Issue Brief:

# *Reality EV*: Why everyone needs to take another look at biofuels

CFDC CLEAN FUELS DEVELOPMENT COALITION

2020 Edition

A Publication of the Clean Fuels Development Coalition

## Executive Summary

Regardless of the eventual introduction of EVs, gasoline will be around for decades. Keeping the current level of benzene-laced carcinogenic aromatic octane enhancers in gasoline is indefensible. The recent article *Environmental Advocates Should Take Another Look At Biofuels* by former Senator Tim Wirth (D-CO), Chairman of the United Nations Foundation, and Senator Charles Grassley (R-IA) offers an example how bipartisan priorities can be achieved by replacing carcinogenic octane additives in gasoline with cleaner, better, faster-to-market high-octane biofuels. *Reality EV's* research explains the consumer/taxpayer, infrastructure, and environmental constraints single fuel source electric vehicles (EVs) must overcome to live up to their often-claimed perfect solution. Not to mention, the $1-2 trillion dollar government/taxpayer investment needed for EVs to replace 50% of the consumer fleet.

The notion that the nation can wait nearly two decades for the US consumer vehicle fleet to completely evolve or that consumers will give up their cars prior to the end of their life cycle is not realistic.

Please read the executive summary of the Insights Into Future Mobility, Massachusetts Institute of Technology (MIT) Energy Initiative study. The MIT study will complement our collective research and reinforce the need to consider total government/taxpayer costs for vehicles and refueling, environmental impacts, probability of consumer success. Regardless of any plausible scenario, reliance on gasoline for the immediate and foreseeable future is a stark reality, because global oil consumption in 2050 is higher than it was in 2015 in all scenarios of the MIT study. In the most aggressive climate change projection for 2050, gasoline consumption is down 25%, but only 20% of the reduction is due to light duty EVs.

The public relations emphasis on EVs often aims to make biofuels appear less valuable. There will be a continued role for all pollution and gasoline reduction technologies and polices where biofuels can make an important contribution. There is no sound reason for the nation to not clean up gasoline while it is trying to phase in EVs. For example, if government and industry combined a higher-octane standard with current EV plug in fuel cell technology, biofuels can achieve an average of 120 miles per gallon of gasoline (MPGG) today.

If the drive for EVs is based on reducing greenhouse gases, everyone should take another look at biofuels, especially corn ethanol. Today's ethanol is not your grandfather's moonshine that big oil and EPA used for its 20-year old and most recent cost benefit analysis.

Today's corn ethanol reduces greenhouse gases 46% relative to fossil fuel gasoline. When the

*Continued on page 2*

> **"IN CLIMATE TERMS, IMPROVED EFFICIENCY OF GASOLINE CARS WAS AS CRITICAL AS ELECTRIFICATION."**
>
> Massachusetts Institute for Technology, 2019

Department of Energy updates its model and sequestration is incorporated into the equation it will represent a 60% reduction. If EPA's long overdue Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule included a higher octane standard of 98-100 RON it would create an 18% reduction in greenhouse gases in every vehicle on the road—for the next 30 years. This new clean fuel standard would also prevent EPA from circumventing Clean Air Act regulations which call for reducing toxics in gasoline to "greatest extent achievable." In addition, if the 20 million flexible fuel vehicles on the road took advantage of their built-in technology to utilize higher ethanol blends drivers could reduce GHGs by over 50%. That reduction is available today. Why wait for the likely empty promise of 50% of drivers driving an EV in 2050?

After reviewing the following *Reality EV* research everyone will be better equipped to explain their support for biofuels as a quantified and achievable path to reducing greenhouse gases will enhancing economic, energy, environmental, food, public health, and national securities. It is important for policymakers to recognize the empty promises Big Oil and their political and public relations (PR) machines are feeding the public in order to defend their market and lethal product (e.g., #unexpectedenergy commercials).

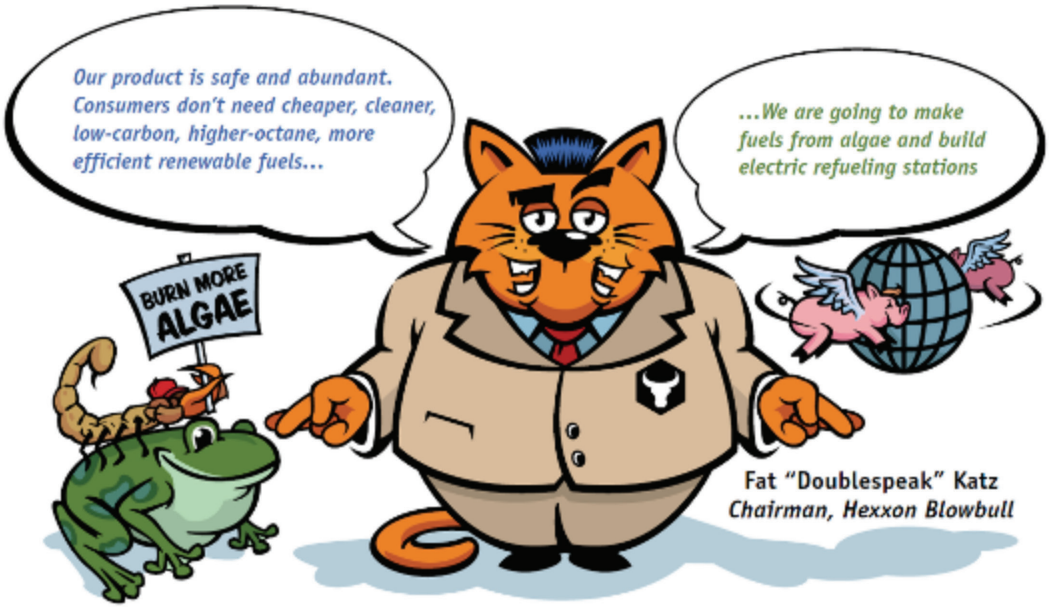
Congress and the public would not be acting alone in demanding a change in Big Oil's quid pro quo. Governors attempting to improve poor air quality caused by gasoline emissions to therefore reduce rising healthcare costs already asked President Trump to "remove gasoline's deadly aromatics." Including a higher-octane standard in the proposed Safer Affordable Fuel-Efficient Vehicles Rule (SAFE) is the fastest route to reduce greenhouse gas emissions and avoid Congressional gridlock. If not now, the choice lies in the hands of the next president to apply this solution and help farmers and the environment beyond the current limitations of the renewable fuel standard; a plan that would create a truly free market driven by a cheaper, immediately available alternative that will save money, jobs, and lives.

The political game of kick the policy can down the oil paved road must stop. The reality of oil: after 100 years, oil companies have a 100% monopoly on gasoline and 90% of the U.S. gasoline market. The United States still imports 25% of its oil from OPEC, an organization openly dedicated to manipulating the supply and price of oil, as well as the countries that produce it; violating the principles of a free market.

Consuming gasoline fuels and funds terrorism. Big Oil and US refiners buy their supply from ISIS and OPEC controlled oil. Therefore, gasoline consumption increases the powers of these organizations. A sense of urgency and a practical bipartisan path are necessary to achieve success. The following research will reveal how we can exceed the goals in the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule and overlook why the Environmental Protection Agency is six months overdue to announce their plan.

First, one needs to understand that Big Oil's political and PR machines were successful in creating doubt regarding biofuels in policy makers, environmentalists, consumers, and the media. While the aftermath of a campaign of lies remains, the myths about biofuels were refuted ten years ago and are chronicled in the *Ethanol Fact Book* and *The Ethanol Papers*. The misinformation campaign aims to protect policies that protect gasoline only result in thwarting the advancement of biofuels and

What's Holding Up EPA's Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule?




*"In the 2015-2016 election cycle, oil, gas, and coal companies spent $354 million in campaign contributions and lobbying and received $29.4 billion in federal subsidies in total over those same years—an 8,200% return on investment."*

**—The Guardian, Dana Nuccitelli, July 2018**

producing less food at higher prices (see Forbes: Part 1 and Part 2: Is EPA at War with the Ethanol Industry).

Misinformation should not be used as an alibi for EPA colluding with Big Oil (here's the emails between EPA and Big Oil) and neglecting it's civic duty to protect citizens by taking the toxics out of gasoline to the maximum extent achievable (see Gasolinegate Part 8: The People v. Big Oil & EPA: The Anti-Ethanol Wars).

Even a wildly successful EV program over the next decade will be paired with 100 million gasoline powered vehicles entering the market during that time period, using billions upon billions of gallons of gasoline. The environmental community, policy makers, and the public must recognize the realities of our transportation system and seek a balance to ensure we are using every tool at our disposal to achieve policy goals.

## *Reality EV* Research

Aside from the recent Massachusetts Institute of Technology study Insights Into Future Mobility, MIT Energy Initiative, many obvious concerns about EVs are going unnoticed. Because many people have heard the upside of the EVs and downside of biofuels, this compiled research focuses on balancing the two. The information is retrieved from validated third party research and simple math.

History and science demonstrate why consumers need to demand regulation of high carbon intense, benzene-laced gasoline as soon as possible:

- In 1948 the American Petroleum Institute (API) established the safe threshold for benzene was zero, and all major health organizations have classified benzene as a known human carcinogen. EPA allows big oil to add 20-30% benzene-based additives which create emissions that are killing their customers—just like cigarettes.

- In contrast to dedicated EVs, consumers don't have to do anything different when using biofuels: they simply pump the blend into their cars at a fuel station. The biofuels directly replace carcinogenic aromatic octane enhances in gasoline (e.g., BTEX, or Benzene, Toluene methylbenzene, Ethylbenzene, and Xylene dimethylbenzene).
- Although MIT's projection of EVs reaching 50% market penetration in 30 years is hard to defend, the U.S. would still be burning 70 billion gallons of gasoline each year. Without new high-octane standards in the SAFE Rule, 20-35% of gasoline will be BTEX-based octane enhancing additives. If most everyone agrees on enacting a higher octane standard, where's the SAFE Rule?
- According to EPA, transportation became the largest source of greenhouse gas emissions in the United States in 2017, dethroning electricity generation. Consider the UN Environmental Program's goal of a 7% reduction of greenhouse gases and their announcement that the "US leads greenhouse gas emissions on a per capita basis." A higher-octane standard in the SAFE Rule would greatly aid in achieving this goal.
- The University of California at Davis calculated the cost of gasoline related health issues, such as lung cancer, to equal $24.3 billion. From womb to tomb consumers pay for the negative health effects associated with air pollution in general. Today consumers don't pay for the health costs from toxic aromatics at the gasoline pump. Consumers pay those costs through higher federal and state taxes that are used to cover rising healthcare costs stemming from the negative effects from gasoline emission. MIT has also calculated that there are about 50,000 premature deaths related to transportation fuel each year. MIT estimates did not account for the premature deaths from war, terrorism, and climate change, all inherently related to gasoline. In the case of cigarettes, consumers did not pay for healthcare by the pack either—federal and state taxes did—until tobacco companies got sued.

**In 1948 the American Petroleum Institute (API) established the safe threshold for benzene was zero, and all major health organizations have classified benzene as a known human carcinogen. EPA allows big oil to add 20-30% benzene-based additives which create emissions that are killing their customers—emissions just like tobacco.**

- This is clearly a case of triple taxation due to poor representation. In addition to the health care price tag, consumers/taxpayers also pay $81 billion to defend world's oil each year and another $20 billion in federal and state subsidies to oil and gas companies ($500 billion globally). Are consumers adding the hidden $3 per gallon negative health effects tax when they fill up with gasoline? With continued education and awareness, like tobacco, consumers will soon realize the real cost of gasoline. (see Gasolinegate Report Part: 4)

## 1. The Reality of All

- Please read the executive summary of the Insights Into Future Mobility, MIT Energy Initiative study. It will validate our research and reinforce the need to consider total government/taxpayer costs for vehicles and refueling, environmental impacts, probability of consumer success, and regardless of any scenario—reliance on gasoline for the immediate and foreseeable future.
- EV's impact on the environment was detailed in a recent article exploring the murky truth around the EV carbon footprint: mining lithium for batteries, battery disposal, and the power sources that charge them.

- Although many believe EVs to be free of cost, risk and pollution, that is not the case. With electricity costs at $0.11 per kilowatt-hour, charging an all-electric vehicle with a 70-mile range (assuming the 24 kWh battery is fully depleted) will cost about $2.64 for a full charge; the same cost as operating an average central air conditioner for about 6 hours. On the surface that cost appears to be a savings. However, the added cost of the vehicle and trillions of dollars in tax incentives needed for incentives for purchasing EVs, new refueling infrastructure, and electric generation upgrades are not included. Could you imagine buying an EV and the sticker on the window read "batteries not included." That's not free fuel, which is also not free from greenhouse gases or risk. Consider the following risks: a climate driven natural disaster, a brown out from a tree limb falling on a powerline in the Northeast, another solar flare similar to 1859, or the outcome of the electric grid's vulnerability to natural disasters, cyber and physical terrorist attacks.

## 2. The Reality of Time vs. Change

- There are 270 million vehicles in the U.S., and less than 1.5% are EVs. Consumers buy 17-20 million new cars each year. It will possibly take more than a decade for EVs to reach 40% market penetration, therefore there will be 100 million relatively new, gasoline dependent cars with a 15+ year life span.
- The change is difficult: for example, there are 20 million flex-fuel vehicles (FFVs) on the road that can burn any combination of biofuels and gasoline. Many convenience store operators have been reluctant to invest just $1,500 to upgrade their gasoline dispensers in order to refuel 20 million FFVs or apply for a grant that would cover the upgrade expenses. Conversely, tests in several states confirmed that blends up to 30% ethanol can be used in all legacy vehicles through existing pumps and refueling infrastructure.

**Regardless of the time frame for EVs entering the fleet, for the same public health reasons the public demanded lead be phased out of gasoline, the United States must now phase down the amount of carbon-intensive and benzene-laced carcinogenic aromatic compounds in gasoline.**

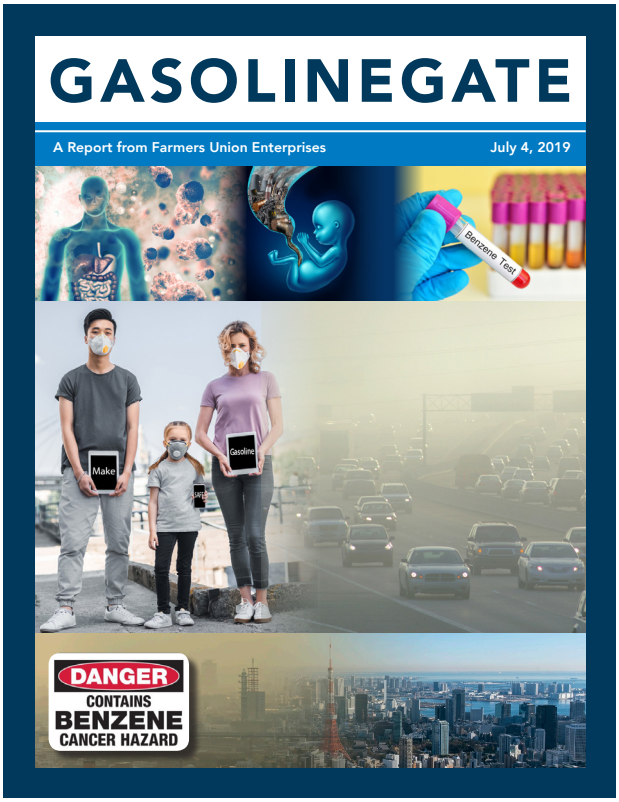
## 3. Financial and Political Realities

- EVs are highly dependent on tax breaks that are being killed in Congress. For example, the tax extenders bill Congress recently passed did not include federal EV tax incentives. Although it was a short-term spending bill, it is clear where the Senate stands and why the gasoline tax has not been raised after 25 years. There were immediate economic consequences, including suspension in the production of the Chevy Volt.
- At the state level, Georgia boasted that they had the highest EV market percentage in the nation after tax incentives were implemented by the state and utility companies, however when they were taken away EV sales fell to near zero. Utility rebates, state and local tax incentives, reduced registration fees, and other subsidies are not sustainable.
- The federal excise tax on gasoline is 18.4 cents on gasoline, 24.4 cents on diesel, and an average of 35 cents for states on 175 billion gallons which equals $95 billion per year. These taxes pay for the safe, efficient roads that are critical to the economy and our way of life. As the sales of EVs increase, federal and state gasoline taxes will be avoided. This will result in significant losses in

federal and state tax revenue due to what are hidden subsidies for EVs.

- Similarly, states across the country are seeking Public Utility Commission approval to increase the rate base for all electricity to cover costs of EV recharging stations. The entire community of electric customers would pay for the extreme minority who own EVs.
- Using the MIT study as the baseline, if EVs comprise 50% of the fleet by 2050 and receive the necessary $7,500 federal tax incentive to drive consumer demand, those 135 million EVs will cost taxpayers more than $1 trillion.
- Big Oil ballyhooed for decades in Congressional testimony that their consumers wouldn't pay a nickel more for cleaner fuels. Automakers saddled with cleaning up gasoline said consumers wouldn't pay $50 for floor mats, much less $50 more for the flexible fuel vehicle technology needed to pave the way for higher blends of biofuels. Now consider the likelihood increasing EV sales when consumers realize the additional cost of the EV plus the cost of home refueling are equivalent to paying about 80 cents per gallon more than they currently pay for gasoline.
- There are 750,000 individual gasoline pumps in the United States. Just one individual level 3 fast charge public EV refueling device costs $50,000.

**You are what you eat—you eat what you drive. Each day the average person consumes 1 kilogram of water, 2 kilograms of food and 20 kilograms of air. Consumers are eating the emissions from burning gasoline and electricity production—which includes coal and nuclear.**




The one EV refueling device per gasoline station in the United States would cost $37 billion. The number would increase to $150 billion if half of the gasoline pumps were converted to refuel EVs.

- On the other side of the balance sheet, a new higher-octane standard in the SAFE Rule would enable all automakers to produce lower cost cars, that could run on lower cost fuels, that will emit lower greenhouse gases and toxic carcinogenic pollution, all from existing refueling infrastructure.

## 4. Reality of Consumers

- Drivers still run out of gasoline—although there are 111,100 gasoline stations in the United States. In 2016 AAA helped 32 million stranded drivers—500,000 ran out of gas (800,000 in Europe). Therefore, miscalculations in range by new EV owner is a given and the resulting

congestion and safety issues from vehicles unable to move should be a significant concern.

- All drivers can't refuel their EV at home. There are 329 million people in the United States. About 30% do not live in a single-family house, and a townhouse is considered a single-family home. Then consider 8% don't have a vehicle, and those living at poverty levels are nine times more like to be a "zero-vehicle" household. How long will consumers/taxpayers without EVs continue to pay the taxes for EV purchases and refueling?
- Not everyone one believes EVs are the answer or can afford one. According to a recent Washington Post article 66% of the EVs registered are owned by people making more than $100K per year. Of the 163.5 million employed workers in the U.S. just 14.8 million individuals earn over $100,000, or 9%. Therefore, about 5.4 million people would be potential purchasers of an EV. Compare that number to the 267 million registered vehicles on the road.
- MIT estimates the extra $10K cost for an EV might come down to $5K in 30 years. Assuming that's true, for two decades drivers will need to decide if an EV is worth the investment vs lifestyle change. For example, total cost of ownership (i.e., five-year payment) based on cost per 100 miles (e.g., average U.S. @ $.13/kWh or California at $.23/KwH) consumers could lose between $1K to $15K compared to $3.00 gasoline (e.g., 15K miles per year at 40MPG).

## 5. Reality of a Readily Available Lower Cost Alternative

- About 80% of drivers travel less than 40 miles per day. Therefore, a 2019 GM Volt averaging 20K miles per year and 42 MPG running on 98-100 RON high octane gasoline (30% biofuels) 50% of the time would average 120 miles to the "gallon of gasoline" (MPGG). Congress first established Corporate Average Fuel Economy (CAFE) standards in 1975 in response to the 1973 oil embargo to save oil which 50% is used to produce gasoline. New efficiency standards are now not just about the gallons of gasoline but also the greenhouse gases per mile. Any new standards which should also come with carcinogenic toxic control. After a politically driven 20-year decline in CAFE, there is now an opportunity for it to evolve into a SAFE Vehicle Rule that achieves the goals of reduced petroleum, reduced greenhouse gases, and protection of public health by reducing toxic carcinogens. The lower cost car and fuel are the added bonuses to the consumer.
- If EPA and DOT would include a provision to increase the octane standard to 98-100 RON (Appendix H) in the SAFE Vehicle Rule—automakers could lower vehicle costs while reducing greenhouse gases by 7%—which just happens to be the international goal. Then consider MIT's comment in their recent study—*"In climate terms, improved efficiency of gasoline cars was as critical as electrification."*

## 6. Reality of Why There's No Real Progress After 250 Years

- What is in the way of saving consumer's lives and money? Why is it that Big Oil has waged an anti-ethanol campaign for 100-years yet they rarely even create negative stories about EVs? Because they are not worried. Oil/gasoline protection advocates tell Congress and EPA high octane is not important, knowing full well that 120-octane ethanol costs less than gasoline, yet they can't get the benzene out? #Gasolinegate.
- Does this health effects product liability problem sound familiar? Cleaning up gasoline first, to make it safer, is the sequel to what happened with cigarettes and big tobacco. Big oil and their public relations and political machines have duped America again with *"gasoline is OK today and EVs will save the day tomorrow"*—knowing they have the political power and money to put off tomorrow.

- CFDC believes that in the near-term and long-term best interest of public health, energy, environmental, and economic prosperity is to build a diverse coalition of advocates that will help make gasoline safer. For the same public health reasons the public demand lead be phased out of gasoline, the United States must now phase down the amount of carbon-intensive and benzene-laced carcinogenic aromatic compounds in gasoline. Congress provided EPA with the authority to reduce the amount of mobile source air toxics (i.e., aromatics) from gasoline emissions to the "greatest extent achievable" when they signed the Clean Air Act in 1990. The Safe Gasoline Campaign will work with all interested parties to define a pathway to safer gasoline using a new cleaner and higher-octane standard for gasoline.

These are just the facts—please check them. After reviewing the data most will believe gasoline is in our future for decades. This is not an anti EV effort but rather a pragmatic look at the real cost of gasoline and reality of EVs to single handedly solve the problem any time soon.

We believe the near term focus in the interest of public health and energy and economic prosperity is to build a diverse coalition of safe gasoline supporters.

**Burl Haigwood** is the principal author of this *Reality EV* Issue Brief. Mr. Haigwood is a member the CFDC advisor board and board member of the Clean Fuels Foundation. Working with CFDC and the Foundation he has created and executed several national education and outreach programs. These programs include the Ethanol Fact Book Series, Ethanol Across America Campaign, the FlexFuel Vehicle Awareness Campaign, Ethanol Minute Radio Program, and the new Safe Gasoline Campaign. The Safe Gasoline Campaign is the world's first consumer awareness campaign designed to educate people about the negative health effects from the benzene-laced aromatic octane enhancers in gasoline. Mr. Haigwood has authored multi-client studies, numerous trade press articles, Issue Briefs, White Papers, videos, and is co-author of *Homegrown Defense: Biofuels & National Security* (available on Amazon).

CFDC CLEAN FUELS DEVELOPMENT COALITION

**For Further Information, Contact:**
Douglas A. Durante, Executive Director
Clean Fuels Development Coalition
4641 Montgomery Avenue | Suite 350 | Bethesda, MD 20814
301 718 0077 | 301 718 0606 FAX
cfdcinc@aol.com | www.cleanfuelsdc.org