



ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 80

[EPA-HQ-OAR-2011-0542; FRL-9822-7]

RIN 2060-AR85

Regulation of Fuels and Fuel Additives: Additional Qualifying Renewable Fuel Pathways under the Renewable Fuel Standard Program; Final Rule Approving Renewable Fuel Pathways for Giant Reed (*Arundo Donax*) and Napier Grass (*Pennisetum Purpureum*)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This final rule approves pathways for production of renewable fuel from giant reed (*Arundo donax*) and napier grass (*Pennisetum purpureum*) as feedstocks. These pathways are for cellulosic biofuel, for purposes of the Renewable Fuel Standard Program (RFS), under Clean Air Act (CAA) as amended by the Energy Independence and Security Act of 2007 (EISA). EPA has determined that renewable fuel made from napier grass and giant reed meet the greenhouse gas (GHG) reduction requirements for cellulosic biofuel under the requirements of the RFS program. In response to comments on the proposal concerning the potential for these crops to behave as invasive species, EPA is adopting additional registration, recordkeeping, and reporting requirements that were developed to address the potential for GHG emissions related to these concerns. Approval of these pathways combined with the related provisions will create additional opportunities for regulated parties to comply with the advanced and cellulosic renewable fuel requirements of the RFS program, while ensuring that these feedstocks do not pose a significant likelihood of spread into areas outside the intended planting area.

DATES: This rule is effective on [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER].

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SUPPLEMENTARY INFORMATION:

Does This Action Apply to Me?

Entities potentially affected by this action are those involved with the production, distribution, and sale of transportation fuels, including gasoline and diesel fuel or renewable fuels such as ethanol and biodiesel. Regulated categories and entities affected by this action include:

Category	NAICS ¹ Codes	SIC ² Codes	Examples of Potentially Regulated Entities
Industry	324110	2911	Petroleum Refineries
Industry	325193	2869	Ethyl alcohol manufacturing
Industry	325199	2869	Other basic organic chemical manufacturing
Industry	424690	5169	Chemical and allied products merchant wholesalers
Industry	424710	5171	Petroleum bulk stations and terminals
Industry	424720	5172	Petroleum and petroleum products merchant
Industry	454319	5989	wholesalers Other fuel dealers

¹ North American Industry Classification System (NAICS)

² Standard Industrial Classification (SIC) system code.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA is now aware could be potentially regulated by this action. Other types of entities not listed

in the table could also be regulated. To determine whether your entity is regulated by this action, you should carefully examine the applicability criteria of Part 80, subparts D, E and F of title 40 of the Code of Federal Regulations. If you have any question regarding applicability of this action to a particular entity, consult the person in the preceding **FOR FURTHER INFORMATION CONTACT** section above.

Outline of This Preamble

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- J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations
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I. Executive Summary

A. Purpose of the Regulatory Action

In this final rule, EPA is approving a pathway for production of renewable fuel from giant reed (*Arundo donax*) and napier grass (*Pennisetum purpureum*) as feedstock for purposes of the RFS program. EPA has determined that renewable fuel made from napier grass and giant reed meet the lifecycle greenhouse gas (GHG) reduction requirements for cellulosic biofuel under the requirements of the RFS program. EPA is also adopting additional registration, recordkeeping, and reporting requirements to minimize the potential spread outside of the

intended planting areas of giant reed or napier grass that was planted for the purpose of producing renewable fuels under the RFS program. These additional requirements are necessary to minimize the potential that the feedstock will spread to areas outside the intended planting area. Such unintended growth could result in additional GHG emissions from activities needed to control and remove the invasive plants, which have not been factored into our lifecycle analysis.

EPA is issuing this final rule based on its evaluation of the lifecycle greenhouse gas emissions of this pathway for production of renewable fuel from these feedstocks. The approach for establishing a renewable fuel pathway is based on the requirements related to greenhouse gas reductions that are part of the RFS program, under Clean Air Act (“CAA”) Section 211(o) as amended by the Energy Independence and Security Act of 2007 (“EISA”). This rulemaking modifies the RFS regulations published at 40 CFR 80.1400 *et. seq.* The RFS program regulations specify the types of fuels eligible to participate in the RFS renewable fuel program and the procedures by which renewable fuel producers and importers may generate Renewable Identification Numbers (“RINs”) for the qualifying renewable fuels they produce through approved fuel pathways. See 75 FR 14670 (March 26, 2010); 75 FR 26026 (May 10, 2010); 75 FR 37733 (June 30, 2010); 75 FR 59622 (September 28, 2010); 75 FR 76790 (December 9, 2010); 75 FR 79964 (December 21, 2010); 77 FR 1320 (January 9, 2012); 77 FR 74592 (December 17, 2012); and 78 FR 14190 (March 5, 2013).

Approving the new fuel pathways according to the provisions of this rule will provide biofuel producers opportunities to increase the volume of advanced, low-GHG cellulosic biofuels under the RFS program. EPA’s comprehensive lifecycle analyses in the January 5, 2012 proposal show significant lifecycle GHG emission reductions from fuels produced from giant reed and napier grass, as compared to the baseline (petroleum-based) gasoline or diesel fuel that

they replace. However, the lifecycle analyses assume no significant indirect greenhouse gas emissions associated with actions to remove or remediate the unintended spread of these feedstocks outside of the intended planting area. This rule includes provisions designed to ensure that this assumption is realized, and were developed in response to comments raised during the public comment period.

B. Summary of the Major Provisions of this Regulatory Action

This rule approves new pathways for production of cellulosic biofuel from giant reed and napier grass as feedstocks. The rule also includes several provisions addressing invasiveness concerns regarding giant reed or napier grass when it is grown as a feedstock for production of renewable fuel.¹ These provisions require either a demonstration by the renewable fuel producer that the giant reed or napier grass will not pose a significant likelihood of spread beyond its intended planting area, or approval by EPA of a Risk Mitigation Plan developed by the fuel producer that demonstrates the giant reed or napier grass will not pose a significant likelihood of spread beyond its intended the planting area. EPA’s use of the term “no significant likelihood of spread beyond the planting area” means that it is highly unlikely there will be such spread. EPA is also including related registration, reporting, and recording keeping requirements.

II. Additional Qualifying Renewable Fuel Pathways under the Renewable Fuel Standard (RFS) Program, Using Giant Reed and Napier Grass

EPA’s analysis of renewable fuel pathways using giant reed and napier grass as feedstocks was originally published in the Federal Register on January 5, 2012 as a direct final rule, with a parallel publication of a proposed rule. Because relevant adverse comments were

¹ For purposes of this proposal, the term “giant reed” refers to the species *Arundo donax* and “napier grass” refers to the species *Pennisetum purpureum*.

received, EPA withdrew the direct final rule on March 5, 2012 (77 FR 13009). A second comment period was not issued, since the simultaneous publication of the proposed rule provided an adequate notice and comment process.

For this rulemaking, EPA considered the lifecycle GHG impacts of two types of high-yielding perennial grasses similar in cellulosic composition to *Panicum virgatum* (switchgrass) and comparable in status as an emerging energy crop. The grasses considered in this rulemaking are giant reed (*Arundo donax*), and napier grass (*Pennisetum purpureum*), also known as elephant grass. In the March 2010 RFS rule, EPA analyzed the lifecycle GHG impacts of producing and using cellulosic ethanol and cellulosic Fischer-Tropsch diesel from switchgrass. The midpoint of the range of switchgrass results showed a 110% GHG reduction (range of 102% to 117%) for cellulosic ethanol (biochemical process), a 72% (range of 64% to 79%) reduction for cellulosic ethanol (thermochemical process), and a 71% (range of 62% to 77%) reduction for cellulosic diesel (F-T process) compared to the petroleum baseline. In the March 2010 RFS final rule, we indicated that some feedstock sources can be determined to be similar enough to those modeled that the modeled results could reasonably be extended to these similar feedstock types. For instance, information on miscanthus indicated that this perennial grass will yield more feedstock per acre than the modeled switchgrass feedstock without additional inputs with GHG implications (such as fertilizer).² Therefore in the final rule EPA concluded that since biofuel made from the cellulosic biomass in switchgrass was found to satisfy the 60% GHG reduction threshold for cellulosic biofuel, biofuel produced from the cellulosic biomass in miscanthus would also comply. In the final rule we included cellulosic biomass from switchgrass and miscanthus as eligible feedstocks for the cellulosic biofuel pathways included in Table 1 to §

² See the Final Regulatory Impact Analysis in support of the March 2010 RFS Final Rule, available at <http://www.epa.gov/otaq/renewablefuels/420r10006.pdf>.

80.1426.

We did not include other perennial grasses such as giant reed or napier grass as feedstocks for the cellulosic biofuel pathways in Table 1 at that time, since we did not have sufficient time to adequately consider them. Based in part on additional information received through the petition process for EPA approval of giant reed and napier grass pathways, EPA has evaluated these feedstocks and is now including these feedstocks in Table 1 to § 80.1426 as approved pathways for cellulosic biofuel pathways.

As described in detail in the following sections of this preamble, because of the similarity of these feedstocks to switchgrass and miscanthus, EPA believes that new agricultural sector modeling is not needed to analyze them. We have instead relied upon the switchgrass analysis to assess the relative GHG impacts of biofuel produced from giant reed and napier grass. As with the switchgrass analysis, we have attributed all land use impacts and resource inputs from use of these feedstocks to the portion of the fuel produced that is derived from the cellulosic components of the feedstocks. Based on this analysis and currently available information, we conclude that biofuel (ethanol, cellulosic diesel, jet fuel, heating oil and naphtha) produced from the cellulosic biomass of giant reed or napier grass has similar lifecycle GHG impacts to switchgrass biofuel and meets the 60% GHG reduction threshold required for cellulosic biofuel.

A. Feedstock Production and Distribution

For the purposes of this rulemaking, Giant reed refers to the perennial grass *Arundo donax* of the *Poaceae* family. Giant reed thrives in subtropical and warm-temperate areas and is grown throughout Asia, southern Europe, Africa, the Middle East, and warmer U.S. states for multiple uses such as paper and pulp, musical instruments, rayon, particle boards, erosion

control, and ornamental purposes.^{3,4} Based in part on discussions with industry, EPA anticipates continued development of giant reed as an energy crop particularly in the Mediterranean region and warmer U.S. states.

Napier grass is a tall bunch-type grass that has traditionally been grown as a high-yielding forage crop across the wet tropics. There is a considerable body of agronomic research on the production of napier grass as a forage crop. More recently, researchers have investigated ways to maximize traits desirable in bioenergy crops. Practices have been developed by USDA and other researchers to lower fertilization rates and increase biomass production. Based in part on discussions with industry, EPA anticipates continued development of napier grass as an energy crop particularly in Gulf Coast Region of the United States (more specifically the growing region includes Florida and southern portions of Texas, Louisiana, Georgia, Alabama and Mississippi).⁵

1. Crop Yields

For the purposes of analyzing the GHG emissions from giant reed and napier grass production, EPA examined crop yields and production inputs in relation to switchgrass to assess the relative GHG impacts. Current national yields for switchgrass are approximately 4.5 to 5 dry tons per acre. Giant reed field trials conducted in Alabama over a 9-year period showed an average yield of 15 dry tons per acre with no nitrogen fertilizer applied after the first year.⁶ Fertilized field trials have shown yields around 13 to 28 dry tons per acre in Spain, and 12 dry

³ See <http://www.fs.fed.us/database/feis/plants/graminoid/arudon/all.html>.

⁴ See Lewandowski, I., Scurlock, J.M.O., Lindvall, E., Christou, M. (2003). The development and current status of perennial rhizomatous grasses as energy crops in the US and Europe. *Biomass and Bioenergy* 25, 335-361.

⁵ For a map depicting the northern limit for sustained napiergrass production in the United States see Figure 1 in Woodard, K., R. and Sollenberger, L, E. 2008. Production of Biofuel Crops in Florida: Elephantgrass. Institute of Food and Agricultural Sciences, University of Florida. SS AGR 297.

⁶ Huang, P., Bransby, D., and Sladden, S. (2010). Exceptionally high yields and soil carbon sequestration recorded for giant reed in Alabama. Poster session presented at: ASA, CSSA, and SSSA 2010 International Annual Meetings, Green Revolution 2.0; 2010 Oct 31–Nov 4; Long Beach, CA.

tons per acre in Italy (based on annual yields of 3, 14, 17, 16, and 12).⁷ High yields have been demonstrated with unimproved giant reed populations, and therefore there is potential for increased biomass productivity through improved growing methods and breeding efforts.⁸ Napier grass field trials have produced dry biomass yields exceeding 20 tons per acre per year in north-central Florida. Using currently available technology, average yields for full-season napier grass should range from 14 to 18 tons per acre with future improvements expected. Yield depends greatly on the type of cultivar and the amount and distribution of rainfall and fertilization rates. There is potential for increased biomass productivity through improved growing methods and breeding efforts.⁹ In general, the yields for both of the energy grasses considered here will have higher yields than switchgrass, so from a crop yield perspective, the switchgrass analysis would be a conservative estimate when comparing against the napier grass, and giant reed pathways.

Furthermore, EPA's analysis of switchgrass for the March 2010 RFS rule (75 FR 14791) assumed a 2% annual increase in yield that would result in an average national yield of 6.6 dry tons per acre in 2022. EPA anticipates a similar yield improvement for giant reed and napier grass due to their similarity as perennial grasses and their comparable status as energy crops in their early stages of development. Given this, our analysis assumes an average giant reed yield of approximately 18 dry tons per acre by 2022 and an average napier grass yield of approximately 20 dry tons per acre by 2022¹⁰. The ethanol yield for all of the grasses is approximately the same so the higher crop yields for napier grass and giant reed result directly in greater ethanol

⁷ Mantineo, M., D'Agnosta, G.M., Copani, V., Patanè, C., and Cosentino, S.L. (2009). Biomass yield and energy balance of three perennial crops for energy use in the semi-arid Mediterranean environment. *Field Crops Research* 114, 204-213.

⁸ Lewandowski et al. 2003

⁹ Based on discussions with industry and USDA and Woodard and Sollenberger (2008)

¹⁰ These yields assume no significant adverse climate impacts on world agricultural yields over the analytical timeframe.

production compared to switchgrass per acre of production.

Based on these yield assumptions, in areas with suitable growing conditions, giant reed would require less than 40% of the land area required by switchgrass to produce the same amount of biomass and napier grass would require approximately 33% of the land area required by switchgrass to produce the same amount of biomass due to their higher yields. Even without yield growth assumptions, their currently higher crop yield rates means the land use required for these crops would be lower than for switchgrass. Therefore less crop area would be converted and displaced resulting in smaller land-use change GHG impacts than that assumed for switchgrass to produce the same amount of fuel. Furthermore, we believe napier grass will have a similar impact on international markets as assumed for switchgrass. Like switchgrass, napier grass is not expected to be traded internationally and its impacts on other crops are expected to be limited. Increased giant reed demand in the U.S. for biofuels is not expected to impact existing markets for giant reed, which are relatively small niche markets (e.g., musical instrument reeds).

2. Land Use

In EPA's March 2010 RFS final rule analysis, switchgrass plantings displaced primarily soybeans and wheat, and to a lesser extent hay, rice, sorghum, and cotton. Napier grass, with production focused in the southern United States, is likely to be grown on land once used for pasture, rice, commercial sod, cotton or alfalfa, which would likely have less of an international indirect impact than switchgrass because some of those commodities are not as widely traded as soybeans or wheat. Given that napier grass will likely displace the least productive land first, EPA concludes that the land use GHG impact for napier grass per gallon should be no greater and likely less than estimated for switchgrass. Given that giant reed is in early stages of

development as an energy crop, there is limited information on where it will be grown and what crops it will displace. We expect giant reed will displace the least productive land first and would likely have a similar or smaller indirect impact associated with crop displacement than what we assumed for switchgrass.

Considering the total land potentially impacted by all the new feedstocks included in this rulemaking would not impact these conclusions. In the switchgrass ethanol scenario done for the March 2010 RFS final rule, total cropland acres increases by 4.2 million acres, including an increase of 12.5 million acres of switchgrass, a decrease of 4.3 million acres of soybeans, a 1.4 million acre decrease of wheat acres, a decrease of 1 million acres of hay, as well as decreases in a variety of other crops. Given the higher yields of the energy grasses considered here compared to switchgrass, there would be ample land available for production without having any anticipated adverse impacts beyond what was considered for switchgrass production. This analysis took into account the economic conditions such as input costs and commodity prices when evaluating the GHG and land use change impacts of switchgrass.

One commenter stated that by assuming no land use change for giant reed and napier grass, the Agency may have underestimated the increase in GHG emissions that could result from breaking new land. According to the commenter, EPA assumed that these feedstocks will be grown on the least productive land without citing any specific models or studies.

The commenter appears to have misinterpreted EPA's analysis. EPA did not assume these crops would be grown on fallow acres, nor did EPA assume that switchgrass would only be produced on the least productive lands. EPA assumed these crops would be grown on acres similar to switchgrass, and therefore applied the land use change impacts of switchgrass analyzed in the March 2010 RFS final rule. In that rule, EPA provided detailed information on the types

of crops (e.g., wheat) that would be displaced by switchgrass. This analysis took into account the economic conditions such as input costs and commodity prices when evaluating the GHG and land use change impacts of switchgrass.¹¹

3. Crop Inputs and Feedstock Transport

EPA also assessed the GHG impacts associated with planting, harvesting, and transporting giant reed and napier grass feedstocks in comparison to switchgrass. Table 1 shows the assumed 2022 commercial-scale production inputs for switchgrass (used in the March 2010 RFS final rule analysis), average giant reed and napier grass production inputs (USDA projections and industry data) and the associated GHG emissions.

Available data gathered by EPA suggest that giant reed may require on average less nitrogen and insecticide than switchgrass, but more phosphorous, potassium, herbicide, diesel, and electricity per unit of biomass. Napier grass may require similar amounts of nitrogen fertilizer application as switchgrass, less phosphorous, potassium and insecticide than switchgrass, but more herbicide, lime, diesel and electricity per unit of biomass. *See* Table 1 below.

This assessment assumes production of these two new feedstocks uses electricity for irrigation given that growers will likely irrigate when possible to improve yields. Irrigation rates will vary depending on the timing and amount of rainfall, but for the purpose of estimating GHG impacts of electricity use for irrigation, we assumed a rate similar to what we assumed for other irrigated crops in the Southwest, South Central, and Southeast as shown in Table 1.

Applying the GHG emission factors used in the March 2010 RFS final rule, giant reed production results in slightly lower GHG emissions relative to switchgrass production (a decrease of approximately 2 kg CO₂eq/mmbtu). Napier grass production results in slightly

¹¹ *See* Final Regulatory Impact Analysis Chapter 2, February 2010.

higher GHG emissions relative to switchgrass production (an increase of approximately 6 kg CO₂eq/mmbtu).

Table 1: Production Inputs and GHG Emissions for Switchgrass, Giant Reed, and Napier grass (Biochemical Ethanol), 2022

	Emission Factors	Switchgrass		Giant Reed		Napier grass	
		Inputs (per dry ton of biomass)	Emissions (per mmBtu fuel)	Inputs (per dry ton of biomass)	Emissions (per mmBtu fuel)	Inputs (per dry ton of biomass)	Emissions (per mmBtu fuel)
Nitrogen Fertilizer	3,29 kgCO ₂ e/ton of nitrogen	15.2 lbs	3.6 kgCO ₂ e	5 lbs	1 kgCO ₂ e	10 lbs	2.4 kgCO ₂ e
N ₂ O	N/A	N/A	7.6 kgCO ₂ e	N/A	4.8 kgCO ₂ e	N/A	7.6 kgCO ₂ e
Phosphorus Fertilizer	1,12 kgCO ₂ e / ton of phosphate	6.1 lbs	0.5 kgCO ₂ e	7.4 lbs	0.6 kgCO ₂ e	1.1 lbs	0.1 kgCO ₂ e
Potassium Fertilizer	743 kgCO ₂ e / ton of potassium	6.1 lbs	0.3 kgCO ₂ e	7.4 lbs	0.4 kgCO ₂ e	4.0 lbs	0.2 kgCO ₂ e
Herbicide	23,45 kgCO ₂ e / tons of herbicide	0.002 lbs	0.003 kgCO ₂ e	0.02 lbs	0.03 kgCO ₂ e	0.4 lbs	0.6 kgCO ₂ e
Insecticide (average across regions)	27,22 kgCO ₂ e / tons of pesticide	0.025 lbs	0.04 kgCO ₂ e	0 lbs	0 kgCO ₂ e	0 lbs	0 kgCO ₂ e
Lime	408 kgCO ₂ e / ton of lime	0 lbs	0 kgCO ₂ e	0 lbs	0 kgCO ₂ e	100 lbs	2.9 kgCO ₂ e
Diesel	97 kgCO ₂ e / mmBtu diesel	0.4 gal	0.8 kgCO ₂ e	1.4 gal	2.5 kgCO ₂ e	1.3 gal	2.2 kgCO ₂ e
Electricity (irrigation)	220 kgCO ₂ e / mmBtu	0 kWh	0 kgCO ₂ e	10 kWh	1 kgCO ₂ e	25 kWh	2.7 kgCO ₂ e
Total Emissions			13 kgCO ₂ e / mmBtu		11 kgCO ₂ e / mmBtu		19 kgCO ₂ e / mmBtu

Assumes 2022 switchgrass yield of 6.59 dry tons/acre and 92.3 gal ethanol/dry ton, 2022 giant reed yield of 18 dry tons/acre and 92.3 gal ethanol/dry ton, and 2022 napier grass yield of 20 dry tons/acre and 92.3 gal ethanol/dry ton. More detail on calculations and assumptions is included in materials to the docket.

GHG emissions associated with distributing giant reed and napier grass feedstocks are expected to be similar to EPA's estimates for switchgrass feedstock because they are all herbaceous agricultural crops requiring similar transport, loading, unloading, and storage regimes. Our analysis therefore assumes the same GHG impact for feedstock distribution as we assumed for switchgrass, although distributing giant reed and napier grass feedstocks could be less GHG intensive because higher yields could translate to shorter overall hauling distances to storage or biofuel production facilities per gallon or Btu of final fuel produced.

B. Fuel Production, Distribution, and Use

Giant reed and napier grass are suitable for the same conversion processes as other cellulosic feedstocks, such as switchgrass and corn stover. Currently available information on giant reed and napier grass composition shows that their hemicellulose, cellulose, and lignin content are comparable to other crops that qualify under the RFS regulations as feedstocks for the production of cellulosic biofuels. Based on this similar composition as well as conversion yield data provided by industry, we applied the same production processes that were modeled for switchgrass in the March 2010 RFS final rule (biochemical ethanol, thermochemical ethanol, and Fischer-Tropsch (F-T) diesel)¹² to giant reed and napier grass. We assumed the GHG emissions associated with producing biofuels from giant reed and napier grass are similar to what we estimated for switchgrass and other cellulosic feedstocks. EPA also assumes that the distribution and use of biofuel made from giant reed and napier grass will not differ significantly from similar biofuel produced from other cellulosic sources. As was done for the switchgrass case, this analysis assumes energy grasses grown in the United States for production purposes. If crops were grown internationally, used for biofuel production, and the fuel was shipped to the U.S., shipping the finished fuel to the U.S. could increase transport emissions. However, based

¹² The F-T diesel process modeled applies to cellulosic diesel, jet fuel, heating oil, and naphtha.

on analysis of the increased transport emissions associated with sugarcane ethanol distribution to the U.S. considered for the 2010 final rule, this would at most add 1-2% to the overall lifecycle GHG impacts of the energy grasses.

C. Summary

Based on our comparison of switchgrass and the two feedstocks considered here, EPA believes that cellulosic biofuel produced from the cellulose, hemicellulose and lignin portions of giant reed and napier grass has similar or better lifecycle GHG impacts than biofuel produced from the cellulosic biomass from switchgrass. Our analysis suggests that the two feedstocks considered have GHG impacts associated with growing and harvesting the feedstock that are similar to switchgrass. Emissions from growing and harvesting giant reed are approximately 2 kg CO₂eq/mmBtu lower than switchgrass, and emissions from growing and harvesting napier grass are approximately 6 kg CO₂eq/mmBtu higher than switchgrass. These are small changes in the overall lifecycle, representing at most a 6% change in the energy grass lifecycle impacts in comparison to the petroleum fuel baseline. Furthermore, the two feedstocks considered are expected to have similar or lower GHG emissions than switchgrass associated with other components of the biofuel lifecycle.

Under a hypothetical worst case, if the calculated increases in growing and harvesting the new feedstocks are incorporated into the lifecycle GHG emissions calculated for switchgrass, and other lifecycle components are projected as having similar GHG impacts to switchgrass (including land use change associated with switchgrass production), the overall lifecycle GHG reductions for biofuel produced from giant reed and napier grass still meet the 60% reduction threshold for cellulosic biofuel, the lowest being a 64% reduction (for napier grass diesel produced through gasification and upgrading) compared to the petroleum baseline. We believe

these are conservative estimates, as use of giant reed or napier grass as a feedstock is expected to have smaller land-use GHG impacts than switchgrass, due to their higher yields. The docket for this rule provides additional detail on the analysis of giant reed and napier grass as biofuel feedstocks.

Although this analysis assumes giant reed and napier grass biofuels produced for sale and use in the United States will most likely come from domestically produced feedstock, we also intend for the approved pathways to cover renewable fuels from giant reed and napier grass grown in other countries. We do not expect incidental amounts of biofuels from feedstocks produced in other nations to impact our assessment that the average GHG emissions reductions will meet the threshold for qualifying as a cellulosic biofuel pathway. Moreover, those countries most likely to be exporting giant reed, or napier grass or biofuels produced from these feedstocks are likely to be major producers which typically use similar cultivars and farming techniques).¹³ Therefore, GHG emissions from producing biofuels with giant reed or napier grass grown in other countries should be similar to the GHG emissions we estimated for U.S. giant reed or napier grass, though they could be slightly higher or lower. For example, the renewable biomass provisions under the Energy Independence and Security Act would prohibit direct conversion of previously unfarmed land in other countries into cropland for energy grass-based renewable fuel production. Furthermore, any energy grass production on existing cropland internationally would not be expected to have land use impacts beyond what was considered for switchgrass production. Even if there were unexpected larger differences, EPA believes the small amounts of feedstock or fuel potentially coming from other countries will not impact our threshold

¹³ See Williams et al. (Docket Number EPA-HQ-OAR-2011-0542-0631); Letter from Petro Losa to Lisa Jackson and Boris Bershteyn, dated October 10, 2012 (Docket Number EPA-HQ-OAR-2011-0542-0625); Virtue et al. at www.caws.org.au/awc/2010/awc201011761.pdf (Docket Number EPA-HQ-OAR-2011-0542-0611); Information on *Arundo donax* (Docket Number EPA-HQ-OAR-2011-0542-0619).

analysis.

Based on our assessment of switchgrass in the March 2010 RFS final rule and this comparison of GHG emissions from switchgrass and giant reed and napier grass, we do not expect variations to be large enough to bring the overall GHG impact of fuel made from giant reed or napier grass to come close to the 60% threshold for cellulosic biofuel. Therefore, EPA is including cellulosic biofuel produced from the cellulose, hemicelluloses and lignin portions of giant reed and napier grass under the same pathways for which cellulosic biomass from switchgrass qualifies under the RFS program.

III. Additional Provisions Addressing Invasiveness Concerns for Giant Reed and Napier Grass

As described in the previous section, the lifecycle GHG assessment of the pathways using giant reed and napier grass assumed that these crops would not expand beyond their intended planting area and therefore did not assume any significant GHG emissions resulting from actions to remediate or remove this unintended spread. In response to the January 5, 2012 proposal, EPA received comments raising concerns about the potential for the spread of these species beyond their intended growing area. After considering these comments, EPA has decided to adopt various changes to the RFS regulations to address the potential for giant reed or napier grass to behave as invasive species beyond their intended planting area. The supplemental requirements included in this final rule support the lifecycle assessment discussed in section II above and the determination that biofuels produced with these feedstocks will meet the criteria of advanced and cellulosic biofuels under the RFS regulations.

A. Discussion of Comments on Invasive Species

In response to the January 2012 proposed rule, EPA received comments highlighting the concern that by approving certain new feedstock types under the RFS program, EPA would be encouraging their introduction or expanded planting without considering their potential impact as invasive species.¹⁴ Commenters stated that *Arundo donax* (giant reed) and *Pennisetum purpureum* (napier grass) have been identified as invasive species in certain parts of the country. These commenters asserted that giant reed and napier grass “are invasive species within the definition of the Executive Order.”¹⁵ Commenters stated that EPA should not approve the proposed feedstocks until EPA has conducted an invasive species analysis, as required under Executive Order (EO) 13112.

¹⁴ Comment submitted by Jonathan Lewis, Senior Counsel, Climate Policy, Clean Air Task Force et al., dated February 6, 2012. Document ID # EPA-HQ-OAR-2011-0542-0118. “Executive Order” refers to Executive Order 13112, Invasive Species, signed February 3, 1999.

¹⁵ Comments submitted by Robert L. Bendick, Director, US Government Affairs, The Nature Conservancy et al., dated February 6, 2012. Document ID # EPA-HQ-OAR-2011-0542-0119.

EPA also received comments stating that giant reed is not “invasive” as defined by EO 13112, since giant reed “only presents problems of invasiveness in riparian areas prone to torrential flooding ... giant reed has been grown responsibly in numerous places ... without problems of invasiveness.”¹⁶

EO 13112, signed in February 1999, calls for each federal agency “to the extent practicable and permitted by law...not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.”¹⁷ The Executive Order defines “invasive species” as “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.”

Giant reed is listed as a noxious or invasive species by Texas,¹⁸ Nevada,¹⁹ and California,²⁰ and these states have programs in place to address invasive species concerns. Several other states also consider giant reed a problem or threat²¹ and napier grass is currently not recommended in Florida because of invasive potential.²² While not prohibiting its planting, Oregon has promulgated strict regulations for the cultivation of giant reed anywhere in the state.²³ Other states, such as North Carolina, have specifically determined that giant reed does

¹⁶ Comment submitted by R. Timothy Columbus and Christopher G. Falcone, Steptoe & Johnson LLP on behalf of The Chemtex Group, dated February 13, 2012. Document ID# EPA-HQ-OAR-2011-0542-0124.

¹⁷ <http://www.gpo.gov/fdsys/pkg/FR-1999-02-08/pdf/99-3184.pdf>.

¹⁸ See <http://info.sos.state.tx.us/fids/200701978-1.html>. Accessed on March 30, 2012.

¹⁹ See http://agri.nv.gov/nwac/PLANT_NoWeedList.htm. Accessed on May 23, 2012.

²⁰ See <http://pi.cdffa.ca.gov/pqm/manual/pdf/107.pdf>. Accessed on March 30, 2012.

²¹ See <http://www.gaeppc.org/list.cfm>. Accessed on May 23, 2012.

²² See <http://www.fleppc.org/list/2011PlantList.pdf>. Accessed on May 21, 2013.

²³ See http://www.oregon.gov/oisc/docs/pdf/arundo603_052_1206.pdf. Accessed May 20, 2013.

not warrant listing as a noxious weed in their state.²⁴

In the January 5, 2012 proposal, EPA included the proposed lifecycle analysis of giant reed and napier grass. As discussed below, EPA's lifecycle analysis of the renewable fuel produced from these feedstocks assumes there are no significant indirect greenhouse gas emissions associated with the spread and subsequent remediation of these feedstocks when grown for biofuel production for the RFS program. Based on this assumption, the lifecycle analysis does not include any expenditures of energy or other sources of GHGs to remediate the spread of these species, such as mechanical removal or chemical control activities, outside of the locations where it is grown as a renewable fuel feedstock for the RFS program.

EPA is not in a position to estimate the magnitude of GHG emissions that might be associated with any such remediation if the plants are not controlled in this manner at these locations. Given this uncertainty, EPA is not ready at this time to determine the percent reduction in lifecycle GHG emissions and whether it satisfies the threshold reduction in GHGs required under the Act, absent such an assumption. Therefore EPA believes it is prudent to require renewable fuel producers to commit to the necessary long-term mechanisms to demonstrate that their production of renewable fuel from giant reed or napier grass is consistent with this assumption, as a condition of approval as a RIN-generating producer of renewable fuel under the RFS program. By requiring the fuel producer to demonstrate no significant likelihood of spread beyond the planting area EPA believes that the approval of pathways to produce renewable fuel from giant reed or napier grass is not likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere.

B. Registration, Reporting, and Record Keeping Requirements to Address

²⁴ Letter from Stephen W. Troxler to Bob Perciasepe, dated March 26, 2013. See Docket Number EPA-HQ-OAR-2011-0542-0665.

Potential Invasiveness

EPA is requiring that registration for producers of renewable fuel made from giant reed or napier grass would include submission by the renewable fuel producer of a Risk Mitigation Plan (RMP) that demonstrates measures are being taken to prevent the spread of these species such that the production of giant reed or napier grass will not pose a significant likelihood of spread beyond the planting area designated in the plan for the feedstock used for production of the renewable fuel. Alternatively, the fuel producer could demonstrate that an RMP is not needed because under the circumstances giant reed or napier grass does not pose a significant likelihood of spread beyond the planting area. For example, an RMP may not be needed where the growing area is an area or region outside the United States where giant reed or napier grass is a native plant and growing it as a feedstock will not lead to any additional spread of the plant. Registration of the producer would therefore require either EPA approval of an RMP or an EPA determination that no plan is needed based on the demonstration noted above. RINs could not be generated for renewable fuel produced using the giant reed or napier grass pathway absent such approval or determination. EPA is also adopting related recordkeeping and reporting requirements. The registration, reporting, and recordkeeping (RRR) requirements are described in more detail below.

The CAA defines renewable fuel as fuel produced from renewable biomass,²⁵ and the definitions of categories of renewable fuel, i.e., advanced biofuel, biomass-based diesel, and cellulosic biofuel, specify the fuels' lifecycle GHG emissions compared to baseline gasoline or diesel fuel GHG emissions.²⁶ The definition of renewable biomass also specifies certain

²⁵ CAA § 211(o)(1)(J).

²⁶ CAA §§ 211(o)(1)(B), (D), (E).

conditions that biomass must meet to be considered renewable biomass.²⁷ The definitions of renewable biomass and renewable fuels do not specifically address the potential environmental impacts associated with the use of potentially invasive species as feedstocks.²⁸ Given the text and structure of section 211(o), EPA does not consider environmental factors other than the lifecycle analysis of GHG emissions and the definition of renewable biomass in determining whether a fuel produced from biomass is a renewable fuel for purposes of the RFS program.

The requirements for producers summarized above and discussed in more detail below are a reasonable way to implement this authority when considering the full lifecycle GHG emissions for renewable fuel produced from giant reed and napier grass. EPA has included additional registration, recordkeeping, and reporting requirements in this rule, to address EPA's lifecycle analysis and concerns related to the spread of invasive species.

EPA developed these additional requirements by building upon a number of state, federal, and local mechanisms that are already in place to reduce the potential invasive impacts of species such as giant reed and napier grass. For example, if producers were to apply for the Biomass Crop Assistance Program (BCAP), USDA would require an environmental assessment that analyzes the risk of invasiveness. In addition, USDA's Conservation Reserve Program (CRP) can also impose restrictions on farmers interested in growing giant reed on CRP land.

Furthermore, invasive species are controlled and regulated under various existing federal and state guidelines. The Animal and Plant Health Inspection Service (APHIS) of the USDA regulates noxious weeds under the authority of the Plant Protection Act (PPA). APHIS names the regulated weeds in the noxious weed regulations (7 CFR 360) that may not be imported into

²⁷ CAA § 211(o)(1)(I).

²⁸ Separately, the CAA directs EPA to consider additional factors, including environmental impacts of the production and use of renewable fuels, in the context of determining the required volumes of renewable fuel for years where Congress does not specify volumes, at CAA § 211(o)(2)(B)(ii). In addition, Congress mandated that EPA conduct certain studies and provide reports to Congress on air quality impacts and other issues besides greenhouse gas impacts associated with the RFS program. *See* CAA § 211(q), (v) and EISA § 204.

the United States, or moved interstate, without a special permit. The requirements included in this rule are not intended to negate or supersede any local, state, or federal authority to restrict or ban these feedstocks due to invasiveness or other concerns.

The potential for spread posed by potentially invasive feedstocks may be greatly reduced through the use of best practices.²⁹ Commenters referenced the voluntary best practices document developed jointly by the North Carolina Department of Agriculture and Consumer Services, the NC State University Cooperative Extension, and the Biofuels Center of North Carolina. Many of the recommendations developed in this document are similar to the best practices USDA describes for the management of similar energy crops such as switchgrass and miscanthus.³⁰ For example, both USDA and the North Carolina voluntary standards recommend developing management plans that avoid planting at sites without buffer areas and avoid feedstock production in floodplains.

The spread of potentially invasive feedstocks is also controlled by some states. For example, in Florida, biomass plantings are governed by FL Rule 5B-57.011. According to the rule, a permit for biomass plantings is required for two contiguous acres within one parcel of land for any plant used for biomass production. The purpose of the permitting process is to control the introduction into, or movement within, Florida of plant species intended for biomass plantings. One provision of the process is that no biomass permit shall be issued for any planting of plants on the state noxious weed list or the federal noxious weed list. In 2009, a company, White Technologies LLC, applied for and received a permit to grow 80 acres of giant reed under the Florida program.

²⁹ Comment submitted by the Biofuels Center of North Carolina and the Institute for Sustainable and Renewable Resources, dated February 13, 2012. Document ID# EPA-HQ-OAR-2011-0542-0123.

³⁰ See http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044768.pdf.

Under Oregon State Statutes, Chapter 570, § 570.405, the Oregon Department of Agriculture may establish control areas if after careful investigation it determines that such areas are necessary for the general protection of the horticultural, agricultural or forest industries of the state from diseases, insects, animals or noxious weeds. In March of 2011, the State created a control area for giant reed in Morrow and Umatilla Counties. The regulation, with restrictions, allowed for up to 400 acres of giant reed to be grown in Morrow and Umatilla Counties for providing biomass for a test burn at the Portland General Electric Boardman Power Plant.

Given the potential for greenhouse gas emissions associated with remediation of the spread of giant reed and napier grass, EPA believes it is prudent to allow RINs to be generated for fuel produced from these feedstocks only if they are grown, transported, and used to produce fuel in a manner that is consistent with our lifecycle analysis. EPA is requiring that producers of renewable fuel derived from giant reed and napier grass must submit a Risk Mitigation Plan to ensure that the production of giant reed or napier grass will not pose a significant likelihood of spread beyond the planting area of the feedstock used for production of the renewable fuel. EPA would consult with the appropriate responsible governmental agencies, including USDA, about the RMP, and would approve it if it meets the regulatory criteria described in §80.1450(b)(1)(ix)(A). The producer or importer may only generate RINs for fuel produced from these feedstocks if the feedstocks were grown and transported in compliance with an EPA approved RMP and if the producer follows the approved RMP. If the RMP for a particular feedstock is not performed, any RINs generated for fuel produced from that feedstock are invalid under §80.1431, and the generation of invalid RINs is a prohibited act under §80.1460(b)(2), subject to civil penalties.

Alternately, the producer could submit information and data showing that no RMP is needed because under the circumstances giant reed or napier grass do not pose a significant likelihood of spread beyond the planting area. For example, EPA would consider not requiring an RMP in cases where the growing area is an area or region outside the United States where giant reed or napier grass is a native plant and growing it as a feedstock will not lead to any additional spread of the plant. While ongoing monitoring will not be required when it is determined that an RMP is not needed, the recordkeeping requirements nonetheless require the producer or importer to notify EPA within five (5) days of any reported growth of the feedstock outside the intended planting area. This will allow EPA to keep track of the growth and possible invasive nature of the feedstock. Also, as per §80.1450(b)(2), the producer or importer must submit an independent engineering report every three years verifying all the information submitted at registration. This will include the producer or importer's demonstration that the feedstock presents no substantial likelihood of spread beyond the intended planting area.

In either case, EPA would require the producer to submit a letter from the appropriate USDA office with its registration materials, stating USDA's opinions regarding the likelihood of the feedstock spreading beyond the planting area, and the sufficiency of the RMP (if applicable) in addressing and mitigating such likelihood.

EPA, again after consultation with USDA and any other relevant governmental agencies, would make its determination regarding whether the producer's plan demonstrates that there is not a significant likelihood of the feedstock spreading beyond the intended planting area prior to registering the renewable fuel producer and allowing RINs to be generated for fuel produced from that feedstock.

Risk Mitigation Plans would be required to incorporate approaches that are already recognized as highly effective. One highly effective approach to risk mitigation is Hazard Analysis Critical Control Point (HACCP).³¹ HACCP examines each phase of an invasive species pathway to identify control and evaluation measures to reduce the likelihood of spread. Applied within a coordinated HACCP strategy or plan, these control and evaluation measures reinforce each other. To the extent appropriate, HACCP should be incorporated into a Risk Mitigation Plan. Also as part of the RMP, the producer would demonstrate how the use of best management practices (BMPs), such as those developed by the Invasive Species Advisory Committee³² for any species, by USDA for miscanthus,³³ and by the State of Oregon for *Arundo donax*,³⁴ will be used by the feedstock grower and how such practices will minimize the potential spread of the renewable fuel feedstock. BMPs include the development and implementation of mitigation strategies and plans to minimize escape and other impacts (e.g., minimize soil disturbance), incorporate desirable traits (e.g., sterility or reduced seed production), develop and put in place dispersal mitigation protocols prior to cultivation of biofuel plants in each region or ecosystem, develop multiple year eradication protocols for rapid removal of biofuel crops if they disperse beyond desired crop rotation period, and develop plans for early detection and rapid response (EDRR).³⁵ EDRR efforts should also be incorporated into an RMP; such efforts should demonstrate that the likelihood that invasions could be halted while still localized and identify and employ cooperative networks, communication forums and consultation processes through which federal, state, and local agencies can work with other stakeholders to reduce the risk of biological invasion. There are significant geographic gaps in baseline distribution and

³¹ See <http://www.habitat.noaa.gov/pdf/HACCP%20Training%20Manual.pdf>.

³² See http://www.invasivespecies.gov/home_documents/BiofuelWhitePaper.pdf.

³³ See http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044768.pdf.

³⁴ See http://www.oregon.gov/oisc/docs/pdf/arundo603_052_1206.pdf.

³⁵ http://www.invasivespecies.gov/global/EDRR/EDRR_documents/Guidelines%20for%20Early%20Detection%20&%20Rapid%20Response.pdf.

abundance data for invasive species including giant reed and napier grass. It may be difficult to determine what plants gave rise to a newly found population and populations may go undetected for long periods. For this reason, early detection rapid response efforts should be conducted cooperatively with a priority on halting the spread of the species. The RMP should include provisions for the closure of the site once it is no longer used for production of feedstock for biofuel use under the RFS program or upon abandonment by the feedstock grower, including the destruction and removal of all remaining feedstock. Site decommissioning planning is also required for sites that have demonstrated that they do not need an RMP to prevent escapes after active crop production and management operations have stopped.

Furthermore, the RMP should include an on-going monitoring and reporting component. The monitoring would cover the presence or absence of the giant reed or napier grass, and the planting locations prior to and during feedstock cultivation. Monitoring should be done during the growing season, as well as extend for a sufficient period after the field is no longer used for feedstock production to ensure no remnants of giant reed or napier grass survive or spread. The details of a monitoring and reporting plan, including the party responsible for collecting and overseeing monitoring data, will be specific to the project and planting site, and should account for and respond to any applicable local, state or federal regulations. The area that needs to be monitored would also be approved by EPA, in consultation with the appropriate responsible officials. The area to be monitored should be sufficient to detect any potential spread of the feedstock, both surrounding the field of production and feedstock storage sites, along the transportation route, and around the biofuel production facility.

EPA is requiring the use of a third party auditor, independent of the feedstock grower and renewable fuel producer to audit the monitoring activities and reporting done by the renewable

fuel producer under the RMP on an annual basis as part of the producer or importer's fourth quarterly report as set out in §80.1451(h)(5), subject to approval of a different frequency by EPA. For growers who are new to growing or harvesting invasive feedstocks, more frequent monitoring or reporting may be required for the first growing cycle. It will be the responsibility of the renewable fuel producer to identify this competent independent third party as part of its registration application. Any future changes to the use of a different independent third party, or changes to any EPA approved management or monitoring mechanisms or practices must be documented in a revised RMP, reviewed, and approved by EPA in advance of the change. RINs generated for renewable fuel produced from giant reed or napier grass without EPA's approval for the RMP (where such a plan is required) would be invalid.

The recordkeeping and reporting provisions would require producers to obtain documentation about giant reed or napier grass feedstocks from their feedstock supplier(s) and take the measures necessary to ensure that they know the source of their feedstocks and can demonstrate to EPA that they were produced in compliance with an RMP or from land that EPA has determined will not create a significant likelihood of spread beyond the planting area of the feedstock used for production of the renewable fuel.

Specifically, the reporting requirements for producers who generate RINs from these feedstocks include a certification on renewable fuel production reports that the feedstock was grown, harvested, transported, and stored in compliance with an RMP or from land that EPA has determined will not create a significant likelihood of spread beyond the planting area.

Additionally, producers will be required to include with their quarterly reports a summary of the types and quantities of these feedstocks used throughout the quarter, as well as maps of the land from which the feedstocks used in the quarter were harvested. EPA's recordkeeping provisions

require renewable fuel producers to maintain sufficient records to support their claims that their feedstocks were grown and transported in compliance with an RMP or from land that EPA has determined will not create a significant likelihood of spread beyond the planting area.

If submitting an RMP, the renewable fuel producer would also submit a number of documents such as a letter documenting the feedstock grower's compliance with all of the relevant federal, state, regional, and local requirements related to invasive species, a copy of all state and local growing permits held by the feedstock grower, and a communication plan for notifying federal, state, and local authorities if the feedstock is detected outside the intended planting areas. Finally, the fuel producer would submit a copy of the agreement between itself, the feedstock grower, and any intermediaries responsible for the harvesting, transport and storage of the feedstock, establishing the parties' rights and duties related to the RMP and any other activities and liability associated with the prevention of the spread of the feedstock. It is essential that the feedstock grower, fuel producer, and any intermediaries responsible for the harvesting, transport, and storage of the feedstock are clearly on notice of their relative rights and duties in this situation because the regulations will require the fuel producer to exercise a level of responsibility for and oversight of the feedstock production, harvest, transport and storage that may not normally exist in a buy-sell contract for agricultural products. Finally, pursuant to existing regulations, EPA may require additional information as needed at the time of registration, which may be especially appropriate when the agency considers the approval of a feedstock with risk of invasiveness.

As part of the registration process, EPA will require information on the financial resources or other financial mechanism available to finance reasonable remediation activities and may require, where appropriate, the fuel producer to include in an RMP a demonstration that

there is an adequate mechanism (such as a state-administered fund, bond, or certificate of deposit) to ensure the availability of financial resources sufficient to cover reasonable potential remediation costs associated with the spread of giant reed or napier grass beyond the intended planting areas. EPA would consult with USDA and, as appropriate, other federal agencies on the need for and, where appropriate, the extent of financial resources required for adequate assurances of containment and remediation in the event of a spread. USDA's letter on the suitability of an RMP (noted above) should include these recommendations considering site specific characteristics. The primary purpose of such a mechanism would be to ensure that the fuel producer has the necessary finances to ensure that giant reed or napier grass does not spread beyond the intended borders. In this way, we believe such a mechanism would be consistent with the lifecycle analyses for these pathways, which assume no significant indirect GHG emissions from remediation activities. Since the expected result would be additional assurance that preventive measures are taken, it would further decrease the likelihood of spread and associated remediation activities occurring, which is consistent with the assumption of the lifecycle analysis. EPA believes that a robust RMP as discussed above, combined with the additional measures to prevent spread of the feedstock resulting from a financial assurance mechanism, would be consistent with EPA's assumption of no significant indirect greenhouse gas emissions associated with the spread and subsequent remediation of these feedstocks grown for biofuel production for the RFS program.

To further reduce the likelihood of growth beyond the planting area for these feedstocks, EPA is also including additional consequences for producers whose feedstock grows beyond the intended planting area. The reporting requirements include a requirement that the producer notify EPA and USDA and relevant agencies identified in the communications plan as soon as

practicable after detection of unintended growth outside the planted area. We are also including provisions wherein growth outside the planting area could result in a suspension of the producer's registration and ability to generate RINs via that pathway until remediation activities were completed and the potential for further spread was addressed. Prohibiting the generation of RINs in this situation would provide an incentive for the producer to conduct better oversight of the feedstock supplier and prevent unintended growth beyond the planting area, and would also ensure that the generation of RINs via these pathways is consistent with the underlying lifecycle analysis. Also, as noted above, if the RMP is not performed as intended, any RINs generated for fuel produced from that feedstock are invalid under §80.1431, and the generation of such invalid RINs is a prohibited act subject to civil penalties. Those penalties would be assessed according to CAA §211(d)(1), amounting to up to \$37,500 per violation per day plus any economic benefit or savings resulting from the violations.

IV. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order

13563: Improving Regulation and Regulatory Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), this action is a "significant regulatory action." Accordingly, EPA submitted this action to the Office of Management and Budget (OMB) for review under Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011) and any changes made in response to OMB recommendations have been documented in the docket for this action.

B. Paperwork Reduction Act

The modifications to the RFS regulations contained in this rule are within the scope of the information collection requirements previously submitted to the Office of Management and Budget (OMB) for the RFS regulations.

OMB has approved the information collection requirements contained in the existing regulations at 40 CFR part 80, subpart M under the provisions of the *Paperwork Reduction Act*, 44 U.S.C. 3501 *et seq.* and has assigned OMB control numbers 2060–0637 and 2060-0640. The OMB control numbers for EPA’s regulations in 40 CFR are listed in 40 CFR part 9.

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today’s rule on small entities, small entity is defined as: (1) A small business as defined by the Small Business Administration’s (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of this action on small entities, I certify that this rule will not have a significant economic impact on a substantial number of small entities. This

rule will not impose any new requirements on small entities. The relatively small changes this rule makes to the RFS regulations do not impact small entities.

D. Unfunded Mandates Reform Act

This rule does not contain a federal mandate that may result in expenditures of \$100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. We have determined that this action will not result in expenditures of \$100 million or more for the above parties and thus, this rule is not subject to the requirements of sections 202 or 205 of UMRA.

This rule is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments. It only applies to gasoline, diesel, and renewable fuel producers, importers, distributors and marketers and makes relatively minor corrections and modifications to the RFS regulations.

E. Executive Order 13132 (Federalism)

This action does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. This action only applies to gasoline, diesel, and renewable fuel producers, importers, distributors and marketers and makes relatively minor corrections and modifications to the RFS regulations. Thus, Executive Order 13132 does not apply to this action.

F. Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments)

This rule does not have tribal implications, as specified in Executive Order 13175 (65 FR 67249, November 9, 2000). It applies to gasoline, diesel, and renewable fuel producers, importers, distributors and marketers. This action makes relatively minor corrections and modifications to the RFS regulations, and does not impose any enforceable duties on communities of Indian tribal governments. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

EPA interprets EO 13045 (62 FR 19885, April 23, 1997) as applying only to those regulatory actions that concern health or safety risks, such that the analysis required under section 5–501 of the EO has the potential to influence the regulation. This action is not subject to EO 13045 because it does not establish an environmental standard intended to mitigate health or safety risks.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not a “significant energy action” as defined in Executive Order 13211 (66 FR 28355 (May 22, 2001)), because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. This rulemaking does not change any programmatic structural component of the RFS regulatory requirements. This rulemaking does not add any new requirements for obligated parties under the program or mandate the use of any of the new pathways contained in the rule. This rulemaking only makes a determination to qualify new fuel

pathways under the RFS regulations, creating further opportunity and flexibility for compliance with the Energy Independence and Security Act of 2007 (EISA) mandates.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (“NTTAA”), Public Law 104–113, 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This action does not involve technical standards. Therefore, EPA did not consider the use of any voluntary consensus standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order (EO) 12898 (59 FR 7629 (Feb. 16, 1994)) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

EPA has determined that this rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it does

not affect the level of protection provided to human health or the environment. These amendments would not relax the control measures on sources regulated by the RFS regulations and therefore would not cause emissions increases from these sources.

K. Executive Order 13112: Invasive Species

Executive Order (EO) 13112 (64 FR 6183 (Feb. 3, 1999)) calls for each Federal agency to not take actions that it believes are likely to cause or promote the introduction or spread of invasive species unless the agency has determined its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species. EPA has determined that this rule is not likely to cause or promote the introduction or spread of invasive species, since this rulemaking requires the demonstration by the renewable fuel producer that the growth of Arundo donax or Pennisetum purpureum will not pose a significant likelihood of spread beyond the planting area of the feedstock used for production of the renewable fuel.

L. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 et seq., as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. A major rule cannot take effect until 60 days after it is published in the Federal Register. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule the *Federal Register*. This action is not a “major rule” as defined by 5 U.S.C. 804(2).

V. Statutory Provisions and Legal Authority

Statutory authority for the rule finalized today can be found in section 211(o) of the Clean Air Act, 42 U.S.C. 7545(o). Additional support for today's rule comes from Section 301(a) of the Clean Air Act, 42 U.S.C. 7414, 7542, and 7601(a).

List of Subjects in 40 CFR Part 80

Environmental protection, Administrative practice and procedure, Agriculture, Air pollution control, Confidential business information, Diesel Fuel, Energy, Forest and Forest Products, Fuel additives, Gasoline, Imports, Penalties, Petroleum, Reporting and recordkeeping requirements.

Dated: June 28, 2013

Bob Perciasepe,

Acting Administrator

For the reasons set forth in the preamble, 40 CFR part 80 is amended as follows:

PART 80 — REGULATION OF FUELS AND FUEL ADDITIVES

1. The authority citation for part 80 continues to read as follows:

Authority: 42 U.S.C. 7414, 7521(1), 7545 and 7601(a).

2. Section 80.1426 is amended by revising Rows K, L, and N of Table 1 in paragraph (f)(1), and by adding paragraph (f)(14) to read as follows:

* * * * *

§80.1426 How are RINs generated and assigned to batches of renewable fuel by renewable fuel producers or importers?

* * * * *

(f) * * *

(1) * * *

Table 1 to §80.1426—Applicable D Codes for Each Fuel Pathway for Use in Generating RINs

	Fuel type	Feedstock	Production process requirements	D-Code
	* * * * *	*		
K	Ethanol	Cellulosic Biomass from crop residue, slash, pre-commercial thinnings and tree residue, annual covercrops, switchgrass, miscanthus, Energy cane, <i>Arundo donax</i> , and	Any	3

		<i>Pennisetum purpureum</i> ; cellulosic components of separated yard waste; cellulosic components of separated food waste; and cellulosic components of separated MSW		
L	Cellulosic diesel, jet fuel and heating oil	Cellulosic Biomass from crop residue, slash, pre- commercial thinnings and tree residue, annual covercrops, switchgrass, miscanthus, energy cane, <i>Arundo donax</i> , and <i>Pennisetum purpureum</i> ; cellulosic components of separated yard waste; cellulosic components of separated food waste; and cellulosic components of separated MSW	Any	7
	* * * * *	* *		
N	Naphtha	Cellulosic biomass from switchgrass, miscanthus, energy cane, <i>Arundo donax</i> , and <i>Pennisetum purpureum</i>	Gasification and upgrading	3

* * * * *

(14) A producer or importer of renewable fuel using giant reed (*Arundo donax*) or napier grass (*Pennisetum purpureum*) as a feedstock may generate RINs for that renewable fuel if:

- (i) The feedstock is produced, managed, transported, collected, monitored, and processed according to a Risk Mitigation Plan approved by EPA under the registration procedures specified in §80.1450(b)(1)(x)(A); or,

(ii) EPA has determined that there is not a significant likelihood of spread beyond the planting area of the feedstock used for production of the renewable fuel. Any determination that Arundo donax or Pennisetum purpureum does not present a significant likelihood of spread beyond the planting area must be based upon clear and compelling evidence, including information and supporting data submitted by the producer. Such a determination must be made by EPA as specified in §80.1450(b)(1)(x)(B).

* * * * *

3. Section 80.1450 is amended by adding paragraph (b)(1)(x) to read as follows:

§ 80.1450 What are the registration requirements under the RFS program?

* * * * *

(b) * * *

(1) * * *

(x)(A) For a producer of renewable fuel made from Arundo donax or Pennisetum purpureum per § 80.1426(f)(14)(i):

(1) A Risk Mitigation Plan (Plan) that demonstrates the growth of Arundo donax or Pennisetum purpureum will not pose a significant likelihood of spread beyond the planting area of the feedstock used for production of the renewable fuel. The Plan must identify and incorporate best management practices (BMPs) into the production, management, transport, collection, monitoring, and processing of the feedstock. To the extent practicable, the Risk Mitigation Plan should utilize a Hazard Analysis Critical Control Point (HACCP) approach to examine each phase of the pathway to identify spread reduction steps. BMPs should include the development of mitigation strategies and plans to minimize escape and other impacts (e.g., minimize soil disturbance), incorporate desirable traits (e.g., sterility or reduced seed production), develop and

implement dispersal mitigation protocols prior to cultivation, develop multiple year eradication controls. Eradication controls should follow an approach of early detection and rapid response (EDRR) to unintended spread. EDRR efforts should demonstrate the likelihood that invasions will be halted while still localized and identify and employ cooperative networks, communication forums, and consultation processes with federal, state, and local agencies. The Risk Mitigation Plan must provide for the following:

(i) Monitoring and reporting data for a period prior to planting that is sufficient to establish a baseline, through crop production, and extending beyond crop production for a sufficient period after the field is no longer used for feedstock production to ensure no remnants of giant reed or napier grass survive or spread.

(ii) Monitoring must include the area encompassing the feedstock growing areas, the transportation corridor between the growing areas and the renewable fuel production facility, and the renewable fuel production facility, extending to the distance of potential propagation of the feedstock species, or further if necessary.

(iii) Monitoring must reflect the likelihood of spread specific to the feedstock.

(iv) A closure plan providing for the destruction and removal of feedstock from the growing area upon abandonment by the feedstock grower or end of production.

(v) A plan providing for an independent third party who will audit the monitoring and reporting conducted in accordance with the Plan on an annual basis, subject to approval of a different frequency by EPA.

(2) A letter from the United States Department of Agriculture (“USDA”) to the renewable fuel producer stating USDA’s conclusions and the bases therefore regarding whether the Arundo donax or Pennisetum purpureum does or does not present a significant likelihood of spread

beyond the planting area of the feedstock used for production of the renewable fuel as proposed by the producer. This letter shall also include USDA's recommendation of whether it is appropriate to require the use of a financial mechanism to ensure the availability of financial resources sufficient to cover reasonable potential remediation costs associated with the invasive spread of giant reed or napier grass beyond the intended planting areas. In coordination with USDA, EPA shall identify for the producer the appropriate USDA office from which the letter should originate.

(3) Identification of all federal, state, regional, and local requirements related to invasive species that are applicable for the feedstock at the growing site and at all points between the growing site and the fuel production site.

(4) A copy of all state and local growing permits held by the feedstock grower.

(5) A communication plan for notifying EPA's Office of Transportation and Air Quality, USDA, adjacent federal land management agencies, and any relevant state, tribal, regional, and local authorities as soon as possible after identification of the issue if the feedstock is detected outside planted area.

(6) A copy of the agreement between the feedstock grower and fuel producer establishing all rights and duties of the parties related to the Risk Mitigation Plan and any other activities and liability associated with the prevention of the spread of Arundo donax and/or Pennisetum purpureum outside of the intended planting area.

(7) A copy of the agreement between the fuel producer and an independent third party describing how the third party will audit the monitoring and reporting conducted in accordance with the Risk Mitigation Plan on an annual basis, subject to approval of a different timeframe by EPA.

(8) Information on the financial resources or other financial mechanism (such as a state-administered fund, bond, or certificate of deposit) that would be available to finance reasonable remediation activities associated with the potential spread of giant reed or napier grass beyond the intended planting areas, and information on whether it is necessary to have any further such resources or mechanism. EPA may require a demonstration that there is an adequate financial mechanism (such as a state-administered fund, bond, or certificate of deposit) to ensure the availability of financial resources sufficient to cover reasonable potential remediation costs associated with the spread of giant reed or napier grass beyond the intended planting areas.

(9) EPA may require additional information as appropriate.

(B) For a producer of renewable fuel made from Arundo donax or Pennisetum purpureum per § 80.1426(f)(14)(ii):

(1) Clear and compelling evidence, including information and supporting data, demonstrating that Arundo donax or Pennisetum purpureum does not present a significant likelihood of spread beyond the planting area of the feedstock used for production of the renewable fuel. Evidence must include data collected from similar environments (soils, temperatures, precipitation, USDA Hardiness Zones) as the proposed feedstock production project site and accepted by the scientific community. Such a demonstration should include consideration of the elements of a Risk Mitigation Plan set forth in paragraph (b)(1)(x)(A) of this section, fully disclose the potential invasiveness of the feedstock, provide a closure plan for the destruction and removal of feedstock from the growing area upon abandonment by the feedstock grower or end of production, and explain why a Risk Mitigation Plan is not needed to make the required determination.

(2) A letter from the United States Department of Agriculture (“USDA”) to the renewable fuel producer stating USDA’s conclusions and the bases therefore regarding whether the Arundo donax or Pennisetum purpureum does or does not present a significant likelihood of spread beyond the planting area of the feedstock used for production of the renewable fuel as proposed by the producer or importer. In coordination with USDA, EPA shall identify for the producer the appropriate USDA office from which the letter should originate.

(C) EPA may suspend a producer’s registration for purposes of generating RINs for renewable fuel using Arundo donax or Pennisetum purpureum as a feedstock if such feedstock has spread beyond the intended planting area.

* * * * *

4. Section 80.1451 is amended by adding paragraph (h) to read as follows:

§80.1451 What are the reporting requirements under the RFS program?

* * * * *

(h) Producers or importers of renewable fuel made from Arundo donax or Pennisetum purpureum per § 80.1426(f)(14) must report all the following:

(1) Any detected growth of Arundo donax or Pennisetum purpureum outside the intended planting area, within 5 business days after detection and in accordance with the Risk Mitigation Plan, if applicable.

(2) As available, any updated information related to the Risk Mitigation Plan, as applicable. An updated Risk Mitigation Plan must be approved by the Administrator in consultation with USDA prior to its implementation.

(3) On an annual basis, a description of and maps or electronic data showing the average and total size and prior use of lands planted with Arundo donax or Pennisetum purpureum, the average and total size and prior use of lands set aside to control the invasive spread of these crops, and a description and explanation of any change in land use from the previous year. (4)

On an annual basis, the report from an independent third party auditor evaluating monitoring and reporting activities conducted in accordance with the Risk Mitigation Plan, as applicable subject to approval of a different frequency by EPA.

(5) Information submitted pursuant to paragraphs (h)(3) and (h)(4) of this section must be submitted as part of the producer or importer's fourth quarterly report, which covers the reporting period October – December, according to the schedule in paragraph (f)(2) of this section.

5. Section 80.1454 is amended by adding paragraph (b)(7) to read as follows:

§80.1454 What are the recordkeeping requirements under the RFS program?

* * * * *

(b) * * *

(7) For any producer of renewable fuel made from Arundo donax or Pennisetum purpureum per §80.1426(f)(14), all the following:

(i) Records related to all requirements and duties set forth in the registration documents described in § 80.1450(b)(1)(x)(A), including but not limited to the Risk Mitigation Plan, monitoring records and reports, and adherence to state, local and federal invasive species requirements and permits.

(ii) Records associated with feedstock purchases and transfers that identify where the feedstocks were produced and are sufficient to verify that feedstocks used were produced and transported in accordance with an EPA approved Risk Mitigation Plan or were produced on land that the EPA determined does not present a significant likelihood of invasive spread beyond the planting area of the feedstock used for production of the renewable fuel, including all the following:

(A) Maps or electronic data identifying the boundaries of the land where each type of feedstock was produced.

(B) Bills of lading, product transfer documents, or other commercial documents showing the quantity of feedstock purchased from each area identified above, and showing each transfer of custody of the feedstock from the location where it was produced to the renewable fuel production facility.

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