



NATURAL RESOURCES DEFENSE COUNCIL

**Statement of**  
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**Natural Resources Defense Council**

**Before the**  
**Committee on Environment and Public Works**  
**Subcommittee on Clean Air and Nuclear Safety**  
**United States Senate**

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## Table of Contents

I.	Introduction.....	1
II.	EPA Should Release a Complete Proposed RFS Rule for Public Comment Now...2	
III.	The RFS land and wildlife safeguards must be preserved and extended to all bioenergy policy .....	5
IV.	Ethanol Blends and Other Biofuels Policies Need to Be Guided by the Best Science .....	9
V.	Our Biofuels Policies Must Shift to Only Supporting the Best Biofuels.....	10
A.	The Billion Gallon Challenge.....	10
B.	How to Make it Happen .....	11
1.	Link together the different incentive programs and the agencies that administer them.....	12
2.	Establish comprehensive gold-standard sustainability requirements for eligibility for financial incentives .....	12
3.	Reform biofuels tax credits .....	13
VI.	Conclusion.....	13

## **I. Introduction**

Thank you for the opportunity to share my views regarding the opportunities and challenges of implementing the Renewable Fuels Standard (RFS). My name is Nathanael Greene. I'm a senior policy analyst for the Natural Resources Defense Council (NRDC) and our director of renewable energy policy. NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles, San Francisco, Chicago, and Beijing.

Mr. Chairman, this hearing is particularly well timed. As you know, we are in uniquely challenging times with the economy in dire straits, the urgency of global warming accelerating, and our energy security as important as ever. In the area of biofuels, these challenges are particularly pressing, but these challenges can also be opportunities if we can get our biofuel policies right. Almost all of our biofuels policies are at critical stages right now and how they develop over the next 6 months to a year will determine whether biofuels will be part of the solution to our multiple challenges or part of the problem. This is true for how we handle the ethanol blend wall and our biofuels tax credits, but it is most critically true with how we implement the Renewable Fuel Standard (RFS).

Sustainably produced biomass feedstocks, processed efficiently and used in efficient vehicles can reduce our dependence on oil for transportation, reduce emissions of heat-trapping carbon dioxide, and contribute significantly to a vibrant farm economy. Pursued without adequate guidelines such as those that Congress wrote into the RFS, however,

biofuels production carries grave risk to our lands, forests, water, wildlife, public health and climate. Unfortunately, the safeguards and standards in the RFS legislation are already under attack before they have been implemented.

If our biofuels policies are to deliver on the promise of biofuels, they must first and foremost be guided by the best science and economics, and they must also focus like a laser on pushing the development of the best biofuels. Fiscally and environmentally, we simply cannot afford to continue to support mature biofuels and those that cause more harm than good.

## **II. EPA Should Release a Complete Proposed RFS Rule for Public Comment Now**

The US Environmental Protection Agency (EPA) has submitted to the Office of Management and Budget a proposed rule to implement the Renewable Fuel Standard, as amended by the Energy Independence and Security Act of 2007. As you know, these amendments established lifecycle greenhouse gas performance requirements for new biofuels and specifically definite lifecycle emissions to include “direct and significant indirect emissions such as significant emissions from land-use changes.” It is my understanding that EPA’s proposed rule includes a lifecycle analysis with values for emissions from indirect land-use, but unfortunately, the proposal seems stalled at OMB.

I urge this subcommittee to encourage the Obama administration to put this proposed rule out for public comment as soon as possible and to ensure that the proposed rule is robust and includes the impacts of indirect land use change on GHG emissions as required by law. The emissions from land-use change would be best dealt with by regulating land owners, but unfortunately even here in the United States, this is many years off and internationally

it is even further in the future. In the meantime, if we are to use policies such as the RFS to encourage biofuels, we need to include emissions from land-use change. If we don't, by squeezing down on the pollution from transportation, we will cause an increase in pollution from land-use.

NRDC has been following closely the developing science on the contribution of indirect emissions from land use changes and I want to voice our strong objection to the suggestion in recent letters to EPA and OMB that EPA should delay or significantly constrain consideration of indirect land use in the RFS rulemaking. EPA has been engaged in a rigorous rule-making process that has drawn on the best available science and peer-reviewed models, and the public comment period is the best and most appropriate place to continue to improve EPA's proposal and ensure the transparency and scientific basis of the rulemaking process.

Consideration of all of the science in an open and transparent comment process will be key to ensuring that the regulations accomplish the emissions reductions Congress intended when they directed that indirect emissions from land use changes be included.

Suppression of this part of the rule, or of aspects of EPA's accounting methodology and results of this accounting, prior to the comment period would severely damage the integrity of the rulemaking process and result in a rule that would almost certainly be legally insufficient.

There is no doubt that using some sources of biomass to make fuels leads to substantial GHG emissions as a result of changing our uses of land around the world and that these emissions can easily make the difference between fuels that reduce or increase GHG

emissions relative to gasoline. There are ongoing debates about the best approach to modeling these emissions, but moving ahead with a rule while delaying or omitting the emissions from indirect land use would be equivalent to assigning these effects a zero value, which is clearly not supported by the science.

A zero value is equivalent to assuming that land is limitless, and that agriculture can expand infinitely without any secondary damage. This flies in the face of common sense and is not a reasonable response to technical uncertainties in the analysis. A zero value for indirect land use would send the wrong signal to the market, and would encourage ventures that increase global warming pollution and that would fail once the lifecycle accounting accurately and completely addresses the impact of land use changes.

Encouraging investments in high carbon technology based on intentionally distorted accounting is a dangerous detour for the biofuels industry and would clearly undermine the intent of Congress in establishing minimum greenhouse gas standards for biofuels.

It has also been suggested to EPA that better data will be available over time. We agree, and suggest that inclusion of indirect land use effects at the outset is the best approach for promoting the scientific and data improvements that will inform a robust on-going process of updating the regulations in the future

We are convinced that it is technically practical and environmentally and legally critical for EPA to follow the requirements of the Energy Independence and Security Act of 2007 and to include indirect effects in its analysis of lifecycle GHG emissions from biofuels production. Excluding indirect land use in the RFS would intentionally distort the accounting and undermine the environmental and legal basis for continuing forward with

the RFS rule in general. Even much more delay puts at risk the increased volume requirements for 2010, which is the first year the RFS specifically requires volumes of fuels that must perform better than the lifecycle GHG thresholds. NRDC opposes any further increase in the RFS volume requirements until a robust and legally complete rule has been finalized.

### **III. The RFS land and wildlife safeguards must be preserved and extended to all bioenergy policy**

In addition to the minimum GHG standards, the RFS includes a definition of renewable biomass that provides essential safeguards for wildlife, native grasslands, old-growth, natural forests, and federal forests. While providing this minimum level of protection, the safeguards are broadly inclusive of the kind of material that typically provides the biggest sources of biomass, assuring diverse opportunities for landowner participation and a wide diversity of feedstocks. These are not, as they are sometimes referred to, sustainability standards; these safeguards protect only against the most destructive practices and sources of biomass. These safeguards should be extended to all policies that promote bioenergy including a Renewable Electric Standard, which we hope will soon be enacted into law.

The renewable biomass definition permits the use of:

- All crops and crop residue from current agriculture land and non-forested, fallow land

- All crops and crop residue from any non-forested land cleared prior to the enactment of the Energy Independence and Security Act of 2007 (EISA07), including newly established tree plantations<sup>1</sup>
- All trees and logging residue from non-federal tree plantations, excluding those converted from natural forests after passage of EISA07 (See below)
- “Slash and pre-commercial thinnings” from non-federal natural forests, which, importantly, constitute the lion’s share of woody-biomass from natural working forests that are expected to be economically viable options for biofuels, while keeping forests from being converted
- All material removed from the immediate vicinity of homes and communities at risk from wildfire, on federal and non-federal lands
- Animal waste and animal byproducts
- Waste material, including separated yard waste, food waste, and cooking and trap grease

The definition of renewable biomass ensures the RFS does not encourage biomass harvesting from sensitive wildlife habitat. The ecosystems identified by the RFS as off-limits are home to our most rare, threatened, and imperiled wildlife. While tree plantations and young forests are increasing in parts of the United States, older forests that provide critical wildlife habitat and store tremendous amounts of carbon are disappearing faster than they are being regrown, both nationally and globally, and loss of native habitat is the greatest threat to biodiversity here and abroad.

The RFS safeguards also protect against the use of biomass harvested from native grasslands and old-growth and late successional forest. Loss of forests is one of the greatest threats to biodiversity worldwide and a major contributor to global warming.<sup>2</sup>

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<sup>1</sup> While I recognize that the term "plantation" carries negative historical connotations, it is used throughout my testimony because "tree plantation" is a technical term distinct from "tree farm". "Tree plantation" is also the term used in the Renewable Biomass definition legislative text.

The RFS definition of renewable biomass does not by any means exclude woody biomass, but does ensure that federal policy is not making this bad situation worse. The RFS renewable biomass definition includes all biomass from existing tree plantations, new tree plantations established on previously cleared non-forested lands, and “slash and pre-commercial thinnings” from natural forests. In concert, these provisions allow woody-biomass to contribute to biofuels, while protecting against the clearing of forests or the conversion of natural forests to monoculture tree plantations, thus losing their natural ecosystem functions.

It is important to emphasize that we believe the term “slash and pre-commercial thinning” should be interpreted with substantial flexibility - allowing the use of all harvest byproducts, as well as small and low-value trees from natural forests, as long as the forest is naturally regenerated after harvest as opposed to converted into a tree plantation or other crop.

Natural forests are under severe threat from unsustainable logging practices, global warming, and real estate development. While deforestation is the most dramatic example of this growing crisis, equally critical is the conversion of natural forests to single-species tree plantations. Plantations may look like “forests,” but they are biological deserts when compared to the natural forests that they replace—lacking the diversity of species, structure, and ecological functions that make natural forests so important.

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<sup>2</sup> Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report Summary for Policymakers*, pg. 5. Available at [http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr\\_spm.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf)

Finally, the RFS sourcing safeguards protect our federal forests. These forests represent unique reservoirs of biologic diversity, genetic diversity, significant carbon stores, and many other ecological services, and stand to play a critical role in the face of global warming's growing impacts, including loss of biodiversity, decreased ecosystem resilience, and the spread of invasive species.<sup>3</sup> It is therefore becoming commensurately more important that our federal forest resources are managed and preserved for their numerous non-commodity values and that we assiduously avoid policies that would impose additional pressures on these already stressed, and increasingly crucial, public resources.

In this context, proposals like those contained in H.R. 1190 and S. 636 to use "preventative thinnings" from national forests as a biofuels source make little economic or ecologic sense and should be opposed. (Please see Attachment 1, a letter sent to all Senators opposing S.636 signed by 43 conservation and environmental groups.) First, it is important to understand that preventative thinning—the removal of forest biomass including anything from small brush to large trees to address forest health—is essentially logging and thus not devoid of ecological impacts, such as soil compaction, spread of invasive species, hydrologic disruption, and in the case of associated road building, increased fire risk due to lost resiliency and increased human traffic.<sup>4</sup>

The argument for the production of biofuels from national forest preventative thinnings hinges on three basic assumptions, all three of which would have to be valid for the

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<sup>3</sup> See, for example, Lovejoy, Thomas, *Climate Change and Biodiversity*, Yale University Press, August 2006.

<sup>4</sup> The literature on the ecologic impacts of logging and road-building is extensive. For a collection of independently reviewed material, see <http://www.nrdc.org/land/forests/roads/eotrinx.asp>. See also USDA. "Roadless Area Conservation Final Environmental Impact Statement." US Forest Service. Vol. 1. (November, 2000). pp. 3-116. Eastman, J. C., et al. "Roadless Areas and Forest Fires in the Western United States." American Geographical Union Spring Meeting. (May 29, 2002). Pyne, S. J. *Tending Fire: Coping with America's Wildland Fires*, Island Press, 2004, p. 208.

proposition to be worth the impacts and risks of logging: first, preventative thinning based biofuels do not negatively impact global warming; second, preventative thinning will safely and sustainably produce a meaningful volume of biofuels; and third, biomass removal is reliably beneficial to addressing wildfire. Unfortunately none of these underlying assumptions related to producing biofuels from preventative thinning reflect the best available science or pragmatic, on the ground scenarios. To contribute a negligible amount of fuel, we would have to risk further degraded forests, exacerbating fire risk, reducing carbon storage, increasing GHG emissions, and establishing an unsustainable industrial demand for continued commercial exploitation of vital public resources.

#### **IV. Ethanol Blends and Other Biofuels Policies Need to Be Guided by the Best Science**

The Renewable Fuel Standard is hardly the only biofuels policy that needs to be guided by the best available science and an open and transparent process. To quote from President Obama's March 9, 2009 Memorandum on "Scientific Integrity":

"Science and the scientific process must inform and guide decisions of my Administration on a wide range of issues, including improvement of public health, protection of the environment, increased efficiency in the use of energy and other resources, mitigation of the threat of climate change, and protection of national security."

While others at this hearing will talk about these issues in more depth, the amount of ethanol we allow to be blended into a gallon of gasoline must be based on complete testing to ensure the public's health is protected. Congress should avoid trying to legislate this blending level and EPA's decision about recent requests for waivers from the Clean Air Act standards that govern the level should be based on the best science.

## **V. Our Biofuels Policies Must Shift to Only Supporting the Best Biofuels**

To avoid the worst impacts of global warming, we need to make low-carbon biofuels work. But the best biofuels have yet to make the jump from the lab to the pump. As a first step, policy makers should stop spending tax dollars on the dirty biofuels of yesterday. Instead we need to start paying for performance that is above and beyond the existing safeguards and standards that were adopted as part of the RFS. But paying for performance is not enough. Right now, the best biofuels—the ones that reduce global warming pollution and protect the environment—are still just a promise. Even though biofuels received about \$10 billion in taxpayer support in 2008, truly “good” biofuels are not yet produced on a commercial scale. We need to jumpstart the best biofuels and make them work for our economy and our environment.

### ***A. The Billion Gallon Challenge***

2009 will likely be the first year that the United States produces 1 million gallons of advanced biofuels, but none of this will come from commercial-scale facilities. Our main existing policy—the Renewable Fuel Standard, which requires the use of 36 billion gallons of biofuels by 2022—provides a nice target, but does not provide economic certainty in the near-term needed to meet to ensure the commercialization of advanced biofuels. The real test for producing good biofuels comes in the scale-up from 1 million to 1 billion. We need to direct all of our biofuels incentives toward these first billion gallons and in return demand that this first billion gallons be the best. I suggest we adopt a “Billion Gallon Challenge.” (Please see Attachment 2, a factsheet on the Billion Gallon Challenge.)

A Billion Gallon Challenge would strive for 1 billion gallons of low-carbon biofuels by 2014 produced using feedstocks and conversion technologies that promise scalability and broad

sustainability. These are the fuels that we can all agree will protect our economy and our environment—growing more jobs, more food, and more truly low-carbon fuel. To do this, we need to stitch together existing government programs under a new law to provide support for the whole biofuels system, from field to fuel. The three key pieces of the challenge are:

- ***A realistic scale*** – The goal will be 10 to 20 advanced biofuels projects, assuming 50 to 100 million gallons per facility.
- ***Comprehensive support and environmental standards*** – We need to fully fund a package of existing programs, link them together into a comprehensive and coordinated initiative along with a set of sustainability requirements, and reform our biofuels tax credits to support the Billion Gallon Challenge.
- ***Learning while doing*** – Because we will be learning how to deploy these systems as they are developed, each of these projects should be partnered with a comprehensive research and assessment program drawing on the expertise of agricultural extension services, NRCS researchers, land grant and other universities, our national labs, and others.

### ***B. How to Make it Happen***

The first and most important steps are to stop funding bad biofuels and mature conventional biofuels and to maintain the performance standards and minimum sourcing safeguards adopted as part of the Renewable Fuel Standard. Then, to jumpstart advanced biofuels, we need to take advantage of a number of programs that, if fully funded, can help meet the Billion Gallon Challenge.

The Biomass Crop Assistance Program, the Farm Bill conservation programs, the Biorefinery Assistance, the EISA Section 207 grants, the SunGrant Initiative, and the Biomass R&D Act programs should be fully funded to provide full system support including

research and analysis. By coupling these programs with the Section 1705 loan guarantee program established as part of the stimulus bill, which specifically focuses on innovative biofuels systems, we will have dollars available for every stage of an advanced biofuels system.

Adding in the following measures, we will have a roadmap to producing a billion gallons of the best biofuels.

1. [Link together the different incentive programs and the agencies that administer them](#)

These programs and agencies need to function as a coordinated whole with a minimum amount of bureaucracy. The crops, the farming practices, the pre-processing and transport, the conversion process and the coproducts should all be developed and implemented in the most sustainable manner, even if they are not all managed by the same facility.

2. [Establish comprehensive gold-standard sustainability requirements for eligibility for financial incentives](#)

For the Billion Gallon Challenge, we should require significant and measurable improvements in a project's production systems according to a broad set of sustainability standards. Verification systems, such as the Roundtable on Sustainable Biofuels, would be the basis for these requirements and ensure we are improving practices that reduce soil erosion, improve water use efficiency and quality, and protect other critical ecological values. The approach will evaluate each project within the context of its existing surrounding landscape, with an objective of finding integrated solutions to our economic and environmental needs.

### 3. Reform biofuels tax credits

In 2009, the various current biofuel production tax credits will be cost tax payers about \$5 billion. However, there exists no federal tax policy designed to reward the increased performance of any kind of biofuels. To remedy this, we propose reforming our federal biofuel tax credits to one technology-neutral, performance-based tax credit. Specifically, I propose that the existing corn ethanol, cellulosic, and biodiesel production tax credits be reformed into a single tax credit worth up to \$1.00 per 7600 Btu (the equivalent of one gallon of ethanol) with half of the credit paid based on providing GHG reductions above and beyond those required under the RFS and the other half paid based the ecological performance of fuel and feedstock production. I believe these two measures of performance of different biofuels can be assessed using the GHG accounting currently being developed by EPA and by building off of existing tools that USDA has developed.

## VI. Conclusion

Renewable fuels hold great promise as a tool for reducing global warming pollution, breaking our dangerous oil addiction, and revitalizing rural economies, as long as appropriate standards and incentives are used to shape the nascent bioenergy industry to provide these benefits in a sound and truly sustainable fashion. Congress deserves credit for the foresight it showed in starting to build these standards and safeguards into the new RFS. We should build on this foundation by encouraging EPA to release its proposed rule—with a complete lifecycle GHG accounting including emissions from indirect land-use change—for public comment as soon as possible. We should also protect the renewable biomass sourcing safeguards and extend them to all of our bioenergy policies. We urge EPA to be protective of public health by waiting for complete and conclusive science before

allowing higher blends of ethanol and gasoline. And we need to stop paying for mature and environmentally destructive biofuels. Instead, we need to adopt a Billion Gallon Challenge to get 1 billion gallons of the best advanced biofuels into commercial production by 2014. To do this we need comprehensive support for 10 to 20 projects, comprehensive sustainability standards for these projects, and we need to reform our biofuels tax credits to pay for the best performance.

Attachment 1

**Allegheny Defense Project \* Alliance for the Wild Rockies \* American Lands Alliance  
Biodiversity Conservation Alliance \* Clean Air Task Force  
Citizens Action Coalition of Indiana \* Conservation Congress \* Christians Caring for Creation  
Defenders of Wildlife \* Earthjustice \* Environmental Protection Information Center  
Environmental Working Group \* Friends of the Earth \* The Habitat Trust for Wildlife  
\*Heartwood \* Global Justice Ecology Project \* Greater Yellowstone Coalition  
John Muir Project \* Kentucky Heartwood \* Klamath Forest Alliance  
Kootenai Environmental Alliance \* The Lands Council \* League of Conservation Voters  
\*Massachusetts Forest Watch \* Native Forest Council \* National Audubon Society  
National Wildlife Federation \* Natural Resources Defense Council \* Olympic Forest Coalition  
RESTORE the North Woods \* Southern Appalachian Forest Coalition  
Southern Environmental Law Center \* Sierra Forest Legacy \* Sierra Club  
Spirit of the Sage Council \* Swan View Coalition \* The West Virginia Highlands Conservancy  
WildEarth Guardians \* The Wilderness Society \* Wildlands CPR \* WildWest Institute  
Wild South**

March 27, 2009

Dear Senator:

On behalf of our millions of members, activists, and supporters we urge you to oppose Senator Thune and Tester's recently introduced bill to amend the Clean Air Act, S. 636. By replacing the current definition of renewable biomass in the Renewable Fuels Standard, S. 636 would roll back critical environmental safeguards that protect important wildlife habitat, at risk forests and grasslands, and our federal forests. These provisions are an essential part of sound biofuels policy and help keep the Energy Bill's 36 billion gallon biofuels mandate from resulting in even more harm than good.

As climate change radically alters our landscape we must preserve our remaining natural ecosystems and ensure they are healthy and resilient. S. 636 would remove vital ecosystem protections in the RFS mandate, replacing the current definition of renewable biomass with a version that lacks any meaningful protections.

The proposed changes would incentivize the loss of critical wildlife habitat, natural forests and grasslands, and the degradation of our federal forests. On federal lands the language the bill uses to restrict old growth logging is vague and confusing and could cause the loss of big trees that provide key wildlife habitat and are the most resistant to forest fires. S. 636 also relies on land management plans that can easily be changed to permit logging in inventoried roadless areas, fragile soils, and steep slopes.

Moreover, the RFS land and forest safeguards work in concert with the RFS's greenhouse gas standards to keep new biofuels production from resulting in deforestation or other land conversion that would release millions of tons of global warming pollution. Deforestation already contributes 20 percent of global GHG emissions and our biofuels policies must assiduously avoid contributing to this problem.

The RFS land and climate safeguards provide for a plentiful supply of biofuel feedstocks without putting important wildlife habitat, natural forests, native grasslands, and public lands in our gas tanks. Stripping these safeguards through legislation like S. 636 would represent a dangerous step backwards for biofuels and climate policy alike.

Once again, we urge you to oppose S. 636 which rolls back the 2007 Energy Bill RFS environmental safeguards.

Sincerely,

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Keith Hammer  
Chair  
**Swan View Coalition (MT)**

Hugh Rogers  
President  
**The West Virginia Highlands  
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Linda Lance  
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**WildWest Institute (MT)**

Ben Prater  
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**Wild South (S.E.)**

## Attachment 2



**Good biofuels versus bad biofuels:** The best biofuels come from sustainable sources such as triticale (above left), a biomass grown as a winter crop. Bad biofuels can clearcut forests and demolish landscapes (above right).

## The Billion Gallon Challenge: How America Can Produce One Billion Gallons of the Best Biofuels By 2014

To avoid the worst impacts of global warming, we need to make low-carbon biofuels work. But the best biofuels have yet to make the jump from the lab to the pump. As a first step, policy makers should stop spending tax dollars on the dirty biofuels of yesterday and start paying for performance, while maintaining our existing safeguards and standards. But that's not enough. We need to jumpstart the best biofuels and make them work for our economy and our environment.

*We need a Billion Gallon Challenge.*

Transportation makes up about one-third of our global warming pollution. Traditional fuel sources such as oil are putting a strain on our economy and our environment by escalating global warming pollution and leaving us vulnerable to price spikes in foreign oil. Advanced biofuels are a low-carbon solution for helping to solve global warming—if they are done right. But right now, biofuels are incredibly controversial, and for good reason.

Biofuels are a double-edged sword. They can be produced in ways that reduce greenhouse gas pollution or in ways that increase it. Biofuels can help clean up the air, water, and soil and protect wildlife. Or they can degrade our lands and water, threaten biodiversity, and harm public health.

Right now, the best biofuels—the ones that reduce global warming pollution and protect the environment—are still just a promise. Even though biofuels received about \$10 billion in taxpayer support in 2008, truly “good” biofuels are not yet produced on a commercial scale.

### The Billion Gallon Challenge

2009 will likely be the first year that the United States produces 1 million gallons of advanced biofuels, but none of this will come from commercial-scale facilities. Our main existing policy—the Renewable Fuel Standard, which requires the use of 36 billion gallons of biofuels by 2022—provides a nice target, but does not provide economic certainty in the near-term needed to meet the Billion Gallon Challenge.

The real test for producing good biofuels comes in the scale-up from 1 million to 1 billion. We need to direct all of our biofuels incentives toward these first billion gallons and in return demand that this first billion gallons be the best.

### We Need a Billion Gallons of the Best

A Billion Gallon Challenge would strive for 1 billion gallons of low-carbon biofuels by 2014 produced using feedstocks and conversion technologies that promise scalability and broad sustainability. These are the fuels that we can

For more information, please contact **Nathanael Greene** at (212) 727-4482 and visit his blog at <http://switchboard.nrdc.org/blogs/ngreene/>



[www.nrdc.org/policy](http://www.nrdc.org/policy)

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## The Billion Gallon Challenge: How America Can Produce One Billion Gallons of the Best Biofuels By 2014

### Biofuels: The Good and the Bad

#### What are the best biofuels?

The best biofuels are those that make it environmentally and economically possible to produce more food and fuel and do it in a way that clearly reduces global warming pollution, conserves and enhances our soil and water resources, protects our fragile wild lands and native ecosystems, and improves the economic welfare of workers and communities.

What do these advanced biofuels look like? Picture perennial grasses growing where land was once degraded; winter cover crops being grown on exposed croplands; and sustainably managed forests that provide a wide range of critical ecosystem services.

Rigorous and independent international sustainability standards, such as those being developed by the Roundtable on Sustainable Biofuels (RSB), hold the best promise for identifying the best biofuels in the future. (See <http://cgse.epfl.ch/page65660-en.html>)

#### What are "bad" biofuels?

Bad biofuels are those that degrade the environment, drive up food prices, and make global warming pollution worse. These fuels look like more of the same. Coal-fired corn ethanol plants; rows of corn, soy, or "energy crops" where wetlands, forests, and grasslands stood before; tropical rainforests cleared and burned for palm oil; more run off and pesticides poisoning our rivers and streams; displaced wildlife habitat and degraded water quality as natural forests are cleared for tree-plantations or switchgrass crops; more families around the world struggling to afford a healthy diet; and combined global warming pollution from these biofuels that are even greater than the petroleum they're replacing.

all agree will protect our economy and our environment—growing more jobs, more food, and more truly low-carbon fuel.

To do this, we need to stitch together existing government programs under a new law to provide support for the whole biofuels system, from field to fuel. The three key pieces of the challenge are:

- **A realistic scale** – The goal will be 10 to 20 advanced biofuels projects, assuming 50 to 100 million gallons per facility.

- **Comprehensive support and environmental standards** – We need to fully fund a package of existing programs, link them together into a comprehensive and coordinated initiative along with a set of sustainability requirements, and reform our biofuels tax credits to support the Billion Gallon Challenge.

- **Learning while doing** – Because we will be learning how to deploy these systems as they are developed, each of these projects should be partnered with a comprehensive research and assessment program drawing on the expertise of agricultural extension services, NRCS researchers, land grant and other universities, our national labs, and others.

#### How to Make it Happen

The first and most important steps are to stop funding bad biofuels and mature conventional biofuels and to maintain the performance standards and minimum sourcing safeguards adopted as part of the Renewable Fuel Standard. Then, to jumpstart advanced biofuels, we need to take advantage of a number of programs that, if fully funded, can help meet the Billion Gallon Challenge.

The Biomass Crop Assistance Program, the Farm Bill conservation programs, the Biorefinery Assistance, the EISA Section 207 grants, the SunGrant Initiative, and the Biomass R&D Act programs should be fully funded to provide full system support including research and analysis.

By coupling these programs with the Section 1705 loan guarantee program established as part of the stimulus bill, which specifically focuses on innovative biofuels systems, we will have dollars available for every stage of an advanced biofuels system.

Adding in the following measures, we will have a roadmap to producing a billion gallons of the best biofuels.

- **Link together the different incentive programs and the agencies that administer them** so that they function as a coordinated whole with a minimum amount of bureaucracy. The crops, the farming practices, the pre-processing and transport, the conversion process and the co-products should all be developed and implemented in the most sustainable manner, even if they are not all managed by the same facility.

- **Establish comprehensive gold-standard sustainability requirements for eligibility for financial incentives.** For the Billion Gallon Challenge, we should require significant and measurable improvements in a project's production systems according to a broad set of sustainability standards. Verification systems, such as the Roundtable on Sustainable Biofuels, would be the basis for these requirements and ensure we are improving practices that reduce soil erosion, improve water use efficiency and quality, and protect other critical ecological values. The approach will evaluate each project within the context of its existing surrounding landscape, with an objective of finding integrated solutions to our economic and environmental needs.

- **Reform biofuels tax credits.** In 2009, these will be worth about \$5 billion. However, there exists no federal tax policy designed to reward the increased performance of any kind of biofuels. To remedy this, we propose reforming our federal biofuel tax credits to one technology-neutral, performance-based tax credit.

