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John S. Moore, Director

TO: Friends of the Governors' Ethanol Coalition

FROM: Dave Loos

DATE: April 18, 1994

RE: Paper on the Alcohol Fuels Credit

APR 20 1994

Enclosed is a copy of the paper entitled "Application of the Alcohol Fuels Tax Credit to Ethanol-Based Alternative Transportation Fuels" by Greg Lawler of GROWMARK, Inc. and Norm Marek of ENR. It explains how the Alcohol Fuels Credit may be applied to ethanol fuels, including E-85, E-95 and the new E-93 formulation.

This paper is very important because it shows how to reduce the price of ethanol fuel to the extent that it is competitive with conventional fossil fuels on a cost per gallon basis. This greatly reduces overall vehicle operational costs to the end user. Application of the credit to ethanol fuels could also have a significant impact on the demand for ethanol vehicles, especially in the Midwest. An increased demand for such vehicles would send a clear signal to the OEM's to develop and manufacture more and different varieties of ethanol vehicles in the future.

If you have any questions about this paper, please call Norm Marek of my staff at 217/785-0184.

APPLICATION OF THE ALCOHOL FUELS CREDIT TO

ETHANOL-BASED ALTERNATIVE TRANSPORTATION FUELS

by: Norman J. Marek, Program Manager
Alternative Transportation Fuels
Illinois Dept. of Energy & Natural Resources

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GROWMARK, Inc.

APR 20 1994

Background:

The State of Illinois, through the Illinois Department of Energy and Natural Resources, has been actively testing and demonstrating the use of high percentage blends of ethanol fuel as a substitute for gasoline and diesel fuel. Currently operating in Illinois are over 100 E-85 ethanol cars, 14 E-93 ethanol powered transit buses in Peoria, and 4 E-95 heavy-duty, over-the-road trucks operated by Archer Daniels Midland (ADM) in Decatur.

GROWMARK, Inc., a regional farm cooperative based in Bloomington, Illinois, has supplied E-85 fuel for state vehicles since July 1992. Recently, GROWMARK, along with Pekin Energy Company of Pekin, Illinois, has been supplying ethanol fuel for the Peoria transit buses. ADM has been using E-95 ethanol fuel they produce for their heavy-duty trucks based in Decatur, Illinois.

Vehicles using ethanol-based fuels get fewer miles per gallon than gasoline or diesel vehicles since ethanol fuels have about two-thirds of the energy content of their fossil fuel counterparts. Ethanol fuels are also more expensive. In March 1994, the central Illinois market price of denatured ethanol was $1.08 per gallon, compared to $0.48 and $0.56 per gallon (before taxes) for gasoline and diesel fuel. These two factors result in higher operational costs for ethanol vehicles. However, using the federal income tax credit for alcohol used as fuel can significantly lower the fuel cost (and operational costs) to the end user.

The Alcohol Fuels Credit:

Congress developed the alcohol fuels credit in response to the energy crisis of the late 1970's and early 1980's. The intent was to foster growth of the alcohol industry by subsidizing non-petroleum based alcohol used as fuel so the cost for the end user would be comparable to traditional hydrocarbon fuels. This subsidy is accomplished in two ways:

- by granting a 5.4¢ per gallon partial excise tax exemption for 10% alcohol blended fuels (gasohol), and

- by allowing a 54¢ per gallon income tax credit for ethanol used as a fuel.

The income tax credit is available to *taxpayers* who:

- "produce" or blend an alcohol mixture, or

- sell or use for business 100% straight alcohol actually placed in the vehicle's fuel supply tank by the taxpayer.

A governmental unit like the State of Illinois or the Peoria Mass Transit District cannot utilize an income tax credit since they are not subject to income taxes. To benefit from the credit, they must use an alcohol mixture purchased from a fuel blender or have a fuel dealer fill vehicles with straight alcohol. Further, the blender or dealer must be subject to income taxes, have sufficient income tax liabilities to make use of the credit, and be willing to pass through the value of the credit by selling the fuel at a reduced price.

E-85 Ethanol Fuel:

By law, ethanol must contain 2% to 5% denaturant (poison) to avoid taxation as consumable alcohol. The E-85 fuel used in the light-duty passenger vehicles is composed of 85% denatured ethanol and 15% light hydrocarbons (to ensure quick starting). The Chevrolet Motor Division of General Motors determined the 5% denaturant used by ADM, called "natural" gasoline (composed primarily of C4-C5 hydrocarbons), was also acceptable for the 15% light hydrocarbon fraction of the fuel. Therefore, final composition of the fuel is approximately 81% anhydrous ethanol and 19% natural gasoline. This formulation is seasonally adjusted to 70% ethanol / 30% natural gasoline to ensure starting during cold weather.

E-95 Fuel Versus E-93 Fuel:

The original E-95 fuel is composed of 95% anhydrous ethanol and 5% hydrocarbon denaturant. This fuel is also called "neat" ethanol and can be blended directly with gasoline to create the 10% ethanol blends commonly used in passenger vehicles. The E-95 fuel used initially in the Peoria buses contained 5% unleaded gasoline denaturant. This is considered 100% straight ethanol and only the taxpayer placing the fuel in the vehicle may claim the tax credit.

The Peoria buses now use an E-93 fuel formulation consisting of 93% anhydrous ethanol, 2% #1 kerosene denaturant, and 5% synthetic (made from natural gas or coal) methanol. Detroit Diesel Corporation (DDC), the manufacturer of the bus engines, approved this blend and warranties engines using it. (DDC engineers believe the new E-93 blend will further decrease emissions due to the higher alcohol content and lower hydrocarbon content.)

Pekin Energy Company supplies GROWMARK with anhydrous ethanol denatured with 2% kerosene. The ethanol is blended with 5% synthetic methanol to produce the E-93 ethanol fuel mixture. Since this blend is a qualified mixture, the blender can use the alcohol fuel credit and pass it through to the end user by selling the fuel at a reduced price.

Claiming the Alcohol Tax Credit:

The credit is claimed by using Form 6478 - "Credit for Alcohol Used as Fuel", filed with a federal income tax return. Limitations of the credit are:

- the credit is "non-refundable"; it can only be used to offset income tax liability.

- The credit cannot exceed:
  - 100% of the tax liability up to $25,000 plus 75% of the amount over $25,000, or
  - the excess of net income tax over the computed minimum tax.

Unused credit can be carried back three years and then carried forward. Also, since the credit is intended to reduce the cost of the fuel sold, the credit must be included in taxable net income.

Tax Credit Computations:

The following is a cost comparison of straight gasoline, diesel fuel, E-85 ethanol fuel, and E-93 ethanol fuel:

	Gasoline		Diesel		E-85		E-93	
	Gal.	$	Gal.	$	Gal.	$	Gal.	$
Fuel Cost:								
Gasoline	10,000	4,800			1,500	720		
per gal.		48¢				48¢		
Diesel Fuel			10,000	5,600				
per gal.				56¢				
Methanol							500	590
per gal.								$1.18
Ethanol					8,500	9,180	9,500	10,260
per gal.						$1.08		$1.08
Total Cost	10,000	4,800	10,000	5,600	10,000	9,900	10,000	10,850
per gal.		48¢		56¢		99¢		$1.09
Alcohol Fuels Credit:								
Alcohol Used					8,500	(4,590)	9,500	(5,130)
credit per gal.						54¢		54¢
Cost Before Federal and State Tax, Distribution and Delivery Costs		4,800		5,600		5,310		5,720
per gal.		48¢		56¢		53¢		57¢

The computed cost assumes the fuel is used for a federally nontaxable purpose, such as by a state or local government. If sold for a federally taxable purpose, federal excise taxes would apply, and the alcohol credit is reduced by the benefit of any partial excise tax exemption.

Form **6478**

Department of the Treasury
Internal Revenue Service

Credit for Alcohol Used as Fuel

▶ Attach to your return.

▶ For Paperwork Reduction Act Notice, see instructions.

OMB No 1545-0231

1993

Attachment Sequence No 83

Name(s) as shown on return

Identifying number

Type of Alcohol Fuel		(a) Number of Gallons Sold or Used	(b) Rate*	(c) Column (a) x Column (b)
1 Qualified ethanol fuel production (in gallons)	1		.10	
2 **Straight alcohol and alcohol mixtures:**				
a 190 proof or greater (in gallons)	2a		.54	
b Less than 190 proof but at least 150 proof (in gallons)	2b		.40	
3 Add lines 1, 2a, and 2b in both columns	3			
4 Other fuels blended with the alcohol on lines 2a and 2b	4			
5a Total gallons of fuel. Add lines 3 and 4 (column (a))	5a			
b Total gallons containing less than 5.7% of 190-proof alcohol or that are exempt from excise taxes (see instructions)	5b			
6 Subtract line 5b from line 5a	6			
7 Break down line 6 into the number of gallons of:				
For use in noncommercial aviation:				
a Alcohol or alcohol blended with aviation fuels	7a		.1293 (.1246**)	
b Alcohol blended with gasoline for aviation fuel	7b		.0444 (.0396***)	
All other uses:				
c Less than 85% alcohol blended with fuel (see instructions)	7c		(See instructions)	
d 85% or more alcohol (see instructions)	7d		.0545	

8 Add lines 7a through 7d, column (c)	8	
9 Current year credit less excise tax benefit. Subtract line 8 from line 3. Include this amount in your income for 1993.	9	
10 Flow-through alcohol fuel credit(s) from a partnership, S corporation, estate, or trust (see instructions)	10	
11 **Total current year credit for alcohol used as fuel.** Add lines 9 and 10	11	

*Only the rate for ethanol is shown. See instructions for lines 2 and 7 for rates for alcohol other than ethanol.

**Rate effective after December 31, 1993. ***Rate effective after September 30, 1993.

*See **Who Must File Form 3800** to see if you complete the lines below or file Form 3800.*

12a Individuals. Enter amount from Form 1040, line 40		12	
b Corporations. Enter amount from Form 1120, Schedule J, line 3 (or Form 1120-A, Part I, line 1)			
c Other filers. Enter regular tax before credits from your return			
13 Credits that reduce regular tax before the credit for alcohol used as fuel:			
a Credit for child and dependent care expenses (Form 2441, line 10)	13a		
b Credit for the elderly or the disabled (Schedule R (Form 1040), line 21)	13b		
c Mortgage interest credit (Form 8396, line 11)	13c		
d Foreign tax credit (Form 1116, line 32, or Form 1118, Sch. B, line 12)	13d		
e Possessions tax credit (Form 5735, line 14)	13e		
f Orphan drug credit (Form 6765, line 10)	13f		
g Credit for fuel from a nonconventional source	13g		
h Qualified electric vehicle credit (Form 8834, line 17)	13h		
i Add lines 13a through 13h		13i	
14 Net regular tax. Subtract line 13i from line 12		14	
15 Tentative minimum tax (see instructions):			
a Individuals. Enter amount from Form 6251, line 26			
b Corporations. Enter amount from Form 4626, line 14		15	
c Estates and trusts. Enter amount from Form 1041, Schedule H, line 37			
16 Net income tax:			
a Individuals. Add line 14 above and line 28 of Form 6251			
b Corporations. Add line 14 above and line 16 of Form 4626		16	
c Estates and trusts. Add line 14 above and line 39 of Form 1041, Schedule H			
17 If line 14 is more than $25,000, enter 25% (.25) of excess (see instructions)		17	
18 Subtract line 15 or line 17, whichever is greater, from line 16. If less than zero, enter -0-		18	
19 **Credit for alcohol used as fuel allowed for the current year.** Enter the **smaller** of line 11 or line 18. This is your **General Business Credit** for 1993. Enter here and on Form 1040, line 44; Form 1120, Schedule J, line 4e; Form 1120-A, Part I, line 2a, or the appropriate line of other income tax returns		19	

Paperwork Reduction Act Notice

We ask for the information on this form to carry out the Internal Revenue laws of the United States. You are required to give us the information. We need it to ensure that you are complying with these laws and to allow us to figure and collect the right amount of tax.

The time needed to complete and file this form will vary depending on individual circumstances. The estimated average time is:

Recordkeeping . . . 10 hr., 46 min.
Learning about the law or the form . . . . . 34 min.
Preparing the form . . . 1 hr., 42 min.
Copying, assembling, and sending the form to the IRS . 16 min.

If you have comments concerning the accuracy of these time estimates or suggestions for making this form more simple, we would be happy to hear from you. You can write to both the IRS and the Office of Management and Budget at the addresses listed in the instructions for the tax return with which this form is filed.

General Instructions

Purpose of Form

Use Form 6478 to figure your credit for alcohol used as fuel. The credit consists of the following:

1. Alcohol mixture credit,
2. Alcohol credit, and
3. Small ethanol producer credit.

You may claim or elect not to claim the alcohol fuel credit at any time within the 3 years from the due date of your return (determined without regard to extensions) on either an original or an amended return.

Who Must File Form 3800

The general business credit consists of the investment credit (Form 3468), jobs credit (Form 5884), credit for alcohol used as fuel (Form 6478), research credit (Form 6765), low-income housing credit (Form 8586), enhanced oil recovery credit (Form 8830), disabled access credit (Form 8826), and renewable electricity production credit (Form 8835).

The Revenue Reconciliation Act of 1993 added the following four new credits: empowerment zone employment credit (Form 8844), Indian employment credit (Form 8845), credit for employer social security and Medicare taxes paid on certain employee tips (Form 8846), and credit for contributions to certain community development corporations (Form 8847). Generally, the new credits are allowed for expenditures incurred after December 31, 1993. See the above forms and **Form 3800**, General Business Credit, for other details.

If you have more than one of the credits for 1993, a carryback or carryforward of any of these credits, or a credit for alcohol used as fuel from a passive activity, you must also file Form 3800, which is used instead of lines 12 through 19 to figure the tax liability limitation.

Definitions and Special Rules

Alcohol.—Alcohol, for credit purposes, includes ethanol and methanol but does not include:

1. Alcohol produced from petroleum, natural gas, or coal (including peat), or
2. Alcohol of less than 150 proof. In figuring the proof of any alcohol, disregard any denaturants (additives that make the alcohol unfit for human consumption). The volume of alcohol includes any denaturant up to 5% of the volume of the alcohol and denaturant combined.

However, methanol produced from methane gas formed in waste disposal sites is not alcohol produced from natural gas, and is included for credit purposes.

Alcohol mixture.—The alcohol must be used to make a qualified mixture. A qualified mixture combines alcohol with gasoline, diesel, or special motor fuel. The producer of the mixture either:

1. Uses it as fuel, or
2. Sells it as fuel to another person.

The credit is available only to the producer who blends the mixture. The producer must use or sell the mixture in a trade or business and the credit is available only for the year the mixture is sold or used. The credit is not allowed for casual off-farm production of a qualified mixture.

Straight alcohol.—The alcohol must not be a mixture with gasoline, diesel, or special motor fuel (other than as a denaturant). The credit is for alcohol that during the tax year is:

1. Used by the taxpayer as a fuel in a trade or business, or
2. Is sold by the taxpayer at retail to another person and put in the fuel tank of that person's vehicle.

However, no credit is allowed for alcohol used by the taxpayer as a fuel in a trade or business if that alcohol was sold in a retail sale described in 2 above.

Qualified ethanol fuel production.—This is ethanol produced by an eligible small ethanol producer (defined below) and during the tax year:

1. Is sold by the producer to another person—

a. For use by the buyer in the buyer's trade or business to produce a qualified mixture (other than casual off-farm production),

b. For use by the buyer as a fuel in a trade or business, or

c. Who sells the ethanol at retail to another person and puts the ethanol in the retail buyer's fuel tank; or

2. Is used or sold by the producer for any purpose described in 1 above.

Eligible small ethanol producer.—This is a person who, at all times during the tax year, has a productive capacity for alcohol of 30 million gallons or less. This includes alcohol made from petroleum, natural gas, coal, peat, and alcohol of less than 150 proof.

Diesel fuel.—This is any liquid other than gasoline that can be used as a fuel in a diesel-powered highway vehicle.

Special motor fuel.—This is any liquid other than gasoline that is suitable for use or is used in a motor vehicle or motor boat.

Noncommercial aviation.—This is the use of an aircraft other than in a business of transporting persons or property for pay.

Recapture of credit if not used as fuel.—You must pay the tax on each gallon of the alcohol or the alcohol in the mixture at the applicable rate that you used to figure the credit if you claim any alcohol fuel credit and later you:

1. Separate the alcohol from the mixture,
2. Use the mixture other than as a fuel,
3. Mix straight alcohol on which the credit was allowed for the retail sale,
4. Use the straight alcohol other than as a fuel, or
5. Do not use the fuel for the purposes described under **Qualified ethanol fuel production.**

Report the tax on **Form 720**, Quarterly Federal Excise Tax Return.

Specific Instructions

Use lines 1 through 9 to figure any alcohol fuel credit from your own trade or business.

Note: *We have shown in column (b) the rate for ethanol only. If you have a credit for alcohol other than from ethanol, enter in column (b) the applicable rate shown in the instructions for lines 2a, 2b, and 7a through 7d.*

Skip lines 1 through 9 if you are claiming only a credit that was allocated to you from a flow-through entity (i.e., S corporation, partnership, estate, or trust).

S corporations, partnerships, estates, and trusts.—Figure the total credit on lines 1 through 11. Then allocate the line 11 credit to each shareholder, partner, and beneficiary in the same way that income and loss are divided.

If the line 11 credit includes any small ethanol producer credit (line 1), you must separately state to each shareholder, partner, beneficiary, etc., the number of gallons on which the credit was figured, and the productive capacity for alcohol that you, the pass-through entity, have. State the productive capacity in terms of gallons.

Line 1.—Enter the number of gallons of ethanol that meet the conditions listed on page 3 under **Qualified ethanol fuel production.** Do not enter more than 15 million gallons. Multiply by the rate of 10 cents per gallon.

Line 2.—Enter on the appropriate line the number of gallons sold or used.

Line 2a.—Enter the number of gallons of 190 proof or greater alcohol and multiply by the rate.

For alcohol other than from ethanol, the rate is 60 cents per gallon.

Line 2b.—Enter the number of gallons of alcohol that is less than 190 proof but at least 150 proof and multiply by the rate.

For alcohol other than from ethanol, the rate is 45 cents per gallon.

Line 4.—Enter the number of gallons of other fuels that you blended with the alcohol shown on lines 2a and 2b. Other fuels include gasoline, diesel, and special motor fuels.

Line 5b.—Enter the number of gallons included on line 5a that contain less than 5.7% of 190-proof alcohol or are exempt from excise taxes. The fuel can be exempt because of specific exemption, credit, or refund provisions other than the alcohol fuel credit. Examples of fuels exempt from excise tax include fuel that is:

- Used on a farm for farming purposes.
- Supplied to military ships or aircraft or certain commercial ships or aircraft.
- Used in off-highway business use.
- Used as fuel by a state, any political subdivision of a state, or the District of Columbia.
- Used as fuel by a nonprofit educational organization.
- Used in an intercity, local, or school bus.
- Used for certain helicopter uses.

Line 7.—If you sold or used alcohol or an alcohol mixture as fuel, you may have been entitled to an exemption from excise tax or a reduced rate of excise tax. The alcohol fuel credit must be reduced to take into account any benefit provided by that exemption or reduced rate.

Line 7a.—Enter on line 7a the number of gallons of aviation fuel sold for use in or used in noncommercial aviation that is alcohol or alcohol blended with aviation fuels other than gasoline.

The benefit for alcohol other than from ethanol or alcohol other than from ethanol blended with aviation fuels (other than gasoline) is 13.61 cents per gallon for fuel sold or used before January 1, 1994. The benefit for this fuel sold or used after December 31, 1993, is 13.13 cents per gallon.

Line 7b.—Enter on line 7b the number of gallons of aviation fuel sold for use in or used in noncommercial aviation that is alcohol blended with gasoline.

The benefit for alcohol other than from ethanol blended with gasoline is 5.11 cents per gallon for fuel sold or used before October 1, 1993. The benefit for this fuel sold or used after September 30, 1993, is 4.63 cents per gallon.

Lines 7c and 7d.—This includes all other uses that received an excise tax benefit because the fuels contained alcohol (e.g., gasoline bought at a reduced rate to produce gasohol). Include only fuel mixtures that received an excise tax benefit because the fuel contained alcohol.

Line 7c.—Enter the number of gallons of fuel that is a mixture containing less than 85% alcohol.

The rates are based on the percentage of alcohol in the mixture.

Percentage of alcohol in mixture	Rate: Ethanol	Rate: Other than ethanol
At least 10%	.054	.060
At least 7.7% but less than 10%	.0416	.0462
At least 5.7% but less than 7.7%	.0308	.0342

Line 7d.—Enter the number of gallons of fuel that contain 85% or more alcohol.

For alcohol other than from ethanol, the benefit is 6.05 cents per gallon.

Line 9.—Include this amount in income, under "Other income" on the appropriate line of your income tax return, even if you cannot use all the credit because of the tax liability limitation.

Line 10.—Enter the amount of credit that was allocated to you as a shareholder, partner, or beneficiary.

If your credit from a flow-through entity includes the small ethanol producer credit, the flow-through entity must tell you the amount of the small producer credit included in the flow-through credit, the number of gallons for which the entity claimed the small ethanol producer credit, and the productive capacity for alcohol. You as a shareholder, partner, beneficiary, etc., are subject to the 15-million-gallon limitation for line 1 and the 30-million-gallon productive capacity limitation for an eligible small ethanol producer. If you receive a small ethanol producer credit from more than one entity, your credit may be limited.

Line 11.—If you have more than one of the credits listed under **Who Must File Form 3800** or a credit for alcohol used as fuel from a passive activity, stop here and go to Form 3800.

If you have only a 1993 credit for alcohol used as fuel, and the credit is not from a passive activity, complete this form. You do not have to file Form 3800 for this year.

For an estate or trust, the credit on line 11 is allocated among the beneficiaries in the same manner as the income was allocated. In the margin to the right of line 11, the fiduciary of the estate or trust identifies its share and the beneficiaries' shares of the total credit. Complete lines 12 through 19, as applicable, to figure the credit to take on Form 1041. Attach a schedule to Form 6478 showing how the total credit was divided.

Line 15.—Enter the tentative minimum tax (TMT) that was figured on the appropriate alternative minimum tax (AMT) form or schedule. Although you may not owe AMT, you must still compute the TMT to figure your credit.

Line 17.—See section 38(c)(3) for special rules for married couples filing separate returns, for controlled corporate groups, and for estates and trusts.

Line 19.—If you cannot use part of the credit because of the tax liability limitations, carry it back 3 years, then forward for 15 years. See the separate instructions for Form 3800 for details.

*U.S. GPO 1994-345-418

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