sustainable Aviation Fuels Interagency Working Group on needs, goals, and priorities.
 - Providing input on SAF Grand Challenge execution and performance tracking and supporting SAF Grand Challenge work team efforts and tasks.
 - Communicating federal funding and program developments to the broader SAF community.
 - Communicating the need for long-term, sustained policy support to meet the SAF grand challenge goals.
 - Working with stakeholders to develop key SAF communications and informational materials (e.g., infographics) that:
 - Reference the best available data
 - Highlight the potential economic benefits (employment, etc.), environmental, and social benefits of SAF.
 - Promote consistency for coherent and clear messaging.
- **Facilitating ongoing efforts by ASTM International on:**
 - Development of a specification for synthesized aviation fuels that can be used at higher blend levels up to 100% (complete) synthesized fuels.
 - Evaluation and approval of new synthesized fuel pathways.¹
 - Establishment of additional specifications leveraging existing refining infrastructure to produce SAF.
 - Support for clearinghouse, prescreening, and other SAF testing for fuel analysis and qualification in collaboration with the FAA-funded ASCENT Center of Excellence.
- **Promoting harmonization of sustainability evaluation approaches and tools by:**
 - Facilitating broader acceptance of methodologies to assess the environmental, social, and economic performance of SAF.
 - Facilitating research, demonstration, and commercial scale projects relating to regenerative agriculture/soil organic carbon sequestration.
 - Fostering integration with developments in carbon capture and sequestration.
 - Identifying concerns about carbon management and permanence with supply chain partners.
- **Continuing and expanding international engagement through:**
 - Input to the International Civil Aviation Organization through events and direct engagement with working group participants.
 - Coordination with other CAAFI-like organizations around the globe to align and complement work efforts.

¹ Synthesized fuels under ASTM D7566 can include any fuels that are sourced from non-petroleum feedstocks, as defined in the annexes. Recently, some parties have used “synthetic” fuels to specifically differentiate power-to-liquid/e-fuels from bio-based fuels. We are using the ASTM terminology of “synthesized fuels” to refer to fuels from a range of feedstocks including biological and waste-based fuels as well as fuels synthesized directly from other carbon and hydrogen sources.

- Collaboration with global SAF stakeholders on messaging.
- **Leveraging the above efforts to advance the use and commercial production of SAF** by fostering strategic partnerships, identifying opportunities and aligning deployment efforts.
 - Facilitating team development to respond to funding opportunities to develop novel feedstocks, SAF commercialization projects, and supply chains.
 - Supporting the development of commercial agreements across the SAF supply chain to enable SAF production and use.
 - Fostering other supply chain development and deployment partnerships.
 - Developing an approach to collaboration with the established biofuel and energy industry and the agricultural sector.



Ag-Auto-Ethanol Work Group
Member Update
December 2022

Dear AAE Work Group Members:

With the holidays and year end fast approaching, we are sending along AAE's final partner update for 2022. A recap of new developments and AAE activities follows:

New Developments

- **Proposed RFS RVOs**

EPA's proposed RFS set rule has been published and a virtual public hearing on the proposed rule is scheduled for Jan. 10th, with written comments due by COB on Feb 10th. As proposed by EPA, oil refiners will be required to blend 20.82 billion gallons of renewable fuel in 2023, 21.87 billion gallons in 2024, and 22.68 billion gallons in 2025. RFA is reporting that the ethanol industry got nearly everything they asked for including a multi-year program, a 15 Billion gal minimum for conventional ethanol and 250 M gal supplemental RVOs to satisfy the court order to restore RVO's lost to inappropriately awarded small refinery exemption waivers [EPA's RFS Set Rule Proposal Volume Requirements](#). On the flip side, our biodiesel partners are not happy with the Biomass-Based Diesel (D4) RVOs. EPA's proposal woefully undercounts existing or planned biomass-based diesel production and creates no extra incentive for biomass-based diesel producers who have exceeded posted targets for biodiesel production, refiners who produce cellulosic biofuels from corn kernel fiber or make advanced biofuels from corn oil produced at ethanol wet mills.

Regarding eRINS, the proposed rule would permit vehicle original equipment manufacturers (OEMs) to generate eRINs based on the light-duty electric vehicles they sell by establishing contracts with parties that produce electricity from qualifying biogas renewable electricity generators. Ethanol and corn stakeholders are very troubled by this new provision, as it broadens its application beyond liquid fuels. They also have major concerns around the challenges that will be created in tracking and validating eRINS. If that mechanism makes sense for electric powertrains, some automakers are asking why EPA is not offering the same incentive for cleaner ICEs. While EPA took no action to revise ethanol LCA, the agency did say that they intend the final rule will "...advance our understanding of the lifecycle GHG emissions associated with changes in crop-based biofuel consumption, including through new modeling of biofuel lifecycle GHG impacts."

The public is invited to submit comments on EPA's proposal by Feb. 10, 2023. Comments, identified by Docket ID No. EPA-HQ-OAR-2021-0427, may be submitted by the following methods:

- Federal eRulemaking Portal: <http://www.regulations.gov> (preferred method)
 - Follow the online instructions for submitting comments.
- E-mail: a-and-r-Docket@epa.gov.
 - Include Docket ID No. EPA-HQ-OAR-2021- 0427 in the subject line of the message.
- Mail: U.S. Environmental Protection Agency, EPA Docket Center, Air Docket, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.

For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit www.epa.gov/dockets/commenting-epa-dockets.

- **RVP Waiver**

AAE members report that efforts continued this month in the House and Senate to secure passage of the RVP waiver fix in the current lame duck session of Congress. Since our last update, 250 organizations have joined on a letter of support for passing the measure. Passage would replace the need for EPA to approve the patchwork opt-out proposal being advanced by eight state governors. As this measure was not included in the \$1.7 trillion “must pass” omnibus spending bill, AAE partners will ramp up work early in the 118th Congress to secure its adoption. This legislative fix would apply to any blend E10 and above.

- **Next Generation Fuels Act (NGFA)**

No new co-sponsors have been recruited since our last report. With Rep. Cheri Bustos retiring in the House, a new lead sponsor will need to be recruited in 2023. Support for the measure has been growing, and AAE members are redoubling their efforts to secure its passage next year. Towards this end, the corn growers are stepping up their comms work in support of the NGFA. Ads are currently running in DC papers and a national op-ed is under development. Other legislative pathways AAE is monitoring are a possible multiple dimension measure being developed by a loose coalition of liquid fuel stakeholders and Clean Fuel Standard legislation, the latter of which does not include a federal octane standard.

- **Legal Petitions**

Several ethanol and corn grower associations and other parties have come together to challenge the California waiver, NHTSA vehicle efficiency and EPA tailpipe emission rules. Initial briefs have been filed and petitioners expect all will be combined by the DC Circuit Court and considered together in September 2023- see [AAE - DC Circuit Litigation Update](#)

On a related note, the Alliance for Auto Innovation has filed an [amicus brief](#) on the NHTSA rule. Of the three challenges, our partners at Boyden Gray & Associates speculate that the EPA tailpipe rule may be most vulnerable as the authority being used by EPA closely resembles what the DC Circuit Court rejected in WVA vs EPA.

Action Teams-

- **Infrastructure**

The 3rd round application period for of USDA’s [Higher Blends Infrastructure Incentive Program - Rural ...](#) has closed. Awards are expected to be announced in February ’23. Petroleum retailers have expanded and accelerated upgrading fuel dispenser infrastructure in OH, IN, KY and MI. Additional incentives for infrastructure are coming via funds included in the Inflation Reduction Act. Thanks to several AAE partners multiyear effort to assist pump manufacturers and petroleum marketers to produce and secure approval of fuel pumps capable of dispensing up to E40 fuel blends, pumps certified to dispense up to E40 will begin to enter the market. Today over 90,000 pumps certified to dispense up to E25 have been put in place, effectively ensuring that there are adequate dispensers to allow drivers to access mid-level ethanol fuel blends.

- **Fuel Regs**

AAE auto partners report that EPA is working to get a proposed Tier 4 rule published by the end of the year. The clock is running out, so we'll be watching to see if they make a Dec. 31st deadline. This proposed rule will be a major area of focus for AAE in 2023, as it potentially will be the last comprehensive liquid fuel quality rulemaking the agency undertakes.

- **Fuel Specs**

Longtime AAE collaborators Coleman Jones, Bob McCormick, Kristy Moore, and others are now working to get a 95 and 98 octane standard approved by ASTM. AAE applauds their commitment to this pathway for high octane fuel development.

Reading File

- <https://ethanolproducer.com/articles/19716/advancing-policy-in-parallel>
- [USDA Carbon Credit Program Headlines Omnibus Bill's Climate Measures | InsideEPA.com](#)
- [CoBank says 2023 outlook for biofuels is 'very strong' | EthanolProducer.com](#)
- [EPA opens registration for Jan. 10 hearing on RFS 'set' rule | EthanolProducer.com](#)
- [Growth Energy flags twisted facts from Reuters, again | EthanolProducer.com](#)
- [USGC representatives share benefits of ethanol at COP27 | EthanolProducer.com](#)
- EPA's Vehicle "Trends" Report Shows Little Gain on CO2 Performance- See [the Dec. 12 report](#)

As always, your comments, questions or suggestions are most welcome.

Happy holidays everyone!

Best Regards,

Brent Boydston
AAE Co-Chair

Coleman Jones
AAE Co-Chair Emeritus



Ag-Auto-Ethanol Work Group
Member Update
January 2023

Dear AAE Work Group Members:

We hope and trust everyone's new year is off to a productive start. 2023 is shaping up to be a pivotal year of action on many fronts for AAE members and collaborating partners. A report on new developments and action team updates follows in your January 2023 AAE newsletter:

New Developments

• **Proposed RFS RVOs**

AAE partners are continuing to digest the 600+ page "set" rule with emphasis on the proposal to initiate a new e-RIN incentive. Last week, the AAE Leadership Team (LT) hosted a special one-hour knowledge sharing session on this new initiative, and the following perspectives were shared:

- EPA's e-RIN proposal is the latest manifestation of the Biden administration's effort to push a single path to decarbonizing the transportation sector.
- More than 300 of the 600+ page proposed rule are devoted to e-RIN discussion;
- In pushing the e-RIN path, EPA is ignoring other pathways such as corn kernel fiber.
- There are many unanswered questions on how e-RINs will be tracked.
- The e-RIN pathway was approved back in 2014; took 8 years for EPA to develop a proposal.
- Automakers are supportive of multiple pathways to reducing GHG emissions (including e-RINs) and are still working to understand how the proposal will work in practice.
- Other pathways have been languishing in EPA for years; concerns were raised expressed that by leapfrogging over other pathways, the e-RIN proposal could derail others in the queue.
- All pathways (e.g., corn oil/fiber) must have robust verification processes.
- Widespread concerns exist for using a proven liquid fuel incentive standard platform to launch additional incentives for electrification.
- Automakers will end up with responsibility for all administrative burdens.

Unanswered questions:

- While the current e-RINs are tied to biogas, could the playing field widen to include solar and wind generated energy?
- Will the e-RINs be generated every year or just the year in which the vehicle was produced?

NCGA commissioned Stillwater Associates to conduct an analysis of the e-RIN proposal. The key takeaways from their report follow:

1. RINs generated from the use of RFS-qualifying electricity to charge Electric Vehicles (EVs), commonly referred to as e-RINs, will begin entering the market based on EPA's latest proposed rule which takes effect January 1, 2024.
2. The number of e-RINs which can potentially be generated will be limited by the number of EVs in use in the U.S.
3. Any e-RINs generated are likely to be D3 (Cellulosic Biofuel) or D5 (Advanced Biofuels).

4. The nested structure of the RFS means that e-RINs will not compete directly with D6 RINs **provided that** EPA correctly accounts for the expected volumes of e-RINs and D6 RINs in their annual process for setting RFS volume obligations. Additionally, EPA needs to properly account for production of corn fiber ethanol in their assessment of D3 RIN production.
5. ***If EPA underestimates the annual generation of D6 RINs or e-RINs, they will compete on the margin towards satisfying the Renewable Fuel obligations and corn demand can be impacted.***

As for the possibility of the comment period on the set rule being extended beyond the current Feb. 10, 2023 deadline, the consensus of the LT was that this would not happen, as Growth Energy's consent decree with EPA requires the RVOs to be finalized by June 2023

- **RVP E10+ Waiver**

EPA still has not acted on the opt out waiver request filed by multiple Midwest governors, Missouri being the latest. The June “summer blend” deadline is fast approaching. If EPA issues another emergency waiver as a temporary fix, it could pave the way for litigation. Any legislative fix needs to go through the floor and not through committee action, as doing so would open the Clean Air Act to other amendments. AAE partners encouraged each other to redouble efforts to secure approval of the waiver in as clean and as soon a way as possible.

- **Multi-pollutant rule**

EPA appears to be on track to release their proposed Multi-Pollutant rule for GHG (CO₂), and criteria emissions (nitrogen oxides, hydrocarbons, and particulate emissions) for model years 2027 and beyond by the end of March. According to [a regulatory notice](#), EPA's proposed multi-pollutant standards arrived at OMB Jan. 23rd. [White House starts review of EPA's passenger vehicle emissions plan - Governors' Biofuels Coalition \(governorsbiofuelscoalition.org\)](#)

- **Pending Petitions**

Boyden Gay & Associates report that three petitions concerning NHSTA, Green House Gas Tail Pipe Emissions, and the California waiver rules are still moving forward. Arguments are scheduled to be heard by the 10th Circuit Court in September.

Next Generation Fuels Act (NGFA)

AAE partners are reporting that a new lead sponsor for the measure in the House has been identified and an announcement to this effect was forthcoming. AAE members are continuing to promote the measure in advance of its reintroduction. While the current environment (political gridlock combined with high gas prices) may not be conducive to getting this comprehensive measure passed, it does provide a unique opportunity for liquid fuel stakeholders to educate new and returning members on the immediate national and energy security, climate and public health benefits that improvements in fuel quality and engine design can provide.

- DOE's national blueprint for decarbonizing the transport sector released

50 THE U.S. NATIONAL BLUEPRINT FOR TRANSPORTATION DECARBONIZATION

	 BATTERY/ELECTRIC	 HYDROGEN	 SUSTAINABLE LIQUID FUELS
1 icon represents limited long-term opportunity 			
2 icons represents large long-term opportunity 			
3 icons represents greatest long-term opportunity 			
Light Duty Vehicles (49%)*		—	TBD
Medium, Short-Haul Heavy Trucks & Buses (~14%)			
Long-Haul Heavy Trucks (~7%)			
Off-road (10%)			
Rail (2%)			
Maritime (3%)		 [†]	
Aviation (11%)			
Pipelines (4%)		TBD	TBD
Additional Opportunities	• Stationary battery use • Grid support (managed EV charging)	• Heavy industries • Grid support • Feedstock for chemicals and fuels	• Decarbonize plastics/chemicals • Bio-products
RD&D Priorities	• National battery strategy • Charging infrastructure • Grid integration • Battery recycling	• Electrolyzer costs • Fuel cell durability and cost • Clean hydrogen infrastructure	• Multiple cost-effective drop-in sustainable fuels • Reduce ethanol carbon intensity • Bioenergy scale-up

* All emissions shares are for 2019

[†] Includes hydrogen for ammonia and methanol

Figure 7. Summary of vehicle improvement strategies and technology solutions for different travel modes that are needed to reach a net-zero economy in 2050 (more details provided in Section 5).

Note that the role of sustainable biofuels has yet to be determined.

- <https://www.energy.gov/eere/us-national-blueprint-transportation-decarbonization-joint-strategy-transform-transportation>

Action Teams-

- **Fuel Regs**

Given the disparate views of AAE members on e-RINs, the census of the LT was to not develop suggested key messages for AAE Work Group members to communicate to EPA. The LT did however affirm the importance of doing so for the proposed Multi-Pollutant rule for GHG (CO₂), and criteria emissions (nitrogen oxides, hydrocarbons, and particulate emissions) for model years 2027 and beyond.

- **Infrastructure**

An E15 Update from our friends at Growth Energy is available at [Prime the Pump E15 Sites01172023b](#). As of the end of 2022, there were 2923 stations selling E15 and nearly 5700 stations selling higher ethanol blends. E15 is available from 378 suppliers at 104 terminals. E15 sales were up more than 35% on a store by store basis for the summer of 2022, and E15 saved consumers an average of 16 cents/gallon (ABF Economics: [Study: Nationwide E15 Would Save](#)

[Drivers Over \\$20 Billion in Annual Fuel Costs – Growth Energy](#)). Additionally, if adopted nationwide, E15 would reduce GHG emissions by more than 17M tons, the equivalent of taking more than 4M cars off the road (Air improvement resources: [National E15 Analysis Final \(airimprovement.com\)](#)) – the study also includes possible state by state GHG reductions.

The 3rd round of HBIP grant awards are expected to be announced in mid- February. Additional incentives are coming via funds included in the Inflation Reduction Act.

- **Communications/Knowledge Sharing**

AAE's Communications Action Team is exploring the possibility of organizing a multistakeholder hill briefing on the benefits of HOLC liquid fuels. If this comes together it would be done in close coordination with government affairs reps of AAE members

The LT then discussed the value of holding an in-person spring forum for AAE members following the release of the proposed Multi-Pollutant rule for GHG (CO₂), and criteria emissions (nitrogen oxides, hydrocarbons, and particulate emissions) for model years 2027 and beyond. Be on the lookout for a doddle to explore best dates for holding a forum in April or May at the Westin Detroit Airport hotel.

Reading File

- **The new RVOs, not as clear cut as it might appear**
- <https://www.governorsbiofuelscoalition.org/not-so-fast-on-electric-cars/>
- <https://www.governorsbiofuelscoalition.org/epa-draft-report-again-fails-to-directly-tie-environmental-harms-to-rfs/>
- <https://www.governorsbiofuelscoalition.org/will-using-more-biofuels-be-good-for-the-environment-two-experts-square-off/>
- https://www.theguardian.com/us-news/2023/jan/24/us-electric-vehicles-lithium-consequences-research?utm_term=63d26b4549511ccbc78bfda72d23e6a3&utm_campaign=DownToEarth&utm_source=esp&utm_medium=Email&CMP=greenlight_email

As always, your comments, questions or suggestions are most welcome.

Best Regards,

Brent Boydston
AAE Co-Chair

Coleman Jones
AAE Co-Chair Emeritus



Ag-Auto-Ethanol Work Group
Member Update
February 2023

Dear AAE Work Group Members:

AAE's spring forum is set for April 25-26 at the Westin Detroit Airport hotel. The format will mirror last year's event beginning with a knowledge sharing session on the afternoon of the 25th followed by presentations, updates and path forward planning on the 26th. A detailed agenda will be available next week. Please use the following links to [register](#) and make your [room reservation](#).

An update on new developments and action team activity follows in your January 2023 AAE newsletter:

New Developments

- **New AAE Co-Chair**

We are delighted to report that [Michael Moore](#), Senior Regulatory Development Engineer in Technical Safety and Regulatory Compliance for Stellantis N.V., has graciously agreed to step in and assume the position of AAE Co-Chair, where he will team up and work alongside Brent Boydston in helping guide the work of our multistakeholder alliance. Michael has served as a member of the AAE Leadership Team for several years and brings a wealth of experience to our collaborative. Please join us in welcoming Michael into his new position.

- **Proposed RFS RVOs**

The comment period on EPA's proposed 2022-2026 RVOs closed on February 10th and several AAE members submitted comments. While most supported the volumetric biofuel targets for obligated parties, most weighed in expressing significant concern with the new eRIN pathway, noting that EPA lacked the statutory authority to issue eRINs. Comments filed by a number of state corn grower organizations called on EPA to "separate its eRINs proposal from the volume targets and instead issue the congressionally required report to Congress so that that branch can consider whether and how to develop a workable standard for incentivizing the use of renewable electricity for vehicles".

Another common theme was the recommendation that any approved pathway for credits must meet the same requirements. Commenters also expressed concern over EPA leapfrogging the eRIN path over others that have been on hold for years. Below are links to comments submitted by AAE members and partners:

- [NCGA EPA-HQ-OAR-2021-0427-0642 attachment 1](#)
- [RFA EPA-HQ-OAR-2021-0427-0603 attachment 1](#)
- [Valero EPA-HQ-OAR-2021-0427-0655 attachment 1](#)
- [AAPC EPA-HQ-OAR-2021-0427-0629 attachment 1](#)
- [Alliance for Automotive Innovation EPA-HQ-OAR-2021-0427-0645 attachment 1](#)
- [GM EPA-HQ-OAR-2021-0427-0589 attachment 1](#)
- [AFPM EPA-HQ-OAR-2021-0427-0812 attachment 1](#)
- [Ford EPA-HQ-OAR-2021-0427-0784 attachment 1](#)

- **RVP E10+ Waiver**

EPA still has not acted on the opt out waiver request filed by multiple Midwest governors. Bicameral and bipartisan Congressional pressure for EPA to act is building. We are reaching a critical decision point as fuel refiners and blenders are gearing up to produce summer blends and they need clarity on what fuel blends will be allowed.

- **Multi-pollutant rule**

EPA's proposed Multi-Pollutant rule for GHG (CO₂), and criteria emissions (nitrogen oxides, hydrocarbons, and particulate emissions) for model years 2027 and beyond has been submitted to OMB for review. AAE auto partners speculate that the rule will be released for comment in early April, with NHTSA's CAFE/GHG rule being issued one month later. Of concern is the lack of harmonization for the period of time each rule covers; EPA's standards extend through 2032 and NHTSA's through 2031. At this time automakers do not expect that fuel quality improvements will be a priority in this rulemaking, reinforcing the need for AAE members and partners to advocate for its inclusion.

- **E30 Testing**

Nebraska's E30 demonstration project continues to evolve. The first phase of the project involved testing approximately 50 state owned vehicles running on E15 and E30 blends using retail (real world fuel). The test ran for 12 months and involved both control and test vehicles. The dimensions of the testing involved performance and economic metrics. Results were positive and demonstrated reductions in CO₂ emissions and economic savings in the form of lower fuel cost. The testing did not reveal any engine damage or warning lights. The second phase of the test program is now underway and is designed to demonstrate effects over a longer period of time, using a more diverse fleet of vehicles that operate on segregated special fuel (not retail fuel). Phase two parameters were tightened by EPA, and the testing will continue for three years, with annual reporting and yearly approval by EPA to continue testing.

Please see the following links for: 1) a presentation on the E30 Demonstration that Reid Wagner gave to the AAE Leadership Team; and 2) the full peer reviewed and published paper that made it into *Fuel* and its location in the journal database Science Direct.

- 1) <http://ethanol.nebraska.gov/wp-content/uploads/2023/02/NEB-E30-Demo-Overview.pdf>
- 2) <https://www.sciencedirect.com/science/article/pii/S0016236121015106> (this is the science direct page)
<https://reader.elsevier.com/reader/sd/pii/S0016236121015106?token=A250ACAD34E7E2602E06DFB3927242EE7E6A7F217F34EA11592BBA1A1229C20EA1B28A875199C792B79210216E981F3&originRegion=us-east-1&originCreation=20230223225648> (this is the full paper PDF)

- **Pending Petitions**

There have been no new developments since our last update on the petitions we have been tracking in the courts. Boyden Gay & Associates report that three petitions concerning NHSTA, Green House Gas Tail Pipe Emissions, and the California waiver rules are still moving forward. Arguments are scheduled to be heard by the 10th Circuit Court in September.

- **Next Generation Fuels Act (NGFA)**

A new lead House of Representatives sponsor for the NGFA has been identified and efforts are now centered on securing additional co-sponsors. The goal is to have a bipartisan group of policy makers cosponsor the bill in both the House and Senate. AAE members are continuing to promote the measure in advance of its reintroduction.

Reading File

- <https://www.governorsbiofuelscoalition.org/biogas-poised-to-seize-rfs-potential/>
- Global Demand for Ethanol (New USDA Report) <https://www.ers.usda.gov/publications/pub-details?pubid=105761>
- <https://www.governorsbiofuelscoalition.org/just-how-good-for-the-planet-is-that-big-electric-pickup-truck>
- Brian West's commentary on NGFA in SAE- see page 2
<https://www.nxtbook.com/smg/sae/23UPD02/index.php#/p/Cov1>
- <https://www.roadandtrack.com/news/a42732700/automakers-pledge-to-go-all-in-on-evs-but-the-numbers-arent-adding-up/>
- [Gazing Higher: The Quest for E30 | EthanolProducer.com](#)
- [Pearson Fuels Opens 300th E85 Retail Site](#)
- **Electrify America Charging Is about to Get More Expensive**
Prices for per-kilowatt-hour and per-minute charging will rise by up to 5 cents starting on March 6. Read in Car and Driver: <https://apple.news/AVFJIrHaDSsKSyX6fU-VuWQ>

As always, your comments, questions or suggestions are most welcome.

Best Regards,

Brent Boydston
AAE Co-Chair

Michael Moore
AAE Co-Chair

3b. Federal Issues Update
iv. Tax Credits (Biodiesel, Cellulosic)



701 8th Street, NW, Suite 450, Washington, D.C. 20001

PHONE 202.545.4000 FAX 202.545.4001

GrowthEnergy.org

February 17, 2023

Commissioner Douglas O'Donnell
Internal Revenue Service
CC:PA: LPD:PR (Notice 2023-06)
Room 5203
P.O. Box 7604
Ben Franklin Station
Washington, DC 20044
Via Regulations.gov

RE: Notice 2023-06, Sustainable Aviation Fuel Credit; Registration; Certificates; Request for Public Comment

Thank you for the opportunity to further comment on the Internal Revenue Service's (IRS) plan to issue guidance regarding important provisions of the Inflation Reduction Act (IRA) that will drive reductions in greenhouse gas emissions (GHG) and grow American jobs. Growth Energy is the nation's largest association of biofuel producers, representing 90 U.S. plants that each year produce almost 9 billion gallons of low-carbon, renewable fuel; 107 businesses associated with the production process; and tens of thousands of biofuel supporters around the country. As we have noted previously, we view U.S. leadership in the global sustainable aviation fuel (SAF) market to be vital to the decarbonization and future economic competitiveness of the U.S. aviation sector, and a number of our members have already made substantial investments in SAF production.

To that end, we reiterate the points that we made in our November 4th letter to Secretary Yellen on SAF as well as our December 2nd comment to you on Notice 2022-58; Request for Comments on Credits for Clean Hydrogen and Clean Fuel Production. Specifically, the IRS must allow ethanol to jet producers to use the U.S. Department of Energy's Greenhouse Gases, Regulated Emissions, and Energy Use in Technologies (GREET) model in determining the fuel's lifecycle GHG emissions. Further, the IRS' implementation of the 40B and 45Z tax credits must rely on accurate and complete GHG lifecycle emissions accounting to determine credit eligibility and amount. Further details on our views can be found in our earlier comment and letter both of which are attached here.

Growth Energy appreciates your input as you implement the IRA tax credit provisions in a manner that ensures the best available science is used to calculate eligibility for and amount of credits. We look forward to our continued engagement on this important work and are happy to meet and discuss these issues in greater detail.

Thank you in advance for your consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "Chris Bliley", with a stylized flourish at the end.

Chris Bliley
Senior Vice President of Regulatory Affairs
Growth Energy

February 17, 2023

Internal Revenue Service
CC:PA:LPD:PR (Notice 2023-06)
Room 5203
P.O. Box 7604
Ben Franklin Station
Washington, DC 20044

Submitted electronically via regulations.gov

Re: Notice 2022-57, Sustainable Aviation Fuel Credit; Registration; Certificates; Request for Public Comments

The Renewable Fuels Association (RFA) appreciates the opportunity to provide these comments to the Office of Associate Chief Counsel (Passthroughs & Special Industries) as well as the Department of the Treasury (Treasury Department) and the Internal Revenue Service (IRS) regarding the anticipated guidance for implementation of the credit for Sustainable Aviation Fuel (SAF) under section 40B of Public Law 117-169, 136 Stat. 2003 (August 16, 2022), commonly known as the Inflation Reduction Act of 2022 (IRA).

RFA is the leading trade association for America's ethanol industry. Its mission is to advance the development, production, and use of low-carbon fuel ethanol and co-products by strengthening America's renewable fuels industry and raising awareness about the benefits of renewable energy. Founded in 1981, RFA serves as the premier meeting ground for industry leaders and supporters. RFA's 300-plus members are working to help America become cleaner, safer, more energy secure, and economically vibrant.

Of particular relevance to the goals of the IRA, RFA's producer members have committed to bold carbon intensity reduction targets. These include ensuring that by 2030 ethanol reduces greenhouse gas (GHG) emissions by at least 70 percent, on average, when compared directly to gasoline and that by 2050, ethanol achieves net-zero lifecycle GHG emissions.¹ Our comments will focus on the interpretation of tax measures which will empower and accelerate the carbon reduction potential which is central to the spirit of the IRA. RFA's comments are informed by input from producer members' concerns about the interpretation of tax provisions within the IRA, as well as RFA's collaboration with related industry groups and coalitions.

I. General Ethanol Industry Priorities and Principles for IRA Provisions

The IRA represents the most significant federal commitment to low-carbon biofuels since the Renewable Fuel Standard was expanded by Congress in 2007. The IRA recognizes the important role renewable fuels like ethanol can play in a lower-carbon future for this nation. Specifically, the legislation includes provisions that provide funding for clean fuel production,

¹ RFA Net Zero Pledge President: Ethanol to Achieve Net Zero Emissions by 2050 or sooner, July 2021, <https://ethanolrfa.org/pledge>

higher biofuel blend infrastructure, enhanced opportunities for ethanol to play a greater role in sustainable aviation fuel, and carbon capture, utilization, and storage (CCUS).

However, the IRA's tax provisions will need to be interpreted correctly for the legislation to achieve its goals. In particular, lifecycle analysis (LCA) methods, flexibility for individual producers in the calculation of individual fuel pathways in order to encourage GHG reduction, and timely guidance on regulations for tax incentives to meet the timeframes of the IRA's programs for carbon capture, utilization, and storage (45Q) will be essential to the legislation's success.

The goal of net zero or better ethanol is within sight and CCUS will play a big part in getting there.² Given the timeframes of IRA measures, decisions impacting ethanol producers' eligibility for credits, the value of those credits, and certain definitions will have a significant impact on the IRA's impact on carbon emissions.

Finally, time is of the essence. Between the time it takes for design, planning, and permitting, sunsets, transitions, and extension discussions will come up fast. Ethanol producers need to begin investing in improvements immediately as approvals take time and technical skill and specialized labor for these projects may be in short supply. As business decisions are being made, the ethanol industry will need to be confident that credits will be based on reliable science and that credits will retain the value Congress intended in the law. This means clear rules for pathway LCA, reasonable reporting requirements and flexibility for prevailing wage and apprenticeship requirements, and provisions that ensure transferrable credits retain their value to transferees.

II. Guiding Principles on Ethanol's Role in the Future of Sustainable Aviation Fuel

SAF production presents a major new market opportunity for ethanol producers, as the lifecycle carbon footprint of ethanol continues to shrink and the economics of ethanol-to-jet fuel processes continue to improve. The ethanol industry sees tremendous promise and potential in the emerging market for sustainable aviation fuels. The ethanol industry has the scale and capacity to deliver the volume of feedstock to meet SAF volume targets for the decades to come.

Section 40B of the IRA can be a bold starting point for the future of SAF policies. However, as initial mechanisms are formulated to encourage SAF production, rules which effectively pick one technology or feedstock over another or use incomplete or outdated science could serve as a barrier to entry and keep production volumes from reaching targets. Of paramount importance to the IRA is the inclusion of the Department of Energy (DOE) Argonne National Laboratory's Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (Argonne GREET) model for pathway LCA for SAF as an "other similar methodology." The Argonne GREET is the leading and most sophisticated model and corrects issues present in the International Civil Aviation Organization (ICAO) Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) LCA framework.

² For more information on net-zero ethanol, see *Pathways to Net-Zero Ethanol: Scenarios for Ethanol Producers to Achieve Carbon Neutrality by 2050*, Isaac Emery, Ph.D., of Informed Sustainability Consulting LLC, February 14, 2022, <https://d35t1syewk4d42.cloudfront.net/file/2146/Pathways%20to%20Net%20Zero%20Ethanol%20Feb%202022.pdf>

Ethanol-to-jet production technology is advancing rapidly and the necessary certification and verification systems are already at work in other fuel programs. The ethanol industry looks forward to playing a central role in the carbon reductions achieved through the use of SAF. However, Treasury/IRS should be cognizant of the potential barriers to entry and disincentives for investment that faulty or incomplete LCA modeling can create. With the right policy signals and support – including technology-neutral LCA, particularly Argonne GREET, ethanol-to-jet technologies can quickly scale up to meet the future SAF needs of the aviation sector.

While our chief concerns with 40B credit generation relate to lifecycle modeling and certification measures, RFA urges Treasury to clarify several other details which will provide consistency and empower the credit to achieve its goals.

- Treasury should make the SAF portion of fuel blends exempt from taxation under section 4081. This is a concern because the definition of “kerosene” includes any liquid fuel covered by ASTM D1655, which would include the SAF portion of the qualified mixture. This is clearly inconsistent with the intent of 40B as it would erode the value of the credit and clarification is necessary to prevent this result. RFA asks that Treasury clarify that the SAF portion of a blend is not kerosene and not taxable.
- Treasury should employ consistent rules across fuel credits, including those under 40B as well as 45Z, regarding the use of book and claim accounting. Book and claim is a necessary and common practice that allows credits to encourage investment in sustainability technologies while allowing feedstock supply chains to function. Allowing book and claim for one credit and not another defeats the technology neutrality which is intended by 40B and encourages the most investment and adoption.
- Given the rapid innovation in the production of SAF, Treasury should make clear that future ASTM pathways will be eligible. 40B contains its own GHG and content eligibility criteria and future ASTM pathways that meet these requirements should be eligible for 40B credit generation.
- To prevent unnecessary delay, Treasury should allow SAF producers to register with IRS prior to receiving certification. Demonstrating compliance with emissions reduction criteria occurs near the time of initial production whereas registration under 40B(f) is a distinct process which can be completed earlier to clear any potential administrative bottlenecks.
- Treasury should adopt reasonable rules for the transfer of fuels into aircraft that appreciate logistical realities and encourage SAF use. While 40B requires that “the transfer of such mixture to the fuel tank of such aircraft occurs in the United States,” Treasury should consider fuel entered into a pipeline or airport storage to be transferred into an aircraft in the United States. Jet fuel is not exported by pipeline and the refueling of outbound international flights would also satisfy 40B requirements for transfer.

RFA appreciates Treasury’s attention to these and other important details throughout the IRA which can help or hinder the law’s impact on GHG emissions, the economy, and US energy independence.

III. Answers to Questions from IRS

The following comments will be organized to align with questions in this Request for Information and will highlight how several provisions and questions of interpretation relate to our general priorities for SAF tax credit implementation.

(1) Section 40B(e)(2) provides that “any similar methodology, which satisfies the 25 criteria under § 211(o)(1)(H) of the Clean Air Act (42 U.S.C. 7545(o)(1)(H)), as in effect on the date of enactment of this section” may be used to determine the reduction in lifecycle greenhouse gas emissions. What methods exist that could qualify as a “similar methodology”? Do the lifecycle emissions values that have been developed by the Environmental Protection Agency for the Renewable Fuel Standard qualify as a “similar methodology”? Does the Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) model developed by the Argonne National Laboratory qualify as a “similar methodology”?

The Department of Treasury and IRS should use the Argonne GREET model for pathway LCA for SAF as well as non-aviation fuel. Although lawmakers opted to allow the use ICAO/CORSIA for LCA of SAF pathways, they also left the door open for the use of an “other similar methodology.” Argonne GREET clearly meets the intent of Congress with respect to “other similar methodology[ies]” that are as at least as robust as the SAF methodology used by ICAO for CORSIA. RFA believes the best choice for LCA of SAF pathways is the Argonne GREET model. Using Argonne GREET for SAF would ensure that the same, consistent methodology is used for both aviation and non-aviation fuels. Using two different models for the purposes of tax credit generation (i.e., one model for SAF, and a separate model for non-aviation fuels) could create administrative challenges for both industry and regulators, and it could also create perverse incentives or disincentives for the production of certain low-carbon fuels in the marketplace.

Argonne GREET is widely considered the most complete and sophisticated transportation fuel LCA modeling tool in the world, and it is particularly well suited to this application for several reasons. First, Argonne GREET does in fact include a robust, peer-reviewed methodology for estimating both direct and indirect land use change (LUC/ILUC) emissions potentially associated with certain low-carbon fuels. Next, Argonne GREET updates its data regularly (at least annually), keeping track of the impact of changes in production practices and technology. Finally, Argonne GREET offers the detail and transparency needed for pathways to be “scored” (i.e., assigned a carbon intensity value) quickly and thoroughly. This allows for individual pathway scoring instead of overbroad categories consisting of default values, which may not accurately represent the wide range of technologies and practices used in the industry.

Argonne GREET is considered the gold standard for estimating the GHG emissions from transportation fuels, including both direct and indirect emissions. Argonne GREET has been utilized extensively by federal, state, and international agencies. Most notably, the model has been used (with only minor adaptations) by the California Air Resources Board for the state's Low Carbon Fuel Standard (CA-GREET) and by the Oregon Department of Environmental Quality for its Clean Fuels Program (OR-GREET). Further, U.S. EPA used the GREET model for key elements of the LCA conducted in 2009-2010 in conjunction with promulgation of the RFS2 regulations.

Contrary to some uninformed criticisms of the model, the Argonne GREET tool does indeed include a comprehensive module for estimating indirect land use change emissions. While ILUC remains a hypothetical concept, the most scientifically robust model-derived estimates of corn ethanol ILUC emissions are integrated into GREET. The Carbon Calculator for Land Use Change from Biofuels Production (CCLUB) is used to estimate ILUC emissions within the GREET/CCLUB/Global Trade Analysis Project (GTAP) modeling array. The use of CCLUB within this array has advantages over other approaches since CCLUB's LUC estimates are taken from the latest version of Purdue University's GTAP model and its emission factors are based on actual field measurements incorporated into the CENTURY/DAYCENT tools for measuring site-level carbon fluxes.

Based on these enhancements, the latest version of GREET/GTAP/CCLUB estimates that ILUC emissions from corn ethanol are approximately 5.4 grams of carbon dioxide equivalent per megajoule (g CO₂e/MJ), while total emissions from LUC (including domestic LUC) are 7.4 g CO₂e/MJ.

As researchers from Argonne explained in a 2021 study, "The LUC GHG emissions from large-scale corn production for corn ethanol have been simulated since 2008. Early studies showed extremely high LUC emissions...and recent studies show significantly lower LUC emissions. The downtrend in simulated LUC emissions is a result of better developed and calibrated economic models and better modeling of GHG emissions from LUC. Economic models such as [GTAP] are much improved in addressing land intensification (i.e., existing lands are managed to be more productive) versus land extensification (i.e., croplands extend into new areas of pasture and forest), crop yield increases over time, crop yield differentials in existing croplands and in newly cultivated croplands, double cropping in regions such as Asia, availability and restriction of certain land conversions (e.g., restriction of public forest land for conversion to croplands), price elasticities for crop yield responses, and food demand responses to price changes."³ The paper included a timeline summarizing LUC emissions estimates that have appeared in the literature since 2008. The 10 most recent estimates result in an average of 12 gCO₂/MJ, roughly 60% lower than EPA's 2010 estimate. This research from Argonne compiled estimates of LUC emissions from corn ethanol based on 15 models and assessments and showed that the emissions estimates have decreased over time and converged into a range.

Another important feature of GREET is the periodic updating of key input data. One of the problems with some LCA models is that they use outdated data and lack the mechanisms necessary to adjust for changing circumstances and improving technology. Keeping the data current is both an accountability measure and an incentive to deploy and maintain the best technology and practices.

Next, the GREET model also allows for low-carbon fuel producers to submit unique, differentiated data on the emissions related to feedstock production, rather than treating farm-level feedstock production in an overly generalized "one size fits all" manner. The model is publicly available and can be used by market participants to evaluate the potential emissions reductions reduction of different SAF production pathways and support decision making.

Importantly, the above discussed benefits of the Argonne GREET model are necessary to correct for certain inadequacies of the ICAO/CORSIA LCA methodologies. The science within

³ Lee, U., Kwon, H., Wu, M. and Wang, M. (2021). Retrospective Analysis of the U.S. Corn Ethanol Industry for 2005–2019: Implications for Greenhouse Gas Emission Reductions. *Biofuels, Bioprod. Bioref.* <https://doi.org/10.1002/bbb.2225>

the ICAO model is severely outdated and data is 10-15 years old. It fails to accurately account for on-farm carbon reduction activities as well as production and efficiency improvements in biofuel production. These changes are well-recognized in the Argonne GREET model and DOE has the best resources, expertise, and current ability to assess lifecycle emissions fairly and scientifically. The inclusion of “other similar methodology” suggests congressional intent to correct for potential issues with ICAO/CORSIA and achieve the technology-neutral, scientific, and up-to-date approach to LCA best exemplified by Argonne GREET.

Finally, RFA supports the option to use individual pathway analysis for purposes of determining carbon intensity, and in turn, credit values. Argonne GREET offers the granular approach that will enable reliable and thorough results without unnecessary delay. By specifying the use of GREET, Department of Treasury/IRS can streamline this process and give ethanol producers the confidence needed to make investments in carbon reduction. This is made all the more important by the relatively short timeframe of the SAF tax credit. DOE has made considerable investment in this tool which can play an important role in achieving the goals of the IRA.

(6) What entities are capable of providing the certifications required by § 40B(d)(1)(D) (relating to a lifecycle greenhouse gas emissions reduction percentage of at least 50 percent) and (f)(2)(A) (concerning general requirements, supply chain traceability requirements, and information requirements established under CORSIA or a similar methodology under the Clean Air Act) with respect to SAF co-processed qualified mixtures?

Regarding certification and verification of fuel production pathways, RFA points out that there are already a number of third-party organizations and systems in place. These existing systems could be used to inform the certification requirements for the SAF credit. Under state programs, such as California’s Low Carbon Fuel Standard (LCFS) and Oregon’s Clean Fuels Program, third-party schemes have been developed to provide certification, verification and quality assurance related to credit generation. For certain international low-carbon fuel programs, other certification bodies, such as the International Sustainability and Carbon Certification (ISCC) scheme have been used successfully. Furthermore, under the Renewable Fuel Standard (RFS), EPA has implemented a Quality Assurance Plan (QAP) to assure valid RIN generation for various low-carbon fuels. Under the QAP program, not only are there a number of approved third-party verification and certification providers, but there is a system for the addition of new providers. There is a similar process for adding new verifiers for California’s LCFS. RFA urges Treasury/IRS to learn from existing programs, or even leverage those programs where appropriate, to conduct certification, verification, and quality assurance for SAF tax credit generation.

In terms of the nature of the certification process, RFA supports the adoption of rules aimed at striking a balance between rigor, assurance, and practicality. Certification practices that are aimed at timeliness and efficiency will encourage the investment intended by the law. Thorough review is necessary for any certification process and RFA supports meaningful verification throughout SAF pathways. However, a balanced approach that provides a necessary level of assurance to regulators while also minimizing administrative burden for industry is necessary.

Finally, as certification focuses on LCA and carbon scoring data, it is worth noting that most third-party certifiers and verifiers in the low-carbon fuels area have a great deal of experience working within the framework of the Argonne GREET model. For example, the carbon intensity values used to generate credits under California’s LCFS are based on GREET, and the certification systems in place there are generally working well today. Bringing Argonne GREET-

based certification for SAF to scale for a federal program is entirely possible utilizing existing industry practices.

RFA looks forward to working with IRS, Treasury, and other agencies on the implementation of the IRA. We thank you again for the opportunity to provide comments. If you have any questions, or need any additional information, please feel free to contact Jared Mullendore at jmullendore@ethanolrfa.org or Edward Hubbard, Jr., Esq., at ehubbard@ethanolrfa.org or (202) 289-3835.

Sincerely,
RENEWABLE FUELS ASSOCIATION

A handwritten signature in black ink that reads "Geoff Cooper". The signature is written in a cursive, flowing style.

Geoff Cooper
President and CEO

3b. Federal Issues Update
v. USDA/DOE Programs

Background:

According to a 2021 report put out by the Biden Administration, 4 out of 5 new cars on the road in 2050 will still require liquid fuels – instead of the immediate push towards electric vehicles, we should be looking to biofuels to reduce emissions and power our vehicles. These three bills provide a framework for the future of fuel in the United States by analyzing the full costs of switching to electric vehicles vs ethanol powered vehicles, researching the possibility of Biojet fuel, and giving our brightest minds the tools to study how ethanol can be used as a primary fuel source to develop fully-carbon neutral vehicles engines.

What each bill does:

COST Act (Comparison of Sustainable Transportation): Directs the Comptroller General and the Secretary of Energy to compare the financial and environmental costs of replacing the federal fleet of gasoline-powered vehicles with electric vehicles or E85 capable flex-fuel vehicles. The Secretary of Energy would analyze the lifecycle greenhouse gas emissions from gasoline vehicles, E85 capable flex-fuel vehicles, and battery electric vehicles.

Biojet Fuel Research Act: Directs the FAA to establish a working group focused on identifying R&D needs to produce Biojet fuel. It would require a report to be submitted no later than one year after the bill's enactment.

Biofuel Cell Research Act: Directs the Secretary of Energy to establish a research, development, and demonstration program for a commercially viable fuel cell system that uses biofuel as a fuel source. The Secretary would establish R&D goals that will result in the demonstration of the fuel cell system.

Josh Millard

Legislative Assistant

Congressman Randy Feenstra (IA-4)

1440 Longworth HOB | (202) 225-4426



Senator Ernst plans to reintroduce the **MAP and FMD bill** tomorrow or Wednesday. This bill was formerly known as the Cultivating Revitalization by Expanding American Agricultural Trade and Exports (CREAATE) Act, but will be called Expanding Agricultural Exports Act this year. She previously introduced this in the 117th Congress and for the 2018 farm bill. Senators King (I-ME), Smith (D-MN), and Grassley were all cosponsors last year as well as Reps. Hinson, Axne, Mann, Costa, Newhouse, Panetta, and Schrier.

This bill doubles funding for MAP and FMD at a cost of \$469 million expands and extends the Market Access Programs (MAP) and Foreign Market Development (FMD) Program under the Agricultural Trade Act of 1978 through FY 2029. With the steep cost in a debt ceiling fight, I have identified an offset to hopefully help our case with the committee.

As you know, the MAP and FMD Programs are critical to ensure Iowa farmers have strong commodity markets and export opportunities to continue to add value to their bottom line and Iowa's economy. Iowa is the country's second largest agricultural export state, shipping \$10.3 billion in domestic agricultural exports abroad in 2017 (latest data from USDA). In 2020, Iowa generated around \$26.2 billion in agricultural cash receipts with the highest valued commodities being corn, hogs, and soybeans. That same year, the value of Iowa's agricultural production and processing industries represented 9.3 percent of total state GDP. Top Iowa exports are pork valued at \$2.5 billion, soybeans valued at \$2.4 billion, corn valued at \$1.3 billion, feeds and other grains valued at \$1.2 billion, processed grain products are valued at \$544 million, and beef exports are valued at \$215 million.

This Wednesday we have a farm bill hearing in Senate Ag on Title III – Trade. If you all are supportive and could provide a quote for our press team, I would greatly appreciate it!

Best,
Steph

Stephanie Carlson
Deputy Legislative Director and Policy Advisor
Office of Senator Joni Ernst

December 21, 2022

FOR IMMEDIATE RELEASE

Contact:

Bryan Jernigan, (202) 603-3891, bjernigan@grains.org

Senate Confirms Taylor As USDA Undersecretary

The U.S. Grains Council offered this reaction to the Senate's confirmation of Alexis Taylor as USDA Trade Undersecretary:

The U.S. Grains Council welcomes the U.S. Senate's confirmation of Alexis Taylor to serve as the U.S. Department of Agriculture (USDA) Under Secretary for Trade and Foreign Agriculture Affairs.

Alexis has a strong background in agriculture from growing up on a farm in Iowa and also has a deep knowledge of trade issues from her time on Capitol Hill and with USDA in previous roles. We look forward to working with her to promote American agriculture.

###

3c. State Trade Association Meeting/Governors' Biofuels Coalition

State Renewable Fuels Trade Association Meeting

February 6th, 2023

Downtown Hilton Hotel in Des Moines – Zoom

Attendance:

Bob Welch, Dawn Caldwell, Trae Green, Mike Lorenz, Deana Wiese, Dave Loos, Reid Wagner, Ben Rhodes, Jan tenBensel, Lane Howard, Walt Wendland, Kristy Moore, Monte Shaw, and Nathan Hohnstein

- | | |
|----------|---|
| 11:30 AM | Introductions– Nathan Hohnstein, IRFA |
| | <ul style="list-style-type: none">• Introductions and brief updates on each member’s state |
| 12:00 PM | Lunch |
| | <ul style="list-style-type: none">• No crumbly sandwiches this year but sorry, no dessert |
| 12:30 PM | Discussion: State Policy Update |
| | <ul style="list-style-type: none">• Talked about E15 standard, various new tax credits from ethanol to SAF. |
| 1:15 PM | Discussion: Year – Round E15 |
| | <ul style="list-style-type: none">• Attorney’s General Letter and what should be done for summer of 2023. |
| 2:30 PM | Break |
| 2:30 PM | Discussion: Federal Policy Update |
| | <ul style="list-style-type: none">• Discussed RFS Set Rule and Next Gen Fuels Act |
| 3:00 PM | Discussion: International Market Development |
| | <ul style="list-style-type: none">• Mike Lorenz updated group on major international markets including Canada, Europe, Japan, South Korea, India, etc. |
| 3:30 PM | Discussion: ASTM, NCWM, UL Update |
| | <ul style="list-style-type: none">• Kristy Moore talked about domestic markets including news on Arizona/Nevada for E15 along with work done in ASTM/NCWM/UL. |

4:00 PM

Final Thoughts/Next Meeting

- Next meeting around RFA Fly-In/Corn Congress in July

4:15 PM

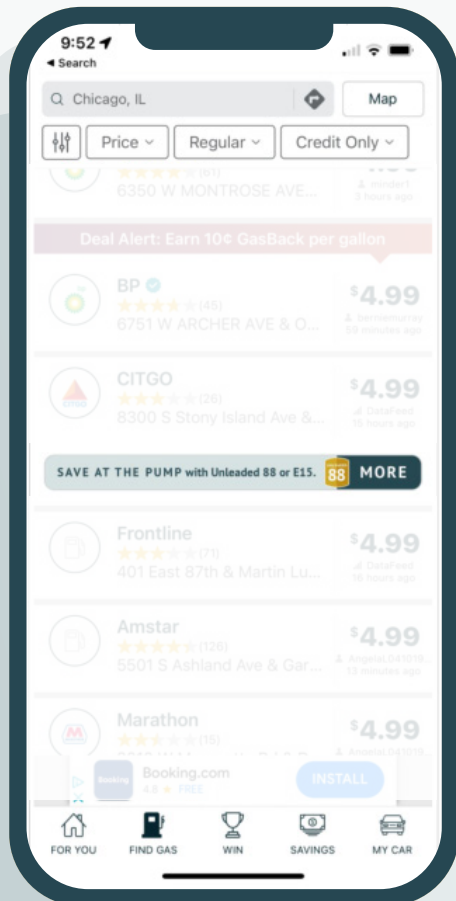
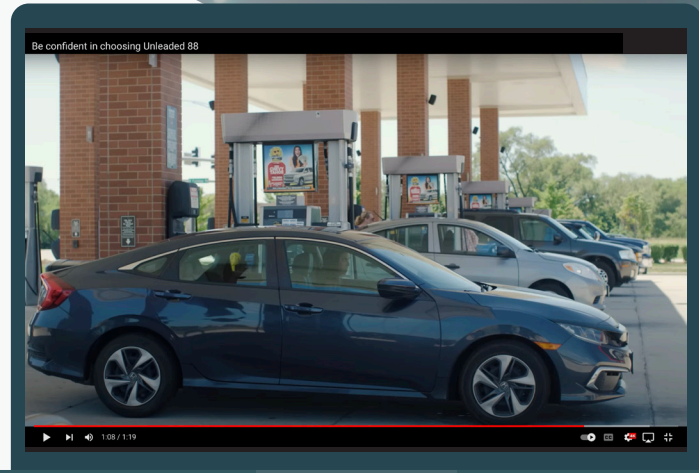
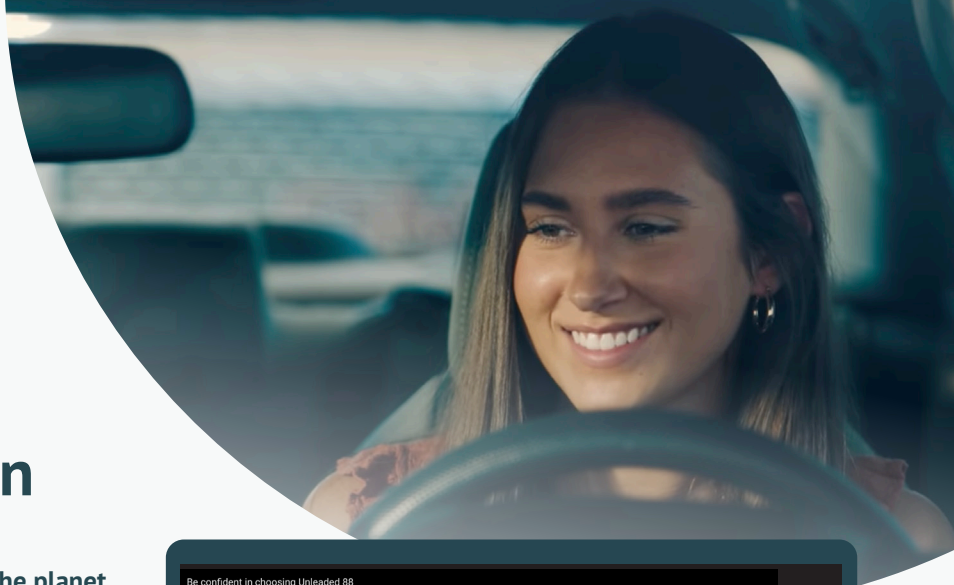
Adjourn

Advantages of Unleaded 88 fuel shared 5 million+ times in summer advertising campaign

Good for your wallet. Good for your car. Good for the planet.

Those were the benefits Chicagoland consumers learned about during IL Corn's latest ad campaign about Unleaded 88/E15 gas. Multiple advertising formats reached people while fuel-purchasing decisions were top of mind: at the gas station, on their commute, searching for gas prices via mobile, and scrolling online and on social. From August 1 through Labor Day weekend, messages were seen or heard over **5.5 million times**.

Anchoring the campaign was a video filmed in partnership with gas retailer Thorntons at a suburban Chicago gas station. The video features a conversation between a dad and daughter about fueling up with the higher-blended ethanol option.



GasBuddy App

As gas price searches surged in summer, the popular GasBuddy app was a key platform for the campaign, leading to the most website traffic with **5K+ page visits** and **960K impressions**

YouTube

The dad and daughter YouTube video generated **1.58M impressions**, **377K+ views** and **591K+ engagements**

WEBSITE

- **6.3K+ page views** on the Homegrown corn page during the campaign
- The Homegrown Corn page was the most visited page on watchusgrow.org during that time with over **36% of total website visits**

UNLEADED
88

SOCIAL MEDIA

- Social content was seen **903K+ times** across Facebook and Instagram
- There were **144K+ engagements** earned through likes, comments and clicks

DIGITAL ADS

- CTV (streaming TV) had **611K+ impressions**
- iHeartRadio audio ads had 209K+ impressions
- Spotify audio ads had 192K+ impressions

RADIO ADS

- Traffic and weather commute time ads on select Chicago stations had **1.05M impressions**



IL CORN
WWW.ILCORN.ORG

3d. International Trade



Developing Markets | Enabling Trade | Improving Lives

Dear valued member,

On February 2, 2023, the National Customs Service of Ecuador (SENAE) officially ruled in favor of the domestic feed industry's request for a Value Added Tax (VAT) exemption for DDGS. In the letter, the governmental entity confirmed imports of DDGS for animal feed use may enter the country at a 0% VAT. Previously the tax was 12%.

The domestic feed industry has worked to get DDGS exempted since 2021. Since then, DDGS exports were already more than 50,000 metric tons (MT), a 160% growth in two years, and the most relevant end-users understood the nutritional and economic benefits of including DDGS in feed rations.

The Council supported the industry's efforts to get the exemption by facilitating access to the technical information needed by the authorities. In April 2021, the Ecuadorian Ministry of Production issued a favorable technical report to support the industry's request and notified the customs and taxes agency (SRI) about it so they could proceed to eliminate the VAT on DDGS. However, SRI also needed to rule in favor of the removal, and it was not until this year they did so. In the official letter from SENAE, they confirmed the SRI's pending concept and DDGS are now exempt from VAT.

This is a great win for DDGS in Latin America, as the VAT made DDGS more expensive than other feed ingredients not subject to any duty. The Ecuadorian feed and shrimp feed industry can utilize over 200,000 MT of DDGS (MY2021/2022 exports were 92,000 MT). Removing the VAT will help DDGS exporters realize that potential.

United States Senate

WASHINGTON, DC 20510

February 9, 2023

The President
The White House
1600 Pennsylvania Ave NW
Washington, DC 20500

Dear Mr. President:

We write today to raise an issue vital to the success of the rural economy and American farmers that we hope you will discuss tomorrow with Brazilian President Luiz Inácio Lula da Silva.

Last Wednesday, February 1, the Brazilian Foreign Trade Chamber (Camex) reinstated its import tariff on American ethanol shipped to Brazil. The new tariff rate on ethanol will be 16 percent this year and 18 percent in 2024. Before this announcement, Brazilian tariffs on ethanol had been at zero since March 2022, which helped to reduce fuel costs for Brazilian drivers and decrease inflationary pressures. The zero percent tariff, matching the United States' zero percent tariff on Brazilian ethanol levels the playing field for bilateral ethanol trade.

Brazil's import tariff will have detrimental effects on American agriculture and ethanol producers. Currently, U.S. biofuel production supports 555,000 jobs across the country and the U.S. ethanol industry produces roughly 16 billion gallons of clean, renewable fuel annually that helps reduce prices at the pump across the country. The U.S. exports about 9 to 10 percent of its ethanol production across the globe, totaling 1.4 billion gallons per year. Brazil is one of America's largest ethanol trading partners and a tariff of 16 or 18 percent on ethanol is unnecessary and counterproductive given the United States duty-free access for Brazil.

There are also non-tariff barriers that further complicate our bilateral ethanol trade with Brazil. Brazilian ethanol producers have access to our Renewable Fuels Standard and California's Low Carbon Fuel Standard program, which recognize the inherent value of low-carbon biofuels. This treatment is not reciprocated by Brazil, where U.S. ethanol producers after 2 years have yet to have one approved pathway for Brazil's biofuel program.

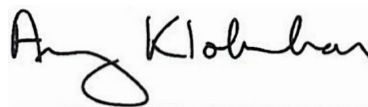
We believe this imbalance in tariffs and access to Brazil's biofuel program is unwarranted and unfair, and we urge you to discuss this issue with President Lula directly. Our American ethanol industry should not be subject to prohibitive tariff and non-tariff barriers while Brazilian ethanol producers enjoy duty-free access to our market and biofuel programs.

Please let us know if we can provide any further information. We look forward to your response.

Sincerely,



Charles Grassley
United States Senator



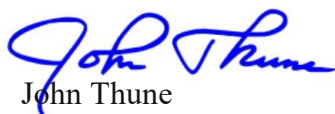
Amy Klobuchar
United States Senator



Joni K. Ernst
United States Senator



Tammy Duckworth
United States Senator



John Thune
United States Senator



Sherrod Brown
United States Senator



M. Michael Rounds
United States Senator



Pete Ricketts
United States Senator



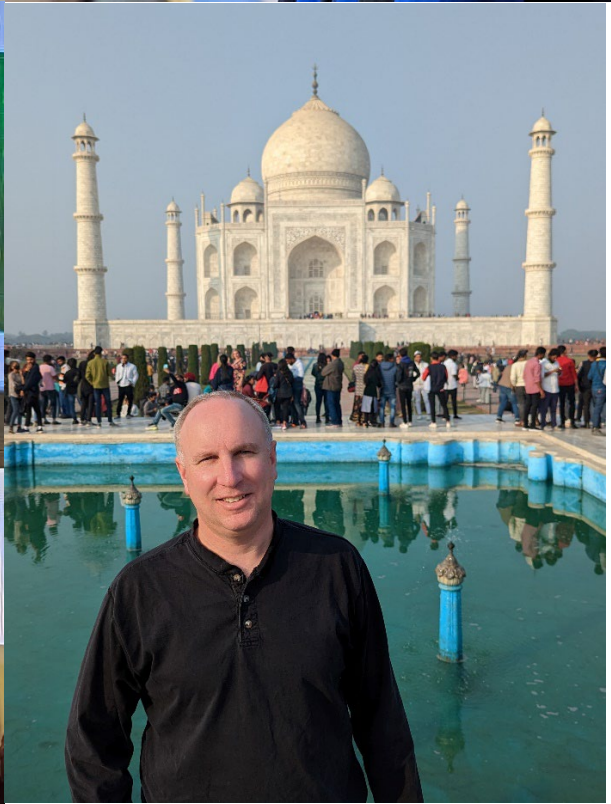
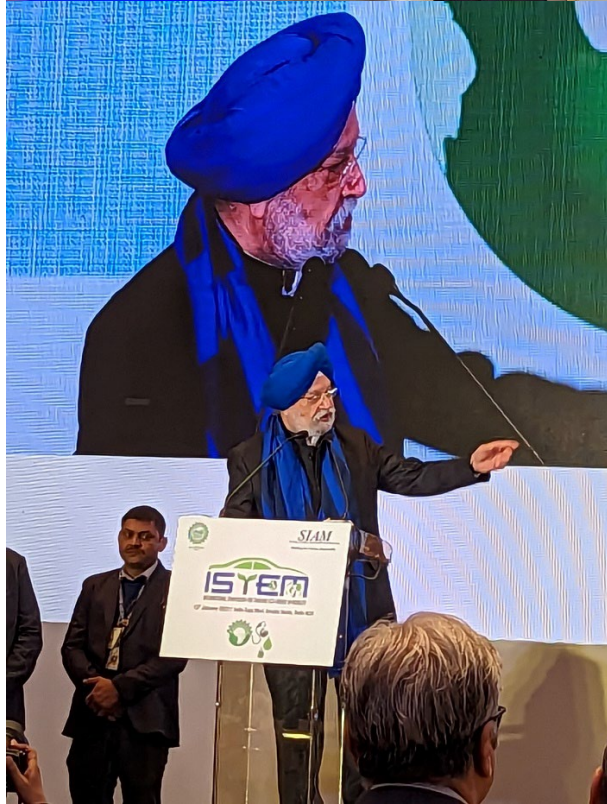
Deb Fischer
United States Senator



Roger Marshall, M.D.
United States Senator

Cc: The Honorable Katherine Tai, U.S. Trade Representative
The Honorable Tom Vilsack, Secretary, U.S. Department of Agriculture







Auto Show and Expo – Noida, India
Jan 11-18, 2023
Activity ATP 35

BACKGROUND

As Government of India (GoI) pushes for E20 by 2025, SIAM has been tasked with leading the promotion and eventual implementation of the ethanol blend mandate, as well as transitioning their fleet to FFV. To achieve these goals, SIAM has partnered with USGC via a Memorandum of Understanding to facilitate technology transfers and best practices that can help support the implementation of ethanol across the country. SIAM is envisioning the promotion of ethanol at the Auto Expo by creating a physical space – Ethanol Pavilion – to be featured prominently throughout the event. They are seeking the support and participation from the U.S. ethanol industry, regulatory bodies, and members of USGC to create a visually arresting and compelling narrative for leveraging the power of biofuels like ethanol.

VENUE

Over the last several years, the Auto Expo, has become Asia's largest automotive show jointly organized by the Automotive Component Manufacturers Association of India (ACMA), the Confederation of Indian Industry (CII) and the Society of Indian Automobile Manufacturers (SIAM). It has grown so much; it is now shown at two different venues with defined focuses on Automobiles (Auto Expo 2023— Vehicles) and Auto Components (Auto Expo 2023 -Components).

Main Objectives:

1. Position the U.S. ethanol industry as the partner of choice for India's ethanol journey due to its quality control process, infrastructure, and advanced technology
2. Build a U.S. ethanol booth as part of the larger ethanol pavilion to promote three main areas:
 - a. eFFV (target stakeholder: India auto industry)
 - b. The advantages of U.S. ethanol: (target stakeholder: general consumer awareness/education)
 - c. Octane and blending: prototype of a blending tank and storage (target stakeholder: OMC's)
3. Build a team to work on this project consisting of:
 - a. Indian project manager



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- b. state organization staff,
 - c. U.S. industry staff that can speak on technical aspects of ethanol blending, storage and FFVs,
 - d. USGC ethanol staff
 - e. U.S. regulatory body staff
 - f. Local India team for day of the event to run the booth and be ambassadors' day of the event
4. Sign an MoU with SIAM under the aegis of the U.S. India Strategic Clean Energy Partnership.

NAME LIST

Overseas team:

1. Rowena Torres-Ordonez, Ethanol Consultant, USGC
2. Isabelle Ausdal, Manager of Global Ethanol Policy and Economics, USGC
3. Joonas Sokka, e-FFV, Finland
4. Serko Nieminen, e-FFV, Finland
5. Ron Lamberty, ACE Ethanol, U.S.
6. Mike Lorenz, Growth Energy, U.S.
7. Kelly Davis, RFA, U.S.
8. Mikayla Mckenna, RFA, U.S.
9. Monte Shaw, CEO, Iowa RFA, U.S.
10. Chris Markey, USGC, KL
11. Johan Ullman, Marquis Energy, Singapore
12. Dora C Branyan, Marquis Energy, Singapore

Local team:

1. Alejandra Danielson Castillo, USGC India
2. Amit Sachdev, USGC India
3. Nayantara Anandani Pande, USGC India
4. Tushar Gandhi, Gateway Consulting
5. Shreya Kamath, Gateway Consulting



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ITINERARY

Saturday, January 08, 2023

Monte Shaw arrives in Delhi – personal travel

12:40PM – 9:50PM	Des Moines – Washington D.C.	AA 3447
5:30PM – 6:52PM	D.C – New York	AA 4781
8:00PM – 9:50PM	New York – New Delhi	AA 292

Isabelle Ausdal arrives in Delhi

5:23PM – 6:50PM	Washington D.C. – New Jersey	UA 0775
8:15PM – 9:50PM	New Jersey – New Delhi	UA 0082

Joonas Sokka and Serko Nieminen depart Helsinki

18:35 – 06:25 ⁺¹	Helsinki – New Delhi	AY0121
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Monday, January 09, 2023

Joonas Sokka and Serko Nieminen arrive New Delhi

06:25		AY 0121
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Tuesday, January 10, 2023

Rowena Torres-Ordonez

18:10 – 21:25	Chicago – New Delhi	UA 0712
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Kelly Davis & Mikayla Mckenna

15:28 – 19:00	St. Louis – Newark	UA 4505
20:15 – 21:50	Newark – New Delhi	UA 0082

Mike Lorenz

16:22 – 17:44	Boston – New York	AA 4317
20:00 – 21:50	New York – New Delhi	AA 0292

Ron Lamberty

19:30 – 11:00	Minneapolis – Amsterdam	DL 0162
12:25 – 01:10	Amsterdam – New Delhi	DL 9574



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Transportation: Hotel pickup
Contact Number: +91 11 2436 3030

Hotel: The Oberoi
Dr Zakir Hussain Marg, Delhi Golf Club, Golf Links,
New Delhi, Delhi 110003
Ph: +91-11 2436 3030

Wednesday, January 11, 2023

Attire: Business

08:30 Nayantara to meet team at Oberoi Hotel

09:30 Depart for 12 Hailey Road

10:00 Working group arrives at 12 Hailey Road for briefing with Gateway Consulting

11:00-12:30 Travel to Auto Expo

13:00 Walk about Auto Expo and USGC booth

13:30 Lunch at site

14:30 Media interactions (pre-arranged by Gateway)

16:00 Depart for Oberoi

Dinner: On our own

Hotel: The Oberoi

Johan Ullman and Dora Branyan arrive New Delhi

09:30 – 12:55 Singapore – New Delhi SQ4906

Chris Markey arrives New Delhi

18:50 – 21:50 Kuala Lumpur – New Delhi MH190



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Thursday, January 12, 2023

Attire: Business

- 08:00 Executive board, Working group and USGC India staff briefing at hotel before departing for Auto Expo
- 09:00 -10:30 Travel to Auto Expo for grand opening and ethanol pavilion
- Photographs at USGC booth
 - Side meetings with auto manufacturers, OMCs and other stakeholders
 - Meeting and photo opportunity with ministers and visiting dignitaries
- 11:00 Auto Expo Inaugural (Expected visit from Min Road Transport, Gadkari)
- 13:00 Lunch at venue
- 14:00 Media engagements with board and pre-arranged business meetings
- 16:00 Depart Auto Expo
- Evening: Dinner on our own
- Hotel:** The Oberoi

Friday, January 13, 2023

Attire: Business

- 08:30 Depart for Auto Expo
- 11:00 MoU signing with SIAM with FAS/GOI key stakeholders and some media at Ethanol Pavilion
- 13:00 MOU media engagements / lunch
- 14:00 Executive team departs Auto Expo
- 14:30 Mobility Conference on Auto Expo grounds (Ron Lamberty speaking)



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+91 11 46036437 | E-mail: usgcindia@grains.org

16:00 Team departs Auto Expo

Dora C Branyan and Johan Ullman depart New Delhi

21:50 – 06:05⁺¹

New Delhi – Singapore

SQ 403

Saturday, January 14, 2023

Attire: Business

09:00 Depart for Auto Expo

10:30 Interactions with general public and networking

13:00 Lunch

14:00 Depart auto expo

15:30 -16:30 Shopping at Cottage Emporium

16:30 – 17:00 Depart hotel for checkout and airport

Team departs

Monte Shaw

11:55 – 06:15⁺¹ New Delhi – New York

AA 0293

Sunday, January 15, 2023

Attire: Casual

Kelly Davis, Mikayla McKenna & Rowena Torres

01:10 – 07:00⁺¹

New Delhi – Chicago

UA 0713

Ron Lamberty

01:10 – 07:05

New Delhi - Paris

DL 8649

Isabelle Ausdal

11:55 – 06:20⁺¹

New Delhi – New Jersey

UA 0083

Mike Lorenz

11:55 – 06:15⁺¹

New Delhi – New York

AA 0293



HOTEL CONFIRMATIONS

#	Name	Hotel Confirmation Number
PARTICIPANTS		Delhi, India
1	Isabelle Ausdal	
2	Rowena Torres-Ordonez	
3	Mike Lorenz	
4	Ron Lamberty	
5	Kelly Davis	
6	Mikayla Mckenna	
7	Serko Nieminen	
8	Joonas Sokka	
9	Monte Shaw	
10	Johan Ullman	
11	Dora Branyan	
12	Chris Markey	

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Ethanol A-Team February 2023 Agenda

Advisory Team Leader
Doug Berven

Board Liaisons
Craig Willis

USGC Staff Liaison
Mackenzie Boubin, Stella Qian

Monday, February 13, 2023 1:45 – 5 pm

- 1:30 – 1:45 Call to order, Introductions and agenda review - Doug Berven/Mackenzie Boubin
1:45 – 2:00 Mexico program updateHeidi Bringenberg
2:00 -- 2:30 Japan program updateTommy Hamamoto
2:30 – 3:00 Korea program updateHaksoo Kim
3:00 – 3:30 Taiwan program update Michael Lu
3:30 – 4:00 Break
4:00 – 5:00 Canada program update Dan Pfeffer

Tuesday, February 14, 2022 10 am – noon & 1:45 – 5:00pm

- 10:00 –11:00 Middle East/Africa, Europe market updateRamy Taieb and Jad Wakileh
11:00 – 12:00 Southeast Asia market update Caleb Wurth and Chris Markey
12:00 – 1:30 Lunch
1:45 – 2:15 India market updateAlejandra Danielson Castillo
2:15 – 3:15 Latin American market updateJuan Diaz and Federico Salcedo
3:15 – 3:30 Break
3:30 – 4:00 A-Team feed back on priority markets and USGC Ethanol Studies Updates
4:00 – 4:30 Misc Discussions
 - Planned 2023 Missions
 - Global Ethanol Summit Preparation
 - Certification Conference
 - COP28 Engagement
 - External Stakeholder Approaches
4:30 – 5:00 Report and Action Items
 - Finalize recommendations to board of delegates
 - Action items for board of directors

November MMR's

Mexico

PROGRAM REPORTS

November 24: AMPES CDMX

The final AMPES event of 2022 took place in Mexico City. During this event we unveiled the first presentation of the study conducted by The Environmental Engineer College (CINAM): "Assessment of the Co-benefits associated with the progressive use of gasoline with Ethanol (E10) in Mexico, and baseline on GHG mitigation projections under the NDC in the transport sector".

Japan

The Council to publicize taxi signage on bioethanol

As a project to gain awareness of ethanol and its benefits, the Council will conduct a unique public relations project of taxi signage on fuel ethanol through taxi signage for two months from January 2023. The Council identified Mr. Suda who is an influential commentator. The contents of the signage are expected to be finalized in December.

The Council expanded network in motor race media community

The Council visited Suzuka Circuit to observe a motor race on November 27. There were vehicles run with biofuel and hydrogen provided by Toyota Motors. The Council was able to be introduced by Ms. Sumie Dan, a motor journalist. Ms. Dan is expected to cooperate with us to publicize bioethanol using her network in the media.

Ethanol: NEED played a heavy role in establishing Biofuel PG

NEED and its allies have been heavily involved in the establishment of Biofuel Parliamentary Group (Biofuel PG) through their strong relationship with the Diet member Toshitaka Ooka. NEED made presentations on the benefits of ethanol at its 2nd meeting on session on November 24. That evening, TV Tokyo's program (WBS) aired an interview with Diet Member Amari who heads the group..

Ethanol: BGA Japan exchanged opinions with METI on bioethanol market

BGA has discussed with ANRE to expand bioethanol consumption in Japan. BGA has found that two factors are largely responsible for the METI's agency to consider the structural policy change. First, there is no public awareness about the roles of bioethanol although bioethanol is currently blended 2% in gasoline. ANRE needs to secure public and political supports for its bioethanol policy. Second, with domestic demand for gasoline expected to decline, ANRE sees that the government cannot not expect support from the petroleum industry when the agency expands a total annual target amount of oil refiners' use of bioethanol. ANRE believes that it would be easier to gain the consent of the key industry stakeholder to leave the total amount of bioethanol consumption to individual users' collective choices of E5 or E10, rather than the government setting it.

Middle East Europe Africa

USGC Ethanol delegation to COP (27), Sharm EL Sheikh, Egypt, November 9-12, 2022 USGC ethanol staff and consultant and grower leaders, including Verity Ulibarri, USGC secretary/treasurer; Doug Berven, USGC Ethanol Advisor Team Leader, traveled to Sharm El-Sheikh, Egypt to participate in COP27 and attend a series of agriculture and transport sector meetings and several high-level events where climate change was discussed and debated. The Council has also taken part in the Sustainable Innovation Forum's "Are we faltering on the fossil fuel phase-out?" to discuss the use of ethanol in sustainably decarbonizing the transport sector globally.

During the trip, the USGC delegation met and spoke with several representatives from the climate associations, learned more about their views on ethanol as a climate solution pathway for the transport sector, and discussed climate-smart agriculture initiatives at the regional and global levels.

For the Council's participation at COP, Doug Berven, Poet-Vice President of Corporate Affairs has participated in two panels "Are we faltering on the fossil fuel phase-out?" and "Agriculture's Role in Decarbonizing the Economy and Reducing GHG Emissions," to ensure that ethanol (and specifically first-generation ethanol) is introduced as a solution that would bring immediate and immense benefits to climate change regionally.

Furthermore, on November 10th, 2022, the European Parliament and Council agreed on stricter regulation of greenhouse gas (GHG) emissions in member states including less flexibility and more transparency as Parliament and Council negotiators reached a provisional agreement on November 8th, 2022 on a revision of the effort sharing regulation (ESR), which sets binding annual greenhouse gas (GHG) emission reductions for EU member states.

Negotiators agreed to increase the mandatory GHG reduction 2030 target at the EU level from 30% to 40% compared to 2005 levels. For the first time, all EU countries must now reduce GHG emissions with targets ranging between 10-50%. The targets for each member state are based on GDP per capita and cost-effectiveness.

Comments: The Council will work with the global industry (Renewable Industries Canada (RICanada), UNICA, UNEM, ePURE, and Ethanol Europe) on a unified marketing message for COP28 and will organize and participate in several panels and side events at COP28; including side events on biofuels and sustainability in agriculture practices; in order to promote the use of ethanol for the decarbonization of road transport.

Europe:

Persistent high energy costs and bearish ethanol prices have led to some producers sounding alarm bells regarding capacity adjustments or temporary plant shutdowns. After CropEnergies, Envien Group, and Enviral highlighted issues in production last month, Alco Group's plant in Ghent, Belgium (70 million gallons/year capacity) also appears to be under pressure.

Moreover, today in Europe, it is more profitable to produce sugar from beets than to produce ethanol. Furthermore, European countries were the major importers of Chinese undenatured ethanol, with Belgium and Spain importing 0.127 million gallons and 0.1 million gallons, respectively. European demand for ethanol from China peaked due to the devastating effect of the summer drought on beet

and grain crops as well as supply chain issues stemming from current sanctions on Russia, noting that China exported a total of 0.5 million gallons of ethanol in October, up 71.1% month on month.

United Kingdom: Ethanol Consumption Increases

U.K. ethanol sales increased 3.7% on the month and 46.5% on the year to 31 million gallons in September. The U.K.'s rollout of E10 gasoline grade in September 2021 has seen ethanol consumption levels surge over the year. Gasoline demand fell 1.1% on the month and 0.5% on the year to 366 million gallons in September, which brought the ethanol incorporation rate to 8.5% on a volume basis, up from 8.1% in August and up from 5.7% in the previous year. The sales of total gasoline (including hydrocarbon and biofuel components) increased by 9.7 percent, from April through June 2022 compared to the same quarter of 2021 due to the complete easing of COVID-19 travel restrictions.

France: Total ethanol consumption eased in September

France's total ethanol consumption in September eased from the highs seen in August, falling 4.1% on the month but climbing 35% on the year to 49.9 million gallons. Gasoline consumption decreased 3.5% on the month but was up 8.8% on the year to 314 million gallons, bringing the estimated ethanol blend rate to 12.50%, down from 12.58% in August and up from 10.06% in September 2021. The E10 market share came off a record high in August, decreasing to 55.5% compared with 56.6% in August and 51.6% in September 2021.

Sweden's fuel ethanol consumption increased by 1.4% in the year

Sweden's fuel ethanol consumption decreased 14.3% on the month to 5.4 million gallons in September but increased 1.4% on the year. Gasoline consumption similarly decreased 12.8% on the month to 62.5 million gallons. This took the ethanol into gasoline incorporation rate to 9.12% in September, down from 9.42% in August and down from 9.27% a year earlier. E85 consumption in Sweden dropped 35.8% on the month and 55.2% on the year to 0.3 million gallons in September. The E85 incorporation rate was at 0.48% in September 2022, down from 0.65% in August and down from 1.04% in September 2021.

Spain's ethanol consumption in September fell 8.8% on the month

Spain's ethanol consumption in September fell 8.8% on the month and 19.4% on the year to 4.1 million gallons. Gasoline consumption in Spain dropped 12% on the month but was 1.6% higher on the year to 166 million gallons. This took the ethanol into gasoline incorporation rate to 2.45% in September, up from 2.36% in August but down from 3.09% in September 2021.

Germany's ethanol consumption in August increased by 2.6% during the month

Germany's ethanol consumption in August increased by 2.6% on the month but fell 12.9% on the year.

Middle East:

Egypt: ESIIC and Praj sign second generation bioethanol deal during COP27

On November 9th, 2022 Praj Industries Limited announced that they have entered a MoU with Egyptian Sugar and Integrated Industries Company (ESIIC) of Egypt. As a part of this MoU, both parties have agreed to: - Drive sustainable climate actions to combat climate change - Set up 1st and 2nd

generation ethanol projects in Egypt. - Develop infrastructure, help formulate policy framework, and create awareness of mainstream bioeconomy.

Africa:

Zambia: Zambia will start blending locally produced ethanol with petrol

On October 31st, the Minister of Energy Peter Kapala revealed that the country will next month start a pilot project of blending petrol with locally produced ethanol at 10 percent.

South Asia

Ethanol Study by Arcus – Assessing India's Potential for E20

USGC India has been working with The Asia Group and Arcus research for the last couple of months to conduct a study on the feasibility of producing ethanol from grain crops. The study aims to test the hypothesis of raw material availability to reach the E20 blend mandate (a goal of 10.16 billion liters) by 2025/26.

What does this mean for USGC?

When the Ethanol Roadmap 2025 was published in June 2021, the GoI made a formal declaration of the country's intention to use grain crops to produce ethanol. Understanding the dynamics – not only the supply and demand of grains crops – but also the availability of sugar, the impact that diversification of crops to ethanol would have on the feed and starch industry, and the infrastructure needed to convert other raw materials to ethanol, is critical to implement the Ethanol Roadmap.

While the sugar sector is highly motivated to produce 5.50 billion liters of ethanol (though they have professed that they intend to produce the full 10.16 billion liters needed to reach E20 and more by reducing sugar surpluses) the study predicts the tradeoffs to do this may be significant. At the same time the grain-based ethanol plants, which aim to provide 4.66 billion liters of ethanol, may not have enough grain in country to continue production.

The facts were already there that India will not be able to achieve its target of E20 blend mandate, given the raw material supply situation and the data that is coming out of extensive research tends to confirm that hypothesis. While USGC is working behind the scenes, the report will play a crucial role in coming years in finalizing a set of strategies to share the data with relevant stakeholders at the correct forums.

MARKET INFORMATION

India

- In early Nov 2022, US ethanol prices delivered to India were close to \$955/mt and by the end of the month the prices had dropped to \$900/MT as corn prices in the US were down.
- In 2021/22 expected supply of ethanol is 4 billion liters against 4.54 bill liters demand, which may go up to 5 billion in 2022/23 against a demand of 5.8 billion liters (The tender has been subscribed well, but mostly via sugar mills and not via grain route). India first 2G plant may start production in 1st quarter of 2023 and it will be another quarter before it stabilizes. The supply of raw material is also an issue for these plants as there are other uses for the biomass

and collection remains an issue. Many states have provided incentives to collection and briquettes manufacturing and use the same for power generation (200 MW power generation in Maharashtra and target is 400 MW in coming years) and these plants cannot be closed now. Price of rice straw is higher now (Since the time discussion was started) and it is not viable to make ethanol unless there is a Viability gap funding and a guarantee of offtake and price announced now.

- Companies setting up grain-based ethanol plants may not be able to sell DDG/DDGS and hence have plans to set up feed plants to consume the co-product themselves. Is it a viable step, is not known, but that is a plan by many.

Director's Comment

November was a relatively slow month for the India office, particularly regarding programming as we are preparing for the USGC Executive Board visit to host the grand opening of the office and attend the Auto Expo in January 2023, where the Council has purchased a stall to promote ethanol. These two programs will cement the Council's commitment in India and will help us push the ethanol promotion agenda in a more visible way.

We are seeing an increase in ethanol enthusiasm as India prepares to take over the G20 Presidency starting on 1 December. Already, there is much press about what India wants to do in the biofuels space but very little in the way of an actual detailed plan of what are the objectives.

Among the many things GoI is announcing as part of the G20 is the formation of a Global Biofuels Alliance. The alliance is proposed to be on the lines of the International Solar Alliance and will consist of Brazil, India, and the U.S (this may change in the coming months). GoI has not reached out to either government as far as we know. Expect to see more updates on next month's edition.

We are also preparing to begin a new year and are spending the time re-bidding several of our third-party contracts, while finishing up two major research projects that India specific. One is the study on the availability of grain crops for ethanol production and the impact this will have in the India energy mix and India's ethanol roadmap. The India office has been working with Arcus to finalize the written report and have it ready to publish by first quarter of 2023. The second project is the economic impact study, jointly sponsored with USSEC, to study the effects of lack of access to feed ingredients and what this means to the Indian feed industry. Both projects aim to provide the economic data that will allow us to improve our narrative on why India needs to do allow market access for ethanol and DDGS. The goal is to share this with industry so they can be empowered to present to their government in hopes this can influence market access decisions.

China

Program Reports

The Council Beijing office attended China Alcohol Annual Conference in Bengbu, Anhui

Key findings:

In 2020, the total output of fermented alcohol in the industry reached 10.15 million tons, breaking through the 10- million-ton mark for the first time, creating a new situation for the development of the alcohol industry. The industry also faces many challenges, such as stagnant development of fuel ethanol, overcapacity of ethanol, low-profit level of the industry, and the threat of ethanol and DDGS imports.

However, challenges and opportunities coexist, and several important factors conducive to industry development have remained the same. First, the historical cycles of corn supply and demand from tension to surplus have not changed. Second, the role of carbon neutralization of fuel ethanol will not change. Third, the long-term growth trend of total demand for fermented alcohol has remained the same. The industry should face difficulties squarely, believe that difficulties are only temporary, and maintain resilience and firm confidence, according to a keynote speech by the Association.

According to the Association's data on 83 member companies in 2021, total fermented alcohol production in 2021 reached 9.46 mmt (including fuel ethanol), which decreased by 6.82% year on year. Among them, fuel ethanol production was 2.84 mmt, down 4.78% year on year. DDGS production reached 6.67 mmt, down by 12.7% year on year. (note: there was some portion of ethanol using cassava).

One speaker noted the following changes in the market:

- The fuel ethanol market has seen fierce competition on the market.
- Demand by the hard liquor and chemical sectors declined in the past years.
- The pharmaceutical and fine chemical sectors have grown these years. However, the overall demand by the sectors is relatively small.
- Coal-based ethanol (Methanol) has grown rapidly and considerably impacted the domestic ethanol sector.

The price for coal-based ethanol is estimated at less than RMB5,000/per ton, while corn ethanol is more than RMB7,000/ton in NE.

One speaker noted a lack of publicity on the sector and called for more scientific education and publicity on ethanol's benefit for the consumers and the officials, clarity in policy on pricing mechanism for fuel ethanol when blending with gasoline, management measures for better regulating the industry, support for research and industry development related with 2G, request NEA to review the industry performance in the past years and deal with misbehavior activities.

The sector's surplus capacity remains. The fuel ethanol production capacity exceeds 6.1 mmt in 2022, while the actual market use is about 2.8 mmt. Due to limited use, all the producers face fierce competition these years.

China cassava ethanol production capacity is estimated at 5.57 mmt in 2021, accounting for 30% of national ethanol production capacity and 90% of global cassava ethanol production capacity.

SDIC's cellulosic plant in Hailun, Heilongjiang:

It started trial operation in August 2022, with a designed annual capacity of 30,000 mt. According to the presentation, it reduced CO2 emission by 3.47 tons per metric tons of ethanol production compared to benchmark gasoline. Total corn stover burned each year is estimated at 100 million mt in China. Cellulosic ethanol has the potential to utilize these corn stovers better.

For future technology development, the company is looking to hydrogen production (from ethanol), which it views as a promising hydrogen economy in the future.

Argentina

Biofuels

The local production might conclude 2022 with a good overall performance. For the production of the corn based ethanol, the accumulated data is above 2021, and improvement of the price is also favorable for the cycle. The uncertainty prevails for the upcoming month due to the potential shortage of corn in case the planting would not be done in time, as consequence of the drought. The latest prices for Bioethanol in the domestic market were set at 112,8 ARS per liter for the corn based ethanol, while they have split again the value for the sugar cane one, and it is at 92.7 ARS per liter. For the corn one, the increased is 5% above the September price, while it is 90% higher than October 2021. When analyzing the price evolution in USD, the corn one is at 0.68 USD /liter and the Sugar cane at 0.56%.

Between January and August of 2022, the production recovered by 17% compared to 2021, by 45% compared with 2020 and only 7% above 2019. By the other hand, domestic sales are 13% over 2021 level, 46% higher than 2020, and +3% regarding 2019 when the mandatory mix was higher than today. Argentina maintains the domestic mandatory rate at 12% (6% for sugar based and 6% for corn based).

November MMR Update

SouthEastAsia

Vietnam Update:

Meeting with Chairman Tran Hoai Duong of Vietnam Biofuels Development

USGC met with the Chairman of Vietnam Biofuels Development, which took over Tung Lam's fuel ethanol plant in Central Vietnam in January 2022. The meeting was used to discuss alignment on 2023 advocacy efforts related to the migration of Vietnam's E5 mandate to all grade of gasoline.

Meeting with Ministry of Transport

USGC met with the Ministry of Transport and the Civil Aviation Authority of Vietnam to present ethanol educational materials for consumers and to align on potential joint events to be conducted in 2023.

A meeting summary is as follows:

- MOT welcomes USGC once again to this meeting to update on the development of biofuels in the country.
- MOT reiterated the Decree 876 proposal to move to E5 nationwide by 2030.
- Concerns remains upon import security, domestic productions, ability to restart existing dormant plans, public/ consumer concerns.
- MOT confirms that the Ministry of Industry and Trade (MOIT) is the government agency that is in charge of the supply of ethanol to fuel blenders.
- MOT appreciates USGC's submission of research reports and materials for them to submit to the Prime Minister's Office (PMO) to showcase the GHG reduction benefits of fuel ethanol.
- Civil Aviation Authority of Vietnam (CAAV) have target to be net-zero for the aviation industry in Vietnam by 2050.
- Sustainable Aviation Fuel will need to be supplied for international flights.
- Carbon offset scheme will be implemented internationally.
- CAAV understands that the supply of SAF will need to be imported first, followed by development of local SAF production to ensure supply security.
- CAAV hopes to develop joint activities with USGC to develop a SAF roadmap for Vietnam

Indonesia Update:

Indonesia National Sugar Association (AGI)

Following from our initial contact with the Secretary General of Indonesia's Sugar Association (AGI), Pak Dwi Purtanto, at the Sugar & Ethanol conference in Bangkok, Pak Dwi approached USGC to invite us to the National Sugar Summit which will be held on 8-9 December 2022. AGI is reportedly

involved on the draft Presidential Regulation on the Sugar Self Sufficiency and Bioethanol Production. development process with PT Perkebunan Nusantara III as the Agricultural SOE Holding company taking the lead of the draft's discussion. However, the association and its member companies have limited understanding of bioethanol issues. To better understand bioethanol industry issues and development process, the association plans to initiate a bioethanol discussion panel during the annual National Sugar Summit (NSS). In order to better understand to role of AGI and the extent of its political influence, USGC has agreed to sponsor the ethanol panel during the NSS. As part of this sponsorship, we will invite Dr Rex Demafelis from UPLB to present the success story of Philippines bioethanol implementation which has a good synergy between domestic and imported ethanol supply.

BPI/Dutamas:

Following our last discussion with BPI (Dutamas being the parent shareholder), we reconnected with BPI to further understand Pertamina CEO's announcement on A20.

- From our last meeting, BPI has also met up with BGA and Investment Ministry (BKPM) to discuss and develop legal, technical and financial framework to support the A20 initiative. BPI stated that the methanol/ethanol mix has yet to be finalized and the project should be properly referred to as Gasoline-Methanol-Ethanol (GME).
- The long term goal of GME is to domestically sufficient so 2G ethanol is part of the discussion with BPI engaging Praj and Shell on 2G development.
- Commercially, BPI's role will be to process corn into ethanol where Pertamina will own both corn feedstock and ethanol output. Corn feedstock is preferred as BPI states that the molasses industry is stagnant whereas potential corn farming areas has been identified in Java. This was recorded in the feasibility study conducted by BKPM.
- BPI projects annual requirement of 300 kTonnes for ethanol and foresees imported ethanol as a necessity in the interim.
- Methanol will be sourced from natural gas. BPI is currently engaging Airproducts on developing methanol plants.

Other Updates:

Malaysia- meeting with Honeywell UOP (ethanol to SAF)

USGC met with Mike Spivey, Director of Sustainability Market Development to discuss Honeywell's renewable technology products especially on SAF production. Honeywell was the technology provider for the green diesel production unit at Pertamina's Cilacap refinery with production capacity of 3000 barrels per day. Interest on SAF production is high in the region but actual dollar investment remains muted despite the strong push by the aviation sector towards SAF. The main concern for investment is economics where SAF production is significantly higher than conventional jet fuel. Honeywell has an established alcohol to jet (ATJ) solution but has yet to be implemented in this region. USGC can consider leveraging on Mike's expertise to speak at ethanol events where oil companies would be far more interested to hear about SAF as compared to bioethanol (eg in Malaysia).

Taiwan

Ethanol Policy Advocacy Update

Key Issue and Market Update in Taiwan:

1. Legislator Hung Sun-Han listed methods to reach net zero: carbon reduction at front end, electrification, maximizing green energy, and carbon-free or low-carbon fuels. Besides electrification, certain forms of combustion are not able to be transformed into electrification; thus, it is essential to improve the fuels to low-carbon or carbon-free fuels, such as the aviation fuels.

2. EPA stated that, after Net Zero Pathways were published, all government divisions must set up feasible goals while electricity supply and carbon reduction in transport sector become the keys. Large number of EVs will emerge to cut down carbon emission in transport sector, meaning that the demand for electricity will increase. Yet, electricity is mainly generated by coal-combustion, so the source of electricity needs to be considered.

3. For 2023, National Science and Technology Council (NSTC) budgeted NTD\$54.54 billion, increasing 7.06 billion dollars more compared to the budget in 2022. NSTC indicated that by the end of this year it will propose net zero technology projects which relate to sustainable energy, low-carbon, circular technology, CCUS and social science.

4. Secretary-General of Taiwan Climate Partnership said that EPA has been managing climate change as “air pollution,” so the development of climate change adaptation is slower than foreign countries. He believed that MOF and FSC should be more active and treat carbon as an asset or financial product to promote carbon right transaction and to facilitate industrial transition.

5. Environmental Justice Foundation pointed out problems of climate actions that Taiwan government carries out, including lack of specific appointed competent authorities. As for the funds, the budget to reach the target in 2030 is less than 10% of the net zero transition investment in other countries. The non-transparent public funds and large subsidy for fossil fuels also limit the resources for net zero development.

6. Green Citizen’s Action Alliance said that, without charging carbon fee domestically, Taiwan, as an export-oriented country, will still be affected when EU and other countries start carbon tax mechanism. Taiwan should pick up the pace and connect with international trend; carbon fee shall not be lower than NTD\$300 per ton and will rise annually to align with the global standard which is USD\$98 in 2030.

7. ITRI mentioned that vehicle electrification is necessary in net zero pathway. However, to charge an EV requires 60 to 70kWh which is a great burden for the grid. How to take care of the grid and to meet the demand for EV requires sound supporting measures.

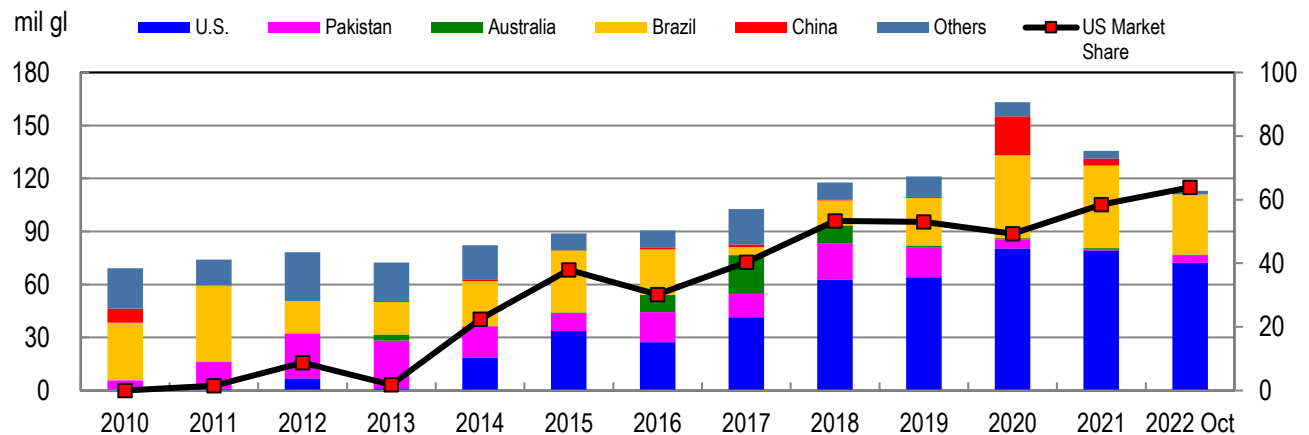
8. On November 22nd, MOTC had a meeting of “vehicle electrification and zero carbon emission” to discuss the critical tactics to achieve net zero. In the meeting, MOTC suggested to stop subsidizing diesel buses in 2023, to change urban buses and official cars into EVs in 2030, and to complete the goal of 100% sale ratio of EV in automobile market.

9. The subsidy for EV industry promoted by MOEA is due to December 10th. According to an official, since “vehicle electrification and zero carbon emission” is one of the 12 critical net zero tactics, the subsidy for purchasing electric motorcycle will not be cancelled and will be prolonged for 4 to 5 years.

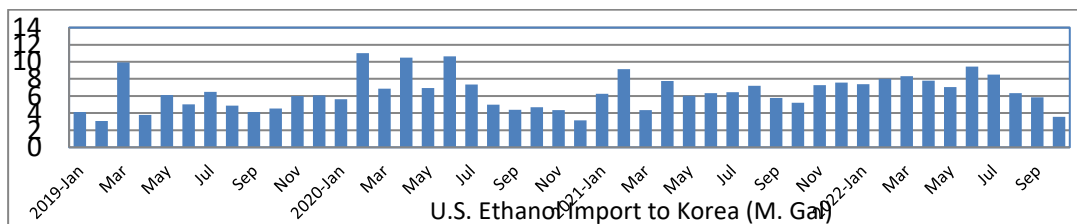
South Korea

72.2 million gallons of U.S. ethanol were imported in Jan-Oct, up 11.9% from 2021

Korea imported a total of 113 million gallons of ethanol from January to October, an increase of 1.6 percent compared to the same period last year. Of 113 million gallons, 72.2 million gallons of U.S. ethanol were imported, increased by 11.9 percent compared to the same period of 2021. U.S. ethanol has captured 63.9 percent of total ethanol import, while 34.1 million gallons of Brazilian ethanol (30.2%), 4.4 million gallons of Pakistan ethanol (3.9%) and 2.3 million gallons of other origins (2.0%) were imported.



Monthly U.S. Ethanol Imports, Jan 2019 – Oct 2022



December MMR Update

SEA Region

Ethanol Program Report:

Oil Market Update

Dated Brent crude averaged \$81.12/b for December 2022, falling 12% from November.

Asian oil markets in 2023 are set to witness a dramatic shift in trade flows as Russian cargo inflows rise while African and U.S. crudes are increasingly diverted to Europe. At the same time, market participants are expecting the flow of Asian oil products to countries looking to fill the gap caused by EU sanctions on Russian products, due in February 2023.

China's COVID-19 policy will be the largest factor to determine the rate of recovery in Asian oil demand. Asian oil buyers would still be hoping for a return of Iranian crude, even though chances might be slim. Iranian crude could potentially bring relief to market supply at a time when the tug-of-war between Asia and Europe for Middle Eastern crudes looks to intensify.

In January, several sources with exporting refineries in China have indicated that they will lift clean oil product exports with the fresh quotas from their original plans. Due to limited quota availability in end-December, China was estimated to slash clean oil product exports to about 3 million–4 million mt in January from about 6 million mt in December. Two refining sources based in Liaoning province and Zhejiang province, respectively, said they will hike gasoil outflows as the exporting margin was at around \$30/b, higher than that of gasoline.

Meanwhile, domestic demand for gasoil slowed down as industrial, construction activities wind down ahead of Lunar New Year. But gasoline demand in China is likely to rise for travels for LNY as the number of new COVID-19 cases may have peaked in this wave.

Indonesia:

Engagement with the Indonesia National Sugar Association (AGI):

- Both AGI and Enero are aligned with USGC's interest to open Indonesia's bioethanol market and is open to the idea of importing bioethanol to kickstart demand for local production. Sugar companies' main interest are to create new revenue line and open the downstream sector of their industry.
- Pertamina is apprehensive in implementing bioethanol fuel mix for RON92 Pertamax variant due to fear of cost increase and rather promote the mix to be introduced on RON 98 Pertamax Turbo variant. Introduction of the latter would not yield environmental and commercial value as the variant only account to 1 percent of Indonesia's fuel consumption.
- Absence in both bioethanol fuel supply (inability for bioethanol industry to produce sufficient volume for fuel-blend program) and demand (Pertamina's unwillingness to support the blending program) creates a "chicken and egg" situation that are highly visible during the NSS event and is required to be solved before the bioethanol fuel blending can take place.

Overall, the sugar industry's objective fully align with USGC's goal to implement bioethanol but are seen to be lacking in knowledge, experience and political influence to do so. However, the sugar industry remains a useful ally as they represent the grassroot population made out of farmers and small enterprises. The support of the sugar industry would be useful when presenting the national interest of bioethanol implementation. Furthermore, with the sugar regulation to be passed in 2023, the political influence of the sugar industry may strengthen under MSOE.

BPI/Dutamas:

Following our last discussion with BPI (Dutamas being the parent shareholder), we reconnected with BPI to further understand Pertamina CEO's announcement on A20.

- From our last meeting, BPI has also met up with BGA and Investment Ministry (BKPM) to discuss and develop legal, technical and financial framework to support the A20 initiative. BPI stated that the methanol/ethanol mix has yet to be finalized and the project should be properly referred to as Gasoline-Methanol-Ethanol (GME).
- The long term goal of GME is to domestically sufficient so 2G ethanol is part of the discussion with BPI engaging Praj and Shell on 2G development.
- Commercially, BPI's role will be to process corn into ethanol where Pertamina will own both corn feedstock and ethanol output. Corn feedstock is preferred as BPI states that the molasses industry is stagnant whereas potential corn farming areas has been identified in Java. This was recorded in the feasibility study conducted by BKPM.
- BPI projects annual requirement of 300 kTonnes for ethanol and foresees imported ethanol as a necessity in the interim.

Malaysia:

Meeting with Greensage Innovations (GI):

Met with Suresh Chandran, consultant with GI to discuss possible ethanol engagements related to their conversion technology using palm kernel cake (PKC) as a feedstock. GI partners with Novozymes to exclusively market and project manage applications of enzymes for ethanol production from PKC. Because of its focus on PKC, GI has identified Malaysia and Indonesia as focus markets to drive their PKC-based technology.

GI has also received private funding to build a PKC to ethanol production plant with the first phase to produce 5,000 mt of ethanol annually. The plant will move to FEED stage after identifying possible sites for construction (potentially Port Klang or Pasir Gudang). Given that PKC to ethanol is a new technology, it will be useful to partner with GI when presenting ethanol potentials to government stakeholders for Indonesia and Malaysia given the strong interest in the palm oil industry. USGC can identify speaking engagements for GI as a new angle to promote ethanol for both countries. In return, GI hopes to leverage on USGC's commercial contacts for ethanol and also identify relevant government engagements to create a PKC to ethanol market.

Thailand

Meeting with BBGI

USGC met with Ekkarat Tonkaranyaset (Operations Sustainability) and Soopachoke Pattanapisalsak (SVP of Operations) from BBGI to introduce USGC and learn more about BBGI's ethanol business. BBGI owns 4 ethanol/biogas and 3 biodiesel/glycerin plants and are the main suppliers of ethanol to its sister company Bangchak Retail Corporation. Khun Soop indicated that the ethanol plants are currently operating at 50% capacity due to tight margins as a result of high cost of feedstock.

The main feedstock is molasses and its supply is currently insufficient to meet running their ethanol plants at full capacity. BBGI is open to working with USGC for information exchange – potentially in relation to GHG emission study of ethanol plants. We will continue to engage BBGI as they are a major ethanol producer in Thailand and will be informed of any changes in policy or market landscape.

Australia

USDA data for ethanol exports in the last two months put Australia as US' 10th largest market. USGC believe this import was due to the heavy rain experienced by Australia beginning Q3 this year. This La Niña weather trend in Australia brought about above average rainfall causing floods, road closures, as well as damaging crops. According to an Argus report, Australian wheat exports fell by 27% between August and September this year as well.

Manildra is the only importer currently and their purchases are likely to supplement their production, in this case they might be facing feedstock issues due to the weather. So it's either drought or heavy rainfall that the country faces periodically that warrants Manildra to import for domestic consumption.

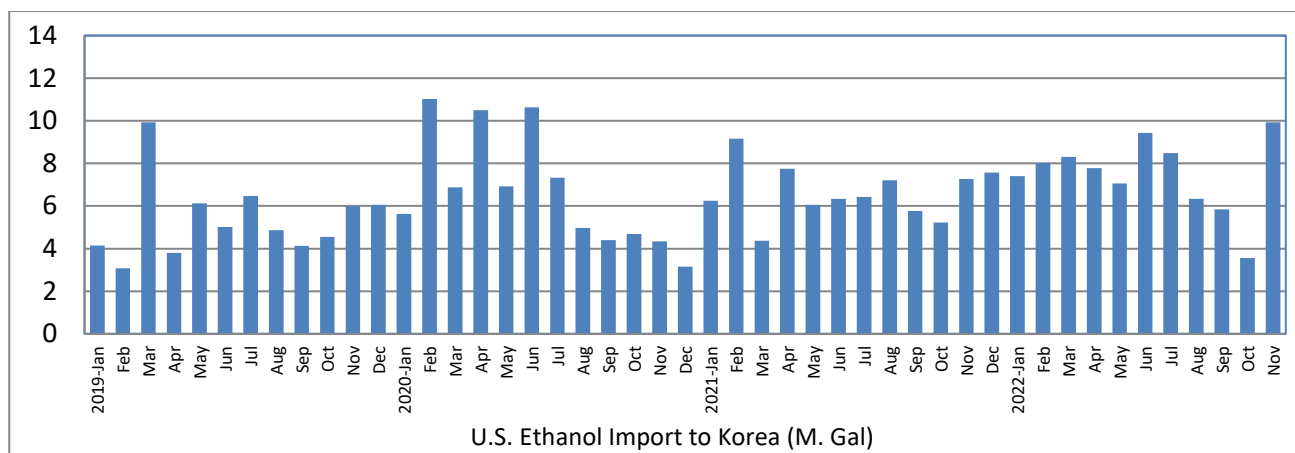
Most recently, the SEA office co-sponsored a Deloitte project: "Transitioning Australia's Liquid Fuel Sector: The Role of Renewable Fuels." The report is set to be published in early 2023

South Korea

82.1 million gallons of U.S. ethanol were imported in Jan-Nov, up 14.4% from 2021:

Korea imported a total of 129.7 million gallons of ethanol from January to November, an increase of 4.9 percent compared to the same period last year. Of 129.7 million gallons, 82.1 million gallons of U.S. ethanol were imported, increased by 14.4 percent compared to the same period of 2021. U.S. ethanol has captured 63.3 percent of total ethanol import, while 40.6 million gallons of Brazilian ethanol (31.3%), 4.4 million gallons of Pakistan ethanol (3.4%) and 2.6 million gallons of other origins (2.0%) were imported.

Monthly U.S. Ethanol Imports, Jan 2019 – Nov 2022



Brazil

Sugar & Ethanol Production: Sugar production in Apr-Dec totaled 33.46 million MT (+4.37%) and 27.47 billion liters (7.26 billion gallons) of ethanol (+3.08%). From the total ethanol produced, hydrous reached 15.80 billion liters (4.17 billion gallons) and anhydrous totaled 11.66 billion liters (3.08 billion gallons), reduction of -0.21% and an increase of 7.90%, over last crop, respectively.

Ethanol Sales: Following the trend observed in November, December registered increased sales of ethanol by the industries. In November, the producing units in the Central-Southern region sold 2.58 billion liters of ethanol (0.68 billion gallons) which represents an increase of 18.79% in relation to same period last crop. Domestic ethanol sales in Apr-Dec, were 11.27 billion liters (2.98 billion gallons) of hydrous and 8.17 billion liters (2.56 billion gallons) of anhydrous, a decrease of 0.39% and an increase of 7.50% over same period last season, respectively. Ethanol exports, in the period Apr-Dec 2022, reached 2.01 billion liters (0.53 billion gallons), an increase of 54.97% in relation to last crop.

Sugar Exports: In 2022, Brasil exported 27.29 MMT, 0.15% more than in 2021, and a revenue 19.8% higher because the FOB US\$/MT increased, in the same period 19.6% (403.17 X 337.01).

Obs.: Ethanol Sales are analyzed by crop year, but Sugar exports are analyzed by chronological year.

Ethanol production from corn:

Ethanol Production from Corn in the Central-Southern Region														
Full Crop Year 2022/2023 (in 1,000 liters)														
Fortnight*	Fortnightly (21/22)			Accumulated (21/22)			Last Crop 21/22	Change 22-23/21-22	Total Sugarcane Ethanol Produced-C.S.			% of Ethanol from Corn	DDGS produce d (MT)	Estimated volume of corn (MT)
	Ethanol Anhydroul	Hydrousl Ethanol	Total (a) + (b)	Ethanol Anhydroul	Hydrousl Ethanol	Total (a) + (b)			21/22 Crop	22/23 Crop	Change 21-22/20-21			
Apr 16**	32,579	131,868	164,447	32,579	164,447	197,026	114,679	71.8%	735,660	394,383	-46.4%	26.78%	175,401	480,551
May 01	10,636	105,908	116,544	43,215	270,355	313,570	238,278	31.6%	2,035,341	1,488,853	-26.8%	15.41%	279,154	764,805
May 16	43,833	114,766	158,599	87,048	385,121	472,169	345,555	36.6%	3,836,369	3,142,753	-18.1%	12.31%	420,346	1,151,632
Jun 01	47,937	108,851	156,788	134,985	493,972	628,957	469,791	33.9%	5,823,687	5,173,757	-11.2%	10.80%	559,925	1,534,041
Jun 16	75,340	101,205	176,545	210,325	595,177	805,502	593,431	35.7%	7,546,481	6,997,138	-7.3%	10.67%	717,093	1,964,639
Jul 01	81,127	107,712	188,839	291,452	702,889	994,341	718,662	38.4%	9,626,578	9,019,705	-6.3%	10.33%	885,206	2,425,222
Jul 16	68,944	103,547	172,491	360,396	806,436	1,166,832	850,636	37.2%	11,829,827	11,239,837	-5.0%	9.86%	1,038,765	2,845,932
Aug 01	91,029	100,480	191,509	451,425	906,916	1,358,341	1,020,159	33.1%	14,108,130	13,651,992	-3.2%	9.63%	1,209,255	3,313,027
Aug 16	81,006	84,670	165,676	532,431	991,586	1,524,017	1,155,629	31.9%	16,416,183	15,689,716	-4.4%	9.28%	1,356,747	3,717,115
Sep 01	85,747	111,697	197,444	618,178	1,103,283	1,721,461	1,333,993	29.0%	18,646,834	17,941,064	-3.8%	9.23%	1,532,520	4,198,685
Sep 16	78,273	134,057	212,330	696,451	1,237,340	1,933,791	1,479,784	30.7%	20,804,407	20,060,521	-3.6%	9.30%	1,721,546	4,716,563
Oct 01	71,391	101,012	172,403	767,842	1,338,352	2,106,194	1,629,465	29.3%	22,788,276	24,484,430	7.4%	9.24%	1,875,026	5,137,059
Oct 16	76,892	97,849	174,741	844,734	1,436,201	2,280,935	1,776,414	28.4%	24,036,112	22,857,385	-4.9%	9.49%	2,030,588	5,563,256
Nov 01	92,614	125,111	217,725	937,348	1,561,312	2,498,660	1,947,141	28.3%	25,089,838	24,448,879	-2.6%	9.96%	2,224,417	6,094,293
Nov 16	85,993	102,795	188,788	1,023,341	1,664,107	2,687,448	2,097,799	28.1%	25,848,587	25,681,523	-0.6%	10.40%	2,392,484	6,554,751
Dec 01	74,401	122,407	196,808	1,097,742	1,786,514	2,884,256	2,255,323	27.9%	26,208,071	26,568,781	1.4%	11.01%	2,567,691	7,034,771
Dec 16	93,390	105,942	199,332	1,191,132	1,892,456	3,083,588	2,410,451	27.9%	26,403,154	27,144,319	2.8%	11.68%	2,745,145	7,520,946
Jan 01***	88,743	114,224	202,967	1,279,875	2,006,680	3,286,555	2,576,201	27.6%	26,560,376	27,466,557	3.4%	12.37%	2,925,836	8,015,988
Source: UNICA adapted by USGC-BR * 15 days (date shown is the last day of the period) 2022** ***2023														

Source: UNICA adapted by USGC-BR

* 15 days (date shown is the last day of the period)

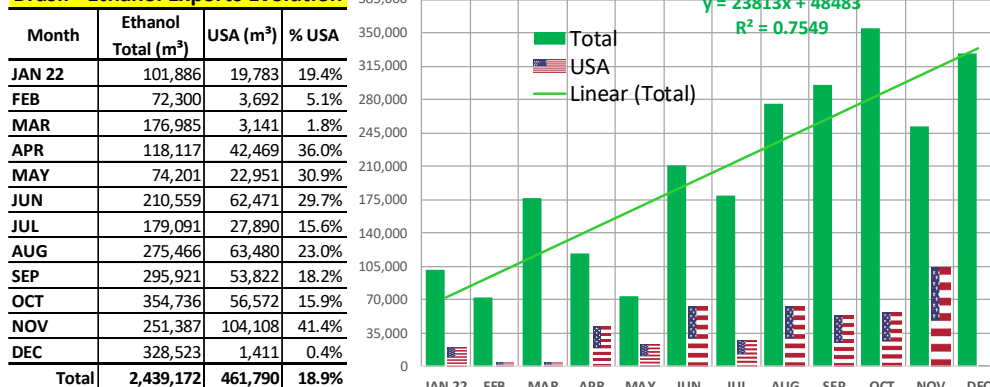
2022**

***2023

From April 1st to January 1st, Brasil produced 3.29 billion liters (0.87 billion gallons) of ethanol (+27.6% in relation to last crop) from 8.02 MMT of corn and generating on a dry basis (10% moisture) 2.93 MMT of DDGS. The present industrial network of corn ethanol producing units are formed by 17 units being 10 flex (crushes both sugarcane and corn) and 7 full (crushes only corn). They are located: 10 in Mato Grosso, 5 in Goias, 1 in Parana and 1 in Sao Paulo.

Ethanol Exports:

Brasil - Ethanol Exports Evolution



Source: Comex-Stat / USGC-BR

In December 2022, Brasil exported 328.52 million liters (86.79 million gallons) being 0.4% of this volume to the US (1.4 million liters = 0.37 million gallons). The total exported in 2022 was **25.6 %** more than in 2021 (2.44 billion liters = 0.64 billion gallons X 1.94 billion liters = 0.51 billion gallons). The participation of the US in the 2022 decreased **20.9%**, going from 464.9 million liters (122.8 million gallons) to 461.8 million liters (122 million gallons).

The volume of ethanol exported in December was higher than in November (+30.7%) because the loss of competitiveness of the ethanol to the gasoline. There was a significant decrease in ethanol use in

Brasil and consequently more available to exports even with lower production due to the end of the season.

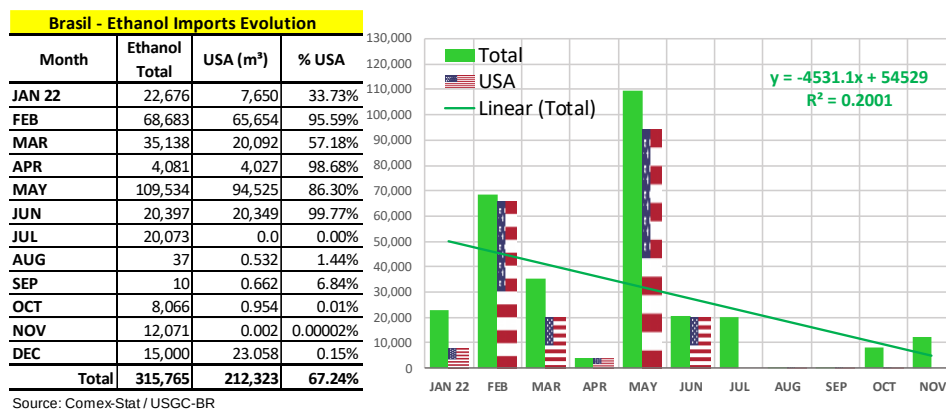
Main buyers of Brazilian Ethanol:

Rank Nov22	Rank Dec22	Ethanol Exports - Main Destinations 2022 (January-December)						December 2022		Jan-Dec 22 / Jan-Nov 22	
		Country	m ³	1,000 US\$	US\$/m ³	% m ³	m ³	%	% Change	m ³	US\$/m ³
1	1	South Korea	740,610	541,398	731.02	30.4%	92,581	28.2%	14.3%	0.4%	
2	2	Netherlands	711,447	529,001	743.56	29.2%	153,080	46.6%	27.4%	-1.4%	
3	3	United States	461,790	308,433	667.91	18.9%	1,411	0.4%	0.3%	0.1%	
4	4	United Kingdom	105,636	75,662	716.25	4.3%	0	0.0%	0.0%	0.0%	
5	5	Japan	88,393	61,235	692.76	3.6%	8,099	2.5%	10.1%	-0.8%	
8	6	Nigeria	54,575	34,552	633.11	2.2%	19,568	6.0%	55.9%	4.9%	
6	7	Ghana	43,150	34,513	799.83	1.8%	2,476	0.8%	6.1%	-0.2%	
7	8	Philippines	45,273	28,921	638.81	1.9%	5,910	1.8%	15.0%	0.3%	
9	9	Cameroun	28,369	22,529	794.13	1.2%	2,305	0.7%	8.8%	-0.1%	
0	10	India	31,475	15,942	506.51	1.3%	31,475	9.6%	-	-	
		Others**	128,453	95,000	739.57	5.3%	11,619	3.5%	9.9%	-0.1%	
		Total	2,439,172	1,747,187	716.30	100.0%	328,523	100.0%	15.6%	-0.4%	

Source: Comex-Stat / USGC-BR No Purchases This Month *FOB **62 countries (5.3% exports)
NCMs: 22071010 and 22071090

Ethanol exports in 2022 totaled 2.44 billion liters (0.64 billion gallons), an increase of **25.6%**, in relation to the 1.94 billion liters (0.51 billion gallons) of 2021. The countries that imported the largest volumes in December were the Netherlands (153.08 million liters = 40.44 million gallons), India (31.48 million liters = 8.32 million gallons) and Nigeria (19.57 million liters = 5.17 million gallons) about 46.6%, 9.6% and 6.0% of the total exported, respectively. India was the country that had the highest growth in imports on December 0 million liters to 31.48 million liters (8.32 million gallons). Average FOB price, for 2021, was US\$ 716.30/m³ and India paid the lowest price US\$ 506.51/ m³. India bought from Brasil for the 1st time. It is an interesting market.

Ethanol Imports:

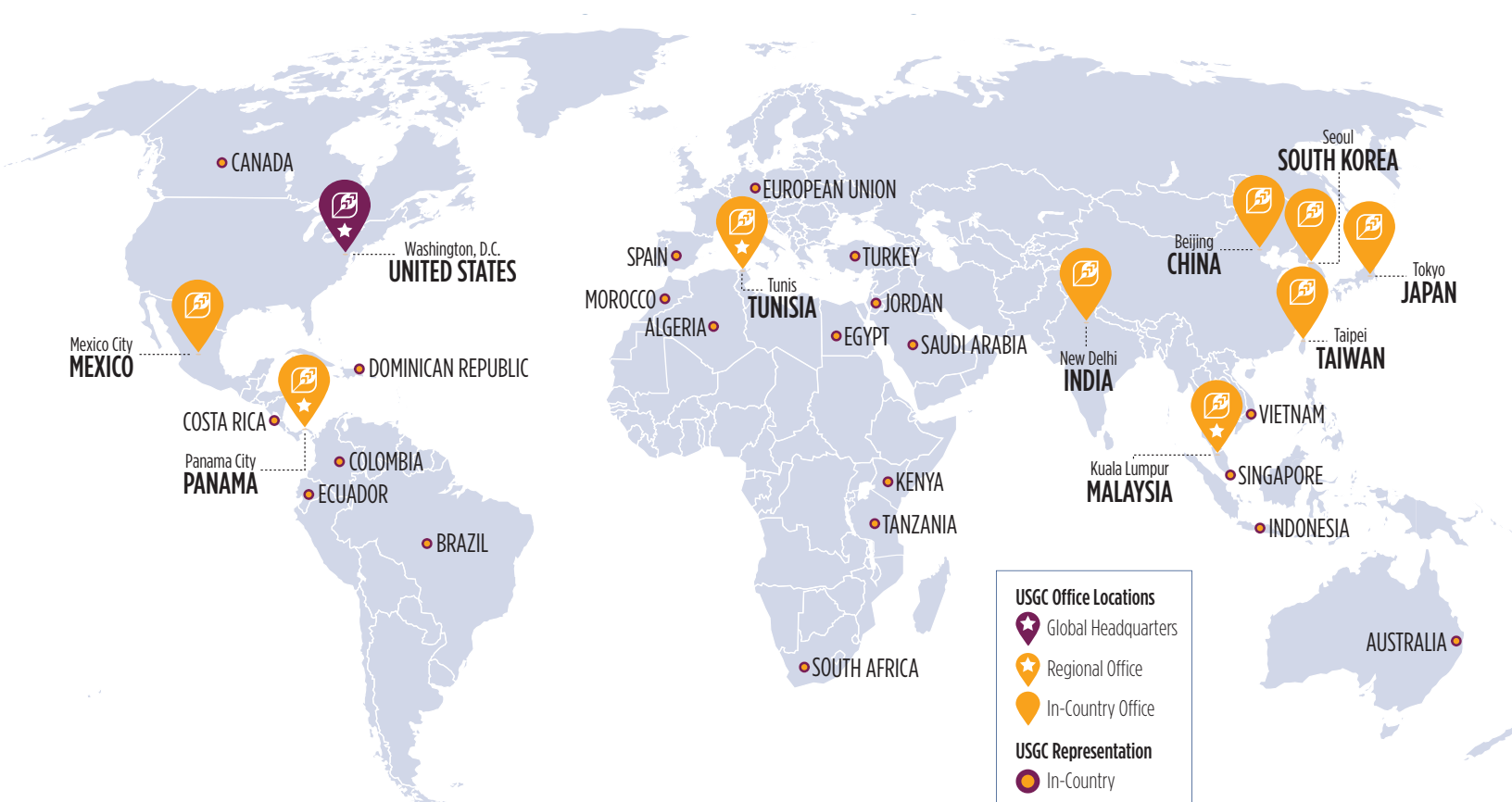


The volume imported in 2022 was 315.76 million liters (83.41 million gallons) being 67.24 % from the US, 212.32 million liters (56.09 million gallons). The volume imported in December 2022 was 15.0 million liters (3.96 million gallons). The increase in volumes imported in the last four months of 2022 was consequence of a large production of ethanol and a significant drop on the price of gasoline that resulted in lower consumption of hydrous ethanol (**-6.6%**) and consequently a larger consumption of anhydrous (consumption increased **6.6%**).



U.S. GRAINS
COUNCIL

2023 MEMBERSHIP DIRECTORY



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Information in this directory was deemed accurate as of November 2022.

20th International Marketing Conference & 63rd Annual Membership Meeting

Feb. 13-15, 2023 | Hyatt Regency Savannah
Savannah, Georgia

63rd Annual Board of Delegates Meeting

July 26-28, 2023 | Hyatt Regency Calgary
Calgary, Canada

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Vic Miller	2007	Robbin S. Johnson	1986	William R. Pearce	1965
Davis Anderson	2006	Howard Mueller	1985	Fred Maywald	1964
Paul Williams	2005	W. L. Stowell	1984	Nelson Urban	1963
Terry Wolf	2004	Larry Abeldt	1983	Reagan G. Peeler	1962
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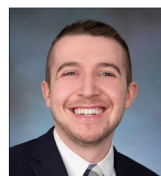
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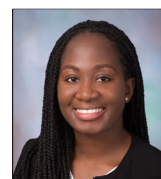
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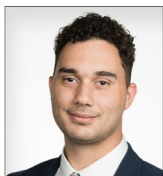


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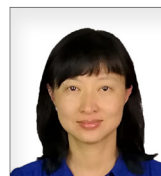
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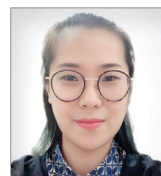
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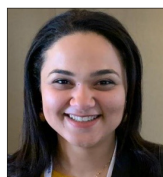
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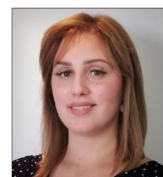
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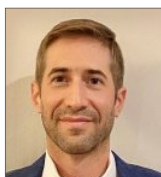
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Email: info@wnyenergy.com
Website: www.wnyenergy.com

Western Plains Energy, LLC

Derek Peine

3022 County Road 18
Oakley, KS 67748
Phone: (785) 672-8810
Email: dpeine@wpellc.com
Website: www.wpellc.com

White Energy Holding Company, LLC

Brian Steenhard

2595 Dallas Parkway
Suite 310
Frisco, TX 75034
Phone: (214) 751-2575
Email: bsteenhard@white-energy.com
Website: www.white-energy.com

Wisconsin Corn Promotion Board Inc.

David Adams	Casey Kelleher
Mike Berget	Ken Rosenow
Thomas Gillis	Randy Woodruff

N77W24707 Century Ct.
Lisbon, WI 53089
Contact: Nicole Wagner, Executive Director
Phone: (262) 372-3289
Email: nicole@wicorn.org
Website: www.wicorn.org

Wyffels Hybrids Inc.

John Wyffels

13344 U.S. Highway 6
Geneseo, IL 61254
Phone: (309) 945-0706
Email: johnwyffels@wyffels.com
Website: www.wyffels.com

Zeeland Farm Services Inc.

Darwin Rader

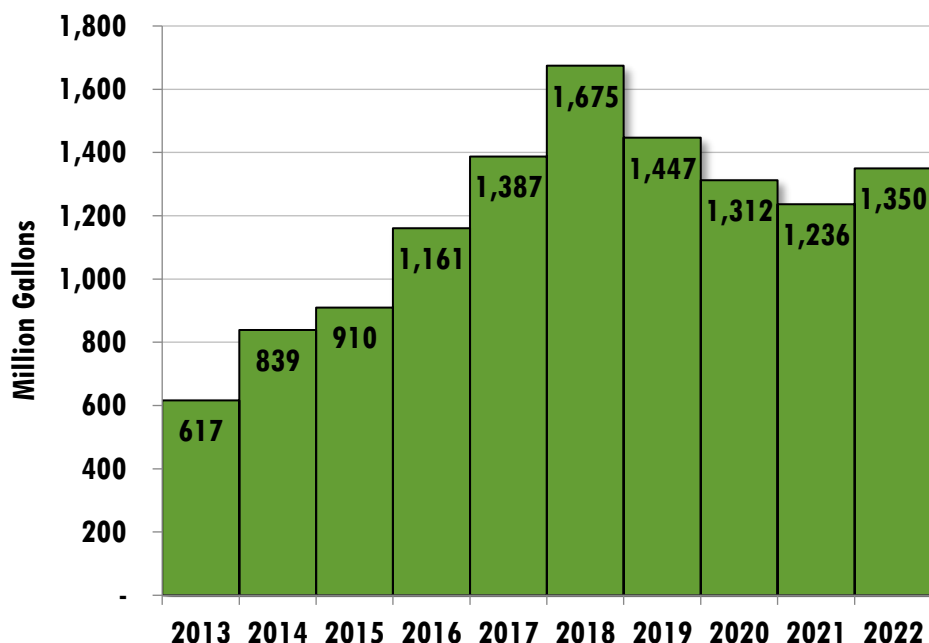
2525 84th Ave.
P.O. Box 290
Zeeland, MI 49464
Phone: (616) 772-9042
Email: darwinr@zfsinc.com
Website: www.zfsinc.com



2022 U.S. ETHANOL EXPORTS & IMPORTS STATISTICAL SUMMARY

2022 U.S. ETHANOL EXPORTS

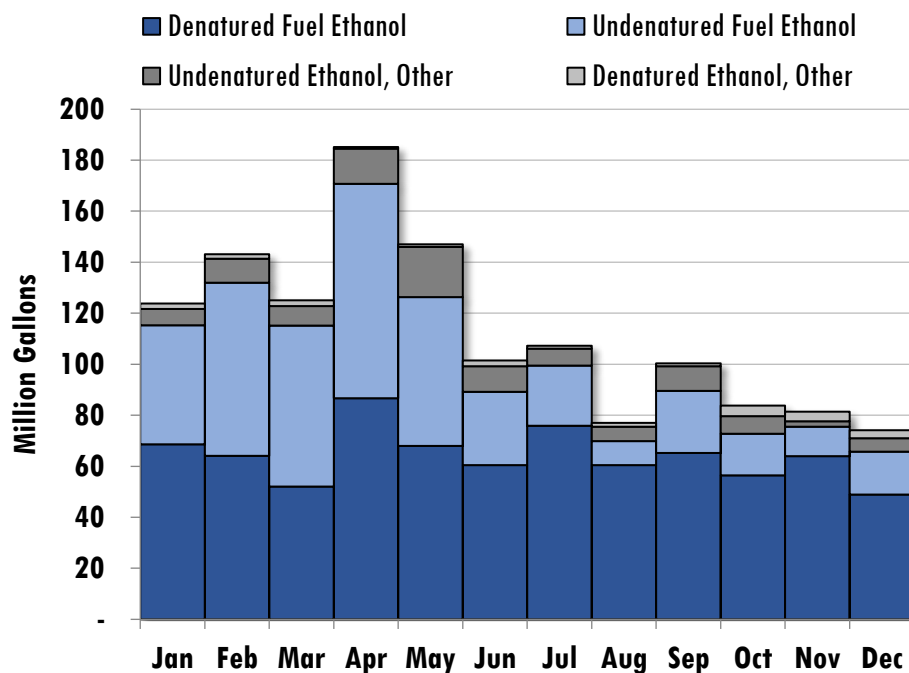
Annual U.S. Ethanol Exports



Spurred by competitive pricing and tight global fuel supplies, **U.S. ethanol exports rose 9% to 1.35 billion gallons in 2022—the fourth-highest volume on record.** American-made ethanol was exported to **85 countries** on all six inhabited continents.

2022 Monthly Ethanol Exports, by Type

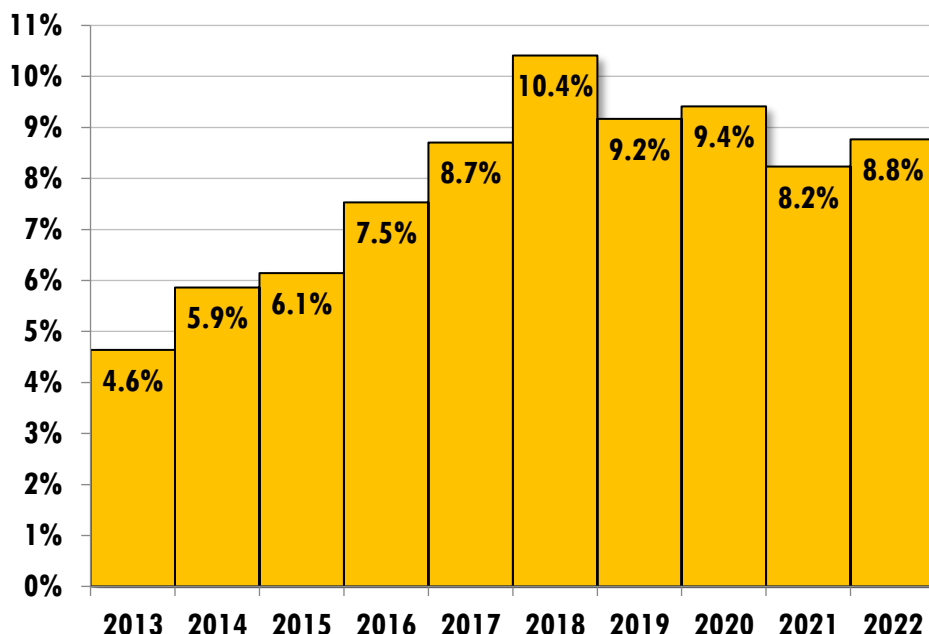
Exports started 2022 strong but eased during the second half of the year, when shipments to South Korea and India declined and minimal volumes went to Brazil. **Denatured ethanol** accounted for **63%** of exports classified as being for fuel use, while **undenatured ethanol** represented **37%**.



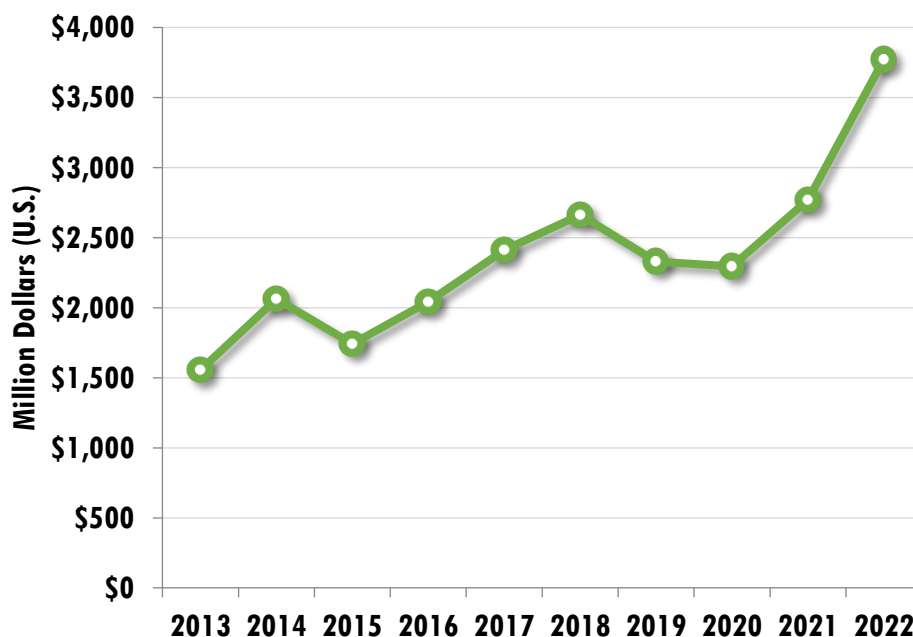
2022 U.S. ETHANOL EXPORTS

Export Share of U.S. Ethanol Production

The share of U.S. ethanol production that was exported rebounded to 8.8% in 2022, which was consistent with the prior five years.



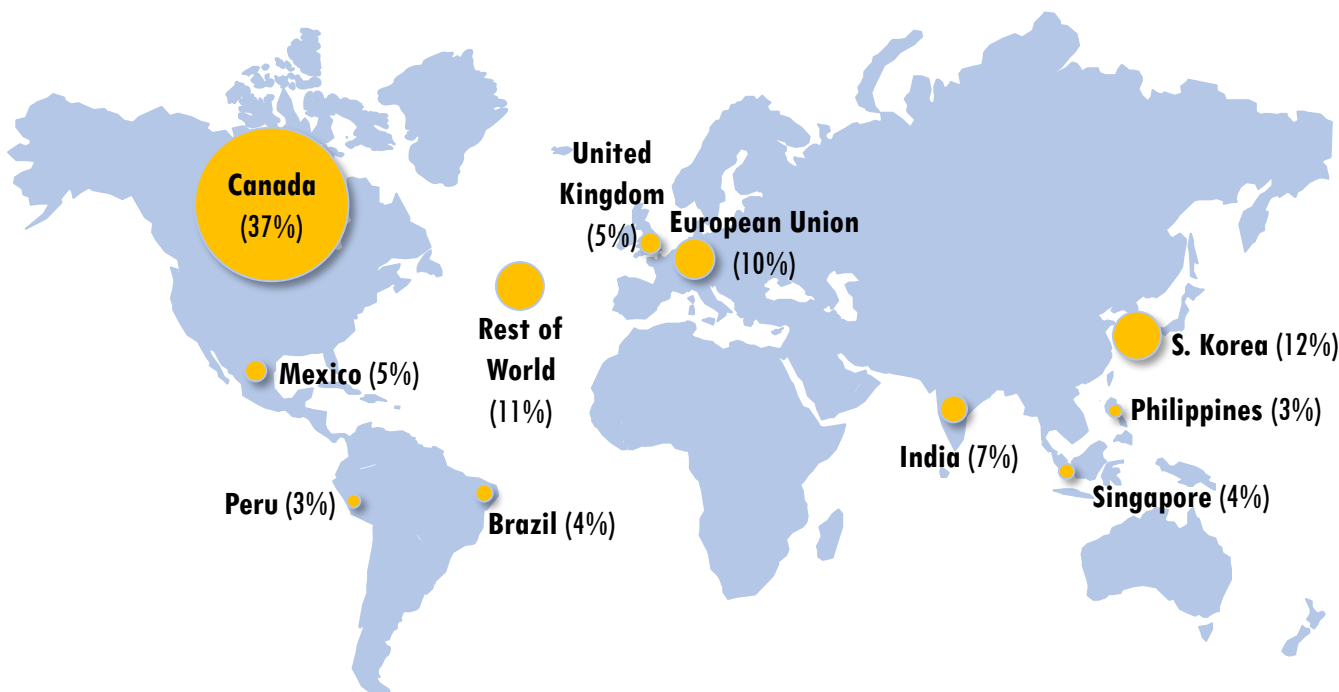
Value of U.S. Ethanol Exports



The value of U.S. ethanol exports **surged to \$3.77 billion** in 2022, **a record high** and an increase of \$1 billion over 2021. Export volumes and prices both increased.

2022 ETHANOL EXPORTS: TOP MARKETS

Top Markets for U.S. Ethanol Exports in 2022

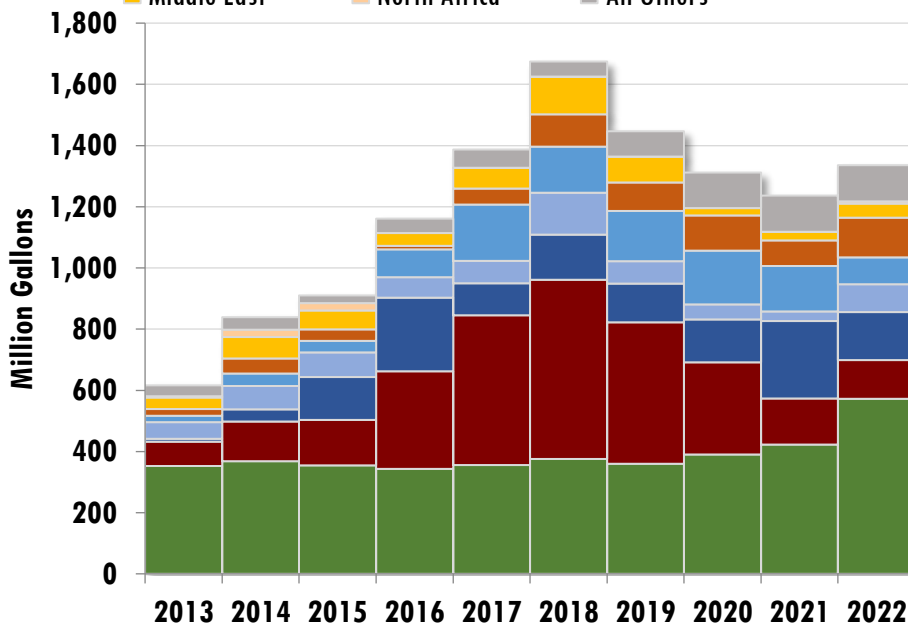


2022 ethanol export volumes to the Top 10 markets are shown in the table below, along with a comparison to 2021 volumes. All figures are shown in millions of gallons, unless otherwise noted.

Country	Den. Fuel	Und. Fuel	Den. Other	Und. Other	2022 Total	2021 Total	Change
Canada	463.3	7.1	16.6	15.5	502.5	374.4	+34%
South Korea	57.2	67.6	3.4	28.2	156.4	150.8	+4%
European Union	66.7	45.6	0.1	17.2	129.5	83.0	+56%
India	2.0	86.6	0.0	0.0	88.6	148.9	-40%
Mexico	5.3	54.3	1.8	8.3	69.8	49.0	+42%
United Kingdom	61.7	5.4	0.0	0.0	67.1	41.5	+62%
Brazil	13.1	46.2	0.1	0.0	59.5	69.5	-14%
Singapore	21.8	28.1	0.0	0.1	50.1	4.1	+1133%
Peru	10.7	35.2	0.0	0.0	45.9	43.9	+5%
Philippines	12.6	23.9	0.1	1.6	38.1	27.6	+38%

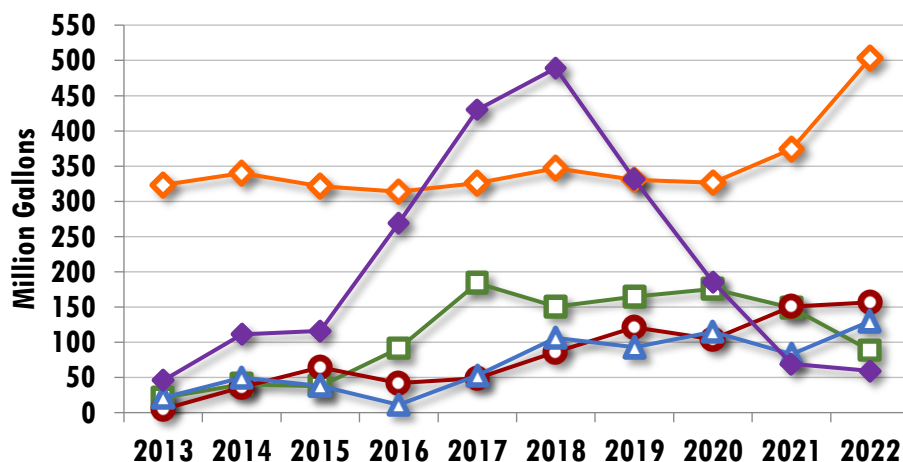
2022 U.S. ETHANOL EXPORT DESTINATIONS

U.S. Exports by Region



North America continued to be the **largest regional destination** for U.S. exports in 2022. **East Asia** remained in second place, though its share declined. The **European Union** rose to third place. However, shipments to **South America** fell further.

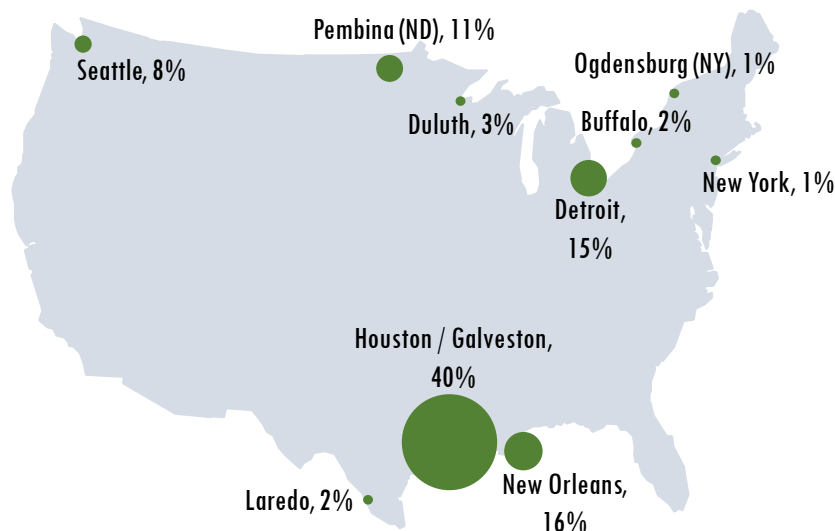
Volatility in Major U.S. Ethanol Export Markets



Canada remained the **top market** for U.S. ethanol, taking more than **500 million gallons, a record** for any destination. Exports to the **EU** rose more than **50%**, strengthening after the Russian invasion of Ukraine. However, shipments to **Brazil** fell further.

2022 EXPORT HUBS AND NET EXPORTS

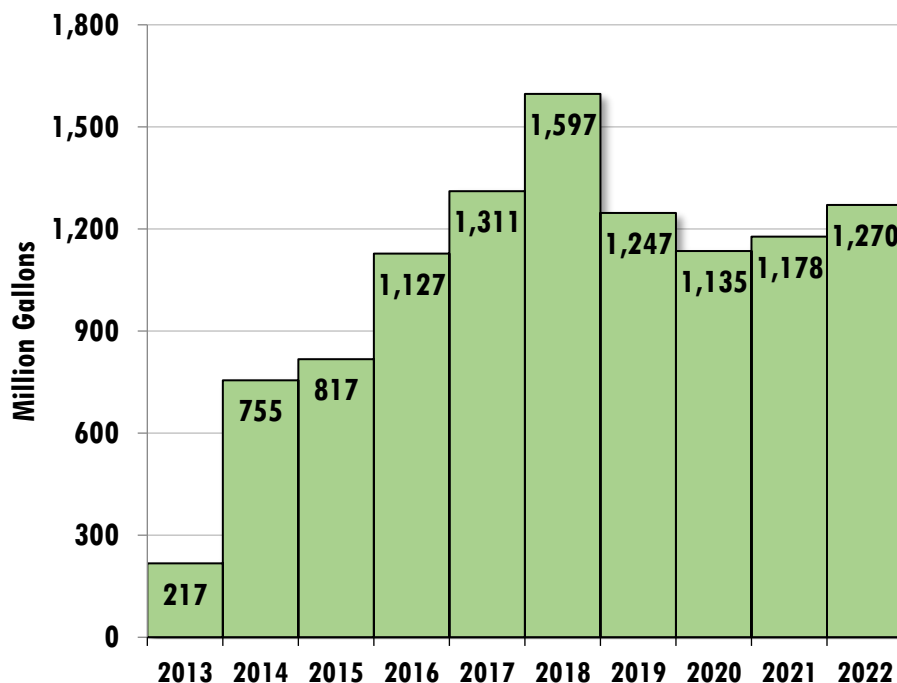
Top Ports/Districts of Exit for 2022 U.S. Ethanol Exports



More than half of U.S. ethanol exports departed via the **Gulf of Mexico**. The **Great Lakes and Northern Tier** were collectively the **second-largest** region. Significant volumes also were shipped from the **Pacific Northwest**.

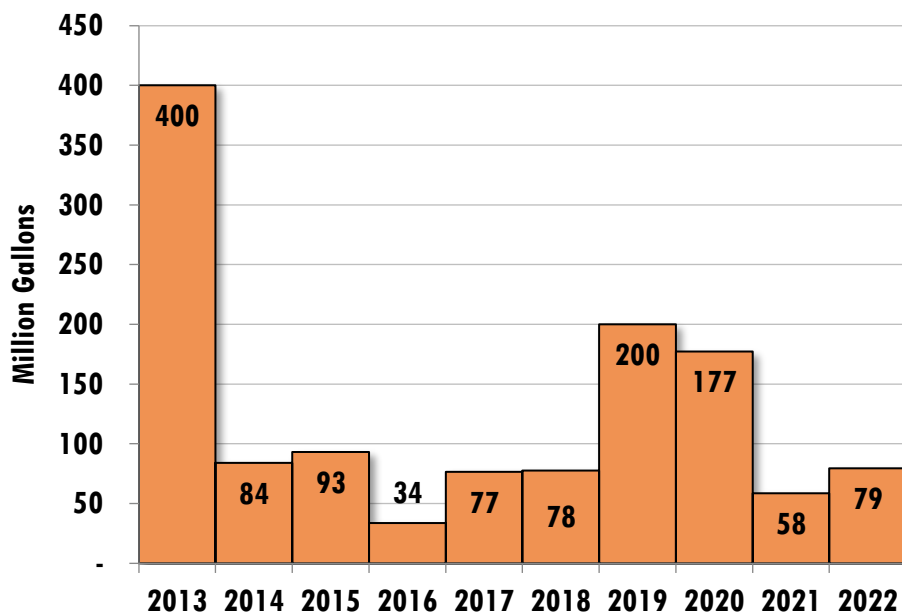
Net exports of ethanol continued to rise in 2022, despite higher imports. The U.S. remained a net exporter for the 13th straight year.

Annual U.S. Net Ethanol Exports



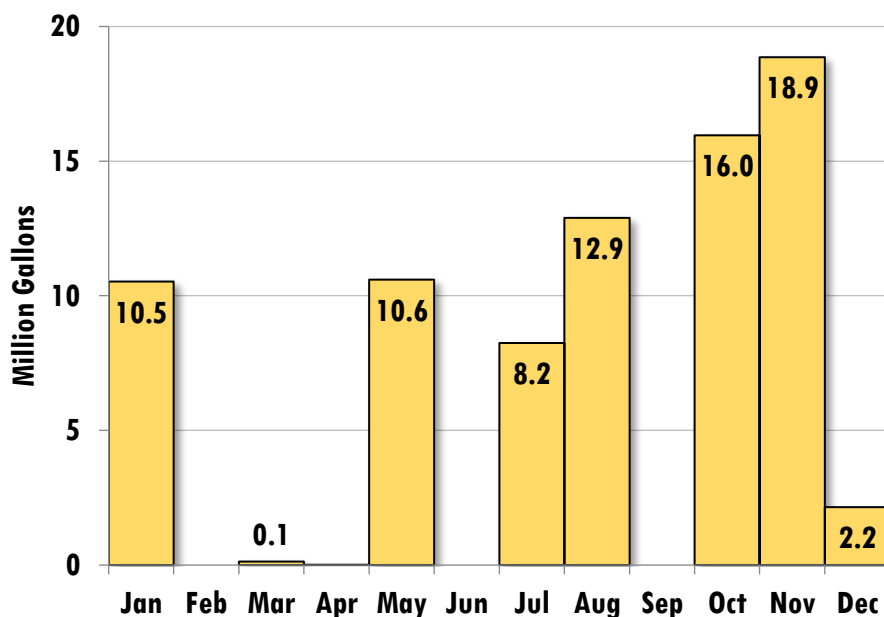
2022 U.S. ETHANOL IMPORTS

Annual U.S. Fuel Ethanol Imports



U.S. imports of fuel ethanol rebounded to **79 million gallons** in 2022, a level consistent with most of the last decade.

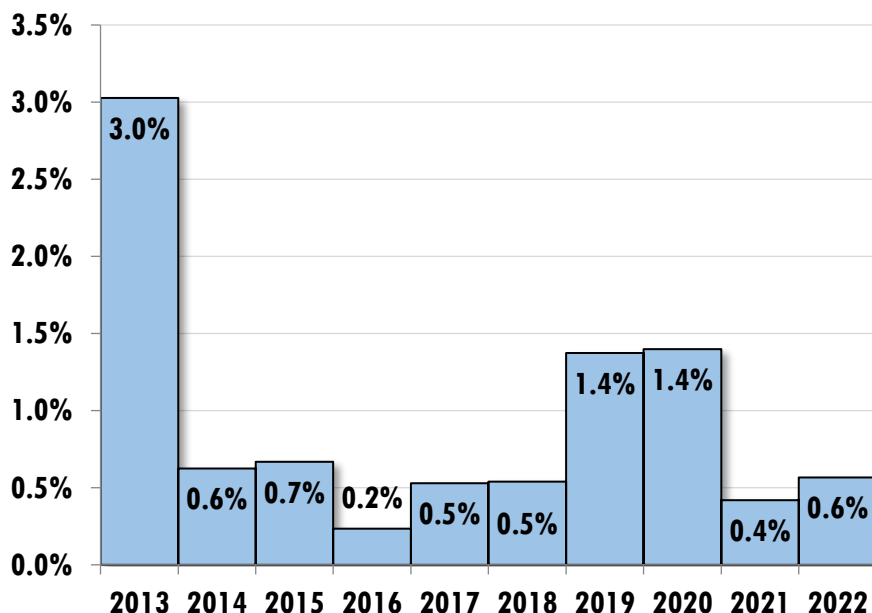
2022 Monthly Ethanol Imports



Virtually all fuel ethanol imports continued to come from **Brazil**, due in large part to favorable treatment under the California Low Carbon Fuel Standard.

2022 U.S. ETHANOL IMPORTS

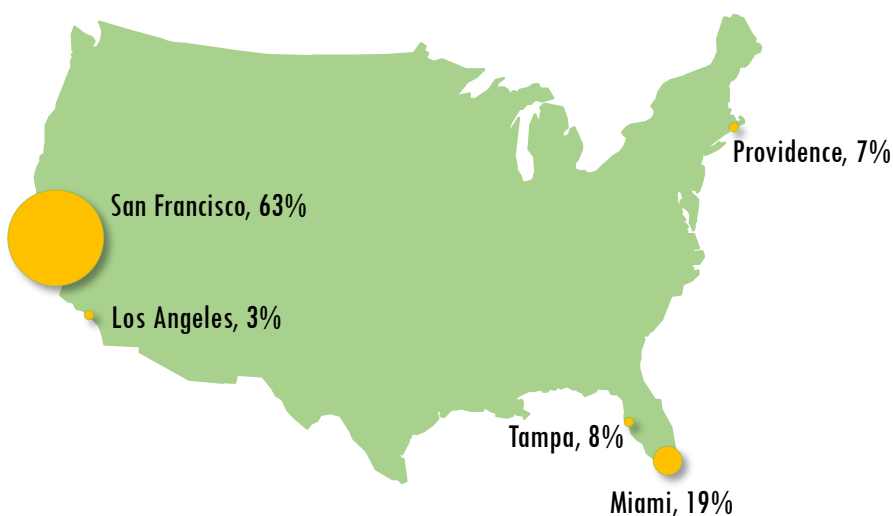
**U.S. Ethanol Imports:
Share of Total U.S. Ethanol Consumption**



Ethanol enhanced America's energy security, as imports accounted for **less than 1%** of U.S. ethanol consumption in 2022.

Top Ports of Entry for 2022 U.S. Ethanol Imports

California ports received **two-thirds** of the fuel ethanol **imported** into the U.S. in 2022. Significant volumes also were imported into **Florida**.



ABOUT THE DATA IN THIS REPORT

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U.S. Ethanol Export Data

- The export data in this report includes exports classified under the following Harmonized Tariff Schedule (HTS) codes:
 - **2207200010**: Ethyl alcohol and other spirits, denatured, of any strength: For fuel use
 - **2207106010**: Undenatured ethyl alcohol of an alcoholic strength by volume of 80 percent vol. or higher: For non-beverage purposes: For fuel use
 - **2207200090**: Ethyl alcohol and other spirits, denatured, of any strength: Other
 - **2207106090**: Undenatured ethyl alcohol of an alcoholic strength by volume of 80 percent vol. or higher: For non-beverage purposes: Other
- 2207200090 and 2207106090 are included in this report because there is anecdotal evidence that exports of ethanol intended for fuel use are sometimes classified under these codes. In any case, ethanol classified under these codes represented 10% of the 2022 U.S. exports discussed in this report.

U.S. Ethanol Import Data

- The import data in this report includes imports classified under the following Harmonized Tariff Schedule (HTS) codes:
 - **2207200010**: Ethyl alcohol and other spirits, denatured, of any strength: For fuel use
 - **2207106010**: Undenatured ethyl alcohol of an alcoholic strength by volume of 80 percent vol. or higher: For non-beverage purposes: For fuel use

Sources

- All data in this report comes from the U.S. Census Bureau, U.S. Department of Commerce, U.S. Department of Agriculture, U.S. International Trade Commission, and U.S. Energy Information Administration

The Renewable Fuels Association publishes **monthly** summaries of export and import data for ethanol and distillers dried grains in its [Trade Monitor](#).

This report was prepared by Scott Richman, who may be contacted at srichman@ethanolrfa.org or 636.594.2287.



Renewable Fuels Association

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Suite 101

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3e. ASTM/NCWM Updates

December 2022

Chuck Corr, CC Consulting, LLC

December ASTM Meeting Updates

The June 2022 ASTM meeting was held in Orlando, FL. The attendance was excellent at this meeting with the number of on-site attendees roughly the same as before the pandemic. Several of the smaller committees (such as E48), subcommittees and work groups still used hybrid meetings. I expect this will be an ongoing practice. In D02 there was a discussion of reducing the number of work groups meeting during the committee week. The general thought is that the task group work can be done virtually and those meetings should occur before committee week so the attendees can participate in other the larger group meetings.

The D02 and E48 meetings were fairly uneventful. There were no major negative adjudications of interest.

Gasoline subcommittee – I had three ballots this semester. All three had negatives. I felt at least one negative point was persuasive on each ballot. Two of these items will be concurrent ballots in the spring. The ballot to identify the D4814 fuel as automotive gasoline will be another SC A ballot. I expect we will be adjudicating the negatives next time if we get any. I expect the ballots to add an introduction to D4814 and the ballot to remove most of the information on leaded fuels from D4814 will pass next semester.

Russ Lewis (Marathon) has been leading a ballot to change the volatility table based on updated geography/temperature data and lower the T50 on fuels containing ethanol. There were several negatives and Russ admitted they used an older draft of the table when the ballot was prepared. A technical paper will be released early next semester that is to provide the background data and rationale used when the volatility table was prepared. Their decisions included the geography/temperature data analysis and other considerations. The technical paper will be the first detailed explanation of all of the criteria used for the other considerations and how they all considerations were combined to create the final assignment in the table. My vote on that ballot will be highly influenced by that paper.

There was a comment in the subcommittee meeting asking if we should include sustainability considerations in the standards. We will need to keep an eye on this to ensure it does not get turned against renewables.

Diesel committee - There was a ballot to change the cetane number in the biodiesel specification. The limit was originally set at 47 but some feedstocks produce biodiesel with a cetane value below 47. The current proposal is for a cetane limit of 45 for biodiesel. The cetane limit for diesel fuel in D975 is 40. These discussions are continuing. I will coordinate with the Scott Fenwick on this one.

Aviation fuels - The subcommittee continues to develop standards for jet fuels with renewable carbon. These efforts are continuing with great interest from the OEMs.

E48, Bioenergy and Industrial Chemicals from Biomass, has a subcommittee on sustainability. There was considerable discussion related to “sustainability” efforts by other committees, especially E60, *Sustainability*. That committee has been involved in areas such as sustainable dentistry, sustainable buildings, etc. They are now branching into general sustainability but approaching it as a certification type issue. This is creating conflicts with terms in relative sustainability. The certification

systems frequently are avenues for outsiders to impose arbitrary standards on other industries. We are doing our best to protect relative sustainability.

January 2023

Chuck Corr, CC Consulting, LLC

NCWM Interim meeting

The January, 2023, NCWM Interim meeting was held in Savannah, GA. The meeting was well attended. I would say it is back to pre-pandemic levels attendance and number of proposals to consider.

Proposals to change Handbook 130

There were several items of interest to renewables. I proposed a number of modifications to Handbook 130. The items were combined into two blocks. One block was two proposals related to gasoline and were to update the text in the Method of Sale and Fuel and Lubes sections of HB130 to be consistent with the EPA regulation citations added last year. These changes will also treat all gasolines equally not just call out gasoline containing ethanol. These two proposals were discussed in the Sunday FALS meeting. After some minor tweaks, FALS agreed to recommend voting status for these two items. The Laws and Regulations (L&R) committee agreed and this block has voting status for the July Annual meeting.

The second block addresses biodiesel and renewable diesel. I have described this block as a wholistic review of the middle distillate type fuels in the Method of Sale and Fuel and Lubes sections of Handbook 130. This includes diesel, biodiesel, renewable diesel and home heating fuel. There were a lot of comments on this Block. I recommended this block be assigned to FALS and I will lead a focus group in FALS to further develop this item. L&R assigned this block to FALS. I will hold webinars with the focus group to have a final proposal for the Interim meeting next January.

Proposal to change how NCWM votes on items

A big item of interest on the Board of Directors (BOD) agenda related to a proposal to move NCWM from voting once a year to twice a year voting. This concept came up several years ago. It has been supported by industry and a number of regulators as it provides a faster way to move issues through the conference. Currently the only voting is at the July annual meeting. The proposal would allow voting at both the January and July meetings. The BOD agenda item listed a number of proposed changes to the bylaws to facilitate the change. There was considerable discussion. I think the main questions were to clarify how the system would actually work under twice a year voting. This proposal was made informational so the board will continue developing the proposal. The earliest twice a year voting could occur would likely be 2025. I will continue to support this effort.

4a. Ethanol Promotion Committee

Iowa Renewable Fuels Association
Ethanol Promotion Committee Minutes

February 24, 2023

Draft

Meeting was called to order by Lisa Coffelt at 9:03 A.M.

Members Participating:

Corn LP	Elizabeth McOllough	
Golden Grain Energy	Dave Sovereign	
Golden Grain Energy	Jerry Calease	
Lincolnway Energy	Bill Couser	
Iowa Renewable Fuels Association	Lisa Coffelt	Marketing Director

IRFA Anti-Trust Policy

Coffelt reviewed IRFA's Anti-Trust Policy Information.

"IRFA and its officers, directors, and employees fully support and intend to comply with all applicable federal and state antitrust laws and shall not engage in anti-competitive conduct or practice, nor allow IRFA to be used by any member or other party for anti-competitive or unlawful purpose, including but not limited to the following kinds of prohibited conduct:

Any discussions or effort to directly or indirectly fix, raise, lower, control, recommend, suggest, or maintain prices on products or inputs.

Any contract, combination, conspiracy, discussions, or effort to divide or allocate markets or customers.

Any discussions or effort to engage in any boycott or considered refusal to deal.

Any discussions or effort through unsanctioned industry standards, restrictions, or any other method, to injure the business or trade of anyone.

Minutes will be kept of all meetings of the Board of Directors, the Executive Committee and Standing Committees. These minutes shall summarize accurately and concisely the action taken at the meeting."

- Minutes

Motion by McOllough, second by Couser to approve minutes. Motion carried.

- Drive Clean – Teen Drivers Promotion

Coffelt reviewed the data of social media engagement across the various platforms. Coffelt showed some initial data from boosting existing posts to gain followers.

- At Pump Marketing/ Dispenser Videos

Coffelt supplied data showing number of views by market across Iowa (Cedar Rapids, Dubuque, Davenport, Des Moines, Ames, Omaha, Mason City, Sioux City and Sioux Falls).

- Geofencing High School age and E15 locations

Coffelt noted that previous thoughts were to stream HS sports, however, she proposed geofencing high schools. We will be able to geofence high schools from 9am – 3pm M-F our 30 sec commercial. We will also be able to target those at E15 locations and play our 15 sec at the pump video. Coffelt suggested we also tie this into our social media as well as on site UNL88 promotions.

- Teacher Packets

Coffelt shared that 260 teacher packets were sent out for FFA teachers, and 100 will be supplied to the 4H agriculture teachers.

- High School, 4H, and FFA events

Coffelt noted Iowa Corn partnership at High School sporting events such as the State Wrestling Tournament. She showed the new Link Tree app the campaign is using for promotion. Coffelt noted upcoming events for 4H and FFA in 2023.

- RAGBRAI

Coffelt discussed the 2024 route and Riding to a greener future jersey.

The meeting was adjourned at 9:31 A.M.

Ethanol Promotion Activities

Social Media

There are multiple on going projects within the teen drivers campaign. IRFA continues to have a presence on social media including Instagram, Facebook, and TikTok with graphics, reels, interactive content.

Teachers Kits

Teachers Kits were sent out for additional information. We will also continue our partnership with the 4H and FFA Organizations with events coming up.

Geo fencing High School age

We will be targeting high schools and E15 locations and advertising with the 15 second commercial as well as the 30 second commercial.

RAGBRAI

IRFA will be contributing jerseys again for the 2024 RAGBRAI route.

Social Media Engagement

Facebook Statistics

Followers: 35

Page Likes: 25

Drive Clean
Published by Shelby Sites · February 15 at 11:00 AM · 🌐

What is Unleaded 88 - When we started looking at Unleaded 88 as a fuel upgrade we loved the idea but you might be wondering what that means.
So we wanted to make sure that we're all on the same page when you go to choose this fuel at the pump.

1. It's lower cost
2. It's cleaner burning
3. It's homegrown

It's time we're focused on upgrading the choices we make and Driving Clean to have FULLER POCKETS AND CLEANER AIR.

**LOWER COST
ENVIRONMENTALLY
FRIENDLY
HOMEGROWN**

DRIVECLEANOWIA.COM
Fuel Upgrade

6,537
People reached

304
Engagements

Boosted on February 21 at 2:09 PM **Finishes in 2 days**
By Iowa Renewable Fuels

People reached **6.5K** Link clicks **65**

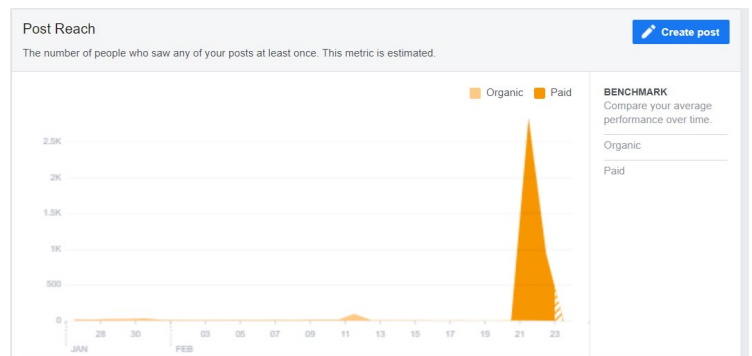
View results

Your 5 Most Recent Posts

Reach: Organic / Paid Post Clicks Reactions, Comments & Shares

Published	Post	Type	Targeting	Reach	Engagement	Promote
02/21/2023 11:00 AM	Do you want to save even more money at the pump?	Video	🌐	10	0 2	Boost post
02/15/2023 11:00 AM	What Is Unleaded 88 - When we started looking at Unleaded	Video	🌐	6.2K	305 3	View promotion
02/12/2023 11:00 AM	We used to wonder WHAT fuel to choose at the pump when-	Video	🌐	108	0 1	Boost post
02/08/2023 10:00 AM	We couldn't relate more to this quote. You're choice at the	Video	🌐	11	0 1	Boost post
01/02/2023 5:58 PM	The answer to what gas to put in your car is Unleaded 88.	Video	🌐	65	0 0	Boost post

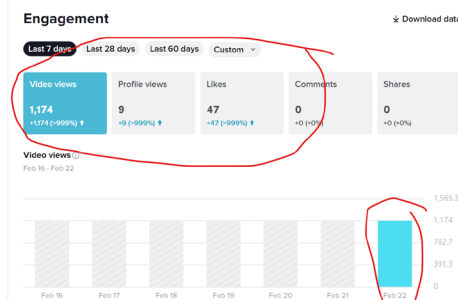
See All Posts



TikTok

Followers: 73

Total Likes: 1678



At the Pump Advertizing

[22286_IRFA_15-SECOND-AT-THE-PUMP.mp4 \(widen.net\)](https://www.widen.net/view/22286_IRFA_15-SECOND-AT-THE-PUMP.mp4)



30 Second Commercial

https://bingbang.widen.net/s/nr2fbjf2ln/22286_irfa_cisncommercial_30sec

Connected TV Inventory

Broadcaster Direct / Thousands of PMPs / The Most Trusted SSPs

Access to Premium Publishers

Access to Trusted CTV SSP Integrations
Full Frequency Controls Across All Suppliers



- Reach young/new driver audience at metro high schools 9am – 3pm M-F
- Target devices seen at high schools in the metro
- Serve students video ad on mobile device
- Ads will be shown within apps where users watch full content or sports broadcasts (CBS, ESPN, Hulu, Sling, etc)
- Also serve ads to users seen at E15 stations in metro area. Ages 18-24 seen at stations and serve :15 sec at the pump video on devices
- Campaign budget of \$6,000 estimate deliver a minimum of 168,000 commercials across both target groups
- Will run for 4-6 weeks
- Ads will direct users to driveclean website

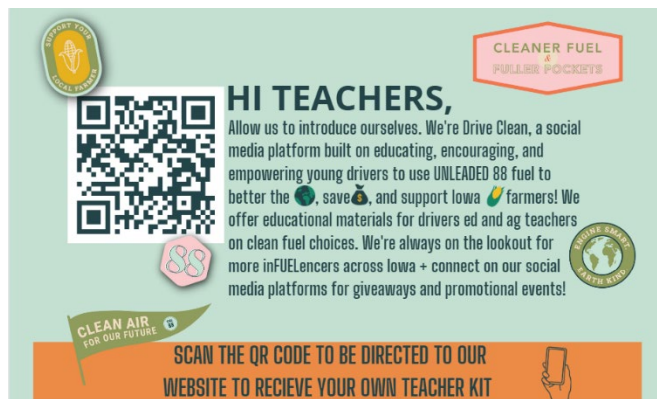
Upcoming 4H events for 2023

- State Science and Technology Fair - March
- Iowa 4-H Conference – Late June
- Career Pathways Events
- They are putting together a schedule for this, will send these when they are set

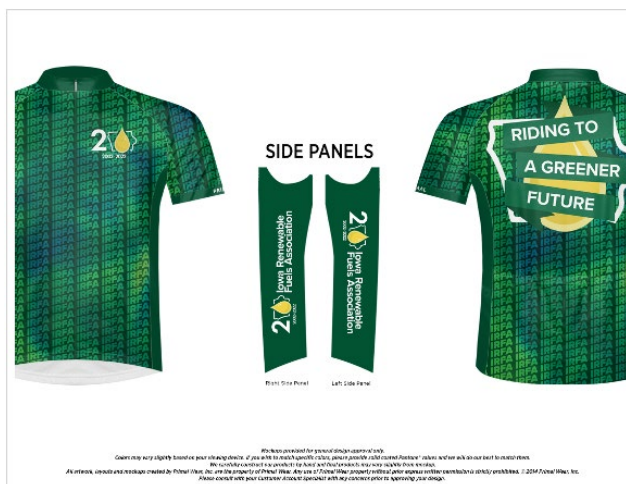
Iowa FFA Association

- ☑ FFA Week February 19-20
- 94th Leadership Conference April 10-12
- Chapter Meetings

TEACHER KITS



RAGBRAI 2024



Prime the Pump E15 Sites



Currently
2,923
E15 Sites

Nearly:
5,700
Higher Blends

Growing E15 Supply

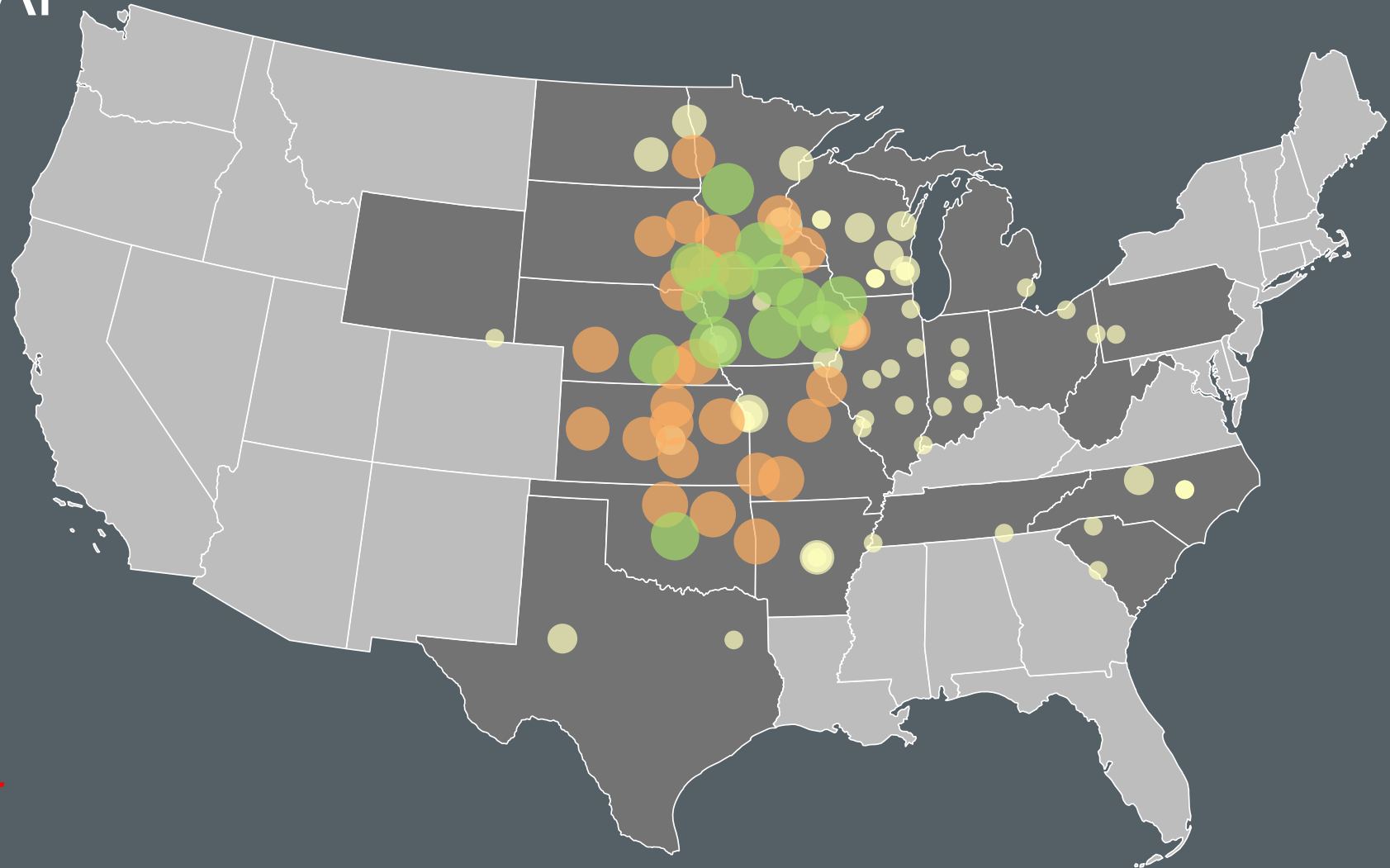
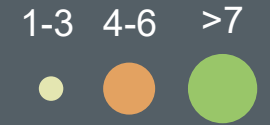
TERMINAL MAP

378 Suppliers
8 new suppliers

103 Terminal Locations
13 new terminals

*In 2017, **only five terminals** offered E15.*

Number of
Suppliers



4b. Biodiesel Promotion Committee

Iowa Renewable Fuels Association
Biodiesel Promotion Committee Minutes

February 22, 2023

Draft

Meeting was called to order by Lisa Coffelt at 3:03 P.M.

Members Participating:

Western Dubuque	Tom Brooks	
Western Iowa Energy	Denny Mauser	
Chevron Renewable Energy Group	Steve Klein	
Chevron Renewable Energy Group	Rachel Geilenfeld	
Iowa Renewable Fuels Association	Lisa Coffelt	Marketing Director

IRFA Anti-Trust Policy

Coffelt reviewed IRFA's Anti-Trust Policy Information.

"IRFA and its officers, directors, and employees fully support and intend to comply with all applicable federal and state antitrust laws and shall not engage in anti-competitive conduct or practice, nor allow IRFA to be used by any member or other party for anti-competitive or unlawful purpose, including but not limited to the following kinds of prohibited conduct:

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Any contract, combination, conspiracy, discussions, or effort to divide or allocate markets or customers.

Any discussions or effort to engage in any boycott or considered refusal to deal.

Any discussions or effort through unsanctioned industry standards, restrictions, or any other method, to injure the business or trade of anyone.

Minutes will be kept of all meetings of the Board of Directors, the Executive Committee and Standing Committees. These minutes shall summarize accurately and concisely the action taken at the meeting."

- Minutes

Coffelt referred the committee to the meeting minutes in the committee packet.

Motioned by Klein, seconded by Brooks to approve the minutes from the committee meeting on November 18, 2022. Motion carried.

- On-Farm Biodiesel Credit Program

Coffelt requested feedback from committee on launching a program for Spring 2023. Coffelt requested additional funds from Chevron REG, Western Dubuque Biodiesel, and Western Iowa Energy, Iowa Soybean Association/Iowa Biodiesel Board. The Committee discussed a few restrictions for past applicants. Discussion followed.

There was a consensus for Coffelt to collect additional funds from plants and associations and launch program with press release.

- Social Media

Coffelt suggested launching a social media campaign with existing ads and video promoting B20 in CaseIH and John Deere engines. She also suggested tying in the Biodiesel Credit Program with social media outreach.

- Humboldt School System/Growmark Promotion

Coffelt gave overview of promotion discussed with Humboldt School and Growmark for a case study on buses run on B20 vs. diesel including testimonials of school system and bus drivers. Discussion continued.

RAGBRAI

Geilenfeld mentioned Chevron REG is discussing promotion activities for 2024 RAGBRAI including signage for sag wagon or support vehicles and support from IRFA. Discussion continued.

Coffelt adjourned the meeting at 3:41 P.M.

On Farm Biodiesel Credit Program

On-Farm Biodiesel Credit Program

On August 10, IRFA announced the launch of the On-Farm Biodiesel Credit Program. Farmers must supply proof of purchase and a credit of 25 cents per gallon for B11 and 50 cents per gallon for B20 will be credited, with a maximum of \$500 per end user. A webpage was developed with a fillable online application and the ability to upload a receipt. Additional partners have stepped up to help fund the program including, Iowa Soybean Association/Iowa Biodiesel Board, Renewable Energy Group, Western Dubuque Biodiesel, and Western Iowa Energy. Over 25 applicants are willing to participate in spotlights to promote biodiesel in farm equipment.

Program Summary as of 12/19/22

Total number of applications	136
Credits not processed	41
Credits processed	95
Total Gallons of B11	88,927.53
Total Gallons of B20	25,619.99
Total Amount of Credits Processed	\$35,000.00

Launch again in 2023? Any restrictions?

IRFA = \$20,000

Other donations?

Social Media Promotion for Credit Program?

Spring 2022 = \$5000 for 2 months of targeted ads and 30 second commercial.

Clean Fuels Conference Sponsorships

1. **Logan Hansch**, Growmark FS, Market Development Specialist
Highway 4 to I-35 area out of Manson
2. **Matthias Schwartzkopf**, Growmark FS, Energy Development Specialist
Highway 4 to Hwy 71 out of Spencer
3. **Leo Reigelsberger**, Humboldt & Twin Rivers CSD Director of Transportation
Iowa Pupil Transportation Association Board of Director

Humboldt Community School District/Growmark Promotion Opportunity

- Begin in April

- B20 blend
- 4 school buses Old & new bus using B20 vs. Old & new bus using B0
- Growmark to set up onsite storage tank and will provide fuel and will monitor tank maintenance including water and algae.
- IRFA will provide biodiesel portion approximately \$50 + replacement fuel filters \$250
- Humboldt CSD will collect data every week including Horsepower, distance traveled, Fuel used/fuel economy or fuel rate and cost.
- Discussion of promotional ideas. Fuel the Wildcats? Sticker on tank? Press Release?

4c. Membership Committee

Iowa Renewable Fuels Association
Membership Committee Minutes
February 22, 2023

DRAFT

Meeting was called to order at 11:06 a.m.

Members participating:

Tom Brooks	Western Dubuque Biodiesel
Julie Vande Hoef	Alliant Energy
Al Giese	Quad County Corn Processors
Greg Hoffpauir	Veolia Water Technologies & Solutions

Others Participating:

Lisa Coffelt	Iowa Renewable Fuels Association
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- IRFA Anti-Trust Policy

Coffelt reviewed IRFA's Anti-Trust Policy information.

"IRFA and its officers, directors, and employees fully support and intend to comply with all applicable federal and state antitrust laws and shall not engage in anti-competitive conduct or practice, nor allow IRFA to be used by any member or other party for anti-competitive or unlawful purpose, including but not limited to the following kinds of prohibited conduct:

- a. Any discussions or effort to directly or indirectly fix, raise, lower, control, recommend, suggest, or maintain prices on products or inputs.
- b. Any contract, combination, conspiracy, discussions or effort to divide or allocate markets or customers.
- c. Any discussions or effort to engage in any boycott or considered refusal to deal.
- d. Any discussions or effort through unsanctioned industry standards, restrictions or any other method, to injure the business or trade of anyone.

Minutes will be kept of all meetings of the Board of Directors, the Executive Committee and Standing Committees. These minutes shall summarize accurately and concisely the action taken at the meeting.

- Minutes

Motioned by Brooks, seconded by Hoffpauir to approve the minutes from the committee meeting on November 11, 2022. Motion carried.

- 2023 IRFA Wage & Benefits Survey

Coffelt discussed information for the 2023 survey and proposed timeline. Newport Group has given a proposal and IRFA will be discussing the opportunity with Christianson PLLP. Discussion followed.

There was consensus for IRFA to confirm pricing and move forward with 2023 survey along with moving up the timeline for the completing date.

- Annual Renewals

Coffelt noted the members who have not paid for renewals. Coffelt will reach out individually prior to the March board meeting.

- Potential Associate Members

Coffelt referenced the potential member list in the Committee folder and will be putting together packets to send/give to potential members. Committee members volunteered additional potential members. Discussion followed.

The meeting was adjourned at 11:35 A.M.

2023 IRFA Associate Member Renewal Status

Will not be renewing membership

Iowa Association of Electric Cooperatives
Burce Edwards, CPA

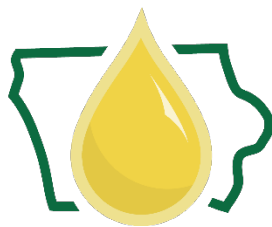
Will be renewing, have not received payment as of 3/3/23

360 Energy Solutions
AgriTrading
Alliant Energy
BetaTec Hop Products
Dorsey & Whitney
Evonic
Foundations Analytical Laboratory, Inc.
Growmark
Nalco Water
PROtect

No response

Air Regulations Consulting
BioLeap
Buckman
CHS Renewable Fuels Marketing
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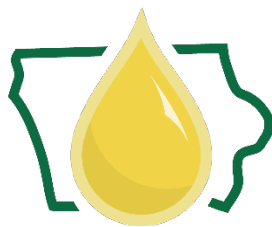
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bpunt@readifuels.com
Jon Bjornstad 612-308-3584
jbjornstad@readifuels.com

4d. IRFA PAC Committee

IRFA PAC Report

Beginning Balance: **\$110,771.75** **(11/30/2022)**

Checks

- Zach Nunn - \$2,000
- State Legislators Pre-Session - \$4,500
- State Legislator (Deposited) - \$1,000

Deposits

- Geoff Cooper - \$275

Current Balance: **\$103,546.75** **(02/28/2023)**

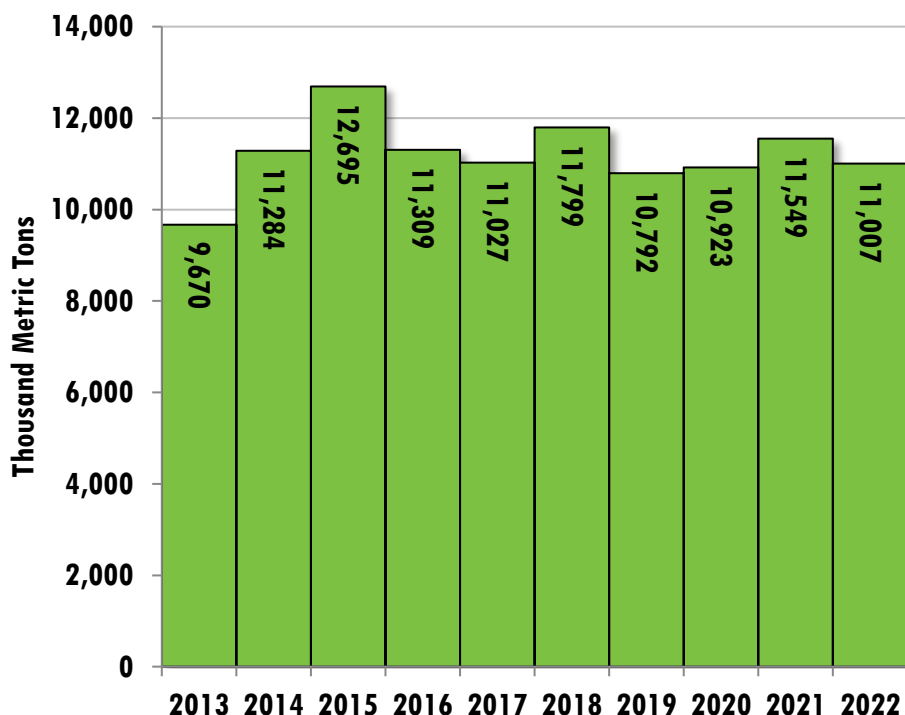
4e. Co-Products Committee

2022 U.S. DISTILLERS GRAINS EXPORTS & IMPORTS STATISTICAL SUMMARY



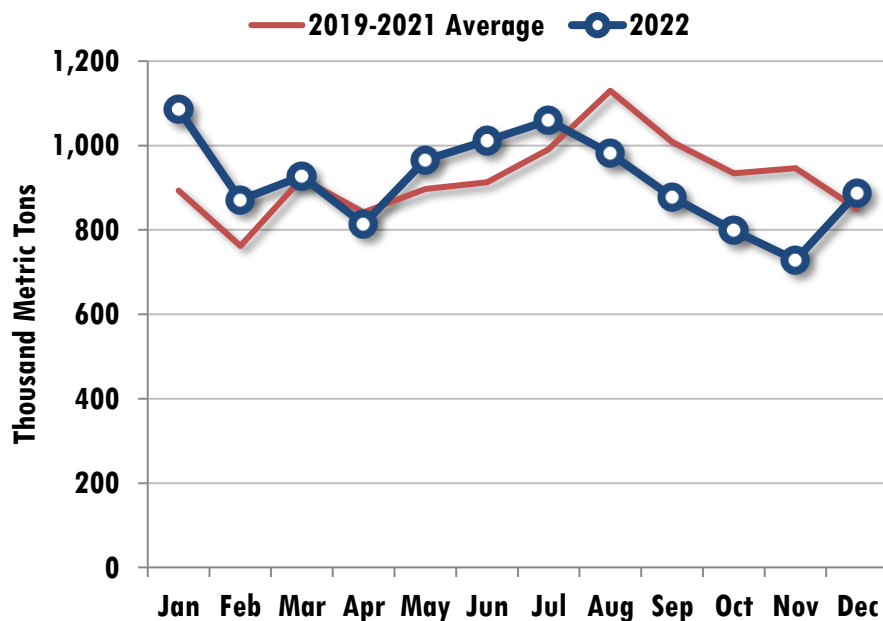
2022 U.S. DISTILLERS GRAINS EXPORTS

Annual U.S. Distillers Grains Exports



U.S. exports of distillers grains (DGs)—a high-quality feed ingredient produced by dry-mill ethanol facilities—slipped to **11.0 million metric tons (MMT)** in 2022. DGs were exported to more than **50 countries**.

Monthly Distillers Grains Exports

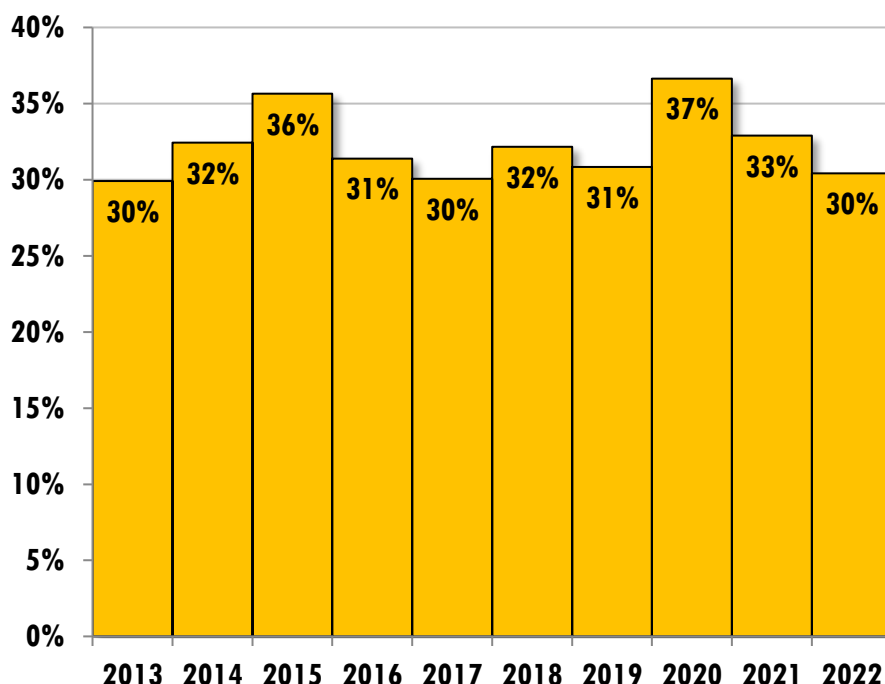


Monthly exports followed a typical seasonal pattern and **exceeded 1 MMT** three times.

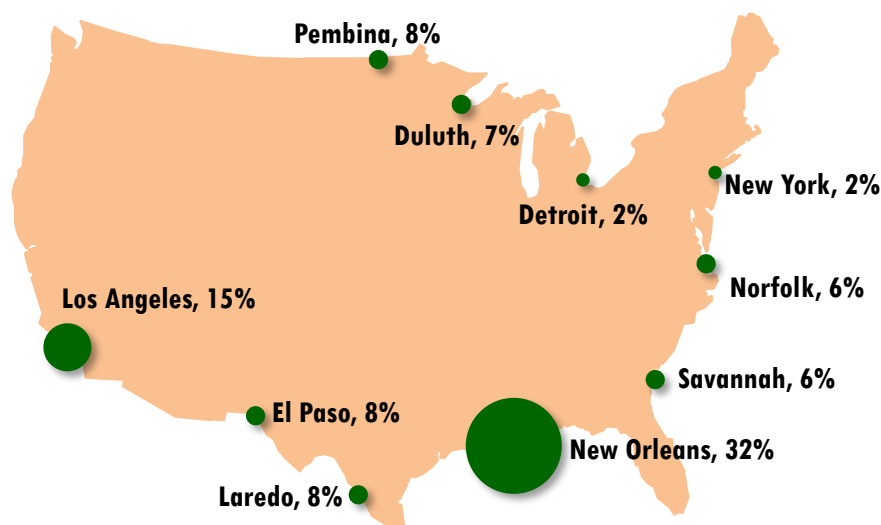
2022 U.S. DISTILLERS GRAINS EXPORTS

Exports are a **vital component of the market** for distillers grains. **Nearly one-third of U.S. DG output was exported in 2022.**

Export Share of U.S. Distillers Grains Production



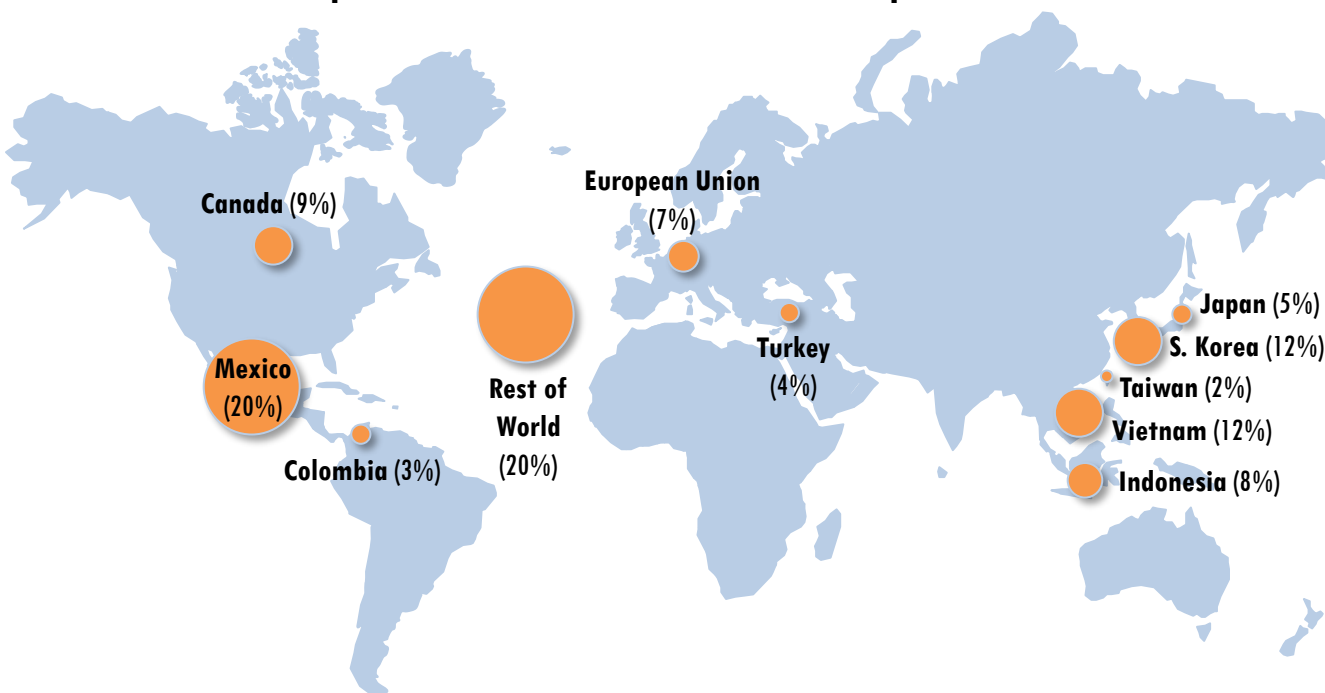
Top Ports of Exit for 2022 U.S. Distillers Grains Exports



U.S. DG exports left the country through **26 ports and exit points** (the top 10 by volume are shown on the map). **New Orleans** again handled the most tonnage, followed by **Los Angeles**.

U.S. DISTILLERS GRAINS EXPORTS: TOP MARKETS

Top Markets for U.S. Distillers Grains Exports in 2022



Country	2022 Total <i>000 Metric Tons</i>	2021 Total	Change <i>%</i>
Mexico	2,230.8	2,382.8	-6%
Vietnam	1,294.6	1,404.9	-8%
South Korea	1,269.4	1,136.3	+12%
Canada	955.8	771.9	+24%
Indonesia	832.1	861.9	-3%
European Union	720.6	545.9	+32%
Japan	506.8	424.2	+19%
Turkey	422.8	832.2	-49%
Colombia	359.9	238.8	+51%
Taiwan	258.4	226.2	+14%

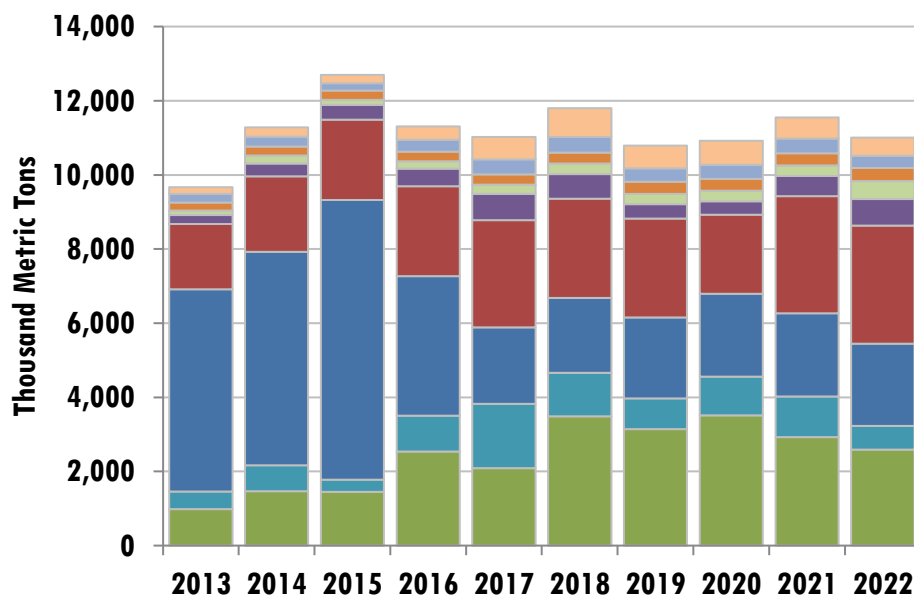
The top three destinations for U.S. DG exports in remained the same in 2022. **Mexico** accounted for **20%** of total shipments. Exports to **South Korea, Canada, the EU, Japan, and Colombia** exhibited **strong growth**.

U.S. DISTILLERS GRAINS EXPORT COMPOSITION

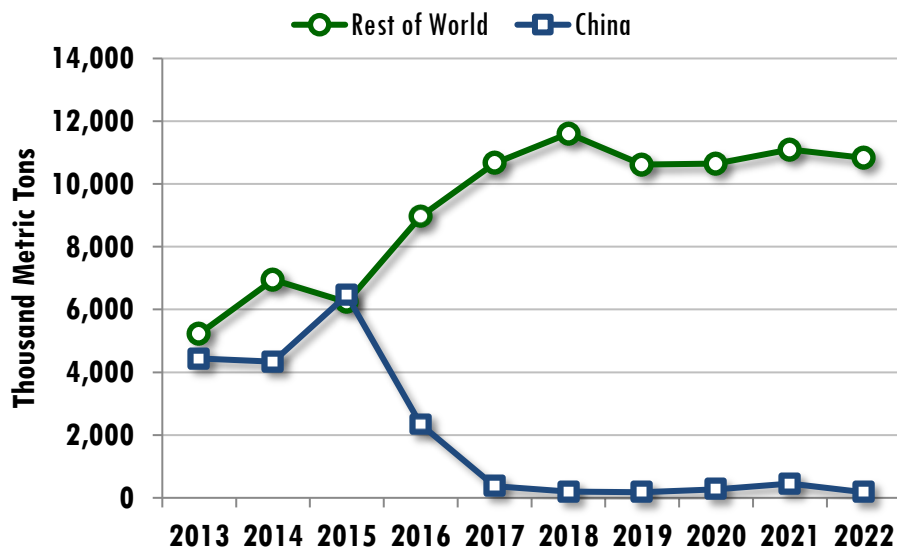
U.S. Distillers Grains Exports by Region

Southeast Asia Middle East East Asia
 North America European Union South America
 Central America North Africa All Others

Exports to the European Union and South America grew significantly in 2022, while shipments to Southeast Asia and the Middle East declined.



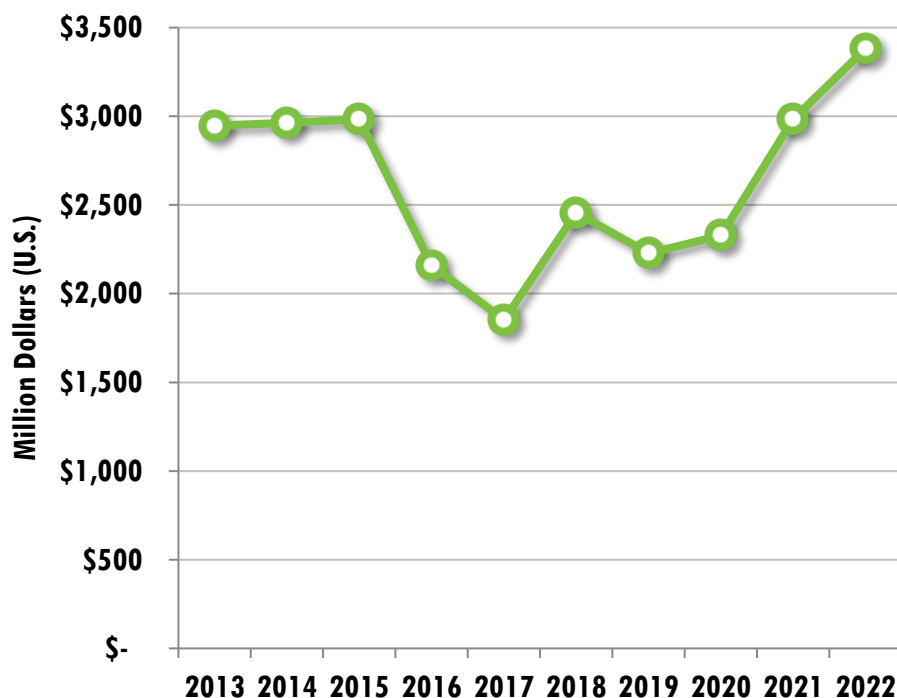
U.S. DG Exports to China and Rest of World



After a moderate rebound in 2021, exports to **China** receded to the lows of the previous few years in 2022. Shipments remained far below levels experienced from 2012 to 2016, when China was the top destination for U.S. DGs.

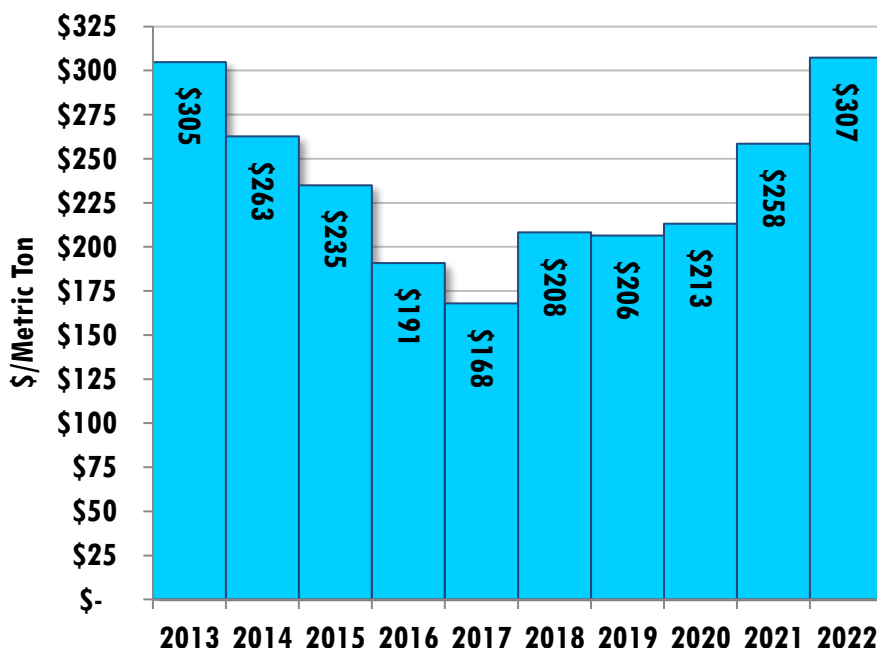
U.S. DISTILLERS GRAINS EXPORTS: **VALUE**

Total Value of U.S. Distillers Grains Exports



The value of U.S. DG exports hit a **record \$3.4 billion** in 2022. DGs continue to be an **important revenue source** for dry-mill ethanol facilities.

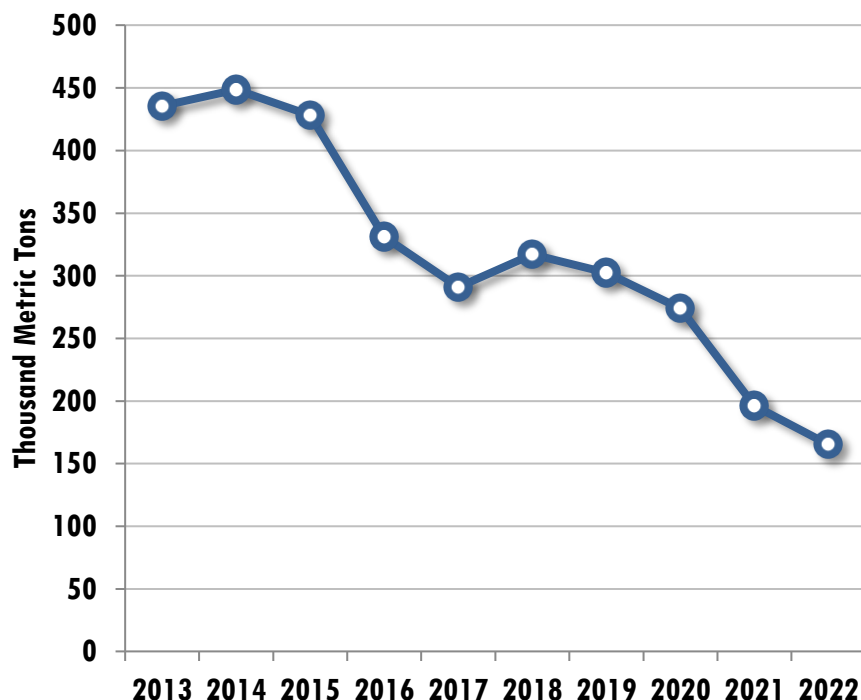
U.S. Distillers Grains Export Price per Metric Ton



The unit value of U.S. DG exports rose to **\$307 per MT** in 2022, as prices of **agricultural commodities** strengthened.

2022 U.S. DISTILLERS GRAINS **IMPORTS**

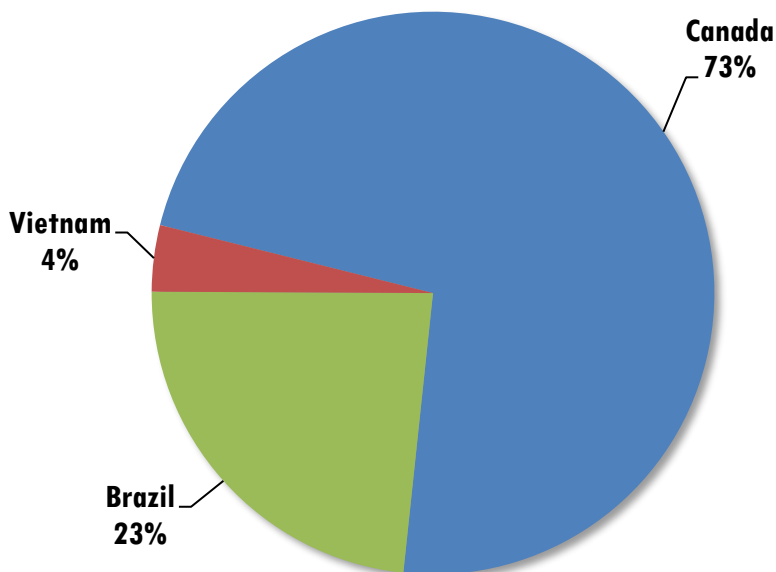
Annual U.S. Distillers Grains Imports



U.S. imports of DGs **fell to 165,000 MT** in 2022, continuing the **downward trend** of the last decade. Imports accounted for only **1%** of U.S. DG consumption and were equivalent to less than **2%** of exports.

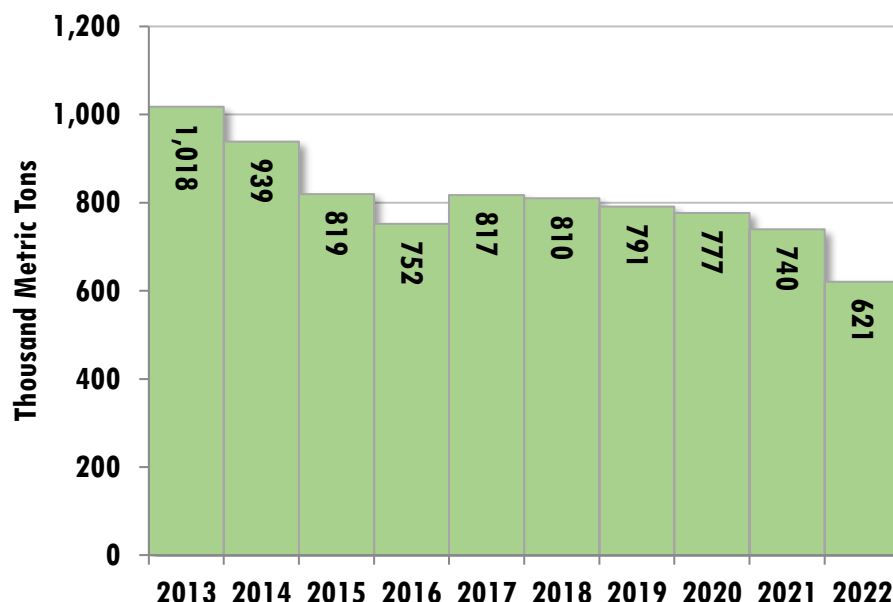
2022 Top Suppliers of U.S. DG Imports

Canada was again the top supplier of DGs imported into the U.S., shipping **120,000 MT**. **Brazil** was the only other significant origin for DGs entering the U.S. market.



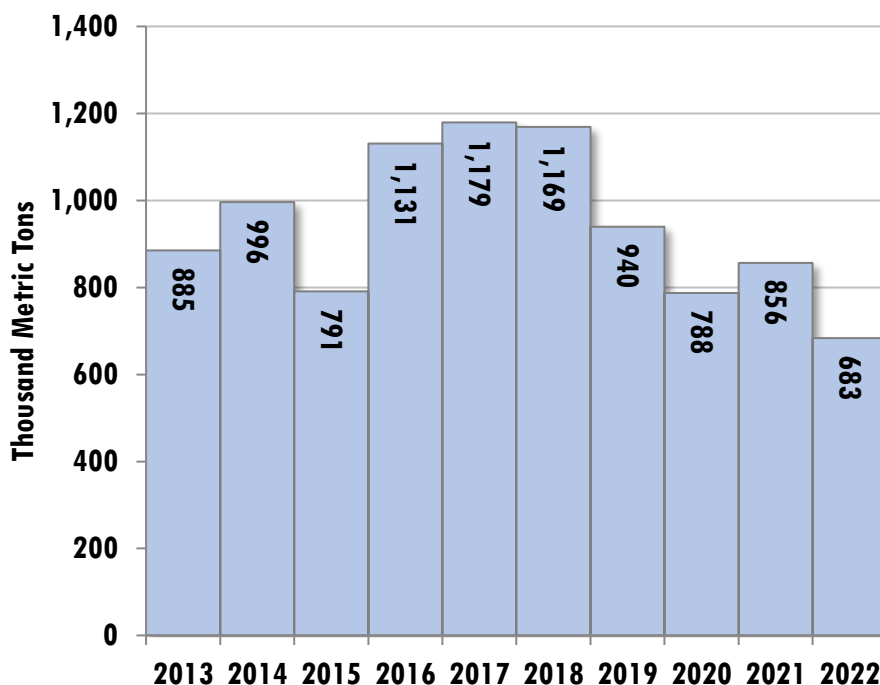
2022 EXPORTS OF OTHER CO-PRODUCTS

Annual U.S. Corn Gluten Meal Exports



U.S. exports of corn gluten meal—a feed co-product made by ethanol wet mills—declined to **621,000 MT** in 2022. **Chile, Colombia, and Indonesia** were the top destinations.

Annual U.S. Corn Gluten Feed Exports



U.S. exports of corn gluten feed—also a co-product made by wet-mill ethanol facilities—fell to **683,000 MT**. Consistent with recent years, **two-thirds** of shipments went to **Ireland and Israel**.

ABOUT THE DATA IN THIS REPORT

U.S. Co-product Export and Import Data

- The export and import data in this report include products classified under the following Harmonized Tariff Schedule (HTS) codes:
 - **2303300000**: Brewing or distilling dregs and waste (Distillers Grains)
 - **2303100010**: Residues of starch manufacture and similar residues: Corn gluten feed
 - **2303100020**: Residues of starch manufacture and similar residues: Corn gluten meal

Sources

- All data in this report come from the U.S. Census Bureau, U.S. Department of Commerce, U.S. Department of Agriculture, and U.S. International Trade Commission.

The Renewable Fuels Association publishes **monthly** summaries of export and import data for ethanol and distillers dried grains in its [Trade Monitor](#).

This report was prepared by Scott Richman, who may be contacted at srichman@ethanolrfa.org or 636.594.2287.



Renewable Fuels Association

16024 Manchester Road

Suite 101

Ellisville, MO 63011

636.594.2284

www.EthanolRFA.org

4f. Safety / Environmental Compliance Task Force

**Environmental Compliance/Safety Task Force Meeting**

February 1st, 2023
9:00 am – 12:00 pm

Attendance: Chris Downs – Iowa OSHA, Sheillah Bentley – Iowa OSHA, Lisa Schmidt – Trinity Consultants, Tom Harmon – PROtect, David Butler – Chevron REG, Dan Kilkenny – Chevron REG, Mark Dolch – Verbio, Scott Newell – HerbBX, John Feighner – HeroBX, Dan Velasquez – Southwest Iowa Renewable Energy, Jenny Etheredge – Corn LP, Will Adler – Siouxland Energy, Ryan Rezac – Green Plains, Vonnie Wareham – WIE, Monte Shaw – IRFA, Nathan Hohnstein – IRFA

- 9:05 Welcome – Nathan Hohnstein, IRFA
 1. Rollcall
 2. Reading of IRFA Anti-Trust Policy
- 9:10 Introductions/Informal Group Gathering
 1. Discuss incidents, concerns, best practices, etc.
- 9:25 **Discussion on Biofuel Industry – Monte Shaw, Executive Director - IRFA**
- 9:35 **Discussion on Risk Management Plans/Iowa DNR/WOTUS and Overview on PTE – Lisa Schmidt, Manager of Consulting Services – Trinity Consultants**
 1. Presentation
 2. Q&A
- 10:15 Break
- 10:30 **Discussion on Plant Outage/Shutdown and Confined Space – Tom Harmon, Senior EHS Consultant - PROtect**
 1. Presentation
 2. Q&A
- 11:10 Other Topics - Open
 1. Upcoming 2023 Meetings
 a. June 21
 b. November 1
 2. Guest Speakers/Topics

- a. Dust Hazard Analysis
- b. Fall Protection – Ladder Safety Requirements
- c. Insurance Audits – Scott Allen (PROtect)

- 11:20 **Chris Downs & Sheillah Bentely, Iowa OSHA**
- 1. Incident Reports/ Proposed/Pending OSHA Regulations and Discussion of Rule Interpretation/Areas of Local Focus
 - 2. Q/A
- 11:55 Meeting Adjourned – Lunch

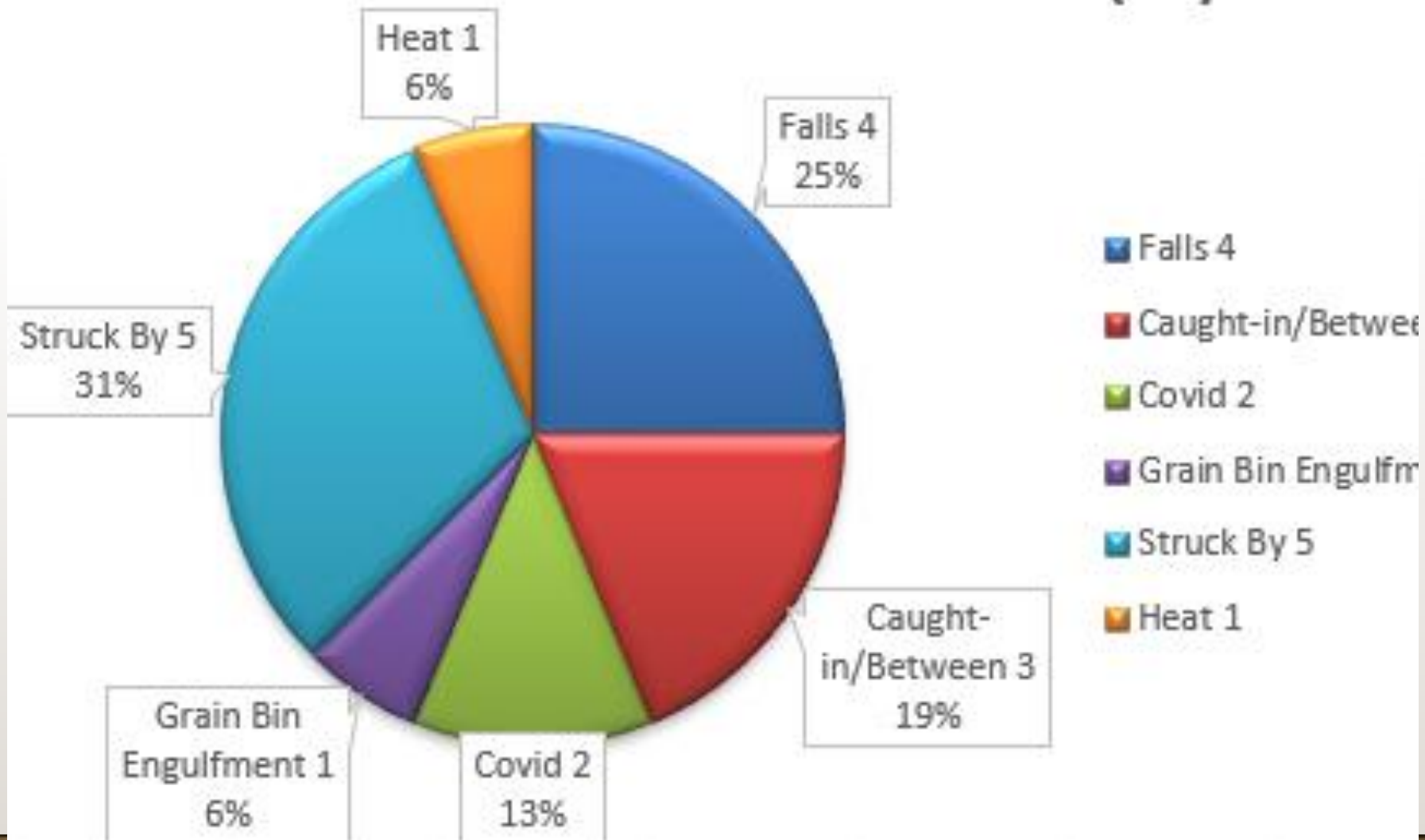


OSHA Work-Related Fatalities Calendar Year 2022



Date	Location	Cause	Company
6 January	Cedar Rapids	EE caught in between tractor and trailer	
13 January	Prairie City	EE died of COVID	
5 February	Mason City	EE fell from ladder onto concrete floor	
8 March	Council Bluffs	EE died of COVID	
25 March	Williamsburg	EE engulfed in grain bin	
8 April	Paton	EE struck by and ran over by excavator	
10 April	Mason City	EE fell and struck head on sidewalk (3/27)	
13 April	Orange City	EE fell from scissors lift (4/9)	
27 April	Dubuque	EE struck by soccer goal/football upright	
12 May	Red Oak	EE stuck by vehicle while flagging	
1 June	Monroe	EE caught in between boom & excavator cab	
21 June	Yarmouth	EE caught in collapsed grain silo	
5 July	Des Moines	EE died of heat stroke	
27 July	Des Moines	EE died from a fall	
19 September	Drakesville	EE crushed by steel tube	
12 October	Des Moines	EE operating a Gator when struck by car	

CY 2022 FATALITIES (16)



OSHA Work-Related Fatalities



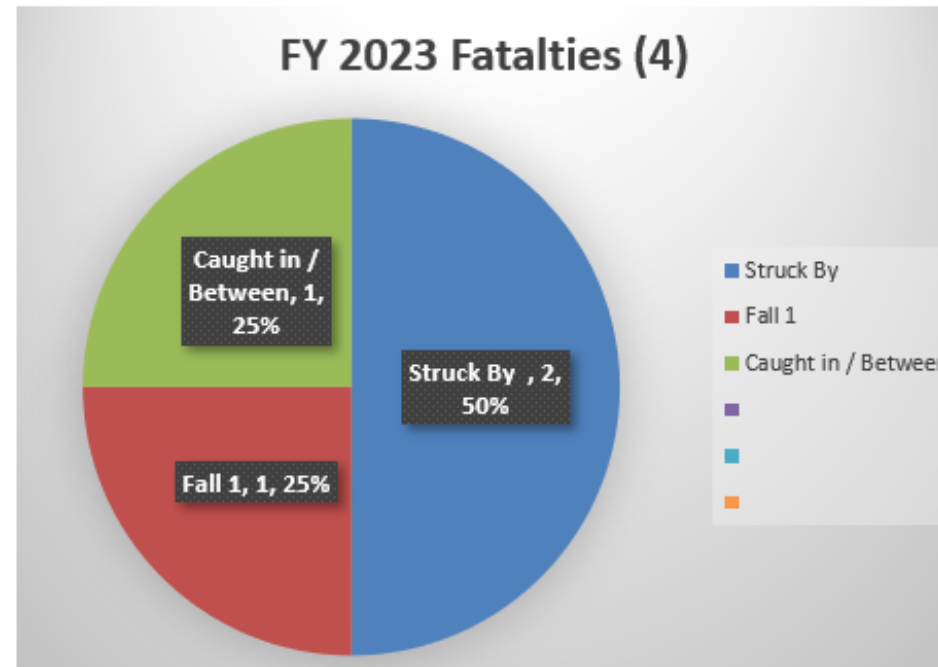
Fiscal Year 2023

(1 October 2022-30 September 2023)



Date	Location	Cause
12 Oct 22	Des Moines	EE operating a Gator when struck by car
2 Dec 22	Aspinwall	EE fell climbing steps of a pay loader (11/23)
7 Dec 22	Jewell	EE caught in a dump truck tailgate sander cross auger
12 Dec 22	Lawler	EE struck by tipped over power pole crane

19 Jan 22 – Dyersville – EE fell ejected from scissors lift – IF/IH



5a. DNR

i. Iowa Comprehensive Petroleum Underground Storage Tank Fund Board



IOWA UNDERGROUND STORAGE TANK FUND

Douglas M. Beech, *Chairperson*

James R. Gastineau, *Administrator*

Board Members:

Michael L. Fitzgerald

Joseph D. Barry

Jeff W. Robinson

Karen E. Andeweg

Kayla Lyon

Timothy L. Gartin

Lisa Coffelt

Patricia Beck

John Maynes

January 5, 2023

MEMORANDUM

TO: Legislative Council and Legislative Services Agency

FROM: James R. Gastineau, Administrator
Iowa Comprehensive Petroleum Underground Storage Tank Fund

RE: Fiscal Year 2023, 2nd Quarter Report on the Iowa Comprehensive Petroleum Underground Storage Tank Fund Program

We are pleased to provide the attached report regarding the Iowa Comprehensive Petroleum Underground Storage Tank Fund (UST Fund) progress for activities through the end of the 1st quarter of Fiscal Year 2023.

The report is submitted pursuant to Iowa Code Section 455G.4(6) titled "Reporting". The code section calls for the report to include the following items:

- Total open claims, including identification of the number of new claims
- IDNR risk classification associated with open claims
- Total reserve figures
- Summary of budgets approved during the reporting period
- Breakdown of categories of claim payment expenditures during the reporting period

Some information in the attached table is obtained from the Iowa Department of Natural Resources (DNR), but the report numbers deal with UST Fund claims and therefore do not include all DNR reported releases since not all meet the eligibility criteria of Iowa Code Section 455G.

If you have any questions regarding the enclosed report or other issues associated the UST Fund, please call the UST Fund Administrator's office at (515) 829-2770 or contact the Administrator at USTFUND@dnr.iowa.gov

UST Fund Program Status Areas 2Q - FY2023 (December 31, 2022)

1. Financial Balances

	12/31/2022	06/30/2022	06/30/2021	06/30/2020	06/30/2019
Revenue Fund	\$2,222,822	\$2,209,487	\$3,951,754	\$5,432,811	\$5,328,873
Unassigned Revenue Fund	\$1,384,743	\$1,717,002	\$1,585,786	\$2,539,840	\$3,382,142
Remedial Fund	\$1,897,320	\$2,617,039	\$2,707,740	\$2,546,803	\$4,043,862
Marketability Fund	\$299,741	\$283,257	\$278,250	\$268,937	\$210,079
Innocent Landowner Fund	\$1,936,361	\$2,473,343	\$2,571,254	\$2,498,227	\$2,913,651
Loan Guarantee Funds	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ -0-
Capital Reserve Funds	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ -0-
Total Fund Balances	↓\$7,740,987	↓\$9,300,128	↓\$11,094,764	↓\$13,286,618	↓\$15,878,605

2. Operational

Changes

- Since 2020, program administration managed under 28E agreement by the Iowa Department of Natural Resources
- Program funding ceased 12/31/2016 (2016 legislation, HF2464).
- Focus on mission to complete action on remaining liability claims prior to ceasing operations.
- Coordinate with Department of Natural Resources to address liabilities on all remaining claims

Expected Results

- Retirement of program liabilities and reduction of future liabilities.
- Reduction of fund balance and number of Program claims.

3. Results - Iowa DNR LUST Sites / Risk Classifications in relation to Open UST Fund claims

Iowa DNR / Iowa UST Site Data (12/31/2022)	DNR LUST Sites	Remedial CRP/NFA claims	Retroactive claims	Innocent Landowner Fund Claims	Open UST Fund Claims
Total Active LUST Sites / Fund Claims	332	43	1	14	58
Sites "Not Classified"	63	9	0	0	9
Low Risk sites	77	5	0	1	6
High Risk sites	173	27	1	11	39
No Action with free product sites	19	2	0	2	4
No Action Required or other sites	6,516	0	0	0	0

4. Results - UST Fund Open Claims / Liabilities

	Liabilities 12/31/2022)	December 2022	June 2022	June 2021	June 2020	June 2019
Retroactive Claims	\$ 0.16 million	1	1	1	2	3
Remedial/CRP/ NFA Claims	\$ 2.41 million	43	43	48	50	68
Innocent Landowner Fund Claims	\$ 1.61 million	14	15	21	23	32
Total*	\$ 4.18 million	58	62	70	75	104
Claim Liabilities *		\$4.18M	\$3.60M	\$4.09M	\$5.05M	\$5.83M

*does not include special project claims or tank closure claims

IOWA UST FUND
ACTIVITIES REPORT
DECEMBER 31, 2022

Claims	Open Claims		Open Claims	Open & Closed
	November Ending	Monthly Changes	December Ending	Totals since
RETROACTIVE				
number	1	0	1	447
reserve	\$ 164,985.93	\$0.00	\$ 164,985.93	\$ 164,985.93
paid	\$ 735,014.07	\$0.00	\$ 735,014.07	\$ 18,454,640.44
total	\$900,000.00	\$0.00	\$900,000.00	\$18,619,626.37
REMEDIAL (RM)				
number	23	(1)	22	4,464
reserve	\$ 1,604,767.95	(\$2,410.00)	\$ 1,602,357.95	\$ 1,602,357.95
paid	\$ 7,132,253.20	\$12,650.91	\$ 7,144,904.11	\$ 224,279,222.54
total	\$8,737,021.15	\$10,240.91	\$8,747,262.06	\$225,881,580.49
INNOCENT LANDOWNER (ILO)				
number	14	0	14	1,161
reserve	\$ 2,093,884.30	(\$497,472.78)	\$ 1,596,411.52	\$ 1,596,411.52
paid	\$ 1,961,715.70	\$497,472.78	\$ 2,459,188.48	\$ 37,382,840.21
total	\$4,055,600.00	\$0.00	\$4,055,600.00	\$38,979,251.73
GLOBAL OPT-IN				
number	4	0	4	1,313
reserve	\$ 19,134.19	\$0.00	\$ 19,134.19	\$ 19,134.19
paid	\$ 36,865.81	\$0.00	\$ 36,865.81	\$ 9,992,990.54
total	\$56,000.00	\$0.00	\$56,000.00	\$10,012,124.73
UNASSIGNED REVENUE FUND PROJECTS				
number	24	0	24	411
reserve	\$ 503,028.08	\$46,378.60	\$ 549,406.68	\$ 549,406.68
paid	\$ 599,996.92	(\$7,403.60)	\$ 592,593.32	\$ 4,982,756.22
total	\$1,103,025.00	\$38,975.00	\$1,142,000.00	\$5,532,162.90
NFA RE-EVALUATIONS				
number	21	0	21	108
reserve	\$ 733,345.47	\$68,573.37	\$ 801,918.84	\$ 801,918.84
paid	\$ 434,154.53	\$101,426.63	\$ 535,581.16	\$ 2,805,991.87
total	\$1,167,500.00	\$170,000.00	\$1,337,500.00	\$3,607,910.71
TANK CLOSURE (TX)				
number	31	(2)	29	891
reserve	\$359,729.37	\$21,773.63	\$381,503.00	\$381,503.00
paid	\$35,362.56	(\$35,362.56)	\$0.00	\$ 10,755,684.38
total	\$395,091.93	(\$13,588.93)	\$381,503.00	\$11,137,187.38

Total Claims	(RT, RM, ILO, NFA)	58	(USTCA, TX)	53
Reserves	(RT,RM,ILO,GS,NFA)	\$ 4,184,808.43		\$ 930,909.68
Total Reserves	(all claim types)	\$ 5,115,718.11		

Operator Training			
A/B (all)	3,935	A/B (FY2011-22)	\$387,520

RT	#
New	0
Reopene	0
Closed	0
RM	#
New	0
Reopene	0
Closed	1
ILO	#
New	0
Reopene	0
Closed	1
GS	#
New	0
Reopene	0
Closed	0
USTCA	#
New	1
Reopene	0
Closed	1
NFA Re-	#
New	1
Reopene	0
Closed	1
TX	#
New	4
Reopene	1
Closed	7
DNR 12-31-2022	
Total	6848
High Risk	173
Low Risk	77
NAR-FP	19
Not	63
Open	332

Invoice Type	December '22	FYTD	Program to Date
Appropriations	\$ 22,239.60	\$ 90,630.08	
Government	\$ 6,466.09	\$ 57,547.02	
2004 Tank Pull	\$ -	\$ -	\$ 1,761,823.44
2010 Tank Pull	\$ 79,733.32	\$ 528,233.32	\$ 11,035,654.53
American Soils	\$ -	\$ -	\$ 5,678,422.58
AST	\$ -	\$ -	\$ 11,217,932.11
CADR Charges	\$ -	\$ -	\$ 4,708,703.72
Corrective Action	\$ -	\$ 24,203.54	\$ 53,050,959.82
Expenses / OT	\$ -	\$ 6,000.00	\$ 387,819.65
Free Prod Recover	\$ 2,865.00	\$ 26,164.66	\$ 12,970,082.05
Monitoring	\$ 6,191.40	\$ 111,201.97	\$ 35,675,733.42
Operations/Maint	\$ -	\$ -	\$ 10,847,837.80
Over-excavation	\$ 517,452.46	\$ 625,327.35	\$ 38,036,140.86
Water Lines	\$ 53,505.78	\$ 53,505.78	\$ 3,688,823.58
Post RBCA Evals	\$ -	\$ -	\$ 258,858.41
RBCA	\$ 27,481.25	\$ 62,359.48	\$ 27,949,660.35
Remed Imp/Const.	\$ -	\$ -	\$ 32,655,420.50
SCR Charges	\$ -	\$ -	\$ 54,217,410.26
Site Check	\$ -	\$ -	\$ 142,486.32
Soil Disposal	\$ -	\$ -	\$ 738,386.66
Tank (UST) Pull	\$ -	\$ -	\$ 3,979,734.25
Tank (UST) Upgrade	\$ -	\$ -	\$ 3,440,849.83
Tier III	\$ -	\$ 5,378.50	\$ 1,471,870.57
Utilities	\$ -	\$ -	\$ 2,303,397.67
Well Closure	\$ -	\$ 3,144.00	\$ 4,603,799.21
Total Invoice Types	\$ 687,229.21	\$ 1,445,518.60	\$ 319,871,511.42

Remediation Budgets Approved to Date		
Last month (Dec'22)	1	\$83,196
Trailing 12 mos	4	\$797,285
Prev Trail 12 mos	1	\$80,547
Total Since Jan 2003	1,281	\$58,282,984

Project Contracts	Open	Closed	Pending
CRP's	0	45	0
Tank Closure	1	8	0
Plastic Water Line	0	2	0

	CY 2022	CY 2021	CY 2020
New LUST Sites	36	26	34
Closed (NAR) Sites	42	67	74

5b. IDALS

i. Renewable Fuels Infrastructure Program



IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

Renewable Fuels Infrastructure Program

	June 2022 (4 th Qtr of FY2022)	July 2022 (1 st Qtr of FY2023)	October 2022 (2 nd Qtr of FY 2023)	February 2023 (3 rd Qtr of FY2023)	Total Projects FY2023 YTD
Projects					
Ethanol Blenders/E85/E15	4	42	6	22	70 Year to Date
Retail Biodiesel Dispensers	3	31	0	0	31 Year to Date
Retail Biodiesel Blender Dispensers	0	0	0	0	0 Year to Date
Biodiesel Blending Terminals	0	5	0	1	6 Year to Date
TOTAL PROJECTS FY 2020	93	78	84	23	107 Year to Date
FUND BALANCE	\$7,137.90	5,515,563.45	5,493,753.21	4,448,993.24	

** - based on all projects closing at full amount awarded.

At August 2, 2022 meeting the \$1.25M bio-diesel funding was met. 5 Biodiesel Dispenser Grants were put in a cue for FY24 available funding.

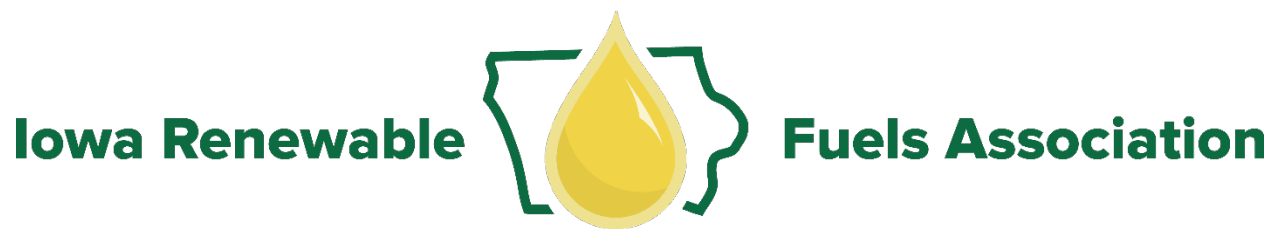
At October 18, 2022 meeting 11 additional bio-diesel grants were put in a cue for FY24 available funding, making the total 16 biodiesel dispenser grants.

At February 14, 2023 meeting 14 additional bio-diesel grants were put in a cue for FY24 available funding, making the total 30 biodiesel dispenser grants on hold. Note: This exceeds the \$1.25 Million cap for FY24.

9 Ethanol grants were not approved due to additional documentation necessary, however they are expected to be approved at next meeting.

5Bii. E15 Access Standard Implementation

5c. Department of Revenue
i. Biodiesel Production Tax Credit



Biodiesel Production Tax Credit

Based on data released by the Iowa Department of Revenue

Quarter	Number of Plants	Total Gallons	Total Dollars
2022 Q4	9	16,379,234*	\$327,585
2022 Q3	6	44,637,741*	\$892,755
2022 Q2	9	74,778,230*	1,495,565
2022 Q1	9	56,127,461	1,122,549
2021 Q4	4	11,019,565*	\$220,392

**One or more facilities reached the maximum of 25 million gallons eligible for the credit annually.*

5D. Iowa Utilities Board / CO2 Projects

[NEWS](#)

Summit Carbon Solutions pipeline hearings in Iowa to start in October

Summit wanted proceedings to start in March but Iowa Utilities Board disagreed.

By [Jeff Beach](#)

February 17, 2023 05:19 PM

Share

News reporting

DES MOINES, Iowa — Public hearings in Iowa on the controversial Summit Carbon Solutions pipeline won't begin until October, months later than the company had requested.

The Iowa Utilities Board on Friday, Feb. 17, announced that the time frame for public hearings will be from October 2023 to January 2024.

The board also set a technical conference for 10 a.m. March 15, to discuss logistics for the hearing and how parties and those who have filed for intervention can better understand the procedural schedule and how the remainder of the docket will progress. Specific dates for the hearing will be determined at the technical conference.

Parties and persons who have filed for intervention will be required to file a notice of participation by March 8, 2023, indicating their intent to participate at the technical conference.

Summit Carbon filed its petition for a hazardous liquid pipeline permit with the IUB in Docket No. [HLP-2021-0001](#) on Jan. 28, 2022. The company seeks to build 687 miles of 6- to 24-inch diameter pipeline for liquefied carbon dioxide within Iowa, part of a five-state, 2,000 mile pipeline project.

Summit's Midwest Carbon Express proposes to capture carbon dioxide emissions from 32 ethanol plants and pipe it to western North Dakota for underground storage. The project would help the ethanol plants lower their carbon intensity score and allow them to sell their corn-based fuel in low-carbon fuel markets, such as California.

Summit had said it wanted to begin construction in 2023 and be operational in 2024, but is still working on permitting and obtaining right-of-way. In December, Summit told the IUB it hoped for hearings to begin in March. Other parties, including the attorney representing landowners who object to the pipeline, said that was not workable.

Carbon pipelines have been a hot topic in Iowa, with Summit's Midwest Carbon Express the furthest along of three planned projects in the state.

Summit Carbon Solutions is a spinoff of Iowa-based Summit Agriculture Group. Summit says the project will benefit the ethanol industry, farmers, the economy and the environment. But environmentalists and some landowners have been vocal in their opposition, especially the use of eminent domain to force landowners to provide a path for the pipeline.

Summit says it has so far obtained voluntary easements on about 60% of the route through Iowa, Minnesota, Nebraska, North Dakota and South Dakota.

On Tuesday, some Iowa legislators, impacted landowners and advocates will rally at the state capitol in opposition to using eminent domain for carbon pipelines.

Wolf CO2 pipeline won't seek eminent domain, petition states

Colorado company files permit for 95 miles of pipeline through Eastern Iowa, including Linn County

Feb. 23, 2023 4:06 pm

Wolf Carbon Solutions will not use eminent domain to acquire easements for a carbon dioxide pipeline through Eastern Iowa, according to the company's permit application filed Thursday with the Iowa Utilities Board.

The decision to obtain all the land for the pipeline route through voluntary easements sets the Wolf project apart from two other proposed CO2 pipelines in Iowa, and sidesteps the most contentious aspect of the pipeline development.

"The Wolf development team has never used eminent domain in its collective careers in building long-haul pipelines and it doesn't intend to start now," Nick Noppinger, Wolf's vice president for corporate development, told The Gazette.

The company has not yet signed any easement deals, he said.

"In our history of developing pipelines, we feel it's more important to develop relationships with all the people in the right of way pathway before we start talking to them about easements," he said. "We'll begin negotiations on easements in the next couple months."

Wolf's proposal calls for collecting compressed carbon dioxide at ADM plants in Cedar Rapids and Clinton and shipping it in a 16-inch underground pipeline to ADM's sequestration site near Decatur, Ill. Wolf wants to find other industrial clients to tie into the project, which would be eligible for up to \$1 billion a year in federal tax credits.

The 280-mile project, with 95 miles in Iowa, would provide \$1.1 billion in economic development for Iowa, Wolf officials said at an informational meeting [Dec. 5 in Cedar Rapids](#). In Linn County, there would be 311 jobs during construction of the pipeline bringing in \$22 million, they said.

Iowa has two other proposed CO2 pipeline projects that already have applied for permits from regulators.

Summit Carbon Solutions proposes a five-state pipeline, with 680 miles in northern and western Iowa, that would end at a sequestration site in North Dakota. The Iowa Utilities Board last week released a schedule calling for the public hearing on the Summit project to happen between October and January.

Navigator CO2 Ventures wants to build a [1,300-mile underground pipeline](#), with 900 Iowa miles stretching from the northwest to southeast corners of the state.

Both of those companies have asked the Iowa Utilities Board to be granted the right to use eminent domain to force easements, with compensation, from landowners who don't sell willingly.

Cedar Rapids Metro Economic Alliance Director Doug Neumann [said in August](#) the organization supports a carbon dioxide pipeline that would benefit ADM — one of its members — despite opposition from many landowners on the proposed route.

"We have looked at this project and our organization supports this project and only this CO2 pipeline project in Iowa at this time," Neumann said. "To support the agribusiness economy of Iowa we need companies like ADM to be successful."

ADM, which has been producing ethanol since 1980, operates a heavy-volume wet mill and a dry mill, as well as a cogeneration plant, just south of Highway 30 in Cedar Rapids. Besides ethanol, the company produces starches, sweeteners and animal feed.

The Cedar Rapids site employs 450, with another 200 and 300 skilled-trade contractors on site, officials [told The Gazette in October](#).

The Wolf project has a lot of local opponents, including people who posted signs against it near Ely.

More than 150 people attended a rally Feb. 21 at the Iowa Capitol denouncing the pipeline projects. Concerns include fear of explosions, landowner rights and uncertainty about what happens after the pipelines' 20-year life span.

Iowa House Republicans [advanced House File 368](#), which would require CO2 pipeline companies to obtain 90 percent of the miles along their path through voluntary easements. The bill also would place a moratorium on projects until the federal Pipeline and Hazardous Material Safety Administration develops new rules that govern the hazardous pipelines.

5e. USDA NRCS State Technical Committee

5f. ISU Iowa Grain Quality Initiative Advisory Committee