

C8. CHAPTER 8

DEPARTMENT OF DEFENSE (DOD) BIO-FUELS PROGRAM  
BIODIESEL BLEND (B20) AND FUEL ETHANOL BLEND (ED75-ED 85)

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## C8.1. GENERAL

This chapter describes Department of Defense (DOD) and Federal Agency policy and management responsibility to procure, manage, and use biodiesel blend (B20) and fuel ethanol blend (E85) fuels in compliance with governing Energy Policy Acts and Executive Orders. Objective of policy is to demonstrate leadership in acquisition and use of alternative fuels to lower national dependence on foreign petroleum products. Accordingly, DESC contracts for Federal agency bulk petroleum requirements, including bio-fuels, pursuant to the General Services Administration delegation of authority established by [41 CFR §101-26.602-3, Procurement of Gasoline, Fuel Oil \(Diesel and Burner\)](#).

C8.2. AUTHORITY. The following authorize the policy and guidance provided herein:

C8.2.1. [Energy Policy Act of 1992](#) at <http://www1.eere.energy.gov/vehiclesandfuels/epact/pdfs/eo13149.pdf>

C8.2.2. [Energy Policy Act of 2005](#) at <http://www1.eere.energy.gov/vehiclesandfuels/epact/pdfs/eo13149.pdf>

C8.2.3. [Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, January 2007](#) at <http://www1.eere.energy.gov/vehiclesandfuels/epact/pdfs/eo13149.pdf>

## C8.3. APPLICABILITY AND SCOPE

C8.3.1. Chapter provisions apply to the Office of the Secretary of Defense (OSD), Chairman of the Joint Chiefs of Staff (CJCS), Military Services including the National Guard and Reserve Components, Combatant Commands (COCOM), Defense Agencies, and Field Activities hereafter referred to as “DOD Components.” This chapter further applies to other Federal Government Agencies referred to as “Federal Agencies” to the extent of agency program participation.

C8.3.2. This guidance applies to DOD and Federal locations in the continental United States, including Hawaii and Alaska.

C8.4. EXEMPTIONS. [Executive Order 13423, Strengthening Federal Environmental Energy, and Transportation Management, Section 8b, Exemption Authority](#) at <http://a257.g.akamaitech.net/7/257/2422/01jan20071800/edocket.access.gpo.gov/2007/pdf/07-374.pdf> permits heads of agencies to exempt certain military tactical, law enforcement, emergency vehicles, and other vehicle classes or types from requirement to use bio-fuels.

## C8.5. DEFINITIONS

C8.5.1. Alternative Fuels. Qualified fuels include methanol, denatured alcohol, other alcohols, mixtures containing 85 percent or greater by volume of methanol, denatured alcohol,

alcohols blended with gasoline and other fuels, compressed/liquefied natural gas, liquefied petroleum gas, hydrogen, coal-derived liquid fuels, fuels other than alcohol derived from biological materials including blends containing 20% or greater by volume of biodiesel with diesel fuel, and electricity including solar generated electricity.

C8.5.2. Biodiesel. Mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats.

C8.5.2.1. Biodiesel (B100) - 100% biodiesel conforming to specification [\*ASTM D 6751, Standard Specification for Biodiesel Fuel Blend Stock \(B100\) for Middle Distillate Fuels\*](#) at [http://www.astm.org/cgi-bin/SoftCart.exe/DATABASE.CART/REDLINE\\_PAGES/D6751.htm?L+mystore+ulyx5980](http://www.astm.org/cgi-bin/SoftCart.exe/DATABASE.CART/REDLINE_PAGES/D6751.htm?L+mystore+ulyx5980). B100 is commonly blended with petroleum-based diesel fuel and is registered with the Environmental Protection Agency (EPA) under [\*40 CFR §79, Registration of Fuels and Fuel Additives\*](#) at [http://www.access.gpo.gov/nara/cfr/waisidx\\_01/40cfr79\\_01.html](http://www.access.gpo.gov/nara/cfr/waisidx_01/40cfr79_01.html).

C8.5.2.2. Biodiesel Blend (Bxx) - Biodiesel (B100) blended with petroleum-based diesel fuel. The xx represents the percentage of B100 in the total blend.

C8.5.2.3. Biodiesel Blend (B20) - 20% B100 volume blended with 80% petroleum diesel volume conforming to [\*ASTM D 975, Standard Specification for Diesel Fuel Oils. Commercial Item Description \(CID\) A-A-59693A, Diesel Fuel, Biodiesel Blend \(B20\)\*](#), governs B20 procurement for use in non-tactical vehicles and equipment. See DOE publication [\*Biodiesel Handling and Use Guidelines\*](#) for detailed discussion of biodiesel characteristics.

C8.5.3. Fuel Ethanol - Ethanol (ethyl alcohol) with common production impurities, including water, but excluding denaturants.

C8.5.3.1. Denatured Fuel Ethanol - Fuel ethanol made unfit for beverage use by addition of denaturants such as hydrocarbon fuel.

C8.5.3.2. Fuel Ethanol Blends – Blends of fuel ethanol and hydrocarbon fuels, usually unleaded gasoline. All such blends are by definition denatured fuel ethanol.

C8.5.3.3. Fuel Ethanol Blend (E85) - 75-85 volume percent fuel ethanol blended with 25-15 volume percent hydrocarbon fuel, usually unleaded gasoline. [\*ASTM D 5798, Standard Specification for Fuel Ethanol \(Ed75-Ed85\) for Automotive Spark-Ignition Engines\*](#) governs E85 procurement as Fuel Ethanol intended for use in ground vehicles with spark-ignition engines. E85 is the commonly accepted designation for Ed75-Ed85.

## C8.6. RESPONSIBILITIES

### C8.6.1. Defense Energy Support Center (DESC)

C8.6.1.1. The DESC Facilities and Distribution Management Business Unit (DESC-F) shall provide infrastructure development guidance to support and expand alternate fuel use by Components and DESC Energy (DESC-W) shall provide engineering support as appropriate in support of DESC-F.

C8.6.1.2. The DESC Product and Standardization Division (DESC-BP) shall provide technical guidance, educational training and material, and liaison with commercial petroleum and automobile/engine manufacturing industries regarding production and use of bio-based products and alternative fuels.

#### C8.6.2. DOD Components and Federal Agencies

C8.6.2.1. Requirements. DOD Components and Federal Agencies shall submit B20 and E85 requirements to DESC-P as prescribed by [DoD 4140.25M, Volume II, Chapter 1](http://www.desc.dla.mil/DCM/Files/Chapter%20I%20V2.pdf) at <http://www.desc.dla.mil/DCM/Files/Chapter%20I%20V2.pdf> and shall provide as much advance notice to DESC-P when changing from conventional fuel requirements to alternative fuels to thereby enable DESC to maximize competition and minimize costs.

C8.6.2.2. Local Purchase. DOD Components and Federal Agencies shall comply with local purchase procedures provided at [DOD 4140.25M, Volume II, Chapter 2](http://www.desc.dla.mil/DCM/Files/Chapter%20I%20V2.pdf) at <http://www.desc.dla.mil/DCM/Files/Chapter%20I%20V2.pdf>.

C8.6.2.3. DOD Components and Federal Agencies shall consult with the U.S. Army Petroleum Center on all technical matters related to handling, use, and ground fuel standardization including B20 and E85 at U.S. Army Petroleum Center, 8725 John J. Kingman Road, Stop 6241, Fort Belvoir VA, 22060-6241, and (703) 767-0645.

#### C8.7. INFRASTRUCTURE

C8.7.1. DOD Components shall optimize alternate fuel vehicle fleets and dispensing facilities through consolidation whenever economically possible and prior to requesting DESC-F infrastructure assistance.

C8.7.2. DOD Components shall convert existing infrastructure to the greatest economic extent possible and shall propose new tank construction only as a last resort. When additional tanks are required, component installations shall submit construction project requests in accordance with the DESC Facilities Sustainment/Restoration, and Modernization Office (DESC-FS) guidance to include the Capitalized Alternative Fuels Infrastructure Decision Support Checklist at Appendix C8.A1. Project proposals shall provide detailed justification and demonstrate that all existing tanks are fully used, are unavailable to convert, and/or that it is cost prohibitive to bring the system into compliance with regulatory requirements such as fire codes and so forth. Project request justification and supporting documents shall address availability of public and nonpublic alternative fuels, existing storage tank(s) capacity in relation to the economic resupply quantity/minimum delivery quantity, and anticipated seasonal change requirements.

## C8.8. SPECIAL CONSIDERATIONS

### C8.8.1. B20

C8.8.1.1. DOD Components and Federal Agencies shall not order B20 where projected consumption and product storage duration exceeds three months due to extended and unresolved product stability concerns.

C8.8.1.2. B20 may be stored in tanks and handled with equipment used for petroleum diesel service. Nevertheless, Defense Energy Support Points (DFSPs) shall comply with standard military service procedures and directives regarding tank cleaning prior to converting existing storage tanks from diesel to B20 service.

C8.8.1.3. A generally higher cloud point than pure petroleum diesel may occasionally affect the B20 cold flow properties. DOD Components and Federal Agency customers should order more frequent, smaller B20 quantities to achieve advantage of seasonal diesel cloud point adjustments that minimizes potential vehicle/equipment cold weather operation problems.

C8.8.1.4. B100 has good solvent characteristics and thereby may necessitate increased filter changes due to fuel system cleansing of deposits upon initial B20 use.

C8.8.1.5. Major engine manufacturers issue public statements regarding biodiesel use as it pertains to warranty coverage. Copies of these statements are available from the [National Biodiesel Board \(NBB\)](http://www.biodiesel.org/) at <http://www.biodiesel.org/> or by calling (800)841-5849.

### C8.8.2. E85

C8.8.2.1. DOD Components and Federal Agencies shall ensure material compatibility with storage tanks and dispensing equipment prior to converting facilities to E85 service.

C8.8.2.2. Reference [DOE Handbook for Handling, Storing, and Dispensing E85](http://www.e85fuel.com/pdf/ethanol_guidebook.pdf) at [http://www.e85fuel.com/pdf/ethanol\\_guidebook.pdf](http://www.e85fuel.com/pdf/ethanol_guidebook.pdf) for special materials requirements. Pre-1992 fiberglass tanks may not be suitable to convert to E85 service.

C8.8.2.2.1. Three vapor pressure classes of fuel ethanol (Ed75 – Ed85) with ethanol content varying between 70% and 85% for different seasonal conditions ([ASTM D 5798, Table 1](http://www.astm.org) at [www.astm.org](http://www.astm.org)) and geographic regions ([ASTM D 5798, Table 2](http://www.astm.org) at [www.astm.org](http://www.astm.org)) serve to ensure proper vehicle operation throughout the year in all locations.

C8.8.2.2.2. High E85 ethanol content may reduce lubricating properties as well as increase water tolerance. Decreased temperature and increased water content may reduce hydrocarbon fuel solubility in fuel ethanol.

C8.8.2.2.3. Monitor water content closely to minimize performance degradation and keep to a minimum due to water miscibility in fuel alcohol.

### C8.8.3. Quality Assurance/Surveillance

C8.8.3.1. Contract Quality Assurance assures U.S. Government biodiesel (B20) and fuel ethanol (E85) procurement satisfies Posts, Camps, and Stations (PC&S) quality and quantity contract requirements.

C8.8.3.2. Quality Surveillance to maintain B20 and E85 product specification shall be in compliance to the PC&S Program.

C8.8.3.3. Suppliers/vendors shall blend B20 and E85 prior to delivery due to product quality considerations. Loading B20 and E85 blend components in separate delivery truck compartments for blending at time of delivery, either through the truck manifold or in the receiving system, is a prohibited practice.

C8.8.4. Quantity Measurement. Although B20 and E85 are handled similarly as traditional petroleum products, approved/appropriate B20 volume correction factors remain yet undeveloped. Accordingly, supplier/vendor volume correction methods may vary as follows:

C8.8.4.1 Some suppliers/vendors separately load the B100 biodiesel component and the petroleum diesel component to create the B20 blend and provide the DFSP two separate delivery tickets as receipt documents. The supplier/vendor shall volume correct the petroleum diesel ticket to 60°F (net volume) while the B100 ticket may not be volume corrected (gross volume). When the supplier/vendor volume does correct the B100 component to standard temperature, the two delivery ticket volumes (B100 and Diesel) are added together to reflect the total receipt quantity.

C8.8.4.2. Other suppliers/vendors may load a premixed B20 blend and provide a single meter ticket to the DFSP. The B20 delivery quantity is volume corrected using the appropriate petroleum diesel conversion table. DOD Components and Federal Agencies shall contact the DESC Product Technology and Standard Division (DESC-BP) with any questions related to biodiesel blend quantity measurement.

C8.8.5. Additional Information and Considerations. Additional guidance, requirements, and other useful information to handle, store and use B20 and E85 is available on the [DESC Alternate Fuels Information Station \(AFIS\)](http://www.desc.dla.mil/DCM/DCMPage.asp?PageID=591) website at <http://www.desc.dla.mil/DCM/DCMPage.asp?PageID=591>.

APPENDIX C8.A1.

CAPITALIZED ALTERNATIVE FUELS INFRASTRUCTURE DECISION SUPPORT CHECKLIST  
(NEW CONSTRUCTION ONLY)

Installations and designated fuel Military Service Control Points (SCPs) shall use this checklist as a decision support tool to determine the need for alternative fuels infrastructure. Complete the checklist and attach it to the project request for submission to DESC Engineering Plans and Services Division (DESC-WI). The checklist will help the user consider alternative fuels requirements, cost, and availability of the alternative fuel, alternative fuel vehicle fleet size and use, supply from off base commercial stations, other sources, tank conversions vs. new tanks, etc. This checklist is not required for biodiesel or E85 tank conversions.

PROJECT: Installation \_\_\_\_\_ Fuel Point Location \_\_\_\_\_

Real Property Number or Station Number \_\_\_\_\_

POC Name \_\_\_\_\_ Phone \_\_\_\_\_ Email \_\_\_\_\_

1. Is a private/commercial or government alternative fuels station accessible to the military facility? Provide rationale, such as distance to station, congestion, cost, risk, liability, THREATCON, other. (THIS IS A GO/NO GO ITEM) (Yes/No)
2. Does the State or Local government have jurisdictional limits on the use of alternative fuel(s) in the area? (THIS IS A GO/NO GO ITEM) (Yes/No) (Note: Provide restriction(s))
3. How many alternative fuels vehicles are projected to use the infrastructure/service being requested? (>100, 25 points; >80/<100, 20 pts; >60/<80, 15 pts; >40/<60, 10 pts; >20/<40, 5 pts)  
points \_\_\_\_\_
4. New fuel storage projects – Does justification provided verify/confirm that existing tanks are not available for conversion? Yes/No (Yes – 25 points; No – 0 points)  
points \_\_\_\_\_
5. Is the alternative fuels area:
  - a. Located in a Metropolitan Statistical Area (MSA) 1990 list? Yes/No (Yes – 5 points, No – 0 points)  
points \_\_\_\_\_
  - b. If in an MSA, is it also in a designated Non-Attainment Area? Yes/No (Yes – 10 points; No - 0 points)  
points \_\_\_\_\_
6. Have measures been studied or taken to consolidate the government/military administrative alternative fuels vehicles to ensure maximum use of the alternative fuels facility? Yes/No (Yes – 10 points; No – 0 points)



- b. If no pricing history is available, DESC-P will execute a Request for Information (RFI) to obtain potential offered price for requested alternative fuel location. Was there a reasonable RFI price offered? Yes/No (Yes - 20 points; No – 0 points) points\_\_\_\_\_

**GRAND TOTAL POINTS**\_\_\_\_\_

\*Note 1: A “No” to “1a” above will affect potential coverage and cost to DESC.

\*\*Note 2: Add points to priorities for the Military Service/Command mission and operations considerations. Suggest not more than 10 points used per item.

\*\*\*Note 3: Total point score allows the Military Services and DESC to qualify a project(s) based on the specified conditions, and to prioritize funding of competing projects based on those qualifications.

Service Control Point Name\_\_\_\_\_ Date\_\_\_\_\_

Concur/Comments\_\_\_\_\_