

United States Environmental Protection Agency

Decision Document: Approval of Fiberight Municipal Solid Waste Separation Plan

June 2012

Summary

Under the Renewable Fuel Standard (RFS) program regulations, municipal solid waste (MSW)-derived feedstock may qualify as renewable biomass, and be used in renewable fuel production pathways authorized for generation of RINs, if EPA has approved a plan developed by a renewable fuel producer for the removal of recyclable materials from their MSW-derived feedstock. On October 11, 2011, Fiberight Blairstown Operating, LLC (“Fiberight”) submitted a plan to EPA pursuant to 40 CFR 80.1450(b)(1)(viii) for the separation of recyclable material from MSW prior to its use as feedstock for renewable fuel production under the RFS Program. Fiberight provided addenda to this submittal on February 15, May 15, and May 24, 2012 (Collectively, the “Fiberight Separation Plan” or the “Plan”). After review and opportunity for public notice and comment, EPA is approving the Fiberight Separation Plan as submitted, including the addendum. Separated MSW developed in accordance with the Plan qualifies as renewable biomass, and Fiberight may use it to produce RIN-generating renewable fuel pursuant to a pathway in 40 CFR 80.1426 that allows use of separated MSW as feedstock. This approval applies uniquely to Fiberight’s Separation Plan and any further approvals will be done on a case by case basis, based on individual plans submitted.

Background

Under the Renewable Fuel Standard (RFS) Program, renewable fuels are those fuels derived from renewable biomass, (such as planted crops and certain waste materials) which are used as transportation fuel, home heating oil or jet fuel and achieve specified greenhouse gas emissions reductions as compared to conventional fossil fuels. To accelerate use of fuels derived from renewable sources, Congress first established requirements under the Energy Policy Act of 2005 designed to encourage the blending of renewable fuels into our nation's motor vehicle fuel supply. Congress strengthened the renewable fuels program under the Energy Independence and Security Act of 2007 to include specific annual volume standards for total renewable fuel and also for three renewable fuel subcategories (cellulosic biofuel, biomass-based diesel, and advanced biofuel). The revised program specifies renewable fuel requirements that must be met on an annual average basis for “transportation fuels,” including gasoline and diesel fuels intended for both motor and nonroad vehicles and engines. However, credit under the program is also available for renewable fuels blended into home heating oil or jet fuel. Compliance is demonstrated through the acquisition of Renewable Identification Numbers (RINs) assigned by renewable fuel producers to the renewable fuel they produce. The RIN shows that a certain volume of renewable fuel was produced. Renewable fuel producers and importers, gasoline refiners and importers, diesel refiners and importers, renewable fuel marketers, and exporters, and other parties involved in the RFS program are required to submit reports to EPA of all transactions relating to RINs. Each year obligated parties (domestic gasoline and diesel fuel producers and importers) and renewable fuel exporters submit compliance reports identifying the RINs they are relying on to demonstrate compliance with RFS requirements.

Under the RFS program regulations, municipal solid waste (MSW)–derived feedstock may qualify as renewable biomass, and be used in renewable fuel production pathways authorized for generation of RINs, if EPA has approved a plan developed by a renewable fuel producer for the removal of recyclable materials from their MSW-derived feedstock. Pursuant to 40 CFR 80.1426(f)(5)(iii)(A), recyclable paper, cardboard, plastics, rubber, textiles, metals, and glass that can be recycled must be separated and removed from the municipal solid waste stream to the extent reasonably practicable, and according to a plan submitted to and approved by U.S. EPA under the registration procedures specified in § 80.1450(b)(1)(viii). In addition the renewable fuel producer seeking to use separated MSW as a renewable biomass feedstock must identify the location of the municipal waste facility or other facility from which it will collect MSW or separated MSW, 40 CFR 80.1450(b)(1)(viii)(A), and must submit to EPA evidence of all contracts relating to the disposition of paper, cardboard, plastics, rubber, textiles, metals, and glass that will be recycled 40 CFR 80.1426(f)(5)(iii)(B).

The separation plan as described in 40 CFR 80.1450(b)(1)(viii)(B) must document the following:

- (1) Extent and nature of recycling that occurred prior to receipt of the waste material by the renewable fuel producer or foreign ethanol producer;
- (2) Identification of available recycling technology and practices that are appropriate for removing recycling materials from the waste stream by the renewable fuel producer or foreign ethanol producer; and
- (3) Identification of the technology or practices selected for implementation by the renewable fuel producer or foreign ethanol producer including an explanation for such selection, and reasons why other technologies or practices were not selected.

Fiberight’s Separation Plan Submission

On October 11, 2011, Fiberight Blairstown Operating, LLC (“Fiberight”) submitted a plan to EPA pursuant to 40 CFR 80.1450(b)(1)(viii) for the separation of recyclable material from MSW prior to its use as feedstock for renewable fuel production under the RFS Program. Fiberight provided addenda to this submittal on February 15, May 15, and May 24, 2012 (Collectively, the “Fiberight Separation Plan” or the “Plan”).

Public Comment

EPA published a Notice of Receipt of the Fiberight Separation Plan in the Federal Register on December 9, 2011 and requested public comment on whether the Fiberight Separation Plan incorporates all of the elements required in the regulations and provides for the separation of recyclable cardboard, plastics, rubber, textiles, metals, and glass from MSW to the extent that is reasonably practicable. EPA placed the Fiberight Separation Plan, and all public comments in docket number EPA-HQ-OAR-2011-0837, available at www.regulations.gov. EPA received three comments in response to its Federal Register notice on the Fiberight Separation Plan. Only one comment was submitted regarding the adequacy of the Fiberight Separation Plan. The comment indicated that Fiberight’s plan adequately demonstrates separation of recyclable materials and components from MSW to the extent reasonably practicable. All of the comments

cautioned EPA in regard to adopting Fiberight's plan as an industry standard. The comments noted that the technology in Fiberight's separation plan may not be appropriate to apply to others with unique waste streams that have already undergone significant source separation.

EPA Decision

EPA finds that the Fiberight Separation Plan has satisfies the requirements of 40 CFR 80.1426(f)(5)(iii)(A) and 40CFR 80.1450(b)(1)(viii)(B).

The Fiberight Separation Plan describes a fully functional municipal recycling facility (MRF) at the front end of their waste-to-energy plant. The Plan assumes no prior separation of the waste stream and indicates the ability to recover and recycle over 70% of inbound waste through various separation processes (shredding, screening, pulping, air and magnetic separation, optical and manual sorting, etc.). The described separation and recycling practices outlined in the Plan will result in the separation of incoming MSW into 40,830 tons per year of recyclables and 29,340 tons per year of "separated MSW" as the renewable biomass feedstock that Fiberight intends to use to produce 2.5 million gallons of renewable fuel per year. In addition, the Plan indicates that the plant will ultimately be energy self-sustaining and will recycle virtually all process water with the exception being an effluent stream from a Reverse Osmosis system.

In 2010, EPA estimated that Americans generated about 250 million tons of trash and recycled and composted over 85 tons of this material, equivalent to a 34.1 percent recycling rate.¹ An average of 71 percent of the U.S. population are served by curbside recycling; however, the Midwest region, with 55% of the population having access to curbside recycling, is the least served region.² Fiberight assumes in its Plan that its inbound waste stream will have undergone no prior sorting.

Pursuant to 40 CFR 80.1450, we find that the separation plan submitted by Fiberight adequately meets the following three requirements and provides ongoing verification of separation:

(1) Extent and nature of recycling that occurred prior to receipt of the waste material by the renewable fuel producer or foreign ethanol producer

Fiberight is not relying for purposes of its separation Plan on any recycling prior to its receipt of MSW at its renewable fuel production facility. Instead, Fiberight's plan assumes that all recycling will occur as a preliminary step to biofuel production at its facility in Blairstown, Iowa.

(2) Identification of available recycling technology and practices that are appropriate for removing recycling materials from the waste stream by the fuel producer or foreign ethanol producer

¹ "Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2010". EPA document number EPA-530-F-11-005.

² Table 25 in "Municipal Solid Waste Generation, Recycling, and Disposal in the United States Tables and Figures for 2010" at http://www.epa.gov/epawaste/nonhaz/municipal/pubs/2010_MS_W_Tables_and_Figures_508.pdf

The Fiberight Separation Plan identifies the following technologies and practices appropriate for sorting and separating recyclables from incoming municipal solid waste streams.

- Conveying
- Shredding
 - Bag opening
- Screening
 - Trommel
 - Vibratory
 - Bounce adhesion
 - Disc
 - Star
 - Liquid Flow
- Pulping
- Washing
- Air separation
 - Vacuum
 - Air Knife
- Sorting stations
 - Paper
 - Plastics
- Magnetic separation
 - Cross-Belt magnet
 - Rare earth eddy current
- Optic sorting
 - Plastics
 - Glass
- Baling

Since Fiberight will use what we consider the best available technology for the separation of recyclables from MSW, as described below, the Fiberight Separation Plan sufficiently identifies available recycling technologies.

(3) Identification of the technology or practices selected for implementation by the fuel producer or foreign ethanol producer including an explanation for such selection, and reasons why other technologies or practices were not.

The Fiberight Separation Plan is focused on construction and utilization of a fully functional materials recovery facility (MRF) capable of recovering and recycling over 70% of inbound waste. Fiberight will apply the practices and technologies detailed below, and the equipment will fit together as described in the process flow diagram that is part of the Plan:

- Conveying
 - Traditional MRF equipment optimized for robust reliable operations, including steel incline conveyor, rubber-belt sort conveyors

and “slip stick” conveyors. Design has been chosen from experience in recycling and waste to energy fields.

- Shredding
 - Bag opening
 - Proprietary solution that minimizes damage to recyclables but opens bags and allows for early screening of unrecoverable ash, fines and broken glass. Process has been developed and is being refined by Fiberight.
- Screening
 - Trommel
 - Traditional rotary trommel that demonstration plant experience has shown to be highly effective in size reduction allowing efficient sorting and subsequent separation of organics from plastics and metals.
 - Vibratory
 - Limited application given that wet materials may bling horizontal vibratory screeners.
 - Bounce adhesion
 - Limited application because textiles will wrap around star screen axles.
 - Disc
 - Used by Fiberight to separate metals from plastics after primary screening and pulping. Informed from experience in recycling industry.
 - Star
 - Being tested for use at front of process to remove large cardboard sheets for recycling. Potential for operational challenges caused by textiles.
 - Liquid Flow
 - Part of Fiberight’s proprietary wash system, removes small plastic contamination further ensuring that no plastics will be utilized in biofuel production.
- Pulping
 - Proprietary process that renders organic materials into reduced size pulp material after initial recycling and sorting. Plastics and metals are unaffected by this relatively low-temperature process and are subsequently screened to greater than 99% efficiency (by weight) for further sorting and recycling. Design has been chosen as a result of demonstration plant activities.
- Washing
 - Core Fiberight process that separates soluble organics (soluble food waste) from insoluble organics (compostable or soiled fiber, cellulosic or low-lignin yard waste) for further conversion into biogas or biofuels, including cellulosic ethanol. Process has been informed by over 5 years of research and is subject to patents issued and pending.

- Air separation
 - Vacuum
 - Process to remove film plastic early in the process without operator picking. Informed by experience in recycling industry and desire to separate film LDPE to ensure maximum value as a discrete recyclable.
 - Air Knife
 - Process to separate lighter materials from heavier ones to improve subsequent screening.
- Sorting stations
 - Paper
 - Primary sort line is optimized to spread recyclable paper separated from mixed waste by primary sort to a burden depth and pick width that enables efficient removal of newspaper and other recyclable paper.
 - Plastics & Glass
 - Secondary sort line that allows for sorting of rigid plastic containers by resin type and glass containers by color after organic materials and the majority of film plastics have been removed. See also optic sort.
- Magnetic separation
 - Cross-Belt magnet
 - Traditional equipment used in recycling industry for recovery of ferrous metal. Incorporated in Fiberight's process and made efficient by prior removal of organic materials.
 - Rare earth eddy current
 - Traditional equipment used in recycling industry for recovery of non-ferrous metal. Incorporated in Fiberight's process and made efficient by prior removal of organic materials.
- Optic sorting
 - Plastics
 - Fiberight has experience with several optic sorting solutions for automated plastics recovery, but is evaluating these given the presence of film plastics which renders air jets ineffective.
 - Glass
 - Fiberight considers optic sorting for glass to be impractical given the unlikely ability to generate a >85% homogenous glass stream.
- Baling
 - Traditional recycling technologies used to densify recycled materials for efficient transportation to market.

In addition, Fiberight's addendum dated May 15, 2012 provides additional clarification regarding the practices employed for separating recyclable textiles in Fiberight's materials recycling facility that was not provided in their initial submission. Waste will go through a manual sort and then be processed through a trommel and subsequently autoclaved and processed through a trommel again.

The processes identified in the Fiberight Separation Plan provide for the separation of recyclable paper, cardboard, plastics, rubber, textiles, metal and glass wastes to the extent reasonably

practicable. The Plan relies upon use of the most advanced technology available for separating recyclables from municipal solid waste streams. While Fiberight has not provided any further explanation for why it chose to select this technology rather than others, such an explanation is neither needed nor required in a circumstance where the best available technology is selected.

Lastly, we find that Fiberight's addenda dated May 24, 2012 satisfies the requirement in 40CFR 80.1450 that separation plans provide for "ongoing verification" of separation of recyclable paper, cardboard, plastics, rubber, textiles, metal, and glass to the extent reasonably practicable. Fiberight has committed to providing semi-annual reports that include tonnage figures, origin, and final disposition of all waste/recyclable materials accepted/processed at Fiberight's facility. This will enable EPA to monitor implementation of the Fiberight Separation Plan and will facilitate EPA enforcement activities related to verifying that RINs are only generated for fuel produced from separated MSW that is processed in accordance with the Plan.

Conclusion

EPA approves the Fiberight Separation Plan as submitted, including the addendum. Separated MSW developed in accordance with the Plan qualifies as renewable biomass, and Fiberight may use it to produce RIN-generating renewable fuel pursuant to a pathway in 40 CFR 80.1426 that allows use of separated MSW as feedstock.