The Economic Impact of Permanently Allowing Year-Round Sales of E15

A Joint Study by National Corn Growers Association & Renewable Fuels Association

Executive Summary

The U.S. ethanol industry supports hundreds of thousands of jobs, contributes tens of billions of dollars to the United States economy, and provides opportunities in rural communities across the country. Allowing consumers year-round access to E15, gasoline blended with up to 15% ethanol, would magnify these benefits to the economy as a whole, and notably would expand markets for corn growers at a time when conditions in the sector are challenging.

Specifically, passage of the Nationwide Consumer and Fuel Retailer Choice Act (S.593 & H.R.1346) would mean an additional $25.8 billion to U.S. gross domestic product (GDP) in direct, indirect, and induced economic activity, more than 128,000 full time equivalent jobs, and $10.3 billion in income for workers and owners through the full implementation of E15, according to an analysis by the National Corn Growers Association and the Renewable Fuels Association.

E15 Background

Consumption of E15 has been increasing steadily since it was approved as a legal fuel in 2011, but an outdated provision in the Clean Air Act restricts summertime sales in conventional gasoline areas, which account for 70% of U.S. gasoline usage. Using ad hoc emergency waivers, the federal government has allowed unrestricted sales on a temporary basis since 2018. However, emergency waivers are not guaranteed and have served only as a temporary remedy to allow continued sales of E15 by retailers currently offering the fuel. Thus, a legislative solution is needed to permanently allow year-round sales of E15.

If such legislation is enacted, E15 consumption would be expected to accelerate, given:

- Drivers generally save around 25 cents per gallon when filling up with E15;
- The equipment at many retail stations is compatible with E15 or can be upgraded at moderate cost, and in cases where more significant investment is needed, funding is being kickstarted through $537 million from the USDA's Higher Blends Infrastructure Incentive Program (HBIIP);
- The federal government could take action to remove regulatory and technical barriers to E15 expansion; and
- In California, the only state where E15 is not yet allowed, recent legislation provides funding for the Air Resources Board (CARB) to complete the rulemaking process for an E15 fuel specification, and the state Senate on Sep. 3 unanimously approved Assembly Bill 30, which would legalize the blend immediately (unless vetoed by the governor) and remain in effect until CARB completes its rulemaking.

Study Approach

The IMPLAN model was utilized to construct an analysis of the economic impacts of increasing ethanol production volumes to meet E15 demand, along with associated facility construction, including equipment purchases. The impacts for key supply chain segments (feedstock production, ethanol production and ethanol exports) and related activities (construction and research & development) were analyzed separately and then aggregated.

A baseline was created representing a status quo situation for annual ethanol and corn production, ethanol use in motor gasoline, and corn use in ethanol. Two scenarios were considered relative to the baseline: full adoption of E15 and interim adoption of E15. In the latter, which can be viewed as the initial stage in the ramp up to full adoption, 10% of the current volume of E10 (the predominant form of finished motor gasoline in the U.S.) is assumed to be replaced by E15. It will take time to reach full adoption of E15, but the interim scenario illustrates that even a 10% movement towards full adoption brings benefits to ethanol and corn that ripple throughout the economy.

Economic Impacts

Increase in Economic Contribution of the U.S. Ethanol Industry with E15

Change from Baseline	Full E15 Adoption						Interim E15 Adoption					
	GDP Contribution (Mil. $)		Income (Mil. $)		Employment		GDP Contribution (Mil. $)		Income (Mil. $)		Employment	
Ethanol Production	**$7,280**	***54%***	**$3,564**	***52%***	**28,811**	***45%***	**$731**	***5%***	**$360**	***5%***	**2,899**	***5%***
Direct	$3,124	*69%*	$1,482	*60%*	4,460	*34%*	$308	*7%*	$148	*6%*	423	*3%*
Indirect	$2,193	*42%*	$1,022	*42%*	8,959	*42%*	$226	*4%*	$105	*4%*	920	*4%*
Induced	$1,964	*52%*	$1,060	*52%*	15,391	*52%*	$199	*5%*	$107	*5%*	1,555	*5%*
Corn	**$13,830**	***39%***	**$4,076**	***15%***	**63,946**	***15%***	**$1,405**	***4%***	**$411**	***2%***	**6,486**	***2%***
Direct	$6,789	*74%*	$60	*0%*	2,231	*1%*	$696	*8%*	$7	*0%*	263	*0%*
Indirect	$4,793	*42%*	$2,805	*43%*	44,121	*42%*	$483	*4%*	$283	*4%*	4,449	*4%*
Induced	$2,247	*15%*	$1,212	*15%*	17,593	*15%*	$226	*2%*	$122	*2%*	1,774	*2%*
Exports	**$1,070**	***9%***	**$550**	***9%***	**2,710**	***8%***	**$160**	***1%***	**$80**	***1%***	**400**	***1%***
Construction	**$3,623**	***1575%***	**$2,137**	***1336%***	**33,310**	***1666%***	**$219**	***95%***	**$108**	***68%***	**2,113**	***106%***
Research & Development	**$0**	***0%***	**$0**	***0%***	**0**	***0%***	**$0**	***0%***	**$0**	***0%***	**0**	***0%***
Total	**$25,803**	***41%***	**$10,327**	***25%***	**128,776**	***25%***	**$2,516**	***4%***	**$959**	***2%***	**11,898**	***2%***
Direct	$11,517	*82%*	$2,543	*17%*	24,862	*12%*	$1,111	*8%*	$209	*1%*	1,989	*1%*
Indirect	$8,888	*30%*	$4,881	*31%*	61,686	*39%*	$913	*3%*	$492	*3%*	6,094	*4%*
Induced	$5,398	*28%*	$2,904	*28%*	42,228	*28%*	$493	*3%*	$259	*3%*	3,814	*3%*

The construction-related impact is annualized during the period when expansion occurs.

Economists' Note: This table represents the change from the status quo–in layman's terms, what each demand change would 'add' to the economy on top of the status quo scenario. A full table with absolute numbers is included at the end of the report.

Full Adoption Scenario: The full implementation of year-round E15 would support an additional 128,776 full-time equivalent jobs and add $10.3 billion to incomes (including both employee compensation and income that accrues to certain owners), and $25.8 billion to GDP. This represents changes of 25%, 25%, and 41% from the baseline, respectively. The total economic impact of the ethanol industry would reach $88 billion following the full implementation of E15.

Of the additional $25.8 billion in economic impact, $7.3 billion comes from ethanol production, while another $13.8 billion comes from the corn needed to produce the ethanol and the remaining amounts are derived from exports and construction.

This includes all the direct, indirect, and induced impacts of the resulting demand for inputs, capacity, and supporting industries. Direct effects–which occur directly in the industries in which activity results from a policy or other change being analyzed–account for 45% of changes to GDP contribution and nearly 20 percent of jobs. Nearly half of jobs were generated by indirect effects, meaning business-to-business purchases and activity that support the initial industry.

Interim Scenario: In the interim implementation scenario of year-round sales of E15 as capacity and blends scale up towards 15 percent inclusion, the total GDP contribution is $2.5 billion and an additional 11,898 jobs are supported, generating added income of $959 million.

Ethanol Industry Impacts

Full Adoption Scenario: If E15 were fully adopted, activity associated with the ethanol production segment of the supply chain (i.e., the processing of grain into ethanol) would add $7.3 billion to GDP and $3.6 billion in employment-related income and would support an additional 28,811 full-time equivalent jobs. These represent increases of 54%, 52% and 45%, respectively, versus the baseline.

Direct effects account for just over 40% of the increase in GDP and incomes and 15% of the additional jobs. Indirect effects, such as from purchases of utilities, enzymes and yeast (but not corn, which was modeled separately), represent nearly one-third of the impacts. The remainder are induced effects, which result from household spending of income.

On an annual average basis, construction of new facilities and expansion of existing plants would contribute $3.6 billion to GDP, generate $2.1 billion in incomes and support 33,310 jobs during the period when it is occurring (i.e., prior to completion of capacity buildout).

Although the IMPLAN database was utilized for the remainder of the analysis, agricultural trade multipliers from the U.S. Department of Agriculture's Economic Research Service (ERS) were used to determine the impact of exports, since ERS provides multipliers specific to ethanol and distillers grains exports. Given that the economic contribution of ethanol production was already estimated separately, only the incremental activity associated with exports (e.g., transportation and wholesale services) is estimated in this step, in order to avoid double-counting. Accordingly, only indirect effects are reflected.

Due to the increase in commodity prices associated with full E15 adoption, exports would contribute an additional $1.1 billion to GDP, generate $550 million in incomes and support nearly 2,710 jobs, compared to the baseline.

The contribution of research and development activities related to ethanol represents a small share of the industry's overall economic activity and was assumed to stay constant at the baseline level.

Interim Scenario: In the interim E15 adoption scenario, activity associated with ethanol production would contribute an additional $731 million to GDP and $360 million in employment-related income, and support 2,899 more jobs. These all represent increases of 5% from the baseline.

Corn for Ethanol Impacts

Full Adoption Scenario: In 2025, ethanol is expected to use approximately 33 percent of the projected record-setting 16.8-billion-bushel corn crop, emphasizing the importance of the biofuels industry to corn farmers and fueling vehicles, employment for Americans, and economic activity. The full implementation of E15 would be expected to boost corn use in ethanol by 2.4 billion bushels, with the positive economic impacts permeating throughout the entire corn industry.

The full implementation of E15 would add 63,946 jobs in the sectors that support the corn industry. In addition to farming, some of the other sectors that will see the most economic impact from increased ethanol demand include merchant wholesalers, housing and real estate, pesticide and fertilizer manufacturing, hospitals, and truck transportation through indirect effects. This results in a $4 billion boost to income for American workers and a $13.8 billion increase to GDP. This would result in the corn for ethanol industry contributing a total of $49.3 billion towards GDP.

To isolate the economic impacts of E15, this model considers only corn used for ethanol, not other uses of corn. This study incorporates an estimate that 47.1% of corn use will be directed towards meeting ethanol demand in the full adoption scenario. The parameters of the full E15 adoption scenario were set to see 16.9 billion bushels of corn production, with 2.38 billion more bushels of corn used for ethanol production than at the baseline. The interim scenario assumes 37.4 percent corn use for ethanol, or a 240 million bushel increase from the baseline.

However, the economic impact of higher ethanol blends isn't limited to the corn going into ethanol, but additional demand and value generation in the industry brings additional contributions to the price value of the entire corn crop (see Assumptions for the Analysis section below), as well as jobs, incomes, and GDP across the economy in addition to what is captured by the analytical approach used in this study. The economic benefits of increasing demand in one aspect of the balance sheet would carry through corn for all uses.

Interim Scenario: In the interim scenario, the economic impacts of the increased demand from the corn industry add $1.4 billion to the GDP, in addition to 6,486 jobs to the corn industry and related sectors and an additional $411 million in wages.

Methodology

This economic impact evaluation study was conducted by NCGA and RFA using the IMPLAN model with 2023 base year data for the United States and monetary figures reported in 2025 dollars. IMPLAN is a regional economic analysis software and data application that estimates the impact or 'ripple effect' of a specific economic activity. It measures the relationship between a given set of demands for final goods and services and the inputs required to satisfy those demands. The type of study predicts the net economic effects of a new or changing economic activity. For example, the model estimates not only value impacts of scenario changes, but also impacts on employment, employee compensation, and intermediate inputs.

Economists arrived at these impact numbers by comparing the economic output of three outcome scenarios, not necessarily specific years: establishing a baseline of corn usage for ethanol and the economic impact of the ethanol industry, a scenario of interim E15 adoption as infrastructure and capacity builds up, and full E15 adoption. Comparing each of the scenarios enables conclusions to be drawn on the difference or change that full-scale E15 adoption would have on the economy. Impacts on price, investment, and employment were considered for the ethanol industry and the impact on the total usage, price, and production of corn.

Assumptions for the Analysis

NCGA and RFA made key assumptions to establish the parameters and input of the modelling, including on prices, investment in ethanol production capacity and industry, and other uses of corn.

The first step in the analysis was to construct a baseline reflecting status-quo ethanol supply/demand balances and prices of ethanol, corn and ethanol coproducts. Next, commodity volumes and values were developed for the two E15 adoption scenarios.

For both scenarios, ethanol supply/demand balances were developed, along with estimates of associated corn usage. It was assumed that ethanol exports are constant at baseline levels and that additional ethanol production occurs at dry-mill facilities. In the full E15 adoption scenario, domestic ethanol usage and production increase by 6.9 billion gallons compared to the baseline, while corn usage increases by 2.4 billion bushels. In the interim E15 scenario, domestic ethanol usage and production increase by 710 million gallons compared to the baseline, while corn usage increases by 240 million bushels.

Study Assumptions

	Baseline	Full E15 Adoption	Interim E15 Adoption
Corn (Million Bushels)			
Beg. Stocks	2000	2000	2000
Production	15,500	16,900	15,600
Imports	25	25	25
Corn for Ethanol	5,600	7,980	5,840
Other Use	7,125	6,995	7,085
Exports	2,800	1,950	2,700
Ending Stocks	2,000	2,000	2,000
Price (Cash, $/bu)	$4.00	$4.35	$4.05
Ethanol (Million Gallons)			
Beg. Stocks	1,000	1,400	1,020
Production	16,240	23,140	16,950
Imports	10	10	10
Domestic Use	14,250	21,150	14,960
Exports	2,000	2,000	2,000

The calibrations for corn use were set with the assumption that the full-scale adoption of E15 would not be entirely all new demand for corn but would impact other domestic usage and export dynamics and result in increased production relative to the baseline as well.

Prices of ethanol, corn and distillers grains were estimated for each scenario, while prices of other ethanol coproducts were held constant at baseline levels. NCGA and RFA used an estimated $4.35 corn price for the full adoption E15 scenario.

Based on the assumed volumes and prices, estimates of ethanol industry revenues and expenses were developed for the baseline and both scenarios.

Total Economic Contribution of the U.S. Ethanol Industry

	Baseline			Full E15 Adoption			Interim E15 Adoption		
	GDP Contribution (Mil. $)	Income (Mil. $)	Employment	GDP Contribution (Mil. $)	Income (Mil. $)	Employment	GDP Contribution (Mil. $)	Income (Mil. $)	Employment
Ethanol Production	**$13,487**	**$6,913**	**64,166**	**$20,767**	**$10,477**	**92,977**	**$14,218**	**$7,273**	**67,065**
Direct	$4,514	$2,452	13,216	$7,638	$3,934	17,676	$4,822	$2,600	13,639
Indirect	$5,161	$2,405	21,089	$7,354	$3,427	30,048	$5,387	$2,510	22,009
Induced	$3,811	$2,056	29,861	$5,775	$3,116	45,252	$4,010	$2,163	31,416
Corn	**$35,448**	**$27,162**	**418,272**	**$49,278**	**$31,238**	**482,218**	**$36,853**	**$27,573**	**424,758**
Direct	$9,208	$12,482	197,089	$15,997	$12,542	199,320	$9,904	$12,489	197,352
Indirect	$11,280	$6,600	103,816	$16,073	$9,405	147,937	$11,763	$6,883	108,265
Induced	$14,960	$8,079	117,367	$17,207	$9,291	134,960	$15,186	$8,201	119,141
Exports	**$12,520**	**$6,470**	**32,050**	**$13,590**	**$7,020**	**34,760**	**$12,680**	**$6,550**	**32,450**
Construction	**$230**	**$160**	**2,000**	**$3,853**	**$2,297**	**35,310**	**$449**	**$268**	**4,113**
Research & Development	**$600**	**$400**	**4,100**	**$600**	**$400**	**4,100**	**$600**	**$400**	**4,100**
Total	**$62,284**	**$41,105**	**520,588**	**$88,087**	**$51,432**	**649,364**	**$64,800**	**$42,064**	**532,486**
Direct	$14,042	$15,174	212,505	$25,559	$17,717	237,367	$15,153	$15,383	214,494
Indirect	$29,181	$15,625	158,515	$38,069	$20,506	220,201	$30,094	$16,117	164,609
Induced	$19,061	$10,305	149,568	$24,459	$13,209	191,796	$19,554	$10,564	153,382