growth energy™
America's Ethanol Supporters

701 8th Street, NW, Suite 450, Washington, D.C. 20001
PHONE 202.545.4000 FAX 202.545.4001 GrowthEnergy.org

October 26, 2020

Anne Austin
Principal Deputy Assistant Administrator
Office of Air and Radiation
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460
Submitted via: www.regulations.gov

RE: Comments on EPA "E85 Flexible Fuel Vehicle Weighting Factor (F-factor) for Model Years 2021 and Later Vehicles" - Docket ID No. EPA–HQ–OAR–2020–0104

Growth Energy is the world's largest association of biofuel producers, representing 89 U.S. plants that each year produce more than 7.5 billion gallons of cleaner-burning, renewable fuel; 96 businesses associated with the production process; and tens of thousands of biofuel supporters around the country. Together, we are working to bring better and more affordable choices at the fuel pump to consumers, improve air quality, and protect the environment for future generations. We remain committed to helping our country diversify our energy portfolio in order to create jobs, sustain family farms, and drive down the costs of transportation fuels for consumers.

Today, plant-based ethanol is blended in 98 percent of our fuel supply meeting roughly 10 percent of our nation's motor fuel needs and we're poised to do much more. Today, ethanol is on average a 39 percent improvement compared to gasoline and with continued improvements can reach 50-70% reductions. By using higher blends of ethanol such as E85 in conjunction with flexible-fuel vehicles (FFVS), American drivers can lower greenhouse gas emissions and improve air quality while reducing our dangerous dependence on foreign oil. As such, we have long been supportive of policies that continue to promote the use of higher ethanol blends like E85 in conjunction with flexible fuel vehicles (FFVs).

The F-factor is used to weight the GHG emissions of a FFV operating on E85 against the GHG emissions of the vehicle operating on conventional gasoline for compliance with vehicle standards including EPA's vehicle greenhouse gas program.

<u>Support for F-factor of 0.14 until there is an upward revision</u>

Growth Energy supports EPA's action to maintain affirm a 0.14 F factor until it can be adjusted upward with available data and future projections of renewable fuel. Given automakers the certainty that 0.14 will provide much-needed policy continuity for automakers and for those investing in E85. We believe that the data supports an upward adjustment of 0.2 or higher.

Automakers Need 5 Years of Policy Certainty and 3 Year Safe Harbor for Investment and Innovation

As EPA considers revisions to the F-factor into the future, it must consider the lengthy time for revisions to automakers' vehicle production lines. As such, EPA should allow for any upward revision of the F-factor to take immediate effect, so that it will continue to accelerate automaker investment and innovation. Conversely, any downward revision in the F-factor should not be made in 5 years as not to interfere with automakers vehicle planning. Doing so would undermine significant up-front investment and production line investment by the automakers. EPA must give at least 5 years notice to automakers before any downward revision to the F-factor. Additionally, it is imperative that once an automaker begins FFV production based on a specific F-factor, the automakers much be a given an additional 3 year "safe harbor" from any downward revisions.

Giving automakers this type of policy continuity will provide automakers the much-needed certainty to maintain their production lines to best take advantage of ethanol's environmental and octane benefits.

We would strongly encourage EPA to immediately issue guidance to formalize this timeline of certainty to automakers even while it considers data provided to justify an upward revision in the F-factor.

EPA Must Not Rely on Historical Data to set the F-factor but should review several factors which lend to a F-factor of 0.2

The F-factor is intended to consider the lifetime use of E85 in the FFV, so relying on historical data to set the F-factor is not appropriate. EPA must consider several important factors all of which lend to a higher F-factor of 0.2. These include inconsistent administration of federal policy, flaws in EPA's E85 estimate methodology, state low carbon fuel standards, and data on the growth of higher ethanol blends, federal investment in higher blend infrastructure, and necessary improvement in federal data on stations carrying higher ethanol blends.

Inconsistent Implementation of the Renewable Fuel Standard (RFS) and its impact on the AEO2020

Relative to federal policy, EPA must consider its own inconsistent implementation of the Renewable Fuel Standard (RFS) that is meant to require increased blending of renewable fuels into our transportation fuel supply.

EPA has repeatedly misused its various waiver authorities to undercut the demand for renewable fuel. Growth Energy and our members still await EPA's resolution of the 500 million gallons that were awarded by DC Circuit for improper use of waiver authority for the 2014-2016 RVOs. Additionally, we've seen more than 4 billion gallons of demand lost due to misuse of

701 8th Street, NW, Suite 450, Washington, D.C. 20001
PHONE 202.545.4000 FAX 202.545.4001

small refinery exemptions. Given that EPA must restore this 500MG and apply the recent 10th Circuit Decision to limit misuse of small refinery exemptions, EPA cannot base its F-factor decisions on its own past shortcomings in applying the RFS appropriately. Unfortunately, the AEO2020 relies on a flawed methodology that incorporates now-illegal small refinery exemptions and fails to recognize the required, implied conventional 15 billion gallons of renewable fuel under the RFS. The RFS, if properly implemented will promote investment in infrastructure as well as retail and consumer discounts for higher blends which would all point to significant growth in E85 used in FFVs.

Concerns about EPA's Estimates of Annual E85 Volumes

We have several concerns about EPA's methodology on EPA's estimates of E85 volumes. We are concerned about the miscount of stations selling higher ethanol blends as well as the misapplication of an average volume per station from six states across the nation.

Federal Data on Stations selling higher ethanol blends should be improved

Growth Energy is continually updating its database of retailers selling higher ethanol blends such as E15 and E85. Working with our retail partners who collectively have more than 10,000 retail locations and sell more than 13 percent of the nation's gasoline, we receive monthly updates of their stations selling higher ethanol blends. Additionally, we constantly add retail stations learned through press releases, news articles, and consumer and retailer word of mouth. Gathering this data, we provide a station update monthly to relevant stakeholders and policymakers. We also provide these monthly updates to GasBuddy for use in their crowdsourced app. Their app helps millions of consumers find stations and fuel. We also perform an annual audit of our data reaching out to the major retail brands selling E15 and E85, getting their updated lists, and cross-referencing it with our database – removing stations that no longer sell the fuel and adding stations that may not be in our database.

In examining data on E85 stations from the Alternative Fuel Data Center (AFDC), there seem to be numerous instances where AFDC has failed to include stations offering E85on its list of total E85 stations. For example, regarding Sheetz, one of the largest independent retailers on the east coast, we have been provided data showing 294 stations that sell E85, while AFDC data only shows 229. Additionally, data from Pearson Fuels in California shows 207 stations selling E85 in California, while AFDC data shows only 137 stations. We understand that keeping a database up to date in real time presents challenges; however, it is critically important to these policy decisions. These station counts are used for modeling used in the AEO which in turn has been used to calculate the F-factor. We would gladly offer to continue to share our data and expertise with AFDC so that they have the latest information on higher ethanol blend availability.

<u>Additional Concerns about EPA's E85 Estimates</u>

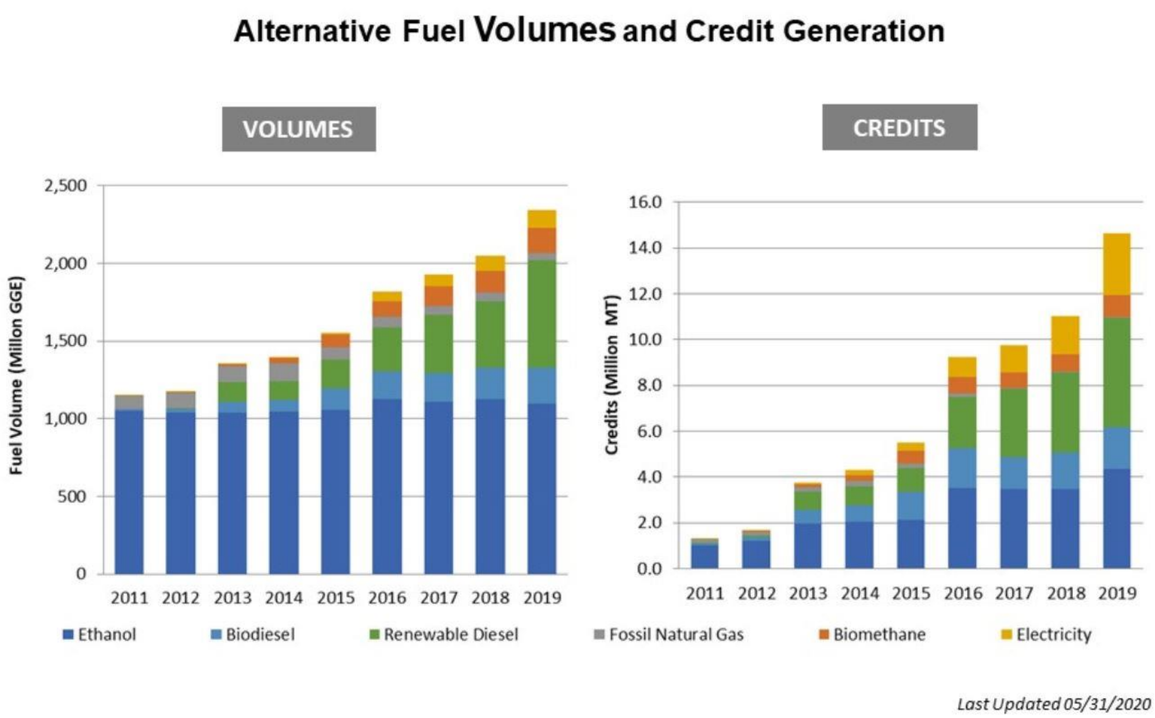
Beyond the concern about station undercount in both of EPA's methodologies, we have additional concerns about EPA's projection of the E85 sales volumes in 6 states in Methodology 1 should be representative of sales across the nation. Using historical data from only 6 states is not complete enough to project an adequate F-factor. As pointed out in a recent Edgeworth Economics analysis[1], EPA provides no justification for its use of these 6 states and its per station average and highlights that California has seen E85 use grow at a rate of 30 percent compounded annually over the past five years. Further analysis of EIA data by Scott Irwin at the University of Illinois found that E85 use per pump in 2018 was 28,551 gallons, more than double the average per pump between 2007 and 2015.[2] These increasing pump volumes and growing availability of E85 as we'll highlight further highlight why EPA's methodology is flawed.

[1] "Evaluation of EPA's Estimates of Annual E85 Volumes", Edgeworth Economics, October 23, 2020. Attached.
[2] "What's Behind Rising E85 Use?" *farmdoc daily*, v. 9, n. 13, January 14, 2019, Scott Irwin, available at https://farmdocdaily.illinois.edu/2019/01/whats-behind-rising-e85-use.html.

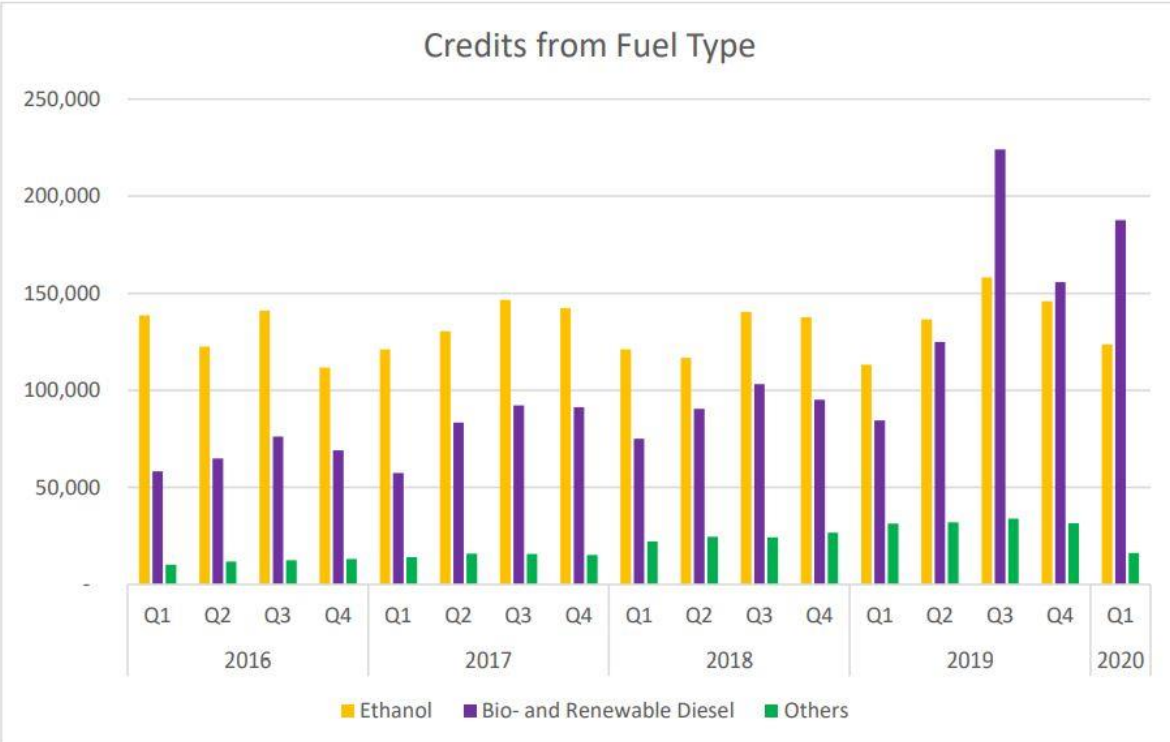
As further highlighted in the Edgeworth analysis, there are additional flaws in EPA's Methodology 2. Again, the undercount of stations that sell higher ethanol blends continues to be a concern. Additionally, EPA uses outdated data that is 4 to 10 years old and presents an inadequate historical perspective on E85 pricing and discounts. These discounts are undercut by the inconsistent administration of the RFS.

State Low-Carbon Policies Continue to Drive Use of Higher Blends

California and Oregon both have implemented low-carbon fuel standards which incentivize the use of E85. AS outlined previously, California's expanded E85 use is largely based on the foundation of the state's low carbon fuel standard (LCFS). Because of ethanol's low-carbon value, we would anticipate that E85 use would only continue to grow. Similarly, Oregon's Clean Fuel Standard (CFS) incents the use of low-carbon fuels like ethanol. Other states are considering similar low carbon policies with Colorado's GHG Pollution Roadmap and LCFS feasibility study and the northeastern states looking at the Transportation Climate Initiative (TCI). All these policies continue to push for the expanded use of lower carbon fuels like higher ethanol blends like E85.



California LCFS Data from the California Air Resources Board



Oregon Clean Fuel Standard Data from the Oregon Department of Environmental Quality

Investment in Higher Blend Infrastructure

Relative to higher blend infrastructure, underground tanks are 20 to 30-year assets while fuel dispensers are 10 to 12-year assets. Retailers and others make these types of investment specifically with long-term growth of higher blends in mind. The U.S. Department of Agriculture (USDA) alone has invested more than $200 million in conjunction with the nation's leading independent retailers for specific programs to promote infrastructure for higher biofuel blends including E15 and E85. In 2013, the USDA injected nearly $100 million to invest in nearly 5000 dispensers at more than 1400 stations with its Biofuels Infrastructure Program (BIP)[3]. More recently, the USDA announced an additional $100 million for the Higher Blend Infrastructure Incentive Program (HBIIP), $86 million which is specifically marked for higher ethanol blends. Under the recent HBIIP program, Growth Energy and its retail partners have secured nearly $30 million for 290 sites that sell more than 400 million gallons of fuel per year to install higher ethanol blends.[4] USDA has chosen this investment to drive growth for higher blends furthering growth in the agricultural feedstocks like corn and sorghum that are used as feedstocks for

---

[3] USDA Release: https://www.fsa.usda.gov/programs-and-services/energy-programs/bip/index

[4] Growth Energy Release: https://growthenergy.org/2020/10/08/growth-energy-celebrates-new-grants-for-retail-expansion-of-biofuel-blends/

biofuel production. The government's investment in infrastructure for higher biofuel blends furthers the argument for projecting growth in E85 volumes into the future and should be included in EPA's F-factor considerations.

Data Supports an upward revision of the F-factor to 0.20

As we've outlined, there are several inconsistencies with EPA's estimates of E85 use and the modeling in AEO 2020. However, we believe when the flaws in AEO 2020 are addressed and policymakers consider the projected growth in E85 stations and uptake, EPA will be justified in establishing a F-factor of 0.20 for model year 2021 moving forward. Growth Energy strongly supports such a conclusion.

In summary, Growth Energy recommends EPA take the following actions:

- Maintain a F-factor of 0.14 until it takes action for an upward revision
- Provide, through immediately issued guidance, 5 years of F-factor continuity and an additional 3-year safe-harbor for automakers for automaker certainty
- Administer the RFS appropriately by applying the 10th Circuit decision to limit small refinery exemptions
- Work with Growth Energy, its retail partners, and the AFDC to appropriately update station data for higher ethanol blends that should be increased to reflect the higher number of stations currently offering E85.
- Using highlighted data and correcting for flaws, provide an updated F-factor of 0.2 for model year 2021 and thereafter

Thank you in advance for your consideration.

Sincerely,

Christopher P. Bliley
Senior Vice President of Regulatory Affairs
Growth Energy

EVALUATION OF EPA'S ESTIMATES OF ANNUAL E85 VOLUME

Edgeworth Economics

October 23, 2020

On August 26, 2020, EPA issued a notice titled, "E85 Flexible Fuel Vehicle Weighting Factor (F-Factor) for Model Years 2021 and Later Vehicles."[1] Supporting that notice was an EPA technical memorandum that included, among other things, two methods for EPA's estimation of current E85 use.[2] This report 1) evaluates those methods for estimating current E85 use and 2) applies updated data and scenario analysis to project future E85 use and compares those projections to projections from other sources.

Significantly, even though EPA may underestimate current E85 use, EPA's estimates of current E85 use still can be consistent with projections of future E85 use that support strong F-factors—*i.e.*, on the order of approximately 0.2. Furthermore, scenario analysis applying recent or reasonably foreseeable growth trends show that EPA's methodologies can directly support F-factors in this range. Finally, it is important to note that it is not reasonable for EPA to simply apply past, flatter E85 growth trends to project *future* E85 use. EPA's reliance on past trends is particularly problematic because EPA has issued a series of RFS waivers subsequently determined illegal by the courts (for example, the overturned "inadequate domestic supply" waivers and small refinery exemptions recently declared improper by the 10th Circuit). Biofuels markets covered by the RFS respond to market signals, including signals from the regulatory authorities. The uncertainty caused by previous EPA decisions likely has restrained E85 growth in a manner that would not occur in the future under a more stable policy regime.

I. EPA Method 1: Extrapolation from Average E85 Sales Per-Station in Six States

As explained in EPA's technical memo, EPA estimates annual E85 volumes as of 2018 using two methods, both of which are explained in previous EPA memoranda. EPA's "Method 1" involves extrapolation of nationwide volumes from local volume data obtained from six states (CA,IA,KS,MN,ND,NY) which track E85 sales.[3] EPA's approach is to calculate the average per-station volume across these states, based on station counts from DOE's Alternative Fuel Data Center (AFDC), and then to multiply the resulting figure by AFDC's count for the entire country. EPA calculates a figure of 306 million gallons per year ("mgy") using this method. There are two key assumptions underlying EPA's approach: 1) the AFDC station counts are accurate; and 2) the per-station volumes for the rest of the U.S. are reasonably approximated by the average per-station volumes from the six states.

[1] 85 FR 52,590.

[2] EPA Memorandum, "Technical Memorandum Describing Potential Methods for Determining the Weighting Factor (F-Factor) for Testing E85 Flexible Fuel Vehicles (FFV) Light-duty Vehicles," August 18, 2020, EPA-HQ-OAR-2020-0104 ("EPA 8/18/20 Memo")

[3] EPA Memorandum, "Final estimate of E85 consumption in 2018," December 18, 2019, EPA-HQ-OAR-2019-0136 ("EPA 12/18/19 Memo"). Note that EPA's August 2020 technical memo is inconsistent regarding which of their methods is "Method 1" versus "Method 2", with the notes to Table 3 differing from the more detailed footnote 20. This report adopts the labels as indicated in footnote 20 of the technical memo, which comport with the previously issued supporting memos.

Regarding the first assumption, it appears that EPA's source, AFDC, undercounts E85 stations substantially. RFA's website, E85prices.com, identifies more than 5,000 E85 stations nationwide, compared to AFDC's current figure of 3,605.[4]

EPA's second assumption regarding per-station volumes may be even more problematic. The per-station volumes calculated by EPA vary quite widely across the six states, from a low of 3,457 gallons per month ("gpy") per station in North Dakota to a high of 18,805 gallons in California, with all six states collectively averaging 7,137 gallons per month per station (see Table 1). **EPA performs no analysis to justify its assumption that stations across the rest of the U.S. necessarily track this average.** Given the very wide range of figures calculated for the six states, EPA should provide support for its assumption that the small group of states is a good proxy for the U.S. as a whole.

Table 1
EPA Estimates of Monthly E85 Volumes per Station in 2018, by State (gpm)

California	18,805
New York	7,719
Kansas	4,824
Minnesota	3,549
North Dakota	3,457
Iowa	6,435
Average	7,137

Source: EPA 12/18/19 Memo.

An analysis by Scott Irwin at the University of Illinois found that "E85 use per pump in 2018 of 28,551 gallons was more than double the average per pump over 2007-2015."[5] If this doubling of volumes were to occur in the states currently experiencing lower volumes, they would soon be generating sales at levels more like that which California already has achieved.

The case of California is particularly instructive, as the LCFS has provided a relatively stable regulatory incentive mechanism. California has seen E85 use grow at an average compounded rate of 30 percent annually over the last 5 years (38 percent annually over 10 years).[6] Stable regulatory programs, like the LCFS, encourage retailers to invest in infrastructure and undertake consistent marketing of biofuels. Stable discounts and consistent marketing then will drive consumer demand. **If EPA were to administer the RFS consistently (*i.e.*, without waivers or the threat of waivers that have undermined the RFS in recent years), it will be more likely that other states will experience growth in per-station volumes such as experienced in California**. Similarly, Michigan's "Yellow Hose" program, which provided consistent E85 discounts during 2013 and 2014, caused E85 sales to increase an average of 266 percent at participating

[4] DOE website, https://afdc.energy.gov/fuels/ethanol_locations.html#/find/nearest?fuel=E85, accessed October 4, 2020; and RFA website, e85prices.com/e85map, accessed October 4, 2020. If the undercount by AFDC is consistent across all states, then this may not cause a significant problem for EPA's method. The ratio of station counts from AFDC and E85prices.com appears similar for the six states evaluated by EPA (30 percent more from E85prices.com) and the country as a whole (34 percent more from E85prices.com). Nonetheless, EPA should use the most accurate and current information regarding station counts.

[5] Scott Irwin, "What's Behind Rising E85 Use?" *farmdoc daily*, v. 9, n. 13, January 14, 2019, available at https://farmdocdaily.illinois.edu/2019/01/whats-behind-rising-e85-use.html.

[6] CA ARB website, https://ww2.arb.ca.gov/sites/default/files/2020-02/annual_e85_volume_02-2020_0.pdf.

stations, according to an analysis by Dr. Michael Whinihan.[7] Even after the program's discounts were subsequently reduced in 2015 due to lower gasoline prices, Dr. Whinihan found that "consumers tend[ed] to stay with the program" and further concluded that savings at the pump were "important in getting consumers to change habits" and that a "consistent price differential reinforces habit." Notably, various marketing programs were undertaken in conjunction with the program.[8] Michigan's Yellow Hose program demonstrates the importance of not only price discounts but also marketing to improve consumer awareness, both of which would be expected to increase under a more consistently administered RFS.

II. EPA Method 2: Extrapolation from the Historical Relationship Between E85 Discounts and E85 Volumes per Station

EPA's "Method 2" involves a statistical analysis of 2014 data which correlates per-station E85 volumes with the price discount for E85 relative to E10.[9] EPA uses the results from this analysis to project per-station volume in 2018, based on price discounts measured in that year as recorded by E85prices.com, and then multiplies the result by AFDC's nationwide station count. EPA calculates a figure of 225 mgy for total E85 volumes in 2018 using this method.[10]

There are several potential issues with this approach:

- **EPA's data is outdated.** The data used to identify the relationship between E85 discounts and sales volumes is now 4 to 10 years old.[11] Given the dynamic nature of the motor fuels retailing business, as well as EPA's own policy direction, it is incumbent upon EPA to confirm that the relationship identified from this earlier period still holds.
- **EPA's reliance on AFDC's station count for this method is problematic, since the final estimate of E85 volumes is directly proportional to AFDC's figure.** The difference between the results from EPA's Method 1 (306 mgy) and Method 2 (225 mgy) is due primarily to the apparent undercount by AFDC. If EPA had applied the higher estimate from E85prices.com, the resulting figure would have been similar to the output from EPA's Method 1 (see Table 2, below).
- **EPA's reliance on the historical relationship between price discounts and sales volumes for E85 presents an additional problem for projecting volumes in the future.** EPA's analysis generates an effectively linear relationship between these two metrics.[12] This analysis, however, was based on sales data from 2010 through mid-2016. During this period, the price discount for

---

[7] Michael Whinihan, "The Relationship Between E85 Sales Volumes and Consistent Beneficial Pricing," January 2016 (available from author).

[8] See, for example, Holly Jessen, "Yellow Hose program brings price stability to E85 in Michigan," *Ethanol Producer Magazine*, December 24, 2014, available at http://www.ethanolproducer.com/articles/11774/yellow-hose-program-brings-price-stability-to-e85-in-michigan.

[9] EPA Memorandum, "Preliminary estimate of E85 consumption in 2018," June 26, 2019, EPA-HQ-OAR-2019-0136 ("EPA 6/26/19 Memo").

[10] Using price discounts from a second source, Gasprices.AAA.com, EPA calculates a figure of 213 mgy. EPA adopts the higher figure, based on price from E85prices.com, for its Technical Memorandum in support of its calculations of the F-Factor for flex-fuel vehicles. [EPA Memorandum, "Technical Memorandum Describing Potential Methods for Determining the Weighting Factor (F-Factor) for Testing E85 Flexible Fuel Vehicles (FFV) Light-duty Vehicles," August 18, 2020, EPA-HQ-OAR-2020-0104 ("EPA 8/18/20 Memo")]

[11] For this analysis, EPA relied on sales data from 2010 through mid-2016. [EPA 11/18/16 Memo]

[12] EPA's formula includes a term related to the natural log of the price discount, but this term does not cause the resulting curve to deviate from an essentially straight line for discounts above approximately 10 percent. [EPA 11/18/16 Memo]

E85 rarely exceeded EPA's estimate of the "energy parity point" of 22 percent.[13] Moreover, as described above, increased consumer response to higher discounts benefits significantly from an extended and consistent period of such discounts, with consistent implementation of the RFS to encourage investments in infrastructure and marketing, which has not occurred recently. The RFS's promotion of ethanol blends above E10, such as E85, has been hampered by a series of waivers (subsequently deemed illegal) ever since EPA first signaled its "inadequate domestic supply" waiver in 2013. Thus, we do not believe that extrapolation of EPA's formula is appropriate to determine likely outcomes under policy regimes which could lead to such discounts (such as consistently enforced standards under the RFS).

Notwithstanding this concern, we provide a sensitivity analysis for EPA's Method 2, which tests the adjustment of the two key inputs: the number of E85 stations and the price discount of E85 relative to E10. Using a more accurate figure for the number of E85 stations (approximately 5,000, based on data from E85prices.com) while maintaining EPA's price discount of 21 percent results in an estimate of E85 volume for 2018—316 mgy—that is more consistent with EPA's Method 1 (see Table 2).

Table 2
Sensitivity Analysis for EPA Method 2: E85 Volume in 2018 (mgy)

		# of E85 Stations					
		3,500	**3,567**	**4,000**	**4,500**	**5,000**	**5,500**
E85 Discount	**10%**	198	202	226	254	283	311
	15%	208	212	237	267	297	326
	20%	219	223	250	282	313	344
	21%	221	225	253	284	316	347
	25%	231	236	264	297	330	363
	30%	244	249	279	314	348	383

Note: EPA estimate highlighted in yellow; revised estimate using station count from E85prices.com highlighted in green.

III. Extrapolation of E85 Volumes to 2025, 2030, and 2050

Based on EPA's estimate of E85 volume for 2018, we have prepared scenario analyses for extrapolating to 2025, 2030, and 2050. Table 3 shows a range of estimates for 2025 volumes, based on a starting point of 306 mgy as of 2018 (EPA's Method 1 estimate). This analysis considers two variables: the growth in the number of E85 stations (ranging from 4 percent to 8 percent annually) and the growth in the per-station throughput (ranging from 3 percent to 15 percent annually). For comparison, **AFDC data indicate a growth rate for the number of stations of about 7 percent annually over the last 10 years. Regarding annual per-station volume growth, the upper end of the range, 15 percent, would result in nationwide average of 18,984 gallons/month as of 2025, approximately equal to the average in California as of 2018.** Such a figure might be a reasonable projection if national policy is implemented more consistently, as policy has been in states like California.

[13] EPA Memorandum, "Updated correlation of E85 sales volumes with E85 price discount," November 18, 2016, EPA-HQ-OAR-2016-0004 ("EPA 11/18/16 Memo"). Given efficiency gains by FFVs when using high-octane E85, the efficiency-adjusted "energy parity point" may be closer to 19 or 20 percent. [Rathin Datta, Mark A. Maher, Coleman Jones, and Richard W. Brinker, "Ethanol – the primary renewable liquid fuel," *Journal of Chemical Technology and Biotechnology*, v. 86, n. 4, April 2011, pp. 473-480 at Figure 3]

These growth rates achieve E85 volumes by 2025 that are consistent with F-factors in the range of 0.20, as indicated by the 2019 Auto Alliance submittal and the June 9, 2020 OnLocation report.[14] For example, the OnLocation report focuses on scenarios that project about 900 million gallons of ethanol as of 2025—equivalent to about 1.2 billion gallons of E85.[15]

Table 3
Sensitivity Analysis for Annual E85 Volume as of 2025 (mgy),
Based on EPA's Method 1 Estimate of 306 mgy in 2018

		Annual Growth Rate of # of E85 Stations				
		4%	5%	6%	7%	8%
Annual	3%	495	530	566	604	645
Growth Rate	6%	605	647	692	739	789
of E85	9%	736	787	841	898	959
Volume per	12%	890	952	1,017	1,086	1,159
Station	15%	1,071	1,145	1,224	1,307	1,395

Table 4 shows a projection for 2030 using the same ranges of growth rates.

Table 4
Sensitivity Analysis for Annual E85 Volume as of 2030 (mgy),
Based on EPA's Method 1 Estimate of 306 mgy in 2018

		Annual Growth Rate of # of E85 Stations				
		4%	5%	6%	7%	8%
Annual	3%	699	784	878	983	1,099
Growth Rate	6%	986	1,106	1,239	1,387	1,551
of E85	9%	1,378	1,546	1,732	1,938	2,167
Volume per	12%	1,909	2,141	2,399	2,685	3,002
Station	15%	2,621	2,940	3,294	3,687	4,123

Notably, these assumptions yield projections of E85 stations and volume per station that are well within the range of possibility. For reference, in the 2050 analysis (see Table 5), the upper end of the ranges shown—*i.e.*, based on 7 percent annual growth in E85 stations and 6 percent annual growth in E85 volume per station—involves approximately 31,000 stations offering E85 and 46,000 gpy of E85 per station. Thus, in this scenario, by 2050 approximately 20 percent of all gasoline stations in the U.S. would be offering E85.[16] Moreover, E85 often is dispensed through blender pumps, which allow the retailer to offer a range of grades between E10 and E85, including E15. Similarly, the per-station E85 throughputs can be readily accommodated, even at the highest growth rates in this sensitivity analysis.

[14] OnLocation, "Update to Understanding E85 in the Annual Energy Outlook 2020," June, 9, 2020 (EPA-HQ-OAR-2020-0104-0007) available at https://beta.regulations.gov/document/EPA-HQ-OAR-2020-0104-0007; Auto Alliance letter, "F-Factor Guidance Request for MY 2020 and Later Flex Fuel Vehicles," September 3, 2019 available at https://ilcorn.org/file/368/9-11-19_20190903_Alliance-EPA_F-factor_Letter.pdf. See also the analysis by Air Improvement Resource, Inc., "F Factor from AEO 2019 1 Feb 2019" available at https://www.regulations.gov/document?D=EPA-HQ-OAR-2020-0104-0006.

[15] E85 volumes can be converted to equivalent ethanol volumes by multiplying by a factor of about 0.74.

[16] There are currently about 150,000 gasoline stations operating in the U.S. [NACS website, https://www.convenience.org/Topics/Fuels/The-US-Petroleum-Industry-Statistics-Definitions]

Table 5
Sensitivity Analysis for Annual E85 Volume as of 2050 (mgy), Based on EPA's Method 1 Estimate of 306 mgy in 2018

		Annual Growth Rate of # of E85 Stations				
		3%	**4%**	**5%**	**6%**	**7%**
Annual Growth Rate of E85 Volume per Station	**2%**	1,485	2,023	2,748	3,721	5,026
	3%	2,029	2,764	3,755	5,085	6,867
	4%	2,764	3,766	5,115	6,927	9,356
	5%	3,755	5,115	6,948	9,410	12,707
	6%	5,085	6,927	9,410	12,744	17,210

In summary, F factors in the range of 0.2 can be easily obtained, based on EPA's own methodologies, by using assumptions that are consistent with recent trends and/or observable data. Furthermore, if EPA consistently enforces the RFS without illegal and/or otherwise undue waivers going forward, EPA's own projection methodologies show that volumes of E85 use consistent with F-factors in the range of 0.2 can be readily obtained.