

The Florida Senate
BILL ANALYSIS AND FISCAL IMPACT STATEMENT

(This document is based on the provisions contained in the legislation as of the latest date listed below.)

Prepared By: The Professional Staff of the Committee on Appropriations

BILL: CS/CS/SB 1082

INTRODUCER: Appropriations Committee; Transportation Committee; and Senator Albritton

SUBJECT: Diesel Exhaust Fluid

DATE: April 22, 2021

REVISED: _____

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	Price	Vickers	TR	Fav/CS
2.	McAuliffe	Sadberry	AP	Fav/CS
3.			RC	

Please see Section IX. for Additional Information:

COMMITTEE SUBSTITUTE - Substantial Changes

I. Summary:

CS/CS/SB 1082 addresses safety issues associated with airport use of diesel exhaust fluid (DEF). Airports and airport tenants use DEF in diesel-powered vehicles used in an aircraft support role, including aircraft fire-fighting equipment, life-saving equipment, and emergency generators. DEF is also used to help meet the emission control standards mandated by the Environmental Protection Agency. In recent years, a number of aircraft have experienced engine shutdowns and other engine operability issues due to the contamination of jet fuel as a result of the inadvertent filling of anti-icing injection systems in aircraft fuel trucks with DEF, instead of a product used as a fuel additive to address potential freezing of water within jet fuel in an aircraft at altitude.

The bill requires each public airport with specified uses of DEF to require a safety mitigation and exclusion plan for each fixed-base operator that performs onsite treatment of aviation fuel with a fuel system icing inhibitor and provides minimum requirements for the plan. By January 1, 2022, each airport must make the plan available for review during inspections by the Florida Department of Transportation (FDOT).

The bill requires the FDOT, by September 1, 2021, to convene a workgroup of public airport representatives to develop uniform industry standards based on a National Air Transportation Association (NATA) best practice relating to the handling of DEF, and authorizes the FDOT to adopt rules to develop a uniform industry standards form for the required plans based on the workgroup recommendations.

The fiscal impact of the bill is indeterminate. See the “Fiscal Impact Statement” for additional information.

The bill takes effect October 1, 2021.

II. Present Situation:

Emission Control Standards

Under the federal Clean Air Act of 1990, the Environmental Protection Agency (EPA) has mandated strengthened emission control standards for vehicle engines to reduce health and environmental issues caused by air pollution. With respect to diesel engines, nitrogen oxides (NOx) are a major contributor to that pollution, and the EPA has identified NOx in diesel engine emissions for drastic reduction.¹

Vehicle and engine manufacturers have developed “aftertreatment” technologies to meet the strengthened EPA standards, such as Selective Catalytic Reduction (SCR). SCR reduces NOx emissions when DEF is injected directly into a catalytic converter² in the vehicle’s exhaust system. Heat from the exhaust helps to break DEF down into ammonia, which in the presence of the catalyst, reacts with the NOx in the exhaust to neutralize it, transforming it into harmless nitrogen gas and water.³

The EPA mandated emission standards for off-road diesel engines starting in 2014, which apply to airport support vehicles now equipped with SCR systems and therefore require DEF.⁴

According to the Federal Aviation Administration (FAA), DEF is not approved for use in jet fuel:

When mixed with jet fuel, DEF will react with certain jet fuel chemical components to form crystalline deposits in the fuel system. These deposits will flow through the aircraft fuel system and may accumulate on filters, fuel metering components, other fuel system components, or engine fuel nozzles. The deposits may also settle in the fuel tanks or other areas of the aircraft fuel system where they may potentially become dislodged over time and accumulate downstream in the fuel system as described above.⁵

¹ Aircraft Diesel Exhaust Fluid Contamination Working Group, *A Collaborative Industry Report on the Hazard of Diesel Exhaust Fluid Contamination of Aircraft Fuel*, June 11, 2019, at p. 3, available at https://download.aopa.org/advocacy/2019/2019_06_11_Aircraft_DEF_Contamination_Working_Group_Report_FINAL.pdf (last visited April 20, 2021).

² Merriam-Webster defines the term “catalytic converter” to mean “an automobile exhaust-system component containing a catalyst that causes conversion of harmful gases (such as carbon monoxide and uncombusted hydrocarbons) into mostly harmless products (such as water and carbon dioxide).” Merriam-Webster, *catalytic converter*, available at <https://www.merriam-webster.com/dictionary/catalytic%20converter> (last visited April 20, 2021).

³ *Supra* note 1.

⁴ *Supra* note 1 at p. 4.

⁵ U.S. Department of Transportation Federal Aviation Administration, *SAFO 1815, Jet Fuel Contaminated with Diesel Exhaust Fluid (DEF)*, November 13, 2018, available at https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos/media/2018/SAFO18015.pdf (last visited April 20, 2021).

Use of DEF at Airports

Airports and airport tenants use DEF in diesel-powered vehicles used in an aircraft support role, including aircraft fire-fighting equipment, life-saving equipment, and emergency generators, and other fixed base operators (FBO)⁶ that operate on airport grounds to provide services to the airport. DEF is also used to help meet the EPA-mandated emission control standards.⁷ DEF is stored in separate tanks on vehicles having an installed SCR system, which treats the exhaust of those vehicle engines.⁸

In recent years, a number of aircraft have experienced engine shutdowns and other engine operability issues due to the contamination of jet fuel as a result of the inadvertent filling of anti-icing injection systems in aircraft fuel trucks with DEF, instead of fuel system icing inhibitor (FSII).⁹ One use of FSII is to mitigate against possible freezing of any water within jet fuel contained in an aircraft when at altitude.¹⁰ FSII injection systems require an FSII fluid reservoir mounted on the truck to supply the injecting system during aircraft refueling.¹¹ However, since the 2014 application of the EPA mandated emissions standards to off-road diesel engines such as airport refuelers, refueling trucks at airports are often equipped with two reservoirs, one for DEF and one for FSII.¹² According to an industry report on DEF contamination of aircraft fuel, difficulty arises in the fact that both DEF and FSII are clear liquids, resulting in confusion and the accidental mixing with or replacement of FSII.¹³

Between November 2017 and May 2019, there were three instances, two in Florida, in which multiple aircraft had jet fuel contaminated with DEF or were refueled using equipment exposed to DEF. In all three cases, the FAA notes the occurrences resulted from the inadvertent adding of DEF to the fuel truck anti-icing injection system reservoirs, instead of FSII.¹⁴ Because of these instances, and others,¹⁵ numerous aircraft had to perform emergency landings. The FAA conducted a hazard analysis and issued preliminary recommendations to address the problem, including additional training for ground support crews, adoption of best management practices, and dyeing either DEF or FSII so they can be distinguished from each other.¹⁶

⁶ The term “fixed base operator” refers to commercial businesses allowed to operate on airport grounds to provide services to the airport, such as fueling services, aircraft maintenance services, and baggage handling. See Presidential, *What is a Fixed Base Operator or FBO*, available at <https://www.presidential-aviation.com/fbo/> (last visited April 20, 2021).

⁷ See email from Lisa Waters, President/CEO of the Florida Airports Council, to House staff, November 4, 2019 (on file in the Senate Transportation Committee).

⁸ *Supra* note 4.

⁹ *Id.*

¹⁰ *Id.*

¹¹ FAA, *Safety Assessment for Jet Fuel Contamination with Diesel Exhaust Fluid (DEF)*, August 30, 2019, p. 4, available at https://www.nata.aero/assets/Site_18/files/GIA/NATA_News/2019-08-30_Safety_Risk_Assessment_Report_DEF-Final.pdf (last visited April 20, 2021).

¹² *Id.*

¹³ *Supra* note 1 at p. 9.

¹⁴ *Supra* note 10 at p. 1.

¹⁵ See National Air Transportation Association, *DEF Contamination Awareness*, available at <https://www.nata.aero/advocacy/def-awareness> (last visited April 20, 2021). See also *supra* note 5.

¹⁶ *Supra* note 10 at pp. 10-13.

Airport Best Management Standards

In response to Florida incidents of fuel contamination from DEF, the Florida Airports Council (FAC) formed a working group to identify how best to educate airport managers and fuel service providers regarding DEF fuel contamination and promulgated a “Florida Statewide Diesel Exhaust Fluid Best Management Practices Plan and requested airport managers to implement the plan, working with fuel providers, to reduce the risk of fuel contamination.”¹⁷

Under the plan, if airport managers choose to implement it, each FBO that provides fueling services is responsible for implementing DEF handling and contamination prevention and is required to provide a copy of the FBO’s best management practices to the relevant airport manager for record keeping purposes. Airport managers are responsible for making the FBO practices available for review by the FDOT during routine airport inspection. The document provides other sources for FBOs and airport staff relative to DEF contamination, including information from the Federal Aviation Administration, the National Transportation Safety Board, the NATA, and a report from the FAC Aircraft Diesel Exhaust Fluid Contamination Working Group & Recommendations.¹⁸

NATA Operational Best Practice No. 36, DEF Handling and Contamination

According to its website, “NATA is the leading national trade association representing the business interests of general aviation service companies on legislative and regulatory matters at the federal level, while also providing education, services, and benefits to our members to help ensure their long-term economic success.”¹⁹ Its ground operational best practices were developed by its Safety Committee, made up of industry experts with years of aviation experience.²⁰

NATA offers a free operational best practice on DEF Handling and Contamination and contamination prevention training.²¹ Best practice No. 36, the purpose of which is “to reduce the risk of aircraft misfueling with Diesel Exhaust Fluid (DEF),” sets out recommended responsible airport personnel, aviation fuel additive storage and fluid handling policies, procedures for procurement and labeling of DEF and FSII, staff training, and auditing.²²

¹⁷ See Florida Airports Council, *FAC initiates statewide effort to address aviation fuel contamination*, available at [Florida Airports Council](#) (last visited April 20, 2021).

¹⁸ See Florida Airports Council, *Florida Statewide Diesel Exhaust Fluid Best Management Practices Plan (BMP) January 1, 2021 - Updated February 8, 2021*, available at [final-def-bmp-2_9_2021.pdf \(floridaairports.org\)](#) (last visited April 20, 2021).

¹⁹ NATA, About, available at <https://www.nata.aero/about-nata> (last visited April 20, 2021).

²⁰ NATA, *Operational Best Practices*, available at [NATA | National Air Transportation Association - Operational Best Practices](#) (last visited April 20, 2021).

²¹ NATA, *Diesel Exhaust Fluid (DEF) Contamination Risk Alert*, available at [National Air Transportation Association | DEF Contamination Awareness \(nata.aero\)](#) (last visited April 20, 2021).

²² NATA, *Diesel Exhaust Fluid (DEF) Handling and Contamination Prevention No OBP-36*, revised August 31, 2020, available at [OBP 36-DEF Handling and Contamination Prevention \(nata.aero\)](#) (last visited April 20, 2021).

FDOT Airport Inspections

The FDOT's rules, among other provisions, require a physical airport inspection as a condition of public airport licensing and an annual inspection for purposes of renewal of a public airport license.²³

III. Effect of Proposed Changes:

This bill creates s. 330.401, F.S., requiring each public airport (any publicly or privately owned airport open for public use²⁴) to require a DEF safety mitigation and exclusion plan for each fixed-base operator that performs onsite treatment of aviation fuel with a FSII. The requirement applies to each such airport at which:

- Aviation fuels receive onsite treatment with FSII;
- Aviation fuel is delivered by a publicly or privately owned FBO; and
- Any aircraft fuel delivery vehicle or ground service equipment that uses DEF is operated within 150 feet of any aircraft.

This provision effectively allows each public airport to assume responsibility for developing the DEF plan or to delegate the responsibility to an FBO operating at the airport.

At a minimum, the plan must include:

- A full inventory of all the FBO's DEF on the airport premises.
- Designation of specific areas of the airport premises where the FBO's DEF may be stored. To the extent practicable, such areas may not be located within or on a vehicle operated for the fueling or servicing of aircraft or at any aviation fuel transfer facility or bulk aviation fuel storage facility.
- Designation of specific areas where DEF may be added to vehicles. These areas may not be located in aircraft operating areas.
- Incorporation of best practices for ensuring the proper labeling and storage of DEF.
- Incorporation of training in the proper use and storage of DEF and FSII for all employees of the FBO who may come into contact with DEF or FSII in the ordinary course of their duties.
- Designation of specific areas where the FBO's FSII may be stored on the airport premises.
- Incorporation of best practices for ensuring the proper labeling and storage of the FBO's fuel system icing inhibitor.
- Physical measures to secure FSII fill points on the FBO's aircraft fuel delivery vehicles, which measures must prevent the addition of any fluid to the FSII fill point by unauthorized personnel.

Each public airport²⁵ must, by January 1, 2022, make the plan for each FBO available for review during FDOT inspections. By September 1, 2021, the bill requires the FDOT to convene a

²³ Rule 14-60.006, F.A.C.

²⁴ Section 330.27, F.S.

²⁵ Publicly owned airports in Florida operate under either a government department model (where the airport operates as a department of the local government) or an airport authority model (where the airport authority is created as either an independent or a dependent special district). Airport operation and administration is generally governed as part of the local government or special district that owns the airport. Privately owned airports open to public use may employ a variety of models for oversight of operations and maintenance, including, but not limited to, sole proprietorships, corporations, and

workgroup of public airport representatives to develop uniform industry standards based upon the minimal provisions required to be in a plan under the bill and on the NATA Operational Best Practice No. 36 relating to DEF Handling and Contamination, to ensure consistency of industry standards.

Lastly, the bill authorizes the FDOT to adopt rules to develop a uniform industry standards form for the DEF plan based on the workgroup's recommendations.

The bill fulfills an important state interest.

The bill takes effect October 1, 2021.

IV. Constitutional Issues:

A. Municipality/County Mandates Restrictions:

Article VII, s. 18(a) of the Florida Constitution provides that “no county or municipality shall be bound by any general law requiring such county or municipality to spend funds or to take an action requiring the expenditure of funds, unless certain conditions are met. Section 18(d) exempts from this provision laws having insignificant fiscal impact. The bill requires each public airport to require a DEF plan for each specified FBO. If such airports develop their own DEF plans, expenses may be incurred. However, the bill may have an insignificant fiscal impact and may, therefore, be exempt from the cited provision of the Florida Constitution.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

D. State Tax or Fee Increases:

None.

E. Other Constitutional Issues:

None identified.

V. Fiscal Impact Statement:

A. Tax/Fee Issues:

None.

B. Private Sector Impact:

According to the FDOT, 129 public-use commercial service and general aviation airports currently operate in Florida. Owners of private airports open to public use at which aviation fuels receive onsite treatment with FSII, at which aviation fuel is delivered by a publicly or privately owned FBO, and at which any aircraft fuel delivery vehicle or ground service equipment that uses DEF is operated within 150 feet of any aircraft must require a DEF plan for each FBO and must make the plans available during FDOT inspections. If such an airport delegates responsibility for the DEF plan to an FBO, the FBO may incur expenses in unknown amounts. To the extent that such owners participate in the required workgroup of airport representatives, expenses may be incurred in unknown amounts. The fiscal impact to such owners is indeterminate but likely insignificant.

C. Government Sector Impact:

Publicly owned airports must require a DEF plan for each FBO and must make the plans available during FDOT inspections. If such an airport does not delegate responsibility for the DEF plan to an FBO, the airport may incur expenses in unknown amounts. To the extent that such airports participate in the required workgroup of airport representatives, expenses may be incurred in unknown amounts. The fiscal impact to such owners is indeterminate but likely insignificant.

The bill does not otherwise appear to present a fiscal impact to local government revenues or expenditures.

The FDOT will likely incur indeterminate expenses associated with convening the required workgroup and, if the FDOT adopts the authorized rules, will incur indeterminate expenses associated with rulemaking. These expenses are expected to be absorbed within existing resources. The bill does not otherwise appear to present a fiscal impact to state revenues or expenditures.

VI. Technical Deficiencies:

The bill is effective October 1, 2021. However, the bill requires the FDOT to convene a workgroup by September 1, 2021.

VII. Related Issues:

None.

VIII. Statutes Affected:

This bill creates section 330.401 of the Florida Statutes.

IX. Additional Information:

- A. **Committee Substitute – Statement of Substantial Changes:**
(Summarizing differences between the Committee Substitute and the prior version of the bill.)

CS/CS by Appropriations on April 21, 2021:

The committee substitute adds a section to declare that the bill fulfills an important state interest. The committee substitute changes the effective date of the bill from July 1 to October 1, 2021.

CS by Transportation on March 24, 2021:

The committee substitute:

- Requires each public airport with the specified uses of DEF to require a DEF safety and mitigation plan for each FBO, rather than to create a plan, effectively authorizing such airports to delegate plan responsibility to an FBO.
- Requires each public airport to make the plans available for review during inspections by the FDOT.
- Requires the FDOT to convene a workgroup of public airport representatives, by September 1, 2021, to develop uniform industry standards.
- Authorizes the FDOT to adopt rules.

- B. **Amendments:**

None.