fully satisfy the requirements of this section.

(b) Use a malfunction indicator. The malfunction indicator must be designed such that the operator can readily see or hear it; visible signals may be any color except red. Visible malfunction indicators must display “Check Engine,” “Service Engine Soon,” or a similar message that we approve. The malfunction indicator must go on under each of the following circumstances:

1. When a malfunction occurs, as described in paragraph (a) of this section.
2. When the diagnostic system cannot send signals to meet the requirement of paragraph (b)(1) of this section.
3. When the engine’s ignition is in the “key-on” position before starting or cranking. The malfunction indicator should turn off after engine starting if the system detects no malfunction.

(c) Control when the malfunction can turn off. If the malfunction indicator goes on to show a malfunction, it must remain on during all later engine operation until servicing corrects the malfunction. If the engine is not serviced, but the malfunction does not recur for three consecutive engine starts during which the malfunctioning system is evaluated and found to be working properly, the malfunction indicator may stay off during later engine operation.

(d) Store trouble codes in computer memory. Record and store in computer memory any diagnostic trouble codes showing a malfunction that should activate the malfunction indicator. The stored codes must identify the malfunctioning system or component as uniquely as possible. Make these codes available through the data link connector as described in paragraph (g) of this section. You may store codes for conditions that do not activate the malfunction indicator. The system must store a separate code to show when the diagnostic system is disabled (from malfunction or tampering).

(e) Make data, access codes, and devices accessible. Make all required data accessible to us without any access codes or devices that only you can supply. Ensure that anyone servicing your engine can read and understand the diagnostic trouble codes stored in the on-board computer with generic tools and information.

(f) Consider exceptions for certain conditions. Your diagnostic systems may disregard trouble codes for the first three minutes after engine starting. You may ask us to approve diagnostic-system designs that disregard trouble codes under other conditions that would produce an unreliable reading, damage systems or components, or cause other safety risks.

(g) Follow standard references for formats, codes, and connections. Follow conventions defined in SAE J1939–05 (incorporated by reference in §1045.810) or ask us to approve using updated versions of (or variations from) this standard.

§1045.112 What are the standards for evaporative emissions?

Fuel systems must meet the evaporative emission requirements of 40 CFR part 1060 as specified in this section. These standards apply over a useful life period of five years for personal watercraft and ten years for all other vessels and for portable marine fuel tanks.

(a) Fuel line permeation. Nonmetal fuel lines must meet the permeation requirements specified in 40 CFR 1060.102 for EPA NRFL fuel lines as described in this paragraph (a).

1. Except as specified in paragraphs (a)(2) and (3) of this section, the emission standard for fuel lines starts for vessels or portable marine fuel tanks with a date of manufacture on or after January 1, 2009.
2. The emission standard for primer bulbs applies starting January 1, 2011.
3. The emission standard for under-cowl fuel lines used with outboard engines apply over a phase-in period as specified in this paragraph (a)(3).

1. Except as specified in paragraph (a)(3)(ii) of this section, the phase-in period is based on total length of fuel lines as specified in Table 1 to this section. For example, at least 30 percent of the length of under-cowl fuel lines used on your full lineup of 2010 model year outboard engines must meet the specified permeation standards. See §1045.145(k) for administrative requirements related to this phase-in.
§ 1045.115 What other requirements apply?

The following requirements apply with respect to engines that are required to meet the emission standards of this part:

(a) Crankcase emissions. Crankcase emissions may not be discharged directly into the ambient atmosphere from any engine throughout its useful life.

(b) Torque broadcasting. Starting in the 2013 model year, electronically controlled engines must broadcast their speed and output shaft torque (in newton-meters). Engines may alternatively broadcast a surrogate value for determining torque. Engines must broadcast engine parameters such that they are read with a remote device, or broadcast them directly to their controller area networks. Your broadcasting protocol must allow for valid measurements using the field-testing procedures in 40 CFR part 1065, subpart J.

(c) EPA access to broadcast information. If we request it, you must provide us any hardware or tools we would need to readily read, interpret, and record

(d) Diurnal emissions. Installed fuel tanks must meet the diurnal emission requirements specified in 40 CFR part 1060.105. Fuel tanks for personal watercraft must meet diurnal emission standards starting in the 2010 model year. Other installed fuel tanks must meet diurnal emission standards for vessels produced on or after July 31, 2011, except as allowed by §1045.625. Fuel tanks meeting the definition of portable marine fuel tank in §1045.801 must comply with the diurnal requirements specified in 40 CFR part 1060 starting January 1, 2010.

(e) Other requirements. The requirements of 40 CFR part 1060.101(e) and (f) apply to vessel manufacturers even if they do not obtain a certificate.

(f) Engine manufacturers. To the extent that engine manufacturers produce engines with fuel lines or fuel tanks, those fuel-system components must meet the requirements specified in 40 CFR part 1060.105. Engine manufacturers must meet the diurnal emission requirements.

(g) Other fuel-line requirements. This section contains all applicable fuel-line requirements.

(h) Other fuel-tanks requirements. This section contains all applicable fuel-tank requirements.

Table 1 to §1045.112—Phase-in schedule for under-cowl fuel lines on outboard engines

<table>
<thead>
<tr>
<th>Model year</th>
<th>Percentage phase-in</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>30</td>
</tr>
<tr>
<td>2011</td>
<td>60</td>
</tr>
<tr>
<td>2012–2014</td>
<td>90</td>
</tr>
<tr>
<td>2015+</td>
<td>100</td>
</tr>
</tbody>
</table>

(ii) You may instead meet the permeation standards of this paragraph (a) by complying with the specified standards with 100 percent of your under-cowl fuel lines across your full lineup of 2011 model year outboard engines. In this case, the requirements of this part would not apply to under-cowl fuel lines before the 2011 model year. To use this option, you must notify the Designated Compliance Officer before December 31, 2009 of your intent to meet permeation standards on all your under-cowl fuel lines in the 2011 model year.

(b) Tank permeation. Fuel tanks must meet the permeation requirements specified in 40 CFR part 1060.103. Portable marine fuel tanks must meet permeation standards starting January 1, 2011. Fuel tanks for personal watercraft must meet permeation standards starting in the 2011 model year. Other installed fuel tanks must meet permeation standards starting in the 2012 model year. Vessel manufacturers may generate or use emission credits to show compliance with the requirements of this paragraph under the averaging, banking, and trading (ABT) program, as described in subpart H of this part. Starting in the 2014 model year for personal watercraft and in the 2015 model year for other installed fuel tanks, family emission limits may not exceed 5.0 g/m²/day if testing occurs at a nominal temperature of 28 °C, or 8.3 g/m²/day if testing occurs at a nominal temperature of 40 °C. These FEL caps do not apply to fuel caps that are certified separately to meet permeation standards. Portable marine fuel tank manufacturers may not generate or use emission credits under subpart H of this part.

(c) Running loss. The running loss requirements specified in 40 CFR part 1060 do not apply.

(d) Diurnal emissions. Installed fuel tanks must meet the diurnal emission requirements specified in 40 CFR part 1060.105. Fuel tanks for personal watercraft must meet diurnal emission standards starting in the 2010 model year. Other installed fuel tanks must meet diurnal emission standards for vessels produced on or after July 31, 2011, except as allowed by §1045.625. Fuel tanks meeting the definition of portable marine fuel tank in §1045.801 must comply with the diurnal requirements specified in 40 CFR part 1060 starting January 1, 2010.

(e) Other requirements. The requirements of 40 CFR part 1060.101(e) and (f) apply to vessel manufacturers even if they do not obtain a certificate.

(f) Engine manufacturers. To the extent that engine manufacturers produce engines with fuel lines or fuel tanks, those fuel-system components must meet the requirements specified in this section. The timing of new standards is based on the date of manufacture of the engine.