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 Transportation

BILL:	SB 1082
INTRODUCER:	Senator Albritton
SUBJECT:	Diesel Exhaust Fluid
DATE:	March 23, 2021
REVISED:	

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	Price	Vickers	TR	**Pre-meeting**
2.			ATD	
3.			AP	

I. Summary:

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 the governing body of each public airport with specified uses of DEF to create a safety mitigation and exclusion plan and provides minimum requirements for the plan. The governing body must approve the plan by September 1, 2021. By October 1, 2021, the governing body must submit the plan to the Department of Transportation (FDOT) and certify that all DEF has been secured within the airport premises. The plan must be fully implemented by January 1, 2022. Beginning January 1, 2023, each airport must annually certify to the FDOT the airport's compliance with its plan.

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

The bill takes effect July 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 converter[2] 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]

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.

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[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 February 25, 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 February 25, 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 February 12, 2021).

DEF is also used to help meet the EPA-mandated emission control standards.[6] DEF is stored in separate tanks on vehicles having an installed SCR system, which treats the exhaust of those vehicle engines.[7]

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).[8] One use of FSII is to mitigate against possible freezing of any water within jet fuel contained in an aircraft when at altitude.[9] FSII injection systems require an FSII fluid reservoir mounted on the truck to supply the injecting system during aircraft refueling.[10] 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.[11] 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.[12]

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.[13] Because of these instances, and others,[14] 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 dying either DEF or FSII so they can be distinguished from each other.[15]

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.[16]

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[6] *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).
[7] *Supra* note 4.
[8] *Id.*
[9] *Id.*
[10] 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 February 25, 2021).
[11] *Id.*
[12] *Supra* note 1 at p. 9.
[13] *Supra* note 10 at p. 1.
[14] *See* National Air Transportation Association, *DEF Contamination Awareness*, available at https://www.nata.aero/advocacy/def-awareness (last visited February 25, 2021). *See also supra* note 5.
[15] *Supra* note 10 at pp. 10-13.
[16] *See* Florida Airports Council, *FAC initiates statewide effort to address aviation fuel contamination*, available at Florida Airports Council (last visited March 1, 2021).

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 FBO's and airport staff relative to DEF contamination, including information from the Federal Aviation Administration, the National Transportation Safety Board, the National Air Transportation Association, and a report from the FAC Aircraft Diesel Exhaust Fluid Contamination Working Group & Recommendations.[17]

III. Effect of Proposed Changes:

SB 1082 creates s. 330.401, F.S., requiring the governing body of each public airport (any publicly or privately owned airport open for public use[18]) to create a DEF safety mitigation and exclusion plan for each fixed base operator (FBO)[19] 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.

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.

[17] *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 March 1, 2021).
[18] Section 330.27, F.S.
[19] 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 February 25, 2021).

The governing body of the airport[20] must approve the DEF safety mitigation and exclusion plan by September 1, 2021. By October 1, 2021, the governing body must submit the plan to the FDOT and certify that all DEF has been secured within the airport premises. The plan must be fully implemented on each of the airport premises by January 1, 2022. Beginning January 1, 2023, each airport must annually certify to the FDOT the airport's compliance with its plan.

The bill takes effect July 1, 2021.

IV. Constitutional Issues:

A. Municipality/County Mandates Restrictions:

Article VII, Section 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 … unless the legislature has determined that such law fulfills an important state interest and unless: … the expenditure is required to comply with a law that applies to all persons similarly situated …." The bill applies to all persons similarly situated (publicly or privately owned airports open for use by the public), but it does not include a legislative determination that it fulfills an important state interest.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

D. State Tax or Fee Increases:

None.

E. Other Constitutional Issues:

None.

V. Fiscal Impact Statement:

A. Tax/Fee Issues:

None.

[20] 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 homeowner's associations. *See* GlobalAir.com, "Airports" tab, "Florida," available at https://www.globalair.com/airport/state.aspx (last visited February 25, 2020).

B. Private Sector Impact:

According to the FDOT, 129 public-use commercial service and general aviation airports currently operate in Florida.[21] 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 will be required to develop and implement the plans specified in the bill. The fiscal impact to these airports is indeterminate, however, as the cost to develop and implement the required plans is unknown. These airports will also incur indeterminate expenses associated with the initial submission of the plan and certification that all DEF is secured within the airport premises, as well as indeterminate expenses associated with the annual submission of certification of plan compliance, to the FDOT.

Tenants of public and private airports open to public use, including fuel providers, will likely incur expenditures associated with complying with airport safety mitigation and exclusion plans; however, the amount of such expenditures is indeterminate.

C. Government Sector Impact:

To the extent that publicly-owned airports are subject to the bill's requirements due to the use of DEF, these airports will incur the same indeterminate expenses as owners of private airports open to public use as described in "Private Sector Impact" above.

VI. Technical Deficiencies:

None.

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 Changes:
(Summarizing differences between the Committee Substitute and the prior version of the bill.)

None.

B. Amendments:

None.

[21] FDOT, *Florida Aviation System Plan*, available at https://www.fdot.gov/aviation/FASP2035 (last visited February 25, 2020).