

# Agenda Item B

## Low Carbon Fuel Credits and Deficits



State of Oregon  
Department of  
Environmental  
Quality

The purpose of this document is to outline a proposed structure and calculation methods for low carbon fuel credits and deficits. The actual credit buying and selling mechanism will be discussed at a future advisory committee meeting. We are discussing the general structure and calculation of low carbon fuel credits and deficits at the January 2010 meeting because the low carbon fuel advisory committee felt this topic is important for an understanding of how a LCFS program in Oregon would work.

### Advisory Committee Objective:

Below are discussion questions that DEQ has identified related to low carbon fuel standard credits and deficits. If there are other questions you feel should be included, please let us know. Each of the questions has a companion discussion piece on the following pages.

1. **Proposed Structure:** Discuss and give input on the proposed structure of a low carbon fuel credit and deficit program. (see page 2)
  - a. Should **low carbon fuel credit banking** be allowed?
  - b. Should **borrowing credits** against future emission reductions be allowed?
  - c. Should **third parties** be able to buy and sell credits?
  - d. How should **small deficits** be addressed? How should **large and repeat deficits** be addressed?
  - e. **Can carbon credits from other programs** be used for the low carbon fuel program?
  - f. Could we use the **federal Renewable Fuel Standard Renewable Identification Number (RIN)** program to track low carbon fuel credits and deficits?
  - g. How would **fuel sold to exempt users be excluded** from deficit and credit calculations?
  - h. **What about intrastate railroads?** How would the railroads' concerns over biofuels be addressed?
  - i. **Can low carbon fuel credits still accrue during the time that exemptions or deferrals are in place?**
2. **Calculation of Credits and Deficits:** Discuss and give input on the examples of calculating low carbon fuel credits and deficits. These examples are intended to demonstrate how a LCFS could work, and illustrate some of the implications of the policy decisions above. (see page 5)
  - For those who would like more details on how DEQ proposes to calculate credits and deficits, there is supporting documentation for calculating credits and deficits on the DEQ website.

3. **Trading Mechanism:** We do not anticipate spending a lot of time at the Jan 27<sup>th</sup> meeting discussing trading mechanisms, but have provided some of our preliminary thoughts. We anticipate discussing this later in 2010. (see page 10)

## 1. Proposed structure of low carbon fuel credits and deficits

Compliance with a Low Carbon Fuel Standard (LCFS) would be demonstrated through the calculation of carbon intensity credits. DEQ proposes that a fuel sold in Oregon by regulated or opt-in parties with a carbon intensity that is less (lower) than the required low carbon fuel standard would generate credits. A fuel sold in Oregon with a carbon intensity that is higher than the low carbon fuel standard would generate deficits. At the end of the year, a regulated party would reconcile credits and deficits to demonstrate compliance with the LCFS. Opt-in parties are presumed to meet the LCFS and would generate credits.

### a. Low carbon fuel credit banking

DEQ proposes that low carbon fuel credits may be banked for future use without expiration. This will permit fuel providers to achieve early reductions under the program and allow greater flexibility in managing compliance in coming years. Being able to carry credits forward should also improve the stability of the credit market as the value of credits would not expire within a limited period. Credits may also be traded among regulated parties which will allow further flexibility and enable market forces to help regulated parties achieve greenhouse gas reductions in the most efficient manner. When the advisory committee discusses reporting later in 2010, we'll discuss what needs to be done to demonstrate that a credit is real.

### b. Credits "borrowed" against future emission reductions

DEQ proposes to **NOT** allow low carbon fuel credit "borrowing" against future emission reductions (i.e., selling credits that would be generated in the future). Some regulated parties commented during development of California's LCFS that they should be allowed to "borrow" credits from future emissions reductions. Under such a mechanism, borrowed credits could be sold to generate funds for equipment or process improvements that would in turn produce reductions in carbon intensity. DEQ considers this to be an intriguing concept but does not have a reliable way to ensure that the reductions signified by borrowed credits are actually achieved.

### c. Third parties

DEQ proposes that non-regulated third parties would **NOT** be permitted to deal in low carbon fuel credits. This prohibition is meant to ensure that an adequate number of credits are available within the program, and that third parties do not speculate in the credit market.

**d. Small, large, and repeat low carbon fuel deficits**

1. Small Low Carbon Fuel Deficits: DEQ proposes that “small” low carbon fuel deficits remaining at the end of a compliance period must be rectified within the next compliance year. In most cases, deficits will need to be rectified at the end of the compliance period. However, for small deficits, DEQ proposes a one year grace period. DEQ proposes that a “small” deficit be defined as a deficit remaining at the end of a compliance period that is 10 percent or less than the total deficits generated by that regulated party during the year. (See **Example 2** on page 6 for a calculation of a “small” deficit.) If, for example, a regulated party had a deficit remaining (after reconciling credits and deficits) that was 10 percent or less of the total deficits before credits were applied, then the regulated party could carry over the deficit amount and reconcile the deficit in the following year. This approach would allow some flexibility for regulated parties without compromising the integrity of the program, and this flexibility could contribute toward minimizing compliance costs for regulated parties.
2. Large Low Carbon Fuel Deficits: DEQ proposes that large low carbon fuel deficits, defined as deficits greater than 10 percent of the total deficits generated by that regulated party during the year, cannot be carried over. The deficiency must be reconciled at the end of that compliance period.
3. Repeat Low Carbon Fuel Deficits: As noted in (d)(1) above, a “small deficit” may be carried over for a one year grace period and reconciled at the end of the following compliance period. However, any additional “small deficits” occurring in subsequent years MAY NOT be carried over, UNTIL the previous small deficit has been reconciled and the “compliance books” have been balanced. This is to prevent the accumulation and perpetuation of multiple “small deficits”.

**e. Can any type of carbon credits from other programs be used for the low carbon fuel program?**

DEQ proposes that only low carbon fuel credits could be used to meet the low carbon fuel standard. This means that no other carbon offset, or other type of carbon credit could be used in the low carbon fuel standard program.

There currently is no broader regulatory greenhouse gas reduction program that affects Oregon, either at the state or federal level. There are, however, markets for carbon offsets. Not allowing carbon offsets or credits from other greenhouse gas reduction programs to be used for the low carbon fuel standard is intended to ensure that greenhouse gas reductions are achieved within the transportation sector and to stimulate the use of low-carbon intensity fuels that are locally available.

**f. Using the federal Renewable Fuel Standard Renewable Identification Number (RIN) program to track low carbon fuel credits and deficits**

The low carbon fuel standard program is intended to work in concert with and complement the federal renewable fuel standard program. The Environmental Protection Agency is in the process

of developing a reporting system for the federal Renewable Fuel Standard, and DEQ will be tracking that process to see if we could use a compliance mechanism that complements the federal reporting in order to reduce the reporting burden on regulated parties.

The current federal renewable fuel standard has a system for tracking renewable fuels, called a RIN or Renewable Identification Number, which correspond to units of renewable fuels. However, “renewable fuels” are not necessarily the same as “low carbon fuels”, and there could be difficulty in trying to use the RIN for LCFS purposes. The RIN system would not work well for the purpose of tracking low carbon fuels because:

1. There are no RINs for fuels such as electricity or hydrogen
2. RINs do not include information on the lifecycle carbon intensity of the fuel.

**g. How would fuel sold to exempt users be excluded from credit and deficit calculations?**

The legislature exempted farm uses and logging trucks from the low carbon fuel standard. In addition, there are other uses (military, airplane, racing cars, oceangoing vessels, interstate trains, etc.) that DEQ also proposes to exempt from the regulation for a variety of reasons (see Exemptions discussion paper). The low carbon fuel standard needs to remain neutral as far as low carbon fuels and exempt uses, and make sure there is not an incentive created to sell more or less low carbon fuel to exempt uses.

If a regulated party sells a delivery (e.g., a quantity of fuel on a single invoice or bill of lading, etc.) of fuels to an exempt user, DEQ proposes the regulated party has two options for calculating credits and deficits for that delivery of fuel during the compliance period:

1. Exclude that entire delivery of fuel from credit and deficit calculations.
2. Exclude none of that delivery of fuel from credit and deficit calculations.

This would mean that if a regulated party sells a delivery of fuel to an exempt user that includes gasoline with 10 percent ethanol with a carbon intensity that is less than the low carbon fuel standard (which will therefore earn credits), then that regulated party has two choices:

1. Exclude that entire delivery of fuel from credit and deficit calculations, claiming neither the deficits from the gasoline nor the credits from the ethanol; OR
2. Exclude none of that delivery of fuel from credit and deficit calculations, claiming both the deficits from the gasoline AND the credits from the ethanol.

**h. What about intrastate railroads? How would the railroad concerns over biofuels be addressed?  
*To be filled in after discussion with railroads.***

**i. Can low carbon fuel credits still accrue during the time that exemptions or deferrals are in place?**

HB 2186 allows for exemptions and deferrals to ensure that the price of gasoline and diesel in Oregon remain competitive with other states, and deferrals to ensure an adequate fuel supply.

DEQ proposes that during the time that exemptions or deferrals are in place, credits would still be allowed to accrue. There are two main reasons for allowing this:

1. The use of exemptions or deferrals most likely means that there is currently not enough low carbon fuels to meet the need. Allowing credits to accrue during times of exemptions and deferrals may be helpful to address a scarcity of low carbon fuels.
2. Allowing credits to accrue during times of exemptions or deferrals provides more regulatory certainty for investors in low carbon fuels.

## 2. Calculation of Credits and Deficits

DEQ proposes that credits and deficits would be calculated and expressed as metric tons of CO<sub>2</sub> equivalent. For purposes of understanding how credits and deficits would work, we have provided six examples below. These examples illustrate the consequences of the proposed policy decisions listed under **Question 1 a - h** above. Advisory committee members should carefully consider whether there are any other scenarios or unintended consequences DEQ should evaluate.

If you are interested in the details of the calculations, please refer to the *Supporting Documentation For Calculating Credits and Deficits*, available on our website. Page 1 has an overview of the steps we propose for calculating credits, while the following pages show details of the calculations for the following six examples.

For the six examples, we will suppose that it is currently 2014 and the low carbon fuel standard is **91.31 gCO<sub>2</sub>E/MJ**, and that in 2020, the low carbon fuel standard will be **83.43 gCO<sub>2</sub>E/MJ**.

*(Please note: This is just an example. The advisory committee will address the following at later advisory committee meetings:*

- *A phase-in compliance schedule for low carbon fuel standards in Oregon*
- *Who the “regulated parties” and “opt-in” parties will be. For example, for petroleum, the regulated party could be the entity that owns the fuel when it is imported to Oregon, or it could be a fuel distributor. For natural gas, the regulated or opt-in party could be whoever owns the fuel when it is dispensed into a vehicle for transportation use. For electricity, the regulated party could be a utility or owner of a charging station, which could be a company or a homeowner.*

### **Example 1: Ethanol**

A regulated party who sells 20 million gallons of ethanol in 2014 (and no other

#### **Assumptions for all six examples:**

- Current Year is **2014**
- Low carbon fuel standard in **2014** is **91.31 gCO<sub>2</sub>E/MJ**
- Low carbon fuel standard in **2020** is **83.43 gCO<sub>2</sub>E/MJ**

transportation fuels<sup>1</sup>) with a carbon intensity of 77.40 gCO<sub>2</sub>E/MJ will generate **22,403 metric tons of credit in 2014**.

These credits can be sold or banked for selling later on. If the regulated party continues to only sell ethanol with a carbon intensity of 77.40 gCO<sub>2</sub>E/MJ, they will never need to use the credits themselves because they already meet the 2020 standard.

See *Supporting Documentation for Calculating Credits and Deficits* page 4 (available on [Oregon DEQ website](#)) for **Example 1** calculations.

### **Example 2: Diesel and Renewable Diesel**

A regulated party sells the following in 2014 (and sells no other transportation fuels):

- 25 million gallons of **diesel** with a carbon intensity of 93.0 gCO<sub>2</sub>E/MJ, generating **5681 metric tons of deficit** in 2014.
- 4.5 million gallons of **renewable diesel** with a carbon intensity of 82.16 gCO<sub>2</sub>E/MJ, generating **5193 metric tons of credit** in 2014.

#### **Assumptions for all six examples:**

- Current Year is **2014**
- Low carbon fuel standard in **2014** is **91.31 gCO<sub>2</sub>E/MJ**

At the end of the year, that company would calculate their low carbon fuel balance, and would find that they have **488 metric tons of deficit** (5681 deficit minus 5193 credit).

The regulated party has three options for complying with the 2014 low carbon fuel standard:

- a) The regulated party can **buy** 488 metric tons of credit.
- b) The regulated party can **carry over** the deficit to the following year 2015 (provided they did not have a deficit in 2013). They can do this because this is a “small low carbon fuel deficit” as described in **1d** on page 3. The deficit remaining at the end of the year is less than 10 percent of their overall deficits for the year. (488/5681= 8.59 percent)
- c) If the regulated party has banked any credits from past years, they could **use banked credits** to cover part, or all of the deficit.

See *Supporting Documentation for Calculating Credits and Deficits* page 5 (available on [Oregon DEQ website](#)) for **Example 2** calculations.

### **Example 3: Electric Vehicles**

An electric utility supplies electricity to 400 electric vehicles that used a total of 2,810,000 kilowatt-hours (KWh) of electricity in 2014 at a carbon intensity (adjusted for drive train efficiencies) of 34.9 g CO<sub>2</sub>E/MJ. This will generate **1712 metric tons of credit**.

---

<sup>1</sup> Transportation fuel includes fuel used or intended for use as a motor vehicle fuel or for transportation purposes in a mobile non-vehicular source (for example, construction equipment, boats, and locomotives), but not fuel used in stationary sources such as generators.

The electric utility (if they had opted in for 2014) could either sell the low carbon fuel credits or bank them for sale in the future. The electric utility will never need to use the credits themselves because they already meet the 2020 standard. See *Supporting Documentation for Calculating Credits and Deficits* page 7 (available on [Oregon DEQ website](#)) for **Example 3** calculations.

**Discussion of Examples 4 and 5:** Examples 4 and 5 address how DEQ proposes credits and deficits would be calculated when fuel is sold to an exempt user (see Question 1g on page 4). A summary table comparing the two examples can be found on page 9. A regulated party could choose to exclude a delivery of fuel sold to an exempt user from calculations of credits and deficits, or could choose to include that fuel in the calculations of credits and deficits. This is so the LCFS remains as neutral as possible with regard to exempt uses. For example, a delivery of clear fuel to a farm coop could be exempted by the regulated party from the calculation of deficits. If sales to exempt users of low carbon fuels as a component of blended fuels are already occurring, this would not disincentivize those sales, while at the same time, there would be little incentive to try and increase the sale of low carbon biofuels to exempt uses to claim credits (as could occur if regulated parties could gain credits on low carbon fuels while excluding the gasoline or diesel components of the blended fuel from deficit calculations).

**Example 4: Regulated party excludes fuel sold to exempted uses from credit and deficit calculations**

A regulated party sells 28 million gallons of diesel and 560,000 gallons of biodiesel from waste oil in 2014 to both farm and non-farm uses, as indicated below (and sells no other transportation fuels).

**The regulated party elects to exclude these deliveries of fuel sold to farm uses from calculations:**

- A total of 28 million gallons of **diesel** with a carbon intensity of 93.0 gCO<sub>2</sub>E/MJ were sold, generating 6363 metric tons of deficits.
  - **However**, of those 28 million gallons, 3 million gallons were sold to exempt farm coops that demonstrated the fuel was for farm use. (Fuel for farm uses is exempt under HB 2186.)
  - The regulated party would then only calculate the deficit on the remaining 25 million gallons of diesel which was not used for farm use. The final deficit calculation would be **5681 metric tons of deficit**.
  
- 560,000 gallons of **biodiesel from waste oil** were also sold by the same regulated party, with a carbon intensity of 13.70 gCO<sub>2</sub>E/MJ. This would generate **5482 metric tons of credit**.
  - Of those 560,000 gallons, 11,200 were sold to exempt farm uses. This would generate **110 metric tons of credit**. Using the approach described in **Question 1(g)** above (on **page 4**), the regulated party must exclude this 110 metric tons of exempt credits from their total credits, and hence would only be able to claim **5372 metric tons of credit**.

**The net result would be the final tally of credits or deficits used for compliance. For the scenarios above, the NET result would be:**

- Initial Deficits [6363MT]- Exempt Deficits [682] = **Net Deficit of 5681 MT**
- Initial Credits [5482MT] - Exempt Credits [110] = **Net Credits of 5372 MT**
- **Total NET Compliance Balance (deficit) -309 MT**

As you can see, the regulated party's total deficit is reduced from 6363 to 5681 metric tons of deficit due to the exclusion of fuel sold to exempt users. The regulated party's total credits are reduced from 5482 to 5372. Their final **deficit calculation would be 309 metric tons of deficit**. See *Supporting Documentation for Calculating Credits and Deficits* page 8 (available on [Oregon DEQ website](#)) for **Example 4** calculations.

#### **Example 5: Regulated Party does not exclude fuel sold to exempted uses from credit and deficit calculations**

A regulated party sells 28 million gallons of diesel and 560,000 gallons of biodiesel from waste oil in 2014 to both farm and non-farm uses, as indicated below (and sells no other transportation fuels).

**The regulated party elects to NOT exclude fuel sold to farm uses from calculations:**

- 28 million gallons of **diesel** with a carbon intensity of 93.0 gCO<sub>2</sub>E/MJ, that would generates **6363 metric tons of deficit**.
  - Of those 28 million gallons, 3 million gallons were sold to farm coops that demonstrated the fuel was farm use. Because the regulated party is NOT excluding any fuel sold to farm uses, they must claim all the deficits.
- 560,000 gallons of **biodiesel from waste oil** were also sold by the same regulated party, with a carbon intensity of 13.70 gCO<sub>2</sub>E/MJ. This would generate **5482 metric tons of credit**.
  - Of those 560,000 gallons, 11,200 were sold to exempt farm uses. Because the regulated party is not excluding any fuel sold to farm uses, credits can accrue on any fuel sold to farm uses. Because the regulated party is NOT excluding any fuel sold to farm uses, they can claim all the credits.

**The net result would be the final tally of credits or deficits used for compliance. For the scenarios above, the NET result would be:**

- Initial Deficits [6363MT]- Exempt Deficits [0] = **Net Deficit of 6363 MT**
- Initial Credits [5482MT] - Exempt Credits [0] = **Net Credits of 5482 MT**
- **Total NET Compliance Balance (deficit) -881 MT**

To calculate their credits vs. deficits, the regulated party would subtract their **6363 metric tons deficit** from their **5482 metric tons credit**, and have a **DEFICIT of 881 metric tons**. Because this deficit is over 10 percent of their total deficit for the year, this regulated party cannot carry over the deficit to the following year. They would need to purchase credits to cover the deficit, or use banked credits from previous years. See *Supporting Documentation for Calculating Credits and Deficits* page 9 (available on [Oregon DEQ website](#)) for **Example 5** calculations.

### Summary Table Comparing Example 4 and Example 5

	<u>Example 4: fuel sold to exempt users excluded from calculations</u>	<u>Example 5: fuel sold to exempt users included in calculations</u>
<b><u>Diesel</u></b>		
Total gallons sold	28 million gallons	28 million gallons
Total sold to exempt users	3 million gallons	3 million gallons
Total included in calculations	25 million gallons	28 million gallons
Total deficits	5681 metric tons	6363 metric tons
<b><u>Biodiesel</u></b>		
Total gallons sold	560,000 gallons	560,000 gallons
Total sold to exempt users	11,200 gallons	11,200 gallons
Total included in calculations	548,800 gallons	560,000 gallons
Total credits	5372 metric tons	5482 metric tons
<b>Total credit/deficit ballance</b>	<b>309 metric tons of deficit</b>	<b>881 metric tons of deficit</b>

### Example 6: Gasoline

A regulated party sells 200 million gallons of gasoline with a carbon intensity of 92.7 gCO<sub>2</sub>E/MJ and 20 million gallons of ethanol with a carbon intensity of 77.40 gCO<sub>2</sub>E/MJ (and no other transportation fuels)

- The gasoline with a carbon intensity of 92.7 gCO<sub>2</sub>E/MJ will generate **32,145 metric tons deficit in 2014**.
- The ethanol with a carbon intensity of 77.40 gCO<sub>2</sub>E/MJ will generate **22,403 metric tons of credit in 2014**.

The final result is **DEFICIT of 9,742 metric tons**. To make up the deficit, the company could buy credits generated by other fuel providers (see examples 1 and 3) or could use banked credits.

See *Supporting Documentation for Calculating Credits and Deficits* page 11 (available on [Oregon DEQ website](#)) for **Example 6** calculations.

### 3. Trading Mechanism

A prominent feature of the LCFS program is the ability to trade low carbon fuel credits. Trading is needed to enable reductions to be achieved by the most efficient companies or processes.

A trading mechanism needs to be simple, transparent, secure and enforceable. Simplicity is necessary for ease of use and to minimize inaccurate entries. A substantial level of transparency is needed to ensure confidence in the trading mechanism by regulated parties and the public. The trading mechanism must also be sufficiently transparent to allow scrutiny by regulators to detect trading anomalies or market problems. At the same time, a credit trading mechanism cannot be totally transparent. To be successful, users of a trading mechanism must also be confident *trade secret* information will not be available to competitors.

DEQ and the advisory committee will discuss possible trading mechanisms in detail at a future low carbon fuel advisory committee meeting.