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**WHY ELECTRICITY CONSUMERS WHO CARE ABOUT
GLOBAL WARMING AND AIR POLLUTION NEED FTC
PROTECTION FROM BIOMASS INDUSTRY
GREENWASHING**

**Kelly Bitov, Esq.
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Letter to the Federal Trade Commission

Re: Request for Assessment of the Use of Environmental Marketing Claims in Advertising Biomass Power Electricity Products

Dear FTC Representative:

We write to request Commission guidance on the use of environmental benefit marketing claims in biomass power advertising. The biomass power sector, primarily constituted by wood-burning electricity generation facilities, is growing aggressively in the United States today, due in part to financial support provided by electricity consumers in the form of renewable energy certificates (RECs) in the compliance and voluntary markets.

Electricity consumers are often short on details about renewable energy, but they know it's a good thing, and they often don't mind paying extra for it. However, not all renewable energy is created equal. Biomass power is marketed as "environmentally friendly," "clean," and "carbon neutral," but depending upon where and how it is produced can actually increase global warming pollution, degrade our lands, forests and water, threaten biodiversity, and harm public health. In our years of work on biomass power regulation we have seen widespread marketing of biomass power as having negligible or actually negative carbon dioxide emissions, negligible conventional pollutant emissions, and non-existent or beneficial forest impacts. Since in fact biomass power plants emit as much or more carbon dioxide and conventional pollutants as fossil fuel plants, and biomass power is widely recognized by scientists, including a panel commissioned by the Environmental Protection Agency as *not* "a priori carbon neutral," we believe such unqualified environmental marketing claims about biomass power may be misleading. These claims not only perpetuate harm to the environment, but they also harm consumers, who pay extra for electricity and RECs to support a technology that can actually worsen climate warming. This is a recipe for cynicism and defeatism just when it is most important that consumers support a transition to truly clean, zero-emissions electricity generation.

The FTC *Green Guides* and National Association of Attorneys General *Environmental Marketing Guidelines for Electricity* are two important documents that address the consumer protection issues unique to marketing electricity and renewable energy. The *Green Guides* interpret the Federal Trade Commission Act to explain how companies should substantiate or qualify environmental marketing claims about "green" products, including green power. The *Environmental Marketing Guidelines* describe non-deceptive advertising of electricity and give specific examples of deceptive biopower advertising. Using these two guides, we analyzed the environmental marketing claims of 17 companies advertising biopower and associated green power products to consumers in the green power market. According to our analysis, many of these companies' claims appear to be deceptive.

Critically, although biomass power plants emit more CO₂ than fossil-fueled plants per megawatt-hour, most companies implicitly claim that their emissions are offset – this is the basis for claims of biomass power carbon neutrality. The unique perceived value of biomass power is based on this potential for emissions to be offset, but in our experience, companies almost never

substantiate their offsetting claims, and in many cases, it appears that substantiation would not be possible. The Green Guides specifically direct companies engaged in the sale of carbon offsets to disclose the timing of the offset when it will occur more than two years from the date of sale. The marketing of bioenergy presents an analogous situation meriting the same kinds of disclosure. Marketing that implies biomass power emissions are offset but fails to disclose how and when this actually occurs may be deceptive to consumers.

We believe that marketing biopower as environmentally beneficial when it actually can cause substantial environmental harm is false advertising, and that this kind of greenwashing could be an unfair and deceptive business practice that violates consumer protection laws, including Section 5 of the Federal Trade Commission Act. We request that the Commission review the advertising and marketing materials documented in this report and determine whether these companies, and others, are making false marketing claims about the environmental benefits of biomass energy. If the Commission finds that any of these companies are in fact making false claims, we urge the Commission to take appropriate corrective action to protect consumers. We also request that the Commission consider issuing specific guidance addressing the unique challenges of biomass power environmental advertising.

Thank you,

Kelly Bitov, Esq.
Attorney, Partnership for Policy Integrity

Mary S. Booth, PhD
Director, Partnership for Policy Integrity

Executive Summary

Since the days of electricity deregulation, the Federal Trade Commission (FTC) has recognized greenwashing as a problem in the power sector, as companies inflate green energy claims to compete for customers who care about the environment. Now, as the power sector is increasingly recognized as a major source of climate-warming greenhouse gases, overselling of environmental attributes of power generation has only intensified. Nowhere is this more true than in the biomass power sector, where wood-burning power plants are widely marketed as “clean” and “carbon neutral” – despite the fact that burning wood emits as much or more air pollution and greenhouse gases as fossil fuels, and offsetting biopower carbon dioxide emissions, if it occurs at all, can require decades. Together, individual claims that biopower is environmentally beneficial combine to generate a climate of deception that colors consumer perceptions of this technology.

The FTC Green Guides, along with the Environmental Marketing Guidelines from the National Association of Attorneys General (NAAG),¹ lay out parameters for environmental marketing of electricity generation that are supposed to protect consumers from false claims of environmental benefit. This report analyzes how these parameters may be applied to biomass power environmental marketing. We particularly focused on statements claiming “reduced” greenhouse gas emissions and statements describing biomass power as “clean” at 17 companies:

American Renewables
Beaver Wood Energy LLC
Covanta Energy Corporation
Dominion Resources Inc.
ecoPower Generation LLC
Enova Energy Group
Georgia Biomass LLC
Greenleaf Power LLC
Laidlaw Energy Group, Inc.
MacPherson Energy Corporation
Novo Power LLC
NRG Energy, Inc.
ReEnergy Holdings LLC
Rollcast Energy
Sierra Pacific Industries
Southern Company and Subsidiaries
United Corrstack/Evergreen Community Power LLC

In comparing these companies’ claims about the environmental benefits of biomass power to

¹ The NAAG Environmental Marketing Guidelines for Electricity were issued over a decade ago and, in accordance with NAAG organizational procedures, have sunsetted and are no longer considered current NAAG policy. We are not aware of any more recent attention to this matter or updated NAAG policy on environmental marketing for electricity, and therefore cite these Guidelines for informational purposes only. To the extent this policy document was considered a useful and important reference by the Commission in the past, it may be informative in the present in discerning appropriate standards for biomass power environmental marketing.

environmental marketing rules described in the FTC Green Guides and the NAAG Guidelines, we found that every company made at least one potentially misleading claim. Overall, 15 out of the 17 companies (88%) made at least one unsubstantiated claim about producing “clean” energy, and 15 out of 17 made an unsubstantiated claim that burning biomass “reduces” greenhouse gas emissions.

The FTC Green Guides and the NAAG Guidelines are clear about how claims of environmental benefit should be substantiated. With regard to emissions, companies that advertise “clean” power are supposed to disclose their actual emissions, and quantify claimed reductions in emissions. However, we found numerous unqualified claims of biomass power plants providing “clean” electricity, even from companies with facilities that burn contaminated fuels like construction and demolition debris. One of the most extreme claims was from Covanta, which owns several wood-burning plants:

“Covanta Pacific Oroville Power facility processes more than 500 tons of biomass wood waste materials each day. The materials are diverted from landfills and used as a fuel. It also receives approximately 70,000 dry tons per year of agricultural greenwaste that helps the facility produce enough clean, renewable energy on a daily basis to generate approximately 16.5 MW of electricity which is enough to power 16,500 homes.” (Covanta Energy)²

In fact, this facility has been shut down for more than two years, subject to investigations from both state Department of Toxic Substances and the local District Attorney for violations of the Hazardous Waste Control Act and other state pollution laws. The plant was burning contaminated construction debris; an investigation revealed that the ash from the boiler, which had been spread as an “agricultural soil amendment,” was highly contaminated with heavy metals and dioxins.

The most common claim we encountered was that biomass plants are “carbon neutral” or even have “negative” CO₂ emissions, based on the idea that biomass fuels are sourced from waste wood that would decompose and emit greenhouse gases anyway if it were not burned for energy, or sourced from forests that can grow and resorb equivalent CO₂ as released by burning. Some companies’ materials actually give the impression that burning wood does not emit any greenhouse gases at all. A typical quote from company marketing materials is provided by Laidlaw:

“A key environmental attribute of biomass power is that it is carbon-neutral, so it does not create greenhouse gas emissions that contribute to global warming and climate change.” (Laidlaw Energy)³

In reality, the 70 MW biomass power plant built by Laidlaw in Berlin, New Hampshire will burn close to two million tons of wood a year with full-time operation and emit about two million tons of CO₂. The air permit for the facility states that “whole logs” will be chipped to provide fuel, and that the facility will burn about 113 tons of wood an hour.

² <http://www.covanta.com/facilities/other-renewable-energy.aspx> (Accessed July 8, 2014).

³ <http://www.nyenerg.com/investors.html> (Accessed July 8, 2014).

This is the equivalent amount of wood that would be provided by clearcutting more than one acre of New Hampshire's forests every hour.⁴

Claiming that biopower CO₂ emissions don't contribute to climate warming is tantamount to claiming that emissions are offset, by processes occurring in another time, and another place. Yet while the FTC and NAAG marketing guidelines are clear that claims about actual carbon offsets, such as reforestation projects, must be substantiated in order to not mislead consumers (who often assume that offsets occur immediately) the "offsets" claimed by the biomass power industry have not been held to the same standard. If they were, biopower companies would be required to reveal whether emissions would be offset within a period of two years, a standard that current science on biopower emissions shows that no wood-burning biomass electricity plant could meet. This means that not only are biopower claims of carbon neutrality not being qualified, but in many cases they cannot be substantiated, as current science and modeling demonstrate that far from reducing greenhouse gas emissions, wood-burning power plants *increase* CO₂ emissions over one to several decades, relative to fossil-fueled power plants, and especially relative to no-emissions renewable energy sources like wind and solar energy.

Biopower companies also make environmental benefit claims about the fuels they use, another issue for which qualification or substantiation is needed to avoid deceiving consumers. Just as companies may discuss burning "waste" wood, but always claim it is "clean," companies often claim that forestry wood is "sustainably harvested" or that forest harvesting is actually improving forest health, another claim that is extremely difficult to substantiate. Claims made by ReEnergy about the fuel supply at one of its plants embodies more than one potentially misleading claim:

"ReEnergy Black River is located at Fort Drum (NY). The facility, which has 60 megawatts of generation capacity, had primarily burned coal to produce electricity. ReEnergy converted the primary fuel source to sustainably harvested local biomass..." (ReEnergy)⁵

In fact, the air permit for ReEnergy's 60 MW facility issued in 2013 reveals that it is actually permitted to burn "*clean wood, unadulterated wood from construction and demolition debris, glued wood, creosote treated wood, tire derived fuel and non-recyclable fibrous material (waste paper), contaminated construction and demolition debris.*"⁶ The permit allows emissions of 696 tons per year of sulfur dioxide and 538 tons per year of nitrogen oxides. While it is possible that the company is indeed currently relying mostly on forest wood for fuel, company claims that the plant burns "sustainably harvested" wood would probably be contested by local firewood sellers and sawmill operators, who blamed an acute wood shortage in January 2014 on wood demand by the facility.

⁴ Data on standing forest biomass in NH from Smith, W.B., et al. 2007. Forest Resources of the United States, 2007. United States Forest Service, Gen.Tech Report WO-78. December, 2008.

⁵ <http://www.reenergyholdings.com/our-facilities/energy-generation-facilities/owned-and-operated-by-reenergy/reenergy-black-river/> (Accessed July 8, 2014).

⁶ New York State Department of Environmental Conservation. Air Title V Facility permit for ReEnergy Black River, LLC. Permit ID: 6-2240-00009/00007. Effective date 5/20/2013.

Marketing biomass power as beneficial to air quality and claiming that it reduces greenhouse gas emissions may mislead electricity customers who pay extra for renewable energy sourced from biomass power plants. In addition to the large and steadily increasing compliance market for renewable energy, about two million people participate in voluntary green power programs each year in the United States, and the number is growing rapidly. These consumers willingly pay extra on their utility bills to support renewable energy above the amount that state-level renewable portfolio standards require utilities to provide. People and businesses may also purchase renewable energy credits outside of their utility, as a way of lessening their carbon footprint.

Just as in the renewable energy compliance market, where utilities are required to purchase renewable energy and RECs, and then pass these costs on to electricity ratepayers, consumers need to trust that voluntary green power programs deliver what they promise – truly clean and low-carbon electricity that helps utilities reduce greenhouse gas emissions and lessen the threat of global warming. When misleading marketing leads consumers to support wood-burning power plants as renewable energy, however, their trust is being violated. Far from being clean, biomass power plants emit large quantities of conventional air pollution such as particulate matter, nitrogen oxides, and hazardous air pollutants. Far from being carbon neutral, these plants emit more CO₂ per megawatt-hour than coal-fired or natural gas plants.

Increased transparency about the actual environmental impacts of biomass power can only be achieved if the original sources of misleading information, the biomass power companies themselves, are held to the FTC's truth-in-advertising standards. False environmental marketing of biomass energy as "clean" and "carbon neutral" is harmful to consumers and directly counterproductive to the national goal of reducing greenhouse gas emissions from the power sector. We request that the FTC examine these environmental marketing claims by companies in the biopower sector, to determine whether they meet the Commission's standards for consumer protection, and to take action if they do not.

I. Introduction – Why The Biopower Sector Needs Oversight

Since the early days of electricity deregulation, consumer protection groups have been wary of claims made by the electric power industry about the environmental attributes of power generation. Recognizing that deregulation would increase competition and the risk of companies overselling the environmental attributes of the electricity they produced, the Federal Trade Commission (FTC) and National Association of Attorneys General (NAAG) issued reports warning consumers of this risk and promising to police electric power companies' advertising claims.

Now, in the era of intensifying climate change, as power sector emissions are recognized as a chief driver of climate warming and electric utilities increasingly offer renewable energy options intended to reduce greenhouse gas emissions, oversight of the power sector by the FTC has never been more important. Oversight is particularly needed over the biomass power ("biopower") sector,⁷ defined for the purposes of this report as the generation of electricity at wood-burning power plants.⁸ Widely promoted and incentivized in the United States as renewable energy, biopower receives tax incentives and subsidies alongside wind and solar energy, and like these technologies, is widely marketed as "environmentally friendly," "clean," "green," and "carbon neutral." Yet unlike wind and solar energy, which are zero-emissions technologies, wood-burning power plants emit large amounts of conventional air pollutants that degrade air quality and threaten public health, and *more* carbon dioxide (CO₂) than fossil fuel power plants per megawatt hour. Claims that greenhouse gas emissions from biomass power plants do not contribute to climate warming – that they are "carbon neutral" – depend on the idea that emissions are offset, but offsetting of biopower CO₂ emissions, if it occurs at all, can take several years to several decades.

In marketing wood-burning power plants as "clean" and "carbon neutral," biomass power companies overstate environmental benefits of biopower and hide negative environmental impacts from consumers. Consumers misled by such claims may participate in "green" power programs or purchase renewable energy certificates expecting to produce the environmental benefits advertised. However, instead of reducing their carbon footprint or toxic air pollution emissions, increased operation of biomass power plants can actually worsen the environmental harms consumers seek to prevent or mitigate.

Marketing biomass power that causes substantial environmental harm as environmentally beneficial is false advertising - precisely the kind of false advertising that the FTC and NAAG warned of over a decade ago. This greenwashing is also the kind of deceptive marketing the FTC seeks to prevent with the Green Guides, the Commission's guidance on how environmental marketing claims must be substantiated. Given the remarkable growth in the number of biomass

⁷ We use the terms "biomass power" or "biopower" in this report to refer to combustion plants that generate electricity. "Biomass energy" or "bioenergy" is a broader term that encompasses biomass burning for thermal energy, and can also refer to manufacture and consumption of liquid fuels from biomass.

⁸ While the term "biomass" also encompasses a large range of biological materials that can be burned as fuel, the majority of biopower plants in the United States burn wood. There are no utility-scale power plants burning other fuel crops like switch grass, though use of this plant species as a fuel is being widely researched by private companies, universities and the government. This report focuses on wood-burning biomass power plants.

power plants being proposed and built in recent years,⁹ and the widespread promotion of biomass power as “clean” and “carbon neutral” energy, it is vital that consumer protection agencies and organizations, including the FTC, critically examine biopower environmental marketing claims.

This report examines environmental marketing by companies in the biomass power sector, comparing marketing claims to the standards set out in the FTC Green Guides and NAAG Environmental Marketing Guidelines for Electricity.¹⁰ We particularly focus on claims concerning air pollution emissions, greenhouse gas emissions, and fuel sourcing. With regard to claims that biopower is “low carbon” or “carbon neutral,” we make the case that such claims are tantamount to claims that biopower CO₂ emissions are offset, by processes occurring in some other place, and at some other time. As such, bioenergy claims of carbon neutrality should be held up against the requirements concerning carbon offsets that are set out in the Green Guides, which require that marketing disclose the timing of offsets and reveal if underlying carbon reductions will occur more than two years from the date of sale.

Our report focuses on the original sources of what we consider to be false and misleading claims about the environmental benefits of biomass power: the biomass power companies themselves. As owners and operators of biomass power plants, these companies are in the best position to accurately represent how much air pollution their facilities emit, what their greenhouse gas emissions are, what their fuel sources are, and whether their fuels are sourced from forest wood or potentially contaminated construction and demolition debris. When biopower companies misrepresent or downplay the environmental and health impacts of their facilities, this contributes to a “climate of deception,” as biopower marketing materials, and the unsubstantiated claims behind them, are passed along to the companies that purchase and market biomass power and renewable energy credits, and ultimately to consumers who voluntarily pay extra on their utility bills to support green power.

II. Environmental Marketing in the Electricity Sector, False Advertising Laws and the Need for Consumer Protection

In July 2000, as the deregulation of electric power markets was getting underway, the FTC issued a Staff Report anticipating new risks to consumer protection in the area of environmental marketing.¹¹ The report expressed the Commission’s concern that rising consumer interest in the environmental qualities of electric power, and willingness to pay a premium for “environmentally friendly” power, could lead to an increase in false claims made by the electric power industry about the environmental attributes of power generation.

⁹ Industry data shows a large surge in the number of biomass plants proposed since the mid-2000’s. Forisk, U.S. Wood Energy Database. May, 2014.

¹⁰ The NAAG Environmental Marketing Guidelines for Electricity were issued over a decade ago and, in accordance with NAAG organizational procedures, have sunsetted and are no longer considered current NAAG policy. We are not aware of any more recent attention to this matter or updated NAAG policy on environmental marketing for electricity, and therefore cite these Guidelines for informational purposes only. To the extent the Commission considered this policy document a useful and important reference in the past, we believe it may be similarly informative in the present in discerning appropriate parameters for biomass environmental marketing.

¹¹ United States Federal Trade Commission Staff Report, “Competition and Consumer Protection Perspectives on Electric Power Regulatory Reform” (July 2000) (“July 2000 Staff Report”). Available at <http://www.ftc.gov/policy/policy-actions/advocacy-filings/2000/07/ftc-staff-report-competition-and-consumer-protection> (Accessed July 8, 2014).

At that time, advertising by the power sector already included claims about emissions (“20% lower than average” or “doesn’t pollute the air or water”), claims about the sources from which electricity was produced (“nuclear free” or “all solar”), claims about overall effects on the environment (“helps prevent global warming” or “reduces acid rain” or “green power”), and claims about company activities benefiting the environment (“we support environmental organizations” or “10% of profits go to rainforest preservation”). Since it would be impossible for consumers to verify such advertising claims themselves, the agency promised to protect consumers by “policing... electric service providers’ advertising claims, particularly claims about the price and environmental attributes of the power being sold.”¹² The NAAG similarly noted in its 1999 Environmental Marketing Guidelines for Electricity that “for those consumers who prefer non-fossil fuels or renewable energy, the marketing of environmental benefits will be a powerful advertising theme, one which is open to abuse” and that “State Attorneys General have an important role to play in ensuring that environmental marketing by electric power companies does not mislead consumers.”¹³ The FTC contributed to the creation of the NAAG Guidelines by submitting comments to the NAAG and participating in workshops, and identified the Guidelines as an additional resource for electricity product marketers.¹⁴

Today’s Green Power Market

In today’s electric power markets, there are thousands of companies selling green power¹⁵ generated from renewable sources and renewable energy certificates (RECs), also known as “green-tags.” The Environmental Protection Agency (EPA) Green Power Partnership and the National Renewable Energy Laboratory of the Department of Energy (NREL) identify green power and REC sales, collectively, as the “green power market.”¹⁶

In tracking and analyzing market trends, NREL and EPA divide the green power market into the *voluntary* and *compliance* markets. In the voluntary market, consumers and businesses voluntarily purchase renewable energy or RECs, paying a premium for green power products that promise certain environmental benefits. The compliance market, in contrast, refers to renewable power and REC purchases by utilities that are legally obligated to meet annual quotas set by state renewable portfolio standards (RPS).¹⁷ While most RPS programs require that REC purchases be from in-state or regional sources, at least six states allow utilities to purchase RECs with minimal or no geographic limitations.¹⁸

¹² Ibid.

¹³ National Association of Attorneys General, Environmental Marketing Subcommittee of the Energy Deregulation Working Group, “Environmental Marketing Guidelines for Electricity” (December 1999) (“Attorneys General Guidelines”).

¹⁴ July 2000 Staff Report.

¹⁵ The Environmental Protection Agency (EPA) defines “green power” as the subset of renewable energy that includes the renewable energy resources and technologies that provide the highest environmental benefit. EPA Green Power Partnership, Green Power Defined, <http://www.epa.gov/greenpower/gpmarket/> (Accessed July 8, 2014).

¹⁶ Heeter, J., T. Nicholas, 2013. Status and Trends in the U.S. Voluntary Green Power Market (2012 Data). NREL Report No. TP-6A20-60210. October, 2013.

¹⁷ A number of states have instituted technology-forcing renewable portfolio standards mandating that certain percentages of electricity generation in utilities’ generation portfolios come from designated renewable generation sources. If a utility fails to meet the level in any year, it must purchase RECs to make up the difference, or pay a penalty sometimes called an Alternative Compliance Cost.

¹⁸ Clean Energy States Alliance, Potential RPS Markets for Renewable Energy Generators,

Compliance market demand has exceeded voluntary market demand since 2010 because state renewable energy laws typically require that utilities increase the percentage of energy from renewable sources each year, and overall compliance levels are ramping up. However, the voluntary green power market is substantial, and growing. Voluntary green power sales increased by 37% between 2010 and 2012, and show a compound annual growth rate of 26% since 2006.¹⁹ NREL estimated the market value of total voluntary green power sales in 2012 to be between \$208 million and \$366 million, with nearly 1.9 million customers participating in these sales, including individuals, companies and institutions. Retail sales of renewable energy in voluntary green power markets exceeded 48 million megawatt-hours (MWh) and represented approximately 1.3% of total U.S. electricity sales in 2011. Biomass combustion and landfill gas combustion provided 12.8% of that electricity generation.²⁰

Biomass Green Power Products

The three biomass power electricity “products” sold in the green power market are: 1) renewable energy certificates (RECs) that include biopower; 2) utility green power membership programs that include biopower; and 3) the electricity itself that is generated at biomass power plants.

Renewable Energy Certificates

Renewable energy certificates (RECs) are an intangible commodity designed to incentivize renewable energy development. They function by putting a market value on the environmental attributes of individual renewable energy sources. In the case of biopower, one REC represents proof that one unit of electricity (one megawatt-hour) was generated by a REC-eligible biomass power plant.

RECs can either be bundled and sold at the wholesale level with electricity, or sold unbundled, at retail, separate from electricity. This severability of RECs from electricity generation allows RECs to be bought and sold anywhere in the country, by anyone. REC sales have been rising steeply, increasing at a compound annual growth rate of 25% from 2010 to 2012.²¹ In the compliance market, RECs are tracked in electronic tracking systems that capture the attributes of each REC (the type of renewable energy facility used to produce it, the facility’s location and generation date) and verify when individual RECs are used for compliance. Tracking systems are also used in voluntary markets but there is no specific type of verification required by law for non-compliance retail sales. Green-e Energy is the leading certifier and auditor of RECs in the voluntary market and certifies the majority of RECs used in retail sales,²² and more than twenty-five companies offer unbundled RECs to retail customers via the Internet.²³

The image below depicts the transaction pathway of RECs in the voluntary green power market.

<http://www.cesa.org/projects/state-federal-rps-collaborative/potential-rps-markets-for-renewable-energy-generators/> (Accessed July 8, 2014).

¹⁹ Heeter and Nicholas, 2013.

²⁰ Ibid.

²¹ Ibid.

²² See Green-e Energy’s website, <http://www.green-e.org/> for more information about this company (Accessed July 8, 2014).

²³ Heeter and Nicholas, 2013, page 1.

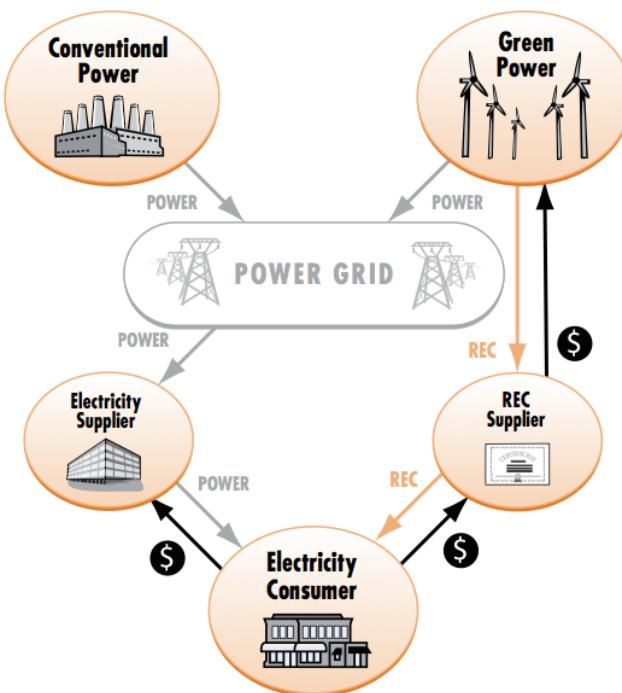


Figure 1. REC transaction pathway in the voluntary green power market²⁴

The availability of REC income incentivizes renewable energy development, and many biomass power plants are eligible for RECs. However, REC eligibility is determined on a state-by-state basis, and some states limit biopower REC eligibility to power plants that meet certain emissions standards – for instance, New Hampshire sets particulate matter and nitrogen oxide emissions standards for eligible units.²⁵ In Massachusetts, REC-eligible facilities must not only meet standards for conventional pollutants, but greenhouse gas emissions as well: qualifying units must have a minimum of 50% operating efficiency, use sustainable forestry practices, and demonstrate through lifecycle carbon accounting that their greenhouse gas emissions over 20 years are no greater than 50% those of a same-sized natural gas plant.²⁶ The state arrived at these standards after commissioning a science-based study on the effect of biomass power plants on atmospheric CO₂ loading.²⁷

Utility Green Power Pricing Programs

Utility green power pricing programs collect membership fees from utility electricity customers and use these funds to purchase electricity and/or RECs from renewable sources, or to develop new renewable generation. Revenue from green power programs may also be used to cover

²⁴ Image from EPA's "Guide to Purchasing Green Power: Renewable Electricity, Renewable Energy Certificate, and On-Site Renewable Generation" (March 2010). Available online at http://www.epa.gov/greenpower/documents/purchasing_guide_for_web.pdf (Accessed July 8, 2014).

²⁵ New Hampshire Statutes. Title XXXIV, Public Utilities. Chapter 362-F. Electric Renewable Portfolio Standard. Definitions. <http://www.gencourt.state.nh.us/rsa/html/xxxiv/362-f/362-f-2.htm> Accessed July 9, 2014

²⁶ The Massachusetts regulations for biomass power REC eligibility are at 225 CMR 14.00, Renewable Energy Portfolio Standard Class I.

²⁷ Walker, T., et al. Massachusetts Biomass Sustainability and Carbon Policy Study: Report to the Commonwealth of Massachusetts Department of Energy. Manomet Center for Conservation Sciences. 2010.

program administration and marketing costs. Green power program membership structures generally take one of two forms. Customers can either purchase green power for a certain percentage of their monthly electricity use, or they can purchase “blocks” of green power at a fixed price. Utilities may obtain the underlying RECs by entering into long-term power purchase agreements with REC-eligible renewable generation facilities, or by buying unbundled RECs from resellers.²⁸ While many utility green power pricing programs provide power and RECs solely from wind and solar facilities, some utility green pricing programs provide biopower-generated RECs.²⁹

The following figure is drawn from Dominion Resources’ online brochure for its green power program. The image suggests dairy-based methane power generation (also sometimes referred to as “biomass”) and wind provide power for the program. Dominion estimates biomass will provide 21% of the projected mix of renewables in its Green Power program in 2014,³⁰ but the company does not state whether all this biomass is derived from agricultural methane combustion or whether it also includes biopower from wood-burning power plants.³¹ Utilities are generally required by law to disclose the *generation mix* or percentage of different resources expected to be used in green power programs, but these disclosures do not necessarily identify individual facilities.



Figure 2. Marketing for Dominion Virginia Power’s Green Power Program.³²

²⁸ Heeter and Nicholas, 2013.

²⁹ U.S. Department of Energy - Energy Efficiency and Renewable Energy Green Power Network Green Pricing Utility Programs by State. Available at <http://apps3.eere.energy.gov/greenpower/markets/pricing.shtml?page=1> (Accessed July 8, 2014).

³⁰ See the Dominion Green Power program Product Content Label for more information, available online at <https://www.dom.com/dominion-virginia-power/customer-service/energy-conservation/pdf/gp-juris-product-content-label.pdf> (Accessed July 8, 2014).

³¹ While Dominion is one of the largest, if not the largest, utility biopower generators, the company states that the facilities supported by its Green Power Program are not owned by Dominion (<https://www.dom.com/dominion-virginia-power/customer-service/energy-conservation/pdf/gp-facts-about-recs.pdf> (Accessed July 9, 2014)).

³² Image from website for Dominion Green Power program, <https://www.dom.com/dominion-virginia-power/customer-service/energy-conservation/green-power.jsp> (Accessed July 8, 2014).

Electricity

Once a biomass power plant feeds electricity onto the grid, the power is indistinguishable from electricity generated by other sources. The majority of people “buying renewable power” are utilizing accounting mechanisms to buy the equivalent of some portion of output from a renewable source, and not the “green” electrons themselves. Such purchases are enabled by utility green power pricing programs, discussed above. However, a non-energy corporate consumer might be able to purchase biopower directly if, for instance, it were in an office park located next to an independent biomass power plant.³³

Green Power Product Consumers

In general, biomass power product consumers in the voluntary market fall into two categories, individual/residential and commercial/non-residential. Individual consumers purchase biomass power products hoping to do good for the environment and reduce their carbon footprint. Commercial consumers similarly purchase RECs or participate in green power programs to reduce their corporate carbon footprint, but also to advance corporate sustainability goals.

Utility companies are consumers of biopower products as well – in many cases, the first customers. When utilities purchase RECs and/or renewable power to meet compliance obligations or to support voluntary green power programs, they may have a choice between power and RECs originating at solar or wind power generation facilities and biopower facilities. FTC rules apply to marketing directed at business-to-business communications as well as individual consumers.³⁴ Therefore, the environmental advertising that affects biopower product purchasing decisions made by each of these types of consumers is within the purview of the FTC.

Consumer Advertising Law

Under FTC case law, deceptive advertising occurs when a representation, omission, or practice is likely to mislead consumers who are acting reasonably under the circumstances, and the representation, omission, or practice is “material,” i.e. influential in the consumer’s decision to buy the product or service.³⁵ Express claims, or deliberately made implied claims used to influence the purchase of or payment for a particular product or service, are presumed to be material.³⁶ The Commission determines whether a claim is deceptive by examining the net

³³ An example of this is Griffiss Utility Services Corporation Energy in New York, a company that owns a biomass power plant that distributes steam heat and power to Griffiss Business and Technology Office Park. See <http://www.gusc.net/operations.asp> (Accessed July 8, 2014).

³⁴ Green Guides § 260.1(c) "These guides apply to claims about the environmental attributes of a product, package, or service in connection with the marketing, offering for sale, or sale of such item or service to individuals. These guides also apply to business-to-business transactions."

³⁵ Federal Trade Commission Act, 15 U.S.C. § 45; Federal Trade Commission Policy Statement on Deception, appended to *Cliffdale Assocs., Inc.*, 103 F.T.C. 110, 165, appeal dismissed sub nom. *Koven v. FTC*, No. 84-5337 (11th Cir. 1984) (“Deception Statement”).

³⁶ *Thompson Medical Co., Inc.*, 104 F.T.C. 648, 816 (1984), aff’d, 791 F.2d 189 (D.C. Cir. 1986), cert. denied, 479 U.S. 1086 (1987). Information concerning the cost of a product or service also has been found to be material. Deception Statement at 174.

impression of the advertisement, which includes analysis of the representation and its context.³⁷ These legal requirements are described in the FTC Green Guides as well as the NAAG Environmental Marketing Guidelines.³⁸ The Green Guides are a regulatory interpretation of the Federal Trade Act that clarify - as opposed to adding to - the rules for non-deceptive environmental advertising. They are based on consumer perception research conducted by the Commission, as well as comments from industry stakeholders submitted in the federal rulemaking notice and comment process. The Green Guides are topically much broader than the NAAG Guidelines, covering a wide variety of “green” consumer products and environmental marketing, but also specifically address marketing of environmental attributes of electric power products. Both sets of guidelines explain that all general advertising law principles apply to environmental claims made about electricity generation, meaning that advertising claims must be truthful and capable of being substantiated with appropriate evidence at the time they are made.

As described below, we believe the environmental claims made in the biopower product advertising described in this report may be false, misleading, or deceptive, either because they are not properly qualified, or because they cannot be substantiated.

III. Environmental Marketing of Biomass Power

Biomass power is the generation of electricity by burning wood and other biological materials as fuel in industrial, commercial, and utility power plants. Just as at a coal plant, fuel combustion produces steam that drives a turbine to generate electricity, and just as at a coal plant, fuel combustion emits CO₂ and conventional air pollution including particulate matter, nitrogen oxides, and hazardous air pollutants. However, these emissions are almost never acknowledged when biomass power and biopower products are marketed – instead, biopower is represented as “clean” and “carbon neutral.”

The gap between marketing claims and the reality of biopower emissions is wide. With regard to CO₂ emissions, biomass power plants actually emit *more* CO₂ per megawatt-hour (MWh) of electricity on a day-to-day basis than traditional fossil-fueled power plants. Typical emission rates for power plants are as follows:

Gas combined cycle	883 lb CO ₂ /MWh
Gas steam turbine	1,218 lb CO ₂ /MWh
Coal steam turbine	2,086 lb CO ₂ /MWh
Biomass steam turbine	3,029 lb CO ₂ /MWh

Table 1. Stack emissions of CO₂ from fossil-fueled and biomass-fueled power plants.³⁹

³⁷ Deception Statement, 103 FTC at 179. For cases regarding claims made through brand names, see *FTC v. Enforma Natural Prods., Inc.*, 362 F.3d 1204 (9th Cir. 2004); *Thompson Med. Co., Inc. v. FTC*, 791 F.2d 189 (D.C. Cir. 1986); *ABS Tech Sciences, Inc.*, 126 FTC 229 (1998). Deception through brand names is discussed further below.

³⁸ As noted above, the Guidelines are no longer current NAAG policy, and therefore are referenced throughout this report for informational purposes only.

³⁹ Fuel CO₂ per heat content data are from EIA, Electric Power Annual, 2009: Carbon Dioxide Uncontrolled Emission Factors. Efficiency for fossil fuel facilities calculated using EIA heat rate data (http://www.eia.gov/electricity/annual/html/epa_08_02.html); biomass efficiency value is common value for utility-

Biomass power plants have higher emissions than coal-fired or natural gas-fired plants partly because they are less efficient, and also because biomass has significantly lower energy content per unit carbon than natural gas. As recognized in the Environmental Protection Agency's recent proposed rule setting CO₂ emission limits for existing power plants, the relatively high moisture content and lower heat content of biomass reduces boiler efficiency at coal plants that co-fire biomass.⁴⁰ Full conversion of a coal plant to biomass generally *decreases* the amount of power the facility can produce, and *increases* the amount of CO₂ emitted per megawatt-hour of electricity generated.

Marketing Claims that Biopower is Low Carbon or Carbon Neutral

Although a biomass power plant emits more CO₂ at the stack than a fossil fueled plant, biopower companies and marketers often claim that biopower is “carbon neutral” or “reduces greenhouse gas emissions.” These marketing claims, which are almost never substantiated, are based on the assumption that CO₂ emissions from biopower are uniquely “offset,” in contrast to emissions from fossil fuel combustion.

Two basic lines of reasoning underlie such claims. The first is that only waste materials - such as lumber mill shavings, paper mill waste, and “forestry residues,” the tops and limbs left over after saw-timber harvesting - are used as fuel. It is argued that because these waste materials would have inevitably decomposed and emitted CO₂, burning them as fuel in biomass power plants emits no more CO₂ than would have occurred anyway, and can therefore be considered carbon neutral. Additionally, some biopower companies claim that burning wood waste materials instead of allowing them to naturally decompose prevents the production of methane, a greenhouse gas with greater potency than CO₂. As we discuss in more detail below, the problem with this argument is that while burning emits CO₂ instantaneously, wood decomposition takes years to decades, and is in fact generally *not* a significant source of methane.

The second main argument for biopower being carbon neutral claims that when whole trees are used as fuel, carbon emissions are offset as standing and/or new trees grow and take up an equivalent amount of CO₂ as was released by burning. The problem with this argument is that again, burning biomass emits CO₂ instantly, while regrowth takes decades, and in addition, harvesting forests for fuel compromises their ability to serve as a “sink” for atmospheric CO₂.

It’s common sense that burning forest wood increases atmospheric CO₂ levels – for instance, it has long been recognized that land-clearing and burning of forests in the tropics is a significant source of greenhouse gas emissions. Beyond this, however, a number of studies in recent years⁴¹

scale facilities.

⁴⁰ U.S. Environmental Protection Agency. Technical Support document for Carbon Pollution Guidelines for Existing Power Plants, Docket ID No. EPA-HQ-OAR-2013-0602: GHG Abatement Measures. June, 2014.

⁴¹ See for instance, Searchinger, T., et al. 2009. Fixing a critical climate accounting error. Science 326: 527-528.

Colnes, A., et al. 2012. Biomass supply and carbon accounting for Southeastern Forests. Biomass Energy Resource Center, Montpelier, VT.

Mitchell, S., et al. 2012. Carbon debt and carbon sequestration parity in forest bioenergy production. GCB Bioenergy (2012) doi:10.1111/j.1757-1707.2012.01173.x.

McKechnie, J. et al. 2011. Forest bioenergy or forest carbon? Assessing trade-offs in greenhouse gas mitigation with

have specifically shown that that far from mitigating or reducing power sector carbon emissions as advertised, burning biomass for energy actually produces an additional surge in CO₂ emissions, while simultaneously degrading forests' ability to remove CO₂ from the atmosphere. The science panel convened by the Environmental Protection Agency to study biogenic carbon emissions has noted that "carbon neutrality cannot be assumed for all biomass energy *a priori*,"⁴² and the EPA itself noted that "In general, the overall net atmospheric loading of CO₂ resulting from the use of a biogenic feedstock by a stationary source will ultimately depend on the stationary source process and the type of feedstock used, as well as the conditions under which that feedstock is grown and harvested."⁴³

We explore CO₂ emissions impacts of biopower in more detail below, and explain why company claims that biomass power has "low" or "negative" carbon emissions are so difficult to substantiate.

1) Biomass power plants emit more CO₂ than fossil fueled plants, even when burning "waste" wood.

Assuming biomass combustion emissions to be zero because the CO₂ would have been emitted "anyway" from decomposition ignores the fact that burning biomass emits CO₂ instantly, while letting it decompose emits CO₂ slowly. This fact is highly relevant to calculating the impact of CO₂ emissions on atmospheric CO₂ levels and climate warming. Figures 3 and 4 show results from a model⁴⁴ of CO₂ emissions from alternate fates of biomass – either being burned at a 50 MW biopower plant, or left to decompose. The model employs a moderate decomposition rate representative of Northeastern forests, and reveals that over time, emissions from burning will always exceed those from decomposition (Figure 3). For instance, after ten years of operation, a 50 MW biopower facility would have emitted about 6.3 million tons of CO₂, whereas if those biomass fuels had been left unburned, the emissions would have been about 2.3 million tons, a difference of 4 million tons, shown by the black arrow.

wood-based fuels. Environmental Science and Technology, 45: 789-795

Hudiburg, T.W., et al. 2011. Regional carbon dioxide implications of forest bioenergy production. Nature Climate Change 1, 419-423. doi:10.1038/nclimate1264

Stephenson, A., and MacKay, D. Life Cycle Impacts of Biomass Electricity in 2020. Scenarios for assessing the greenhouse gas impacts and energy input requirements of using North American woody biomass for electricity generation in the UK. UK Department of Energy and Climate Change, July 2014.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/336038/beac_report.pdf

⁴² United States Environmental Protection Agency. SAB review of EPA's Accounting Framework for Biogenic CO₂ Emissions From Stationary Sources. EPA-SAB-12-011. September 28, 2012. Washington, DC.

([http://yosemite.epa.gov/sab/SABPRODUCT.NSF/57B7A4F1987D7F7385257A87007977F6/\\$File/EPA-SAB-12-011-unsigned.pdf](http://yosemite.epa.gov/sab/SABPRODUCT.NSF/57B7A4F1987D7F7385257A87007977F6/$File/EPA-SAB-12-011-unsigned.pdf)).

⁴³ Standards of performance for greenhouse gas emissions from new stationary sources: electric generating units. 40 CFR Part 60, [EPA-HQ-OAR-2013-0495; FRL-9839-4] RIN 2060-AQ91. September 20, 2013.

⁴⁴ The model assumes:

Green wood is 45% water by weight

Bone dry wood is 50% carbon

% wood left at year x = e^{-0.09*(year-x - 0.05)}

Wood decomposed at year x = (1 - % wood left at year x)

Facility efficiencies: Coal: 33%; Biomass: 24%; Natural Gas: 45%

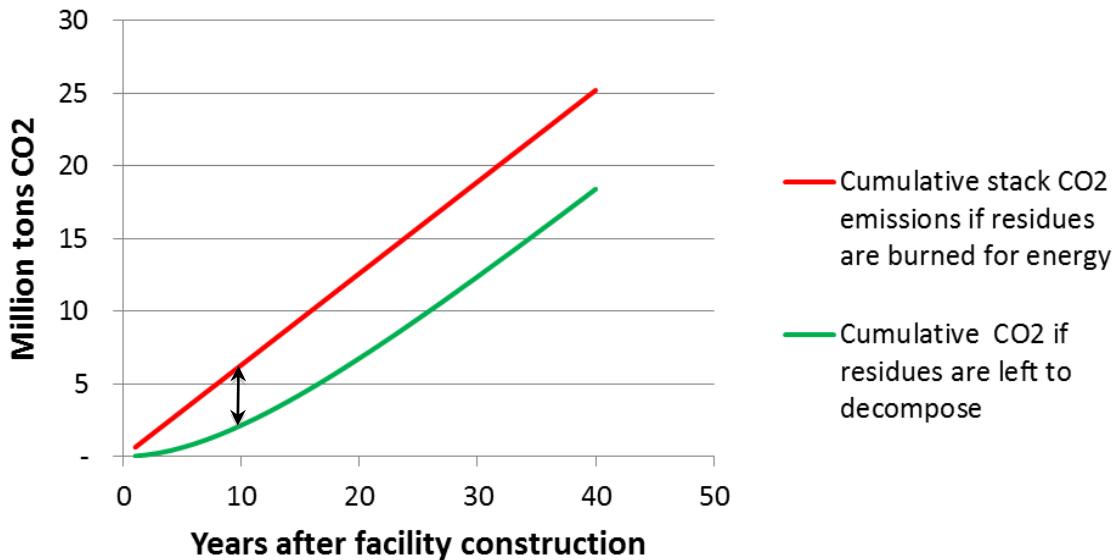


Figure 3. Comparison of CO₂ emissions from biomass combustion and biomass decomposition over time. After ten years of facility operation, burning residues will have emitted about four million tons more CO₂ than under the scenario where they are allowed to decompose.

Figure 4, below, shows the additional, “net” four million tons of CO₂ emitted by ten years of biopower facility operation, in comparison to emissions from a same-sized coal or gas plant over the same period. The example shows that prior to the ten-year mark, the net biopower emissions exceed those from a coal plant; at the ten-year mark, biopower and coal are approximately equivalent; and after ten years of facility operation, coal plant emissions now exceed net biopower emissions. Net emissions at the biopower facility still exceed emissions from a gas plant even after about 35 years.

Importantly, these estimates are only valid if the wood being burned is truly “waste wood that would have decomposed anyway,” and not trees harvested for biopower, which but for being harvested would have continued to grow and take CO₂ out of the atmosphere (we discuss this scenario below).

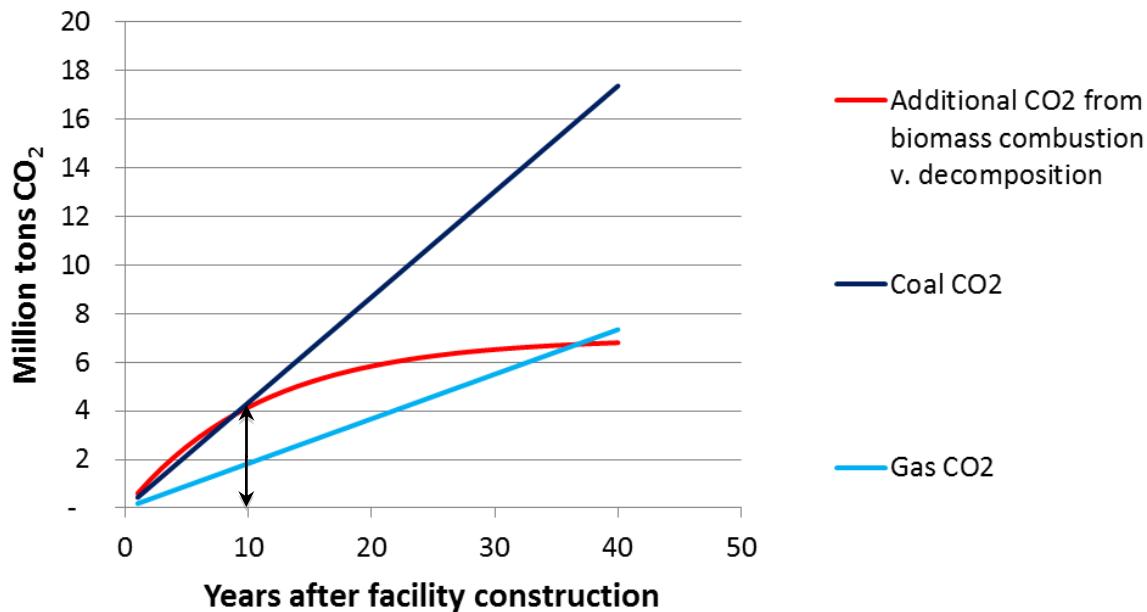


Figure 4. Even after subtracting “anyway” emissions from decomposition, net CO₂ emissions from a biomass plant exceed those from a coal plant for about ten years, and exceed those from a gas plant for more than 35 years.

These results mean that instead of reducing emissions from power generation, biomass power plants burning waste wood “that would decompose anyway” actually *increase* greenhouse gas emissions for at least a decade, even compared to old, inefficient coal plants. Nothing offsets these excess emissions during this time period.

Many consumers might consider the long-lasting surge of greenhouse gas emissions from biomass plants compared to fossil-fueled plants as contradictory to the goal of reducing greenhouse gas emissions – a goal for which they are paying extra on their utility bill when they purchase green power or RECs sourced from biomass power plants. For these reasons, biomass power companies claiming that their facilities have “low” or “negative” CO₂ emissions because they are burning “waste” wood may be engaging in deceptive advertising.

2) Using biomass as fuel does not “avoid” methane emissions from decomposition, because wood decomposition is not a significant source of methane emissions.

Methane is a more powerful greenhouse gas than carbon dioxide, and reducing methane emissions is an important part of addressing climate warming. While the natural gas industry and livestock operations are the largest sources of methane emissions in the United States, EPA also recognizes landfill gas produced by decomposing garbage as a significant source of methane emissions.⁴⁵ Biomass companies and marketers sometimes claim that burning biomass produces a reduction in greenhouse gas emissions because if biomass were left to decompose, this process would emit methane, whereas combustion of biomass “only” emits CO₂.

⁴⁵ EPA’s methane information page is at <http://epa.gov/climatechange/ghgemissions/gases/ch4.html>. (Accessed July 9, 2014).

However, this is a specious argument, first because landfills are not a common destination for “waste” wood, at least, not in the quantities of hundreds of thousands of tons per year that a typical biomass plant burns.⁴⁶ Second, while EPA recognizes that decomposition of organic materials in landfills is a source of methane,⁴⁷ EPA’s breakdown of methane emissions from different materials for its Waste Reduction Model (WARM) shows that rather than serving as a source of methane, landfilled wood generally represents a *sink* for carbon, rather than a source.⁴⁸ Table 2 is excerpted from EPA’s waste decomposition model documentation and shows relevant sections of tables for decomposing organic materials, and wood.

Exhibit 3: Organics GHG Sources and Sinks from Relevant Materials Management Pathways

Landfilling	NA	NA	Emissions <ul style="list-style-type: none"> • Transport to landfill • Landfilling machinery • Landfill methane Offsets <ul style="list-style-type: none"> • Avoided utility emissions due to landfill gas combustion • Landfill carbon storage
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Exhibit 2: Wood Products GHG Sources and Sinks from Relevant Materials Management Pathways

Landfilling	NA	NA	Emissions <ul style="list-style-type: none"> • Transport to landfill • Landfilling machinery Offsets <ul style="list-style-type: none"> • Carbon storage • Energy recovery
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Table 2. Overview of greenhouse gas emissions and sinks from EPA’s waste decomposition modeling for organic materials and landfilled wood. While the table for organics identifies methane emissions as a factor, the table for wood does not include methane as a product of decomposition, but identifies landfilled wood as representing carbon storage.

Nor is decomposition of logging residuals in the forest a significant source of methane, therefore, arguments that burning such materials prevents methane emissions are also specious. In forests, methane can be emitted in environments where oxygen is extremely low or non-existent, like the saturated wetland soils in swamps or bogs. However, in upland areas where well-aerated logging residues are decomposing, forest soils contain bacteria that consume methane, so that these forested systems are generally net *consumers*, not producers, of methane.⁴⁹ In fact, an EPA

⁴⁶ The wood chip fuel pile for a 50 MW biomass plant is typically one to several football fields in size, and wood chips may be piled 60 feet in height. Entering the coordinates 44.492806, -73.208674 into Google Earth “flies” one to the site of the McNeil biomass plant in Burlington, Vermont, where the size of the fuel pile can be viewed.

⁴⁷ <http://epa.gov/epawaste/conserve/tools/warm/pdfs/Organics.pdf> (Accessed July 8, 2014).

⁴⁸ http://epa.gov/epawaste/conserve/tools/warm/pdfs/Wood_Products.pdf (Accessed July 8, 2014).

⁴⁹ EPA’s webpage at <http://epa.gov/climatechange/ghgemissions/gases/ch4.html> points out that while wetlands can be a source of methane, natural systems actually take it up: “Methane is emitted by natural sources such as wetlands, as well as human activities such as leakage from natural gas systems and the raising of livestock. Natural processes in soil and chemical reactions in the atmosphere help remove CH₄ from the atmosphere.” (Accessed July 8, 2014).

review reports that the United Nations Intergovernmental Panel on Climate Change has concluded, “dry upland soils serve as one of the primary global methane sinks,” removing about 30 million metric tons of methane from the atmosphere each year.⁵⁰ In reality, far from decreasing methane emissions by removing potentially methane-emitting forest residues, forest harvesting operations may actually increase methane emissions by reducing this sink, as some studies show that logging activities can reduce soil uptake of methane.⁵¹ Thus, unqualified claims that burning biomass for fuel “avoids” harmful methane emissions may be misleading and deceptive advertising.

3) Forests must grow for decades to offset carbon dioxide emissions from cutting and burning trees.

When trees are harvested for biomass fuel, net carbon emissions from burning this wood can theoretically be offset, as trees regrow and take up an equivalent amount of CO₂ as was released by fuel combustion. However, modeling studies demonstrate that it requires decades of forest growth to offset emissions from biomass power plants, and that forest carbon uptake is considerably suppressed by the very harvesting required to provide biomass fuels. Critically, although biopower marketing claims either explicitly or implicitly imply that emissions offsetting is occurring, such claims never discuss the time required to offset emissions. Nor do biopower companies typically control the means to offset emissions, because most do not own or manage the forests from which their fuel is sourced, and therefore cannot control whether trees are replanted or the rate at which offsetting of biopower emissions occurs.

Figure 5 is a generalized schematic showing that it takes time for net uptake of CO₂ from new forest growth to bend the net emissions curve for biomass downward. Until the point is reached where the biopower curve crosses the emissions line for fossil fuels, the atmosphere is “seeing” more CO₂ from a biomass power plant than from an equivalently sized fossil fueled plant. For biomass facilities that are harvesting new whole trees as fuel, forest modeling demonstrates that it takes 35 to more than 90 years for new forest growth to offset the extra CO₂ emissions from burning biomass rather than fossil fuels, with shorter offsetting times for biomass-coal comparisons, and longer times for biomass-natural gas comparisons.⁵²

⁵⁰ U.S. EPA, Office of Atmospheric Programs. 2010. Methane and nitrous oxide emissions from natural sources. EPA 430-R-10-001. April, 2010.

⁵¹ See for example Wu, X. et al. 2011. Long-term effects of clear-cutting and selective cutting on soil methane fluxes in a temperate spruce forest in southern Germany. Environmental Pollution, 159:2467-2475; Bradford, M.A. et al. 2000. Soil CH₄ oxidation: response to forest clearcutting and thinning. Soil Biology and Biogeochemistry, 32:1035-1038.

⁵² Walker, T., et al. 2012. Carbon accounting for woody biomass from Massachusetts (USA) managed forests: a framework for determining the temporal impacts of wood biomass energy on atmospheric greenhouse gas levels. Journal of Sustainable Forestry, 32:1-2, 130 – 158; 2010; Colnes, A., et al. 2012. Biomass supply and carbon accounting for Southeastern Forests. Biomass Energy Resource Center, Montpelier, VT; Mitchell, S., et al. 2012. Carbon debt and carbon sequestration parity in forest bioenergy production. GCB Bioenergy (2012) doi:10.1111/j.1757-1707.2012.01173.x.

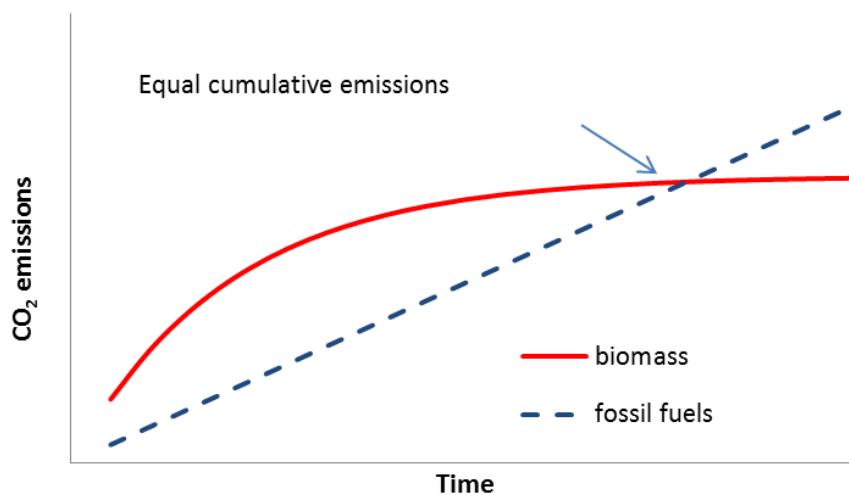


Figure 5. Comparison of CO₂ emissions from biomass power plants versus fossil fuel plants. The calculation of net biopower emissions includes the actual stack emissions, minus the CO₂ that is sequestered by forest regrowth.⁵³

Since the ultimate goal of biopower carbon neutrality depends upon a number of uncertainties, including whether or not the trees harvested will be replanted, whether they will be allowed to fully regrow before further harvesting, and the rate of forest regrowth (which is itself dependent upon weather, climate conditions and various biological factors), claims that biopower fueled by forest harvesting is carbon neutral over even moderately long timeframes can be difficult to substantiate. There is no case, however, where biopower is *instantaneously* carbon neutral, whether the fuel is sourced from “waste wood that would decompose anyway,” or whether it is sourced from trees that are assumed to grow back under optimal conditions. Therefore, any claim that biopower has “negative” carbon emissions, or that it is “carbon neutral,” is likely misleading unless substantiated with a demonstration that the offsetting is under the control of the biopower company, and that the offsetting will happen within a specified timeframe.

Marketing Claims That Biopower Is “Clean”

It is common to see biomass power companies refer to their facilities as generating “clean” energy. However, biomass power plants – even those employing modern emissions controls – emit as much or more particulate matter, carbon monoxide, and nitrogen oxides as modern coal plants per unit energy generated, and far more air pollution than natural gas plants (Figure 6).⁵⁴ Replacing coal with biomass can reduce sulfur dioxide emissions, but biomass plants still have higher sulfur dioxide emissions relative to modern natural gas plants, which are the most common type of new power plants being built in the U.S. today. The amount of pollution

⁵³ Figure after Walker, T., et al. 2012. Carbon accounting for woody biomass from Massachusetts (USA) managed forests: a framework for determining the temporal impacts of wood biomass energy on atmospheric greenhouse gas levels. *Journal of Sustainable Forestry*, 32:1-2, 130 – 158.

⁵⁴ Data on permitted emissions from different facilities are available at EPA’s BACT clearinghouse, <http://cfpub.epa.gov/RBLC/> (Accessed July 8, 2014). The best-performing (lowest-emitting) biomass power plants included in the database have emissions rates that are no lower than the best-performing coal plants, except for sulfur dioxide. However, emission rates of bioenergy for sulfur dioxide exceed those from natural gas considerably.

emitted by a particular facility and how it compares to any other facility depends on the fuels burned, the age of the facility, and the pollution control technologies employed. Yet, there is no question that a new biomass power plant, even one employing modern emissions controls, emits substantially more air pollution on a per-megawatt-hour basis than a new gas plant, and similar or greater pollution than a new coal plant.

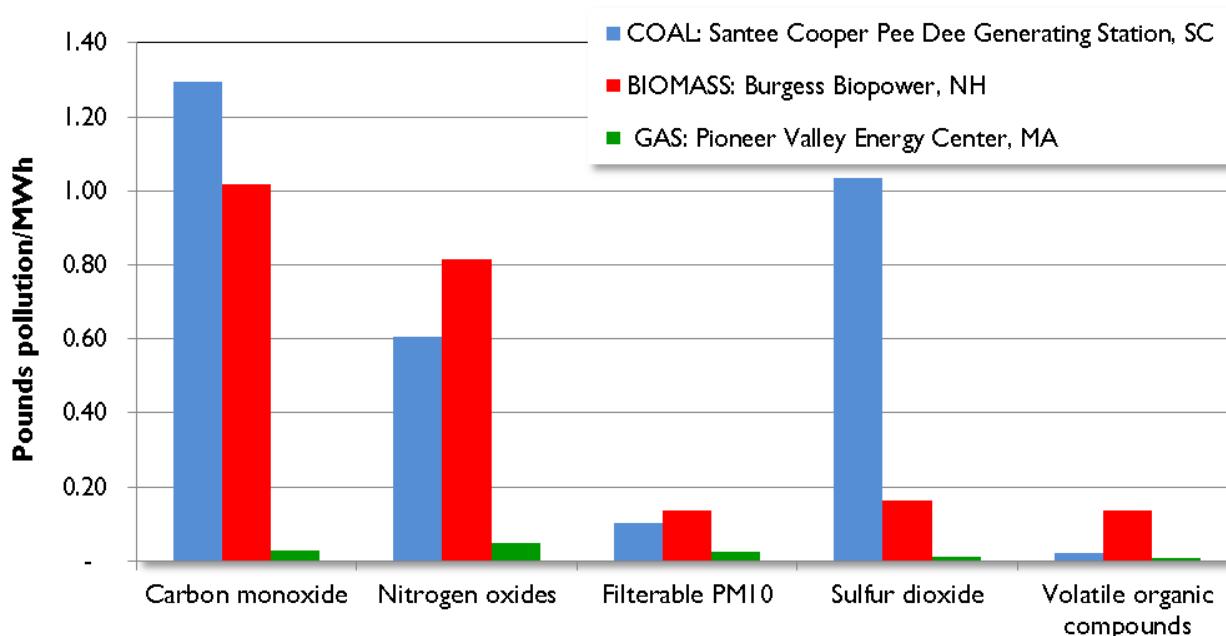


Figure 6. Comparison of permitted emission rates (in pounds per megawatt-hour of electricity generated) from three recently permitted power plants. Emissions from the biomass facility are higher than from the coal or gas-burning facilities in all cases except for sulfur dioxide and carbon monoxide, where emissions exceed those from natural gas but not from coal.⁵⁵ The Burgess Biopower facility's carbon monoxide rate is less than half the rate that is typical for biomass power plants, making its emissions rate atypical.

Biomass power plants also emit hazardous air pollutants (HAPs), including hydrochloric acid, dioxins, organic compounds such as benzene and formaldehyde, and heavy metals like arsenic, chromium, cadmium, lead, and mercury. These toxic materials are particularly likely to be emitted when construction and demolition waste wood is burned as fuel; further, toxic residues and heavy metals accumulate in the several tons of ash that a typical biomass power plant generates per day, requiring special disposal. Due to regulatory loopholes, the majority of biomass power plants have almost no legal restrictions on the amount of toxic air pollution they can emit and therefore are permitted to emit more of this dangerous pollution than fossil fueled power plants.⁵⁶

⁵⁵ South Carolina Bureau of Air Quality. December 16, 2008. PSD, NSPS (40 C.F.R. 60), NESHAP (40 C.F.R. 63) Construction Permit for Santee Cooper Pee Dee Generating Station (1,320 MW). Florida Department of Environmental Protection. December 28, 2010. Final air construction permit for Gainesville Renewable Energy Center (100 MW). Massachusetts Department of Environmental Protection. June, 2010. Conditional permit to construct issued to Pioneer Valley Energy Center. Emissions rates from the three permits were converted from units of lb/MMBtu to units of lb/MWh.

⁵⁶ Regulatory loopholes in the Clean Air Act and its enforcement that allow biomass plants to be more emitting than many fossil fueled plants are outlined in “Trees, Trash, and Toxics: How Biomass Energy Has Become the New

Given the amount of HAPs and “conventional” air pollution that can be emitted by a typical biomass power plant, claims that biomass power is “clean” energy may be false and misleading if they are not qualified. For instance, claims that are not qualified to convey that biomass reduces emissions only of *some* pollutants relative to only *some, older* fossil-fueled technologies may be misleading because consumers may expect emissions reductions relative to comparatively modern technologies. Claims that obscure the fact that biopower facilities emit air pollution that can pose significant health risks may also be misleading and deceptive.

IV. Can They Prove It? How Biopower Product Marketers Should Substantiate and Qualify Their Environmental Advertising Claims

Environmental marketing claims – like any marketing claims – must be proven, provable or qualified to avoid being deceptive. Consumer advertising law calls this truth-in-advertising requirement the requirement of “substantiation.”⁵⁷ If a company has not yet substantiated its marketing claim through product testing or research, they must *actually be able to do so*, or *have a reasonable basis for believing they can do so* at the time the claim is made. What constitutes a “reasonable basis” can vary, depending on a number of factors: the type of product, the type of claim, the benefits if the claim is true, the consequences if the claim is false, the ease and expense of developing substantiation, and the level of substantiation experts in the field would agree is reasonable.

The FTC’s Green Guides tell marketers how to properly substantiate environmental claims about various products, as well as how to qualify claims to avoid overstating environmental benefit. Unless marketers can meet their duty of substantiation, they should qualify their environmental marketing claims, or avoid making them altogether, to prevent deception about the specific nature of the environmental benefits being asserted.⁵⁸

Below, we apply the Green Guides and NAAG Guidelines provisions relevant to biomass power to examples of biopower product marketing.

Substantiating Claims of General Environmental Benefit

The FTC Green Guides describe general claims that a product is “eco-friendly,” “earth-friendly,” “good for the environment” and “green” as *claims of general environmental benefit*. The Commission’s consumer perception research conducted for the Green Guides showed that consumers are likely to interpret claims of general environmental benefit as meaning that a product, package, or service has both specific and far-reaching environmental benefits. Some consumers interpreted general environmental benefit claims as meaning that the item or service

Coal,” Partnership for Policy Integrity, April 2, 2014 (<http://www.pfpi.net/wp-content/uploads/2014/04/PFPI-Biomass-is-the-New-Coal-April-2-2014.pdf>)

⁵⁷ Marketers must substantiate every express and material implied claim that the claim conveys to reasonable consumers about an objective quality, feature or attribute of a product.

⁵⁸ July 2000 Staff Report, Section VIII. Consumer Protection. Citation to *Pfizer, Inc.*, 81 F.T.C. 23, 64 (1972); FTC Policy Statement Regarding Advertising Substantiation, appended to *Thompson Medical Co.*, 104 F.T.C. 648, 839 (1984), aff’d, 791 F. 2d 189 (D.C. Cir. 1986), cert. denied, 479 U.S. 1086 (1987).

had no negative environmental impacts whatsoever.⁵⁹

The FTC considers it “highly unlikely” that any marketer can adequately substantiate general environmental marketing claims because they are so open to interpretation and therefore recommends that companies avoid claims of general environmental benefit altogether.⁶⁰ Where a company does choose to make general environmental marketing claims, the claims should always be qualified.⁶¹ The Guides’ examples of how to qualify a claim of general environmental benefit include adding to a claim of “green” the language “made with recyclable products.” In other words, the FTC recommends qualifying the general claim by naming the specific environmental benefit the product offers, and evaluating trade-offs:

“To avoid deception [by making general environmental claims], marketers should use clear and prominent qualifying language that limits the claim to a specific benefit or benefits. Marketers should not imply that any specific benefit is significant if it is, in fact, negligible. If a qualified general claim conveys that a product is more environmentally beneficial overall because of the particular touted benefit(s), marketers should analyze trade-offs resulting from the benefit(s) to determine if they can substantiate this claim.”⁶²

Terms Like “Clean” and “Green” Can Imply a General Environmental Benefit to Consumers

When the FTC issued its July 2000 Staff Report on competition and consumer protection in the electric power market, it wasn’t sure what to do with ambiguous terms like “clean” and “green.” At that time, there weren’t enough data on the use of these terms in electric power marketing for the Commission to determine how consumers would interpret them in relation to electricity.⁶³ The Staff Report ultimately described “green” as likely a claim of general environmental benefit, but “clean” as likely referring only to emissions. The Commission ultimately declined to define “clean” or “green” but recommended applying the Green Guide’s approach to general environmental benefit claims - stating the specific environmental benefit - for both terms. The current Green Guides take a similar approach.

As applied to biomass power marketing, biopower advertisements that use the terms “green” or “clean” should also include language identifying specific environmental benefits associated with their products. The specifically named environmental benefits must be true and substantiated. Marketing materials that employ “clean” and “green” terminology but fail to identify specific environmental benefits that can be substantiated may be false and deceptive.

In the following selections, we provide initial examples of “clean and green” claims that appear to be claims of general environmental benefit. These marketing claims are worthy of scrutiny, to determine whether they amount to general environmental benefit claims that need to be qualified

⁵⁹ FTC Green Guides Statement of Basis and Purpose, pages 35-36.

⁶⁰ The FTC takes the position in its Green Guides that claims of general environmental benefit are not prohibited per se, but should be avoided or qualified as to specific attributes of a product unless the marketer can substantiate all implications of the broad claim. The July 2000 Staff Report stated that general environmental claims for electricity would be treated in the same way.

⁶¹ Green Guides § 260.4(c)

⁶² Ibid.

⁶³ July 2000 Staff Report.

or substantiated. Emphasis added:

“We Envision A Greener, Cleaner Earth With Abundant Energy That Is Produced Using Waste And Biomass Fuels. To That End, We Pledge Our Experience, Our Innovation and Our Advanced Technologies.” (ReEnergy Holdings LLC)⁶⁴

In this marketing example, ReEnergy makes an unqualified claim of general environmental benefit by using “green, clean” language without identifying the specific environmental benefits of its products. (In addition to being unsubstantiated, this claim may actually be actively deceptive. Below, we provide information on the fuels permitted to be burned at ReEnergy’s facilities and how facility emissions are arguably *not* clean.)

- *“ecoPower’s conversion of wood by-products to create electricity is clean, safe and environmentally friendly.”* (ecoPower)⁶⁵

In this marketing example, ecoPower makes an unqualified claim of general environmental benefit by using “clean, environmentally friendly” language without identifying the specific environmental benefits of its products. The word “safe” may refer to environmental benefit, but this is not clear from the advertisement. Use of the word “safe” may be misleading in another way; among other problems, biomass power plants are notoriously prone to fires (examples at footnote⁶⁶), which can start in fermenting fuel piles or when fabric pollution filters ignite.

⁶⁴ <http://www.reenergyholdings.com/about-us/our-vision/> (Accessed July 8, 2014).

⁶⁵ ecoPower Generation LLC website, http://www.ecopg.com/?page_id=20 (Accessed July 8, 2014).

⁶⁶ *Two injured when boiler blows at Ione biomass plant (CA)*

<http://www.sacbee.com/2013/05/30/5457507/two-injured-when-boiler-blows.html>

Sawdust Sets Fire at Biomass (OR)

<http://www.kdrv.com/sawdust-sets-fire-at-biomass/>

Tilbury Power Plant in U.K. Ablaze as Biomass Catches Fire (UK)

<http://www.bloomberg.com/news/2012-02-27/rwe-s-tilbury-power-plant-ablaze-in-essex-as-wood-pellet-stockpiles-burn.html>

Fire accidental at biomass plant (VT)

<http://www.rutlandherald.com/article/20110517/THISJUSTIN/705179901/1002/NEWS01>

Firefighters put out blaze at Ironbridge biomass power plant (UK)

<http://www.powerengineeringint.com/articles/2014/02/another-biomass-power-plant-in-flames-in-england.html>

Shakopee biomass plant fire contained (MN)

<http://www.mprnews.org/story/2013/04/26/news/shakopee-biomass-plant-fire-contained>

Fire rages at RWE's UK biomass power plant (UK)

<http://www.reuters.com/article/2012/02/27/us-britain-fire-idUSTRE81Q0ZO20120227>

Sittard biomass plant explosion 2007 video (Netherlands)

<https://www.youtube.com/watch?v=BYcz6zSEeq8>

Ernst Biomass fuel pellet plant is damaged by fire (PA)

<http://www.meadvilletribune.com/x135002895/Ernst-Biomass-fuel-pellet-plant-is-damaged-by-fire>

Biomass plant roof damaged in fire; damage estimated at \$30,000 (MN)

http://www.hibbingmn.com/news/local/biomass-plant-roof-damaged-in-fire-damage-estimated-at/article_4f13fc4a-ef09-11e3-bbe6-0019bb2963f4.html

Fire erupts at the MFA Biomass plant in Aurora (KY)

Images, Text and Logos Can Imply General Environmental Benefit

Depending on context, the combination of images and text in marketing and brand names can also add up to a claim of general environmental benefit. The Green Guides give the following example:

“A marketer’s advertisement features a picture of a laser printer in a bird’s nest balancing on a tree branch, surrounded by a dense forest. In green type, the marketer states, “Buy our printer. Make a change.”⁶⁷

The Guides explain that although this advertisement does not *expressly* claim that the product has environmental benefits, the featured images, in combination with “buy our printer, make a change,” likely convey that the product has far-reaching environmental benefits. They may even convey that this product has no negative environmental impact whatsoever.

Applying this reasoning to biopower company marketing, we believe the following combinations of images and brand names used in biomass power marketing materials may make general environmental benefit claims, the kinds of claims that must be substantiated to avoid being deceptive:

The company website for Greenleaf Power combines images of sunlight filtering through a forest with the company logo of a leaf to imply that the product contributes to clean air and healthy forests, and generally benefits the environment.



Figure 7. Greenleaf Power website⁶⁸

⁶⁸ http://www.ky3.com/news/local/fire-erupts-at-the-mfa-biomass-plant-in-aurora/21048998_22421932

⁶⁷ Green Guides § 260.4, Example 3.

⁶⁸ <http://www.greenleaf-power.com/biomass-technologies.html> (Accessed July 8, 2014).

Similarly, the company logo and website header for Beaver Wood Energy combines the images of a beaver with misty forests, implying that the product will have some positive benefit for forests or provide general environmental benefit.



Figure 8. Beaver Wood Energy website⁶⁹

The company website for Laidlaw Energy Group combines images of hands holding the sun, a bright blue sky and the text “Cleaner Energy for a Greener Future” to imply that its products contribute to clean air and generally benefit the environment. This marketing might reasonably be construed by a consumer to imply that the company produces solar energy, but they actually produce biopower. In fact, the air permit for the 70 MW biomass plant the company has built in Berlin, New Hampshire, states that the facility will burn wood including chips from “whole logs” at a rate of approximately 113 tons per hour.⁷⁰



Figure 9. Laidlaw Energy Group website⁷¹

⁶⁹ <http://beaverwoodenergy.com/> (Accessed July 8, 2014).

⁷⁰ New Hampshire Department of Environmental Services. Air permit for Laidlw Berlin BioPower, LLC. July 26, 2010.

⁷¹ www.laidlawenergy.com (Accessed July 8, 2014).

The company logo for Novopower proclaims the company's "enlightened generation" with a logo against a background of trees, implying that the product will benefit forests or provide general environmental benefit.



Figure 10. Novo Power website⁷²

The company logo for NRG project Renew Montville combines the image of a growing tree with the text "Renew," implying that the product will have some positive benefit for forests or provide general environmental benefit. In fact, this biomass power plant will burn forest wood and construction and demolition wood, which is likely to contain heavy metals like lead, arsenic, and chromium.



Figure 11. NRG's Renew Montville project logo⁷³

EcoPower's logo presents the image of a leaf inside a lightbulb with the company name "eco", implying that the product is natural and will have some positive benefit for trees, forests, or provide general environmental benefit. In fact, this company is proposing to build a biomass power plant that, the company application shows, will be fueled in part by whole-tree harvesting.



Figure 12. ecoPower Generation logo⁷⁴

⁷² <http://www.novopower.com/> (Accessed July 8, 2014).

⁷³ <http://montville-ct.patch.com/groups/politics-and-elections/p/renew-montville-coalition-launches-to-promote-biomass38a7f146af> (Accessed July 8, 2014).

⁷⁴ <http://www.ecopg.com/> (Accessed July 8, 2014).

The full top image from the ecoPower website combines claims about the “clean,” “environmentally friendly” nature of biopower with an image of an innocent child. The text claims the facility will improve the “health of forests” (however, testimony before the Kentucky Public Service Commission reveals this facility will harvest “regionally over-abundant” trees for fuel;⁷⁵ how forests can have “over-abundant” trees is not explained).

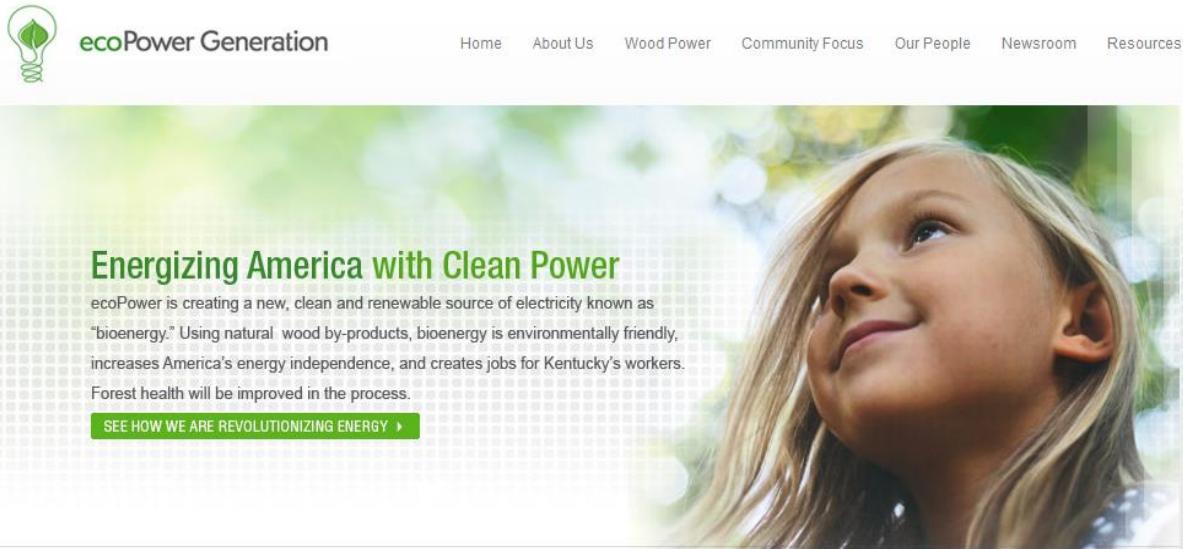


Figure 13. ecoPower Generation website⁷⁶

These images, company names, and logos all contribute to an impression of environmental benefit that may be misleading if not substantiated, and that may be actually deceptive given the potential environmental impacts of some biomass power plants.

Substantiating Claims About Amounts or Attributes of Emissions

Claims that a biomass electricity product is “clean”, “carbon neutral” or “reduces greenhouse gases” are all examples of *claims about emissions*. The National Association of Attorneys General Guidelines define “emissions” as “all discharges of matter or energy that have a significant negative impact on the environment.”⁷⁷ As described above, biomass power plants emit CO₂; criteria air pollutants including particulate matter, nitrogen oxides, carbon monoxide, and sulfur dioxide; and toxic air pollutants, including dioxins, hydrochloric acid, acrolein, styrene, benzene and formaldehyde, as well as heavy metals like arsenic, chromium, cadmium, lead and mercury.⁷⁸

⁷⁵ Kentucky Power Company responses to Kentucky Industrial Utility Customers’ second set of data requests before the Kentucky Public Service Commission. Case No. 2013-00144, Application of Kentucky Power Company for approval of the terms and conditions of the renewable energy purchase agreement for biomass energy resources between the Company and EcoPower Generation Hazard, LLC. June 17, 2013.

⁷⁶ <http://www.ecopg.com/> (Accessed July 8, 2014).

⁷⁷ The FTC Green Guides do not specifically address marketing of environmental benefit based on emissions. As mentioned above, the Guides indicate that consumers likely interpret the word “clean” used in marketing as referring to emissions.

⁷⁸ Mary S. Booth, PhD, “Trees, Trash and Toxics: How Biomass Energy Has Become the New Coal,” Partnership for Policy Integrity, April 2, 2014.

The NAAG Guidelines state that if a company chooses to make *any* advertising claims about emissions, it should additionally do the following:

- *quantify or qualify the types of emissions associated with specific generation sources;*
- *quantify or qualify the amounts of emissions relative to environmental standards;*
- *quantify or qualify the benefits or reduction in harm to the environment associated with the absence or reduction of various types of emissions, and;*
- *quantify or qualify the relevance of the emissions claims to the geographic area in which the claims are made.*⁷⁹

Importantly, the NAAG Guidelines also say that companies making marketing claims about emissions reductions should disclose all related emissions that have a significant negative impact on the environment. This means that if a product reduces emissions of pollutant X but increases emissions of pollutant Y in the process, advertising that only mentions the reductions of pollutant X would be deceptive if the increase in emissions of Y could reduce or eliminate the advertised environmental benefit. This kind of information gives consumers the details they need to make decisions about whether or not they want to buy a product based on its advertised environmental emission benefits.

Claims that that biopower is “clean” implying reduced emissions of conventional air pollutants

The following section provides examples of claims about emissions by biomass power companies that deserve examination of by the FTC. Where bolded, emphasis is added.

- *“Covanta Pacific Oroville Power facility processes more than 500 tons of biomass wood waste materials each day. The materials are diverted from landfills and used as a fuel. It also receives approximately 70,000 dry tons per year of agricultural greenwaste that **helps the facility produce enough clean, renewable energy** on a daily basis to generate approximately 16.5 MW of electricity which is enough to power 16,500 homes.”* (Covanta Energy)⁸⁰

This facility has been inoperative for at least two years and subject to investigations from both state Department of Toxic Substances and the local District Attorney for violations of the Hazardous Waste Control Act and other state pollution laws. The plant was burning contaminated construction debris; an investigation revealed that the ash from the boiler, which had been spread as an “agricultural soil amendment,” was highly contaminated with heavy metals and dioxins.⁸¹

- *“The [biomass power] plant will generate enough **clean electricity** to provide for about 40,000 households.”* (Enova Energy Group, developer of Plainfield Renewable Energy in Connecticut,)⁸²

⁷⁹ Attorneys General Guidelines, pp. 18.

⁸⁰ <http://www.covanta.com/facilities/other-renewable-energy.aspx> (Accessed July 8, 2014).

⁸¹ Burning Questions. Chico News and Review, September 12, 2013. <http://www.newsreview.com/chico/burning-questions/content?oid=11390800> (Accessed July 8, 2014).

⁸² <http://www.enovaenergygroup.com/projects-plainfield.html> (Accessed July 8, 2014).

This facility burns sorted construction and demolition debris. Because demolition wood can be contaminated with a variety of toxic compounds, the permit sets limits on emissions of sulfuric acid, arsenic, cadmium, chromium, benzene, formaldehyde, lead, mercury, dioxins, and selenium, among other toxic materials. The permit allows emissions of 45.8 tons of particulate matter and 171.8 tons of nitrogen oxides per year, among other pollutants.⁸³

- “*Using biomass in power plants produces clean energy. For instance, using wood pellets in lieu of coal dramatically reduces the high levels of carbon dioxide, sulfur dioxide and nitrogen oxide emissions. The same holds true when substituting biomass for other fossil fuels such as natural gas and oil.*” (Georgia Biomass)⁸⁴

Georgia Biomass manufactures wood pellets that are shipped overseas for consumption in coal plants in Europe and the UK. We have included this claim, even though this is not from a electricity generating company, because it provides an example of how pervasive biopower “clean energy” claims are. In general, biomass power does *not* provide emissions reductions compared to natural gas, as the company claims.

- “*Increasing the use of biomass in the United States will reduce air pollution, greenhouse gases and reliance on imported sources of energy.*” (Rollcast Energy)⁸⁵

Rollcast is developing three biomass power plants in Georgia and South Carolina with a combined capacity of about 157 MW. Operated full-time, annual emissions from these facilities will be 1.7 million tons of CO₂. Combined, the facilities’ air permits allow emissions of 270 tons of particulate matter and 669 tons of nitrogen oxides per year.⁸⁶ Claims that pollution will be “reduced” are clearly misleading, unless it could be demonstrated that the plants are genuinely displacing old, more polluting coal plants. Another possibility, however, is that flooding the renewable energy market with biomass power could make it less likely that true no-emissions renewable energy sources like wind and solar are built.

- “*In addition to being renewable, biomass is also a source of low carbon energy... As Dominion works to further increase its renewable energy portfolio, Pittsylvania Power Station will remain the foundation on which the company's efforts are based. Clean, reliable, and renewable.*”⁸⁷ (Dominion)

⁸³ Connecticut Department of Energy and Environmental Protection. Construction and Operating Permit for Plainfield Renewable Energy, December 8, 2011.

⁸⁴ <http://www.gabiomass.com/whybiomass> (Accessed July 8, 2014). Georgia Biomass LLC is a wholly owned U.S. subsidiary of European electricity and gas company RWE Innogy. Biomass power plants in Europe are largely fueled by wood pellets manufactured in North America from wood harvested from North American forests. Georgia Biomass owns and operates the largest pellet manufacturing facility in the world.

⁸⁵ <http://www.rollcastenergy.com/about/> (Accessed July 8, 2014).

⁸⁶ Georgia Environmental Protection Division. Greenway Renewable Power, LLC. Permit No. 4911-285-0089-01-0, October 22, 2009. Georgia Environmental Protection Division. Permit for Piedmont Green Power, LLC. Permit No. 4911-171-00140E-01-0. September 17, 2008. South Carolina Department of Health and Environmental Control. Permit for Loblolly Green Power, LLC. Permit No. 1780-0051-CA.

⁸⁷ Promotional video, available at http://www.youtube.com/watch?feature=player_embedded&v=UdVbknG7WNk#!, accessed July 9, 2014.

Permitted emissions from Dominion's 83 MW Pittsylvania wood-burning plant, according to its Title V emissions permit,⁸⁸ are 96.4 tons per year –tpy- particulate matter, 77.1 tpy sulfur dioxide, 482.1 tpy nitrogen oxides, 1,687.3 tpy carbon monoxide, and 337.5 tpy volatile organic compounds.

Claims that biopower has “negative” emissions or is carbon neutral, implying emissions are offset

The most common environmental claim biopower marketers make is that biopower has low or no greenhouse gas emissions and is therefore beneficial to the climate, with the explicit or implicit rationale that emissions would occur anyway from wood decomposition if the material were not burned for fuel, or that emissions are mitigated by forest growth. Such explanations are strikingly similar to the rationale behind actual carbon offsets, an area about which the FTC Green Guides has much to say. The carbon offsets discussed in the Green Guides are certificates sold by companies that represent the reduction of one metric ton (2,205 lbs) of carbon dioxide emissions through projects that are outside the scope of an organization's direct or indirect emissions.⁸⁹ Examples of carbon offset projects include planting trees, promoting the healthy growth and maintenance of existing forests, and capturing methane gas at landfills. Companies purchase carbon offset certificates in order to benefit the environment and advertise as a “carbon neutral” or a “net zero carbon” business, similar to claims made about bioenergy. Individuals may purchase offsets to counteract the emissions from individual actions like air travel. Offset projects may occur anywhere in the world and often do take place in locations distant from both offset marketers and purchasers. While carbon offset projects may take place years before or after the purchase of the offset certificate, regardless of where or when the activity takes place it must have the quality of “additionality,” meaning that the offset represents *new, additional* sequestration of carbon above what would have happened in the absence of the project. In other words, an offset cannot be based on carbon emission reductions that are required by law or that would have occurred anyway through natural processes without the offset sale.

Though biomass power companies are not marketing carbon offsets as unique products such those as those sold by companies like *Terrapass* and *Carbonfund*,⁹⁰ the reasoning behind marketing claims of biopower carbon neutrality is based on the same idea – that forest growth or other processes happening at some other time, in some other place, negate the impact of CO₂ emitted by burning wood at the power plant. The approach of the Green Guides in preventing deceptive marketing of carbon offsets should therefore be equally applicable to biomass power.

The Green Guides place clear side rails on what can be claimed about offsets. Since most consumers believe purchasing an offset will result in relatively immediate emissions reductions,⁹¹ the Guides advise marketers to disclose if emission reductions underlying a carbon

⁸⁸ Available at <http://www.deq.state.va.us/Portals/0/DEQ/Air/Permitting>TitleVPermits/30871tvada.pdf>

⁸⁹ EPA Green Power Partnership, Making Environmental Claims, <http://www.epa.gov/greenpower/buygp/claims.htm> (Accessed July 8, 2014).

⁹⁰ <http://www.terrappass.com>, <http://www.carbonfund.org/> (both accessed July 8, 2014).

⁹¹ Based on this research, the Commission concluded that it would be “deceptive to misrepresent that a carbon offset represents emission reductions that have already occurred, or will occur in the near future if, in fact, they will occur at a significantly later date.” Green Guides § 260.5, Carbon Offsets.

offset will not actually occur for two years or more after the date of purchase.⁹² If applied to biopower, this would require all wood-burning power companies that market their products as “carbon neutral” to disclose the offsetting period for biopower emissions, since even when waste wood is burned, net emissions exceed those from a same-sized coal plant for about ten years (see Figures 3 and 4, above). Additionally, since offsetting usually depends on actions outside the biopower company’s control (such as replanting of trees and preventing their near term harvesting) the contingent nature of offsets should also be revealed.

The Green Guides also require offset sellers to be able to substantiate that the emissions reductions connected to the offset go beyond what would have occurred without the sale, and that local laws did not require the reduction. As applied to biopower, “carbon neutral” claims should be backed up by a demonstration that offsetting is truly additional – that is, that the forest or other plant growth assumed to sequester equivalent CO₂ as released by burning is over and above the growth that would be expected to occur anyway, since if those forests had not been harvested for bioenergy, the trees might well have continued growing and sequestering CO₂, resulting in lower net emissions of CO₂ to the atmosphere. To quantify sequestration of CO₂, companies should be able to quantify the offsite emissions reductions expected from tree regrowth or reforestation and demonstrate that they have control or ownership over forested land, or are participating in reforestation programs.

The NAAG Guidelines provide an example of a deceptive biomass power carbon offsetting claim⁹³ that makes it clear why quantification matters, and why substantiation of offsetting is key:

“Example 1: Company A advertises the fact that it plants a tree for every 5,000 kilowatt-hours used by all of its residential customers. The company’s advertisement claims this helps to minimize the impact of greenhouse gases that are emitted as a result of generating electricity from its power plants. To substantiate its claim, the company possesses numerous articles from scientific journals that prove that trees absorb greenhouse gases from the air. The company estimates that its average customer will consume 5,000 kilowatt-hours in one year and reasonably anticipates a customer base for the advertised product of 10,000. However, 10,000 trees will have no discernible effect on greenhouse gases; moreover, the electricity generated by the company results in emissions that more than offset any beneficial effect of the trees on greenhouse gases. The claim is deceptive. On the other hand, the claim would not be deceptive if it were limited to the accurate statement that Company A plants a tree for every 5,000 kilowatt-hours used by its residential customers, provided that the context of the claim created no other inferences that could not be substantiated.”⁹⁴

This detailed example from NAAG suggests what could be required for biopower offsetting claims to be made non-deceptive. In the example, while it is true that trees absorb carbon from

⁹² If a marketer, however, has evidence that emission reductions occurring at a significantly later date do not deceive consumers (e.g., that timing of emission reductions is immaterial to consumers), then the recommended disclosure is not necessary.

⁹³ Described in the Guidelines as a deceptive claim of “indirect environmental benefit.”

⁹⁴ Attorneys General Guidelines, p. 23.

the air and planting trees *could* offset carbon emissions, the claim that the *number* of trees planted by this company will offset its carbon emissions is false. This company therefore cannot substantiate its claim that it is offsetting its emissions, making this claim deceptive. From this example, it appears that marketing claims that biopower is “carbon neutral” that are substantiated by little more than a vague claim that trees are growing *somewhere* fall far short of the kind of substantiation that the Guidelines would require.

Similarly, if a product reduces emissions onsite but increases emissions offsite, ultimately resulting in higher net emissions, marketing that advertises the product’s “emissions reductions” while hiding this net increase would be deceptive. The NAAG Guidelines give the following example:

Example 8: An unqualified claim is made that electricity generated by a new hydro facility is “emissions-free.” In fact, the consequent flooding of organic matter leads to the early release of significant amounts of greenhouse gases. The claim is deceptive.⁹⁵

This claim is deceptive because the “emissions free” advertising hides the indirect emissions from flooding from consumers. The marketing language used would lead consumers to believe that buying this electricity product would decrease emissions of greenhouse gases, when in fact the opposite is true. This example, which highlights a little-known fact about greenhouse gas impacts from supposedly “emissions free” hydropower, provides a parallel to the types of claims that are being made by many biomass energy companies, which frequently claim that biopower has low or no greenhouse gas emissions, when in fact the opposite is true. The claims by biomass companies are of a similar order of magnitude and are similarly misleading. If the NAAG Guidelines identify the example above as a deceptive claim, then it seems that biopower marketing claims of carbon neutrality could also be deceptive, if not substantiated.

In the following biopower marketing examples, companies make claims about biomass being carbon neutral or reducing carbon emissions. The materials generally do not include a discussion of how long it will actually take to offset biopower CO₂ emissions, or the dependency of offsetting on a number of factors. Some of the claims are based on the idea that wood decomposing in landfills would have a greater greenhouse gas impact (due to methane emissions) than combusting it, a claim for which companies never offer any proof (and which is directly contradicted by EPA’s estimates of negligible methane generation from wood decomposing in landfills, as shown above in Table 2). Many of these claims also employ the fundamentally flawed logic that *historic* carbon sequestration by forests (i.e., the carbon that was held in the wood prior to its release as CO₂ from combustion) counterbalances emissions occurring *now*. In fact, the same argument could be made for coal. The atmosphere is warming in response to greenhouse gas emissions emitted at the current time and going forward, therefore former carbon sequestration does not negate the warming effects of combusting carbon in wood into CO₂. As far as we could tell, none of these marketing claims are substantiated, and none quantify how long it will take for emissions to be offset. The implication is usually that CO₂ emissions are offset instantaneously; some companies’ materials actually give the impression that burning wood does not emit any greenhouse gases at all.

⁹⁵ Attorneys General Guidelines, p. 19.

- “In addition to diverting waste from already over-burdened landfills, biomass facilities are also valued for their **negative greenhouse gas footprint as they displace more potent greenhouse gas emissions of methane** that would otherwise result from the decomposition and decaying of organic materials that occurs as a result of landfill accumulation . . .” (Novo Power LLC)⁹⁶
- “Biomass facilities and other energy-from-waste projects offer numerous community benefits such as.... **significant reductions in greenhouse gases emissions.**” (Covanta)⁹⁷
- “Fossil fuel power plants take carbon-rich fuel buried in the ground, burn it, and release carbon dioxide (CO₂) into the air, a greenhouse trapping gas. In contrast, Biomass fuels “recycle” atmospheric carbon, minimizing global warming impacts since zero “net” **carbon dioxide is emitted during biomass combustion — the amount of carbon dioxide emitted is equal to the amount absorbed from the atmosphere during the biomass growth phase.**” (American Renewables)⁹⁸
- “Although biomass burned as a fuel emits carbon dioxide, scientists consider the process to be ‘carbon neutral’ because an equal amount of carbon is released into the atmosphere that would have been returned to it when the trees decayed as part of their natural life cycle.” (Dominion)⁹⁹
- “This thermal- and emissions-efficient, environmentally friendly biomass boiler . . . [r]educes CO[₂] emissions from fossil fuel combustion.” (Evergreen Community Power)¹⁰⁰
- “A key environmental attribute of biomass power is that it is carbon-neutral, so it **does not create greenhouse gas emissions that contribute to global warming and climate change.**” (Laidlaw Energy)¹⁰¹
- “Biomass power plants are one of the cleanest and most reliable ways to convert excess biomass material into energy. It is also one of the most environmentally beneficial; **biomass energy plants have a net negative emission of greenhouse gases.** This is possible because the alternatives for this biomass material, if not used in our facilities, emit substantially higher levels of greenhouse gases including carbon dioxide, methane, and nitrous oxide as a result of their biodegradation in the landfills or in the forest, or from their open-burning in agricultural fields.” (Greenleaf Power)¹⁰²

⁹⁶ <http://www.novopower.com/what-is-biomass.html> (Accessed July 8, 2014).

⁹⁷ <http://www.covanta.com/facilities/other-renewable-energy.aspx> (Accessed July 8, 2014).

⁹⁸ <http://gainesvillebiomass.com/clean-fuel/> (Accessed July 8, 2014).

⁹⁹ <https://www.dom.com/about/stations/renewable/biomass-stations.jsp> (Accessed July 8, 2014).

¹⁰⁰ <http://www.interstateresources.com/PDF/Interstate-Resources-Evergreen-Community-Power.pdf> (Accessed July 8, 2014).

¹⁰¹ <http://www.nyenerg.com/investors.html> (Accessed July 8, 2014).

¹⁰² <http://www.greenleaf-power.com/biomass-technologies.html> (Accessed July 8, 2014).

- “*Biomass to electrical power facilities are also considered to be carbon neutral as CO₂ emissions generated by combustion is generally offset by the CO₂ emissions consumed during the lifecycle of plant material. By comparison, the CO₂ emissions released from the combustion of fossil fuels (such as coal, oil and natural gas) add to the imbalance of carbon emissions in our atmosphere, which contributes to global warming.*” (Novo Power)¹⁰³
- “*Georgia Power is investing in the research and technology required to convert coal-burning plants to biomass. Processing wood as biomass is considered carbon-neutral since the resultant emissions equal the carbon dioxide absorbed by the trees as they matured.*” (Southern Company subsidiary Georgia Power)¹⁰⁴
- “*Electricity from biomass is considered “carbon neutral.” Although some CO₂ is emitted during the generation process, it is equal to what was absorbed while the biomass was growing, thus causing no net increase in CO₂ emissions on a carbon-lifecycle basis.*” (Southern Company)¹⁰⁵
- *The use of biomass to produce energy is considered "carbon neutral," because biomass energy production makes use of carbon that is already a part of the carbon cycle. Fossil fuel use releases trapped carbon into the atmosphere, thereby raising the overall level of carbon.*” (MacPherson Energy Corporation)¹⁰⁶

Based on the guidance offered by the FTC and the National Association of Attorneys General, biomass advertisements that make claims about emissions should quantify all emissions of greenhouse gases, criteria air pollutants and toxic air pollutants and be able to substantiate claims about emissions reductions. Where biomass companies do not or cannot quantify these emissions, their marketing claims should be appropriately qualified. They should identify for consumers where, geographically, emissions reductions associated with buying the product are expected to occur. They should also describe all related *increases* in emissions, including both conventional air pollutants and greenhouse gases. Marketing materials that advertise biomass as “clean” but fail to explain *why* biomass is clean, i.e. to identify what pollutants are reduced or avoided and by how much, or give relevant comparisons, e.g., lower-emitting than coal but more polluting than natural gas, may be false and deceptive. Marketing using “carbon neutral” language should be qualified to let consumers know that carbon neutrality is reached only after decades, because the Guides recommend disclosing delays of over two years. Any claim that implies that carbon neutrality is achieved in the near term must be backed up by a demonstration that offsetting is truly additional – that is, that the forest or other plant growth assumed to sequester equivalent CO₂ as released by burning is actually occurring, and is over and above the growth that would be expected to occur anyway. Finally, falsely claiming a reduction in emissions will occur where in fact it will not clearly violates truth-in-advertising requirements.

¹⁰³ <http://www.novopower.com/what-is-biomass.html> (Accessed July 8, 2014).

¹⁰⁴ <http://www.georgiapower.com/about-energy/energy-sources/biomass> (Accessed July 8, 2014).

¹⁰⁵ Southern Company 2014 Carbon Disclosure Report, p. 8. Available at http://www.southerncompany.com/what-doing/pdf/Carbon_Disclosure_Report_2014_final.pdf (Accessed July 8, 2014).

¹⁰⁶ <http://macphersonenergy.com/mt-poso-conversion.html> (Accessed July 8, 2014).

Substantiating Claims About Fuel Sources and Associated Impacts

When biomass companies market their products as “clean and green” because they use trees as fuel, they are making *claims about the environmental attributes of their fuel sources*. The NAAG Guidelines explain that advertising emphasizing the environmental attributes of a particular fuel source “should not obscure the true nature of the fuel, hide the relative amounts of fuels used to generate electricity or obscure where the fuel came from,”¹⁰⁷ because all of these characteristics are important in enabling consumers to understand the true environmental benefit of an electricity product. These guidelines are highly relevant to marketing biomass power generation, which uses a variety of fuels, all of which emit particulate matter, nitrogen dioxide, and carbon monoxide when burned, and many of which are likely to emit hazardous air pollutants.

For example, in addition to burning natural trees, which already is itself a polluting process, some biomass power plants burn construction and demolition debris, which can contain contaminated waste wood like wood treated with copper-chromium-arsenate preservatives and sulfur-laden gypsum wallboard. In these cases especially, advertising biomass products as “clean” simply because the power plant burns “wood” hides important facts from consumers. Some examples of marketing materials deserving scrutiny on this basis are:

- “Covanta Pacific Oroville Power facility processes more than 500 tons of biomass wood waste materials each day. The materials are diverted from landfills and used as a fuel. It also receives approximately 70,000 dry tons per year of agricultural greenwaste that **helps the facility produce enough clean, renewable energy** on a daily basis to generate approximately 16.5 MW of electricity which is enough to power 16,500 homes.” (Covanta Energy)¹⁰⁸

We are repeating this example, which we used above in the section on “clean energy claims, because it is appropriate here as well. Despite the company’s claims, the Covanta Oroville plant has been inoperative for at least two years and subject to investigations from both state Department of Toxic Substances and the local District Attorney for violations of the Hazardous Waste Control Act and other state pollution laws. The plant was burning contaminated construction debris; an investigation revealed that the ash from the boiler, which had been spread as an “agricultural soil amendment,” was highly contaminated with heavy metals and dioxins.¹⁰⁹

- “We own facilities that recycle **debris** into usable raw materials, and power plants that **use biomass and other residuals in an environmentally friendly way** to produce electricity and reduce greenhouse gases.” (ReEnergy)¹¹⁰

“ReEnergy Black River is located at Fort Drum (NY). The facility, which has 60 megawatts of generation capacity, had primarily burned coal to produce electricity.

¹⁰⁷ Attorneys General Guidelines, p. 16.

¹⁰⁸ <http://www.covanta.com/facilities/other-renewable-energy.aspx> (Accessed July 8, 2014).

¹⁰⁹ Burning Questions. Chico News and Review, September 12, 2013. <http://www.newsreview.com/chico/burning-questions/content?oid=11390800> (Accessed July 8, 2014).

¹¹⁰ <http://www.reenergyholdings.com/about-us/our-vision/> (Accessed July 8, 2014).

ReEnergy converted the primary fuel source to sustainably harvested local biomass ...”
(ReEnergy)¹¹¹

Though ReEnergy’s claims describe the primary fuel source for this power plant as “environmentally friendly” “sustainably harvested local biomass,” the air permit for this 60 MW facility issued in 2013 reveals that it is actually permitted to burn “*clean wood, unadulterated wood from construction and demolition debris, glued wood, creosote treated wood, tire derived fuel and non-recyclable fibrous material (waste paper), contaminated construction and demolition debris.*”¹¹² The permit allows emissions of 696 tons per year of sulfur dioxide and 538 tons per year of nitrogen oxides. While it is possible that the company is indeed currently relying mostly on forest wood for fuel, company claims that the plant burns “sustainably harvested” wood would probably be contested by local firewood sellers and sawmill operators, who blamed an acute wood shortage in January 2014 on wood demand by the facility.¹¹³

- “*NRG is developing and has fully permitted a project that will convert our Montville plant in Uncasville, Conn., from heavy fuel oil and natural gas to open-loop biomass as feedstock. When completed, the station will use forestry residues, tree trimmings and clean, recycled wood to produce 40 MW of carbon-neutral electric power.*” (NRG)¹¹⁴

This plant will also be burning construction and demolition debris. Consumers are unlikely to know that “recycled” wood simply means demolition waste that has had the most obviously contaminated wood removed, by a process that primarily relies on visual inspection to determine whether wood is pressure-treated.

Biomass “clean fuel” marketing can obscure the origin of biomass fuels, which can range from forest clearcuts to forestry residues, and from agricultural waste to highly contaminated construction and demolition debris. With each of these examples, the origin of the fuel is related to a different environmental impact. Consumers therefore need to know where fuels come from in order to understand the nature and extent of the advertised environmental benefit.

Of particular note are broad claims made by Dominion about its use of “waste wood” as fuel. The company operates one of the largest biomass power stations in the United States, the 83 MW Pittsylvania station in Virginia.¹¹⁵ In addition to Pittsylvania, Dominion began operation of the 585 MW Virginia City Hybrid Energy Center in July 2012, which will co-fire up to 60 MW biomass by 2020.¹¹⁶ Dominion is also converting three 51 MW coal-fired power plants in

¹¹¹ <http://www.reenergyholdings.com/our-facilities/energy-generation-facilities/owned-and-operated-by-reenergy/reenergy-black-river/> (Accessed July 8, 2014).

¹¹² New York State Department of Environmental Conservation. Air Title V Facility permit for ReEnergy Black River, LLC. Permit ID: 6-2240-00009/00007. Effective date 5/20/2013.

¹¹³ “Firewood sellers blame Fort Drum biomass plant for lumber shortage.” Watertown Daily Times, January 31, 2014. Available at <http://www.watertowndailymet.com/article/20140131/NEWS03/701319888> (accessed July 9, 2014)

¹¹⁴ <http://genon.com/econrg/biomass.html> (Accessed July 8, 2014).

¹¹⁵ Dominion 2011-2012 Citizenship & Sustainability Report, page 85 (<http://www.dominioncsr.com/assets/pdf/2011-12-DominionCSR.pdf>).

¹¹⁶ Dominion Virginia Power’s and Dominion North Carolina Power’s Report of Its Integrated Resource Plan.

Virginia to burn biomass, and plans to purchase another 20 MW of bioenergy from a non-utility generator. Dominion's projection for energy generation from renewables in 2020 includes over 75% bioenergy, 3% solar, and 0% wind.¹¹⁷ Despite this massive ramp-up in biopower capacity by the company, the company claims that "waste wood" is available to meet the emerging needs for the 3 – 4 million tons of biomass per year that will be required to fuel these plants.

- *"Dominion's Pittsylvania Power Station is one of the largest biomass power stations on the East Coast. Pittsylvania's principle fuel source is waste wood that would otherwise be left in forests as "slash," dumped into landfills, or burned."*¹¹⁸

In fact, while the company makes one claim on its "biomass" webpage to customers, stating it only burns waste wood, it tells regulators something different. A letter from Dominion to EPA's Science Advisory Board on biogenic carbon accounting reveals that waste wood "*to us means forest materials including residues (tree tops, non-merchantable sections of stem, branches, and bark), small trees and other low value materials.*"¹¹⁹ Some consumers might find the gap between the marketing claims about "waste" on the website, and the letter to EPA designating trees as "waste," to be misleading.

An example from the NAAG Guidelines referencing biopower provides another example of how claims about the origin of fuels can be misleading, if claims give the impression that burning wood for energy is mitigating another environmental harm, in this case limited landfill space:

*Example 3: A supplier advertises that electricity generated from biomass helps to solve the problems associated with overfull landfills in a particular state. The supplier does not own any landfills, has no entitlement to landfill fuels, and does not operate in a region where there are landfills in which matter is recovered for incineration. Instead, the company's access to biomass fuels comes from agricultural waste from local farming operations, which would otherwise not be disposed of in a landfill.*¹²⁰

This marketing claim is deceptive because the biomass fuel used does not provide the advertised environmental benefit. The generator advertises his product as solving the problems associated with overfull landfills, but the particular biomass fuel used would not have ended up in landfills. As stated above, since a typical biomass plant burns hundreds of thousands of tons of wood per year, it is unlikely that any significant amount of this material would be landfilled, in any case.¹²¹

Before the Virginia State Corporation Commission and North Carolina Utilities Commission. Case No. PUE-2013-00088, Docket No. E-100, Sub 137. Filed August 30, 2013.

¹¹⁷ Virginia Electric and Power Company d/b/a Dominion Virginia Power. Annual report to the State Corporation Commission on renewable energy. November 1, 2012.

¹¹⁸ <https://www.dom.com/about/stations/renewable/biomass-stations.jsp> (Accessed July 9, 2014).

¹¹⁹ Pamela F. Faggert, Dominion Resources Services, Inc. Comments to the Science Advisory Board biogenic carbon emissions panel on its draft advisory report regarding EPA's accounting framework for biogenic CO₂ emissions from stationary sources. March 16, 2012.

¹²⁰ Attorneys General Guidelines, pp. 16-17.

¹²¹ As stated in a previous footnote, the wood chip fuel pile for a 50 MW biomass plant is typically one to several football fields in size, and wood chips may be piled 60 feet in height.

In our research, we found that the environmental marketing claim that using biomass fuels will solve the problem of landfill space shortages is common. The following claims are strikingly similar to those identified in the Guidelines, and may not be capable of being substantiated:

- “*Biomass power is carbon neutral electricity generated from renewable organic waste that would otherwise be dumped in landfills, openly burned, or left as fodder for forest fires.*” (ReEnergy Holdings LLC)¹²²
- “*Most of our wood fuel is a waste product, which would otherwise be clogging up landfills or forests and decomposing into carbon dioxide (CO₂) and methane (CH₄) in the process.*” (Beaver Wood Energy)¹²³
- “*It [biomass power] provides an alternative to landfill disposal of a substantial portion of these tons, with its attendant consumption of landfill volume and resulting generation of landfill gasses.* (Sierra Pacific)¹²⁴
- “*In the absence of a biomass facility, a large portion of the biomass energy would be left to decompose naturally, be open-burned or landfilled. This would release carbon in the form of carbon dioxide, and also potentially methane, which is between 20 and 25 times more potent as a greenhouse-gas than carbon dioxide.*” (American Renewables)¹²⁵

V. Conclusion

Global warming is real, and greenhouse gas emissions from the power sector are large source of the CO₂ emissions that are warming the climate. Millions of electricity consumers care about mitigating climate change, even to the point of voluntarily paying extra on their electricity bill for “green” power, or purchasing renewable energy credits and carbon offsets. When consumers are persuaded to pay extra for biomass power based on claims that it is “clean” and “carbon neutral,” a double harm is done, because not only are consumers unknowingly supporting a technology that increases CO₂ emissions and air pollution over years to decades, but the integrity of green power programs that include biomass power is compromised.

The source of misleading claims about biopower is the companies that develop and operate the facilities themselves. These companies receive facility air permits setting emissions levels, and they often monitor pollution emissions at the smokestack – they know exactly how polluting biomass power plants are, yet they persist in calling them “clean.” Companies also know how many hundreds of thousands of tons of wood they burn in a year, and they know that burning a ton of wood emits about a ton of CO₂ – yet they persist in claiming that their power plants have “negative” emissions, or that they are “carbon neutral.” Companies know that they are actually burning contaminated waste wood when they claim to be burning “sustainably harvested forestry residues,” or that they are burning chips from whole trees, when they claim publicly to be burning just tops and limbs.

¹²² <http://www.reenergyholdings.com/renewable-energy/what-is-biomass/> (Accessed July 8, 2014).

¹²³ <http://beaverwoodenergy.com/faq/> (Accessed July 8, 2014).

¹²⁴ http://www.spi-ind.com/operations_cogen.aspx (Accessed July 8, 2014).

¹²⁵ <http://gainesvillebiomass.com/clean-fuel/> (Accessed July 8, 2014).

In our review of websites and marketing materials from multiple biomass power companies, we found that nearly every company made at least one marketing claim that could be considered false advertising – an unqualified claim about conventional pollutant emissions, greenhouse gas emissions, or fuel sourcing, or a general claim of environmental benefit that is difficult or impossible to substantiate. Such claims are exactly the kind of greenwashing the Green Guides were intended to prevent. Now more than ever, as biomass power is widely promoted as means of reducing power sector emissions, it is important that the Federal Trade Commission keep its promise to police electric power companies' environmental marketing claims. We urge the Commission to apply the Green Guides' standards to company claims that biomass power plants are “clean” and “carbon neutral,” and we request specific guidance on the proper limits for environmental marketing of biomass power.

Appendix - Summary of Biomass Power Company Environmental Marketing Claims

Company List

American Renewables
Beaver Wood Energy LLC
Covanta Energy Corporation
Dominion Resources Inc.
ecoPower Generation LLC
Enova Energy Group
Georgia Biomass LLC
Greenleaf Power LLC
Laidlaw Energy Group, Inc.
MacPherson Energy Corporation
Novo Power LLC
NRG Energy, Inc.
ReEnergy Holdings LLC
Rollcast Energy
Sierra Pacific Industries
Southern Company and Subsidiaries
United Corrstack/Evergreen Community Power LLC

Company name: American Renewables LLC

Company website: <http://gainesvillebiomass.com/>

Company profile: American Renewables is an energy developer that developed Nacogdoches biomass (owned by Southern Company, described below) and Gainesville Renewable Energy Center.

Biomass power plant(s) description (location, size, status): The Gainesville Renewable Energy Center (GREC) is a 100-MW biomass power facility located in Gainesville, Florida. The facility began commercial operation in December 2013.

Claims about reduced carbon emissions: Heading: “Biomass: part of the right energy mix to mitigate climate change.” “Fossil fuel power plants take carbon-rich fuel buried in the ground, burn it, and release carbon dioxide (CO₂) into the air, a greenhouse trapping gas. In contrast, Biomass fuels “recycle” atmospheric carbon, minimizing global warming impacts since zero “net” carbon dioxide is emitted during biomass combustion — the amount of carbon dioxide emitted is equal to the amount absorbed from the atmosphere during the biomass growth phase. In the absence of a biomass facility, a large portion of the biomass energy would be left to decompose naturally, be open-burned or landfilled. This would release carbon in the form of carbon dioxide, and also potentially methane, which is between 20 and 25 times more potent as a greenhouse-gas than carbon dioxide.”¹²⁶

Claims that biopower is “clean”: “As part of its emissions control system, GREC has an advanced baghouse to capture particles, soot, and ash before air is discharged from the stack. GREC is the first biomass plant in the U.S. designed and built to be in conformance with strict

¹²⁶ <http://gainesvillebiomass.com/clean-fuel/> (Accessed July 8, 2014).

new EPA regulations that limit the emission of particles. GREC cleans its exhaust gas to remove other pollutants by using selective catalytic reduction and other pollution control devices..”¹²⁷

Other claims about emissions: “In the absence of biomass energy, a large portion of biomass material would be left to decompose naturally, be open-burned or landfilled. Landfilled or naturally decaying biomass material releases carbon in the form of methane as well as carbon dioxide.” - Benefits of Biomass Energy, American Renewables. ¹²⁸

Claims about environmental benefits: “Before our facility began taking wood deliveries, much of this forestry waste wood was open burned, releasing smoke, ash, and soot into the air that our facility does not. Now, instead of being burned in the open or left on the forest floor to decompose, this material is being used to create renewable energy.”

Company name: Beaver Wood Energy LLC

Company website: <http://beaverwoodenergy.com/>

Company profile: Beaver Wood Energy is developing one biomass project in Vermont in collaboration with Bechtel Power Corporation and Bechtel Development Corporation.

Biomass power plant(s) description (location, size, status): The Beaver Wood Energy Fair Haven project is a proposed 29.5 MW woody biomass power plant, to be located in Fair Haven, VT. Also on site will be a wood pellet production facility and an educational greenhouse.

Claims about reduced carbon emissions: “... biomass for renewable, baseload power is carbon neutral and actually moves us in the right direction on climate change. If the forest resource is used sustainably and the biomass plant employs the latest technology and emissions controls, as is planned for the Beaver Wood Energy projects, biomass is a wise choice for the climate, for jobs and for the forest. Our plants will be carbon neutral while adding permanent jobs to the economy and renewable baseload power to the system.”¹²⁹

Claims that biopower is “clean”: “Powering local food systems with clean, renewable energy”¹³⁰

Other claims about emissions: “Leaving some waste material in the forest is good for the soil but leaving too much creates fire hazards, reduces the growth rate of new seedlings and, most importantly, emits a significant amount of harmful greenhouse gases during decomposition.”¹³¹

Claims about environmental benefits: “Most of our wood fuel is a waste product, which would otherwise be clogging up landfills or forests and decomposing into carbon dioxide (CO₂) and methane (CH₄) in the process.”¹³²

Company name: Covanta Energy Corporation

Company website: <http://www.covanta.com/>

Company profile: Covanta is an international company with biomass energy and "energy-from-waste" facilities in 16 U.S. states.¹³³

Biomass power plant(s) description (location, size, status): Covanta owns seven wood-burning biomass power plants – five in California and two in Maine – with a gross energy output

¹²⁷ <http://gainesvillebiomass.com/clean-operations/> (Accessed July 15, 2014).

¹²⁸ <http://www.amrenewables.com/biomass-energy/biomass-energy-benefits.php> (Accessed July 8, 2014).

¹²⁹ <http://beaverwoodenergy.com/faq/> (Accessed July 8, 2014).

¹³⁰ <http://beaverwoodenergy.com/> (Accessed July 15, 2014)

¹³¹ <http://beaverwoodenergy.com/process/> (Accessed July 8, 2014).

¹³² <http://beaverwoodenergy.com/faq/> (Accessed July 8, 2014).

¹³³ Covanta Corporate Sustainability Report 2010-2011, page 11. Available online at http://www.covantaenergy.com/pdf/Covanta_2012_CSR.pdf (Accessed July 8, 2014).

of 191MW (about 11% of total generating capacity across the company's "Americas" sector). However, not all of these plants are operating. Oroville (Butte County, CA), Mt. Lassen Power (Lassen County, CA), Burney (Shasta County, CA) are closed although air permits are still valid. Mendota (Fresno County, CA) and Delano (Kern County, CA) are still active fluidized bed burners.

Claims about reduced carbon emissions: "Biomass facilities and other energy-from-waste projects offer numerous community benefits such as . . . significant reductions in greenhouse gases emissions."¹³⁴

Claims that biopower is "clean": "The materials are diverted from landfills and used as a fuel. It also receives approximately 70,000 dry tons per year of agricultural greenwaste that helps the facility produce enough clean, renewable energy on a daily basis to generate approximately 16.5 MW of electricity which is enough to power 16,500 homes."¹³⁵

Claims about environmental benefits: "Biomass facilities and other energy-from-waste projects offer numerous community benefits such as: energy generation diversification; significant reductions in greenhouse gases emissions; diversion of wood waste materials from landfills; reducing our dependence on fossil fuel for electricity generation; utilizing wood waste from the forest floor as fuel, biomass facilities make a significant contribution in reducing the potential for forest fires"¹³⁶

Company name: Dominion Resources Inc.

Company website: <https://www.dom.com/>

Company profile: Dominion is a major U.S. energy company with diverse holdings across the Eastern United States.

Biomass power plant(s) description (location, size, status): Dominion operates one of the largest biomass power stations in the United States, the 83 MW Pittsylvania station in Virginia.¹³⁷ In addition to Pittsylvania, Dominion began operation of the 585 MW Virginia City Hybrid Energy Center in July 2012, which will co-fire up to 60 MW biomass by 2020.¹³⁸ Dominion is also converting three coal-fired power plants to burn biomass (Altavista, Southampton, and Hopewell), and announced the completion of the Altavista plant conversion on July 15, 2013.¹³⁹ Dominion also plans to purchase another 20 MW of biopower from a non-utility generator.

Claims about reduced carbon emissions: "Although biomass burned as a fuel emits carbon dioxide, scientists consider the process to be 'carbon neutral' because an equal amount of carbon is released into the atmosphere that would have been returned to it when the trees decayed as part of their natural life cycle."¹⁴⁰

¹³⁴ <http://www.covantaenergy.com/what-we-do/our-services/other-renewable-energy.aspx> (Accessed July 8, 2014).

¹³⁵ <http://www.covantaenergy.com/what-we-do/our-services/other-renewable-energy.aspx> (Accessed July 8, 2014).

¹³⁶ <http://www.covantaenergy.com/what-we-do/our-services/other-renewable-energy.aspx> (Accessed July 8, 2014).

¹³⁷ Dominion 2011-2012 Citizenship & Sustainability Report, page 85. Available online at

<http://www.dominioncsr.com/assets/pdf/2011-12-DominionCSR.pdf> (Accessed July 8, 2014).

¹³⁸ Dominion Virginia Power's and Dominion North Carolina Power's Report of Its Integrated Resource Plan. Before the Virginia State Corporation Commission and North Carolina Utilities Commission. Case No. PUE-2013-00088, Docket No. E-100, Sub 137. Filed August 30, 2013.

¹³⁹ Announcement of Altavista conversion completion, <http://dom.mediaroom.com/2013-07-15-Dominion-Virginia-Power-Completes-Biomass-Conversion-At-Altavista-Power-Station> (Accessed July 8, 2014)

¹⁴⁰ <https://www.dom.com/about/stations/renewable/biomass-stations.jsp> (Accessed July 8, 2014).

Claims that biopower is “clean”: “In addition to being renewable, biomass is also a source of low carbon energy... As Dominion works to further increase its renewable energy portfolio, Pittsylvania Power Station will remain the foundation on which the company’s efforts are based. Clean, reliable, and renewable.”¹⁴¹

Company name: ecoPower Generation LLC

Company website: www.ecopg.com

Company profile: ecoPower Generation, LLC was formed in 2009 to build and operate a wood powered biopower plant in Eastern Kentucky.

Biomass power plant(s) description (location, size, status): The company is developing a 58 MW biomass power plant in Perry County, Kentucky.

Claims about reduced carbon emissions: “Bioenergy comes from converting recently grown organic materials into useful energy. When trees grow, they use the sun’s energy to convert carbon dioxide into wood. When wood is used to make bioenergy, it is converted back into carbon dioxide. After a tree is harvested, new trees come up naturally or are replanted.”... “Recycling of wood and carbon dioxide through this process is considered carbon neutral—meaning it takes an equal amount of carbon dioxide out of the atmosphere as is released into it. Carbon neutral processes are environmentally friendly.”

Claims that biopower is “clean”: “ecoPower’s conversion of wood by-products to create electricity is clean, safe and environmentally friendly.”

Claims about environmental benefits: “ecoPower is creating a new, clean and renewable source of electricity known as “bioenergy.” Using natural wood by-products, bioenergy is environmentally friendly, increases America’s energy independence, and creates jobs for Kentucky’s workers. Forest health will be improved in the process.”

Company name: Enova Energy Group

Company website: <http://www.enovaenergygroup.com/projects-plainfield.html>

Company profile: Enova is an independent energy developer providing development, financing, and operational expertise to biomass, solar and cogeneration projects. (the current owner of the facility is Leidos, but Enova, as the developer, still has marketing materials for the plant on its website)

Biomass power plant(s) description (location, size, status): Plainfield Renewable Energy is a 37.5 MW biomass power plant located in Plainfield, CT.

Claims about reduced carbon emissions

Claims that biopower is “clean”: “The plant will generate enough clean electricity to provide for about 40,000 households.”; “The PRE project will use the clean wood that is leftover from construction and demolition activities for the majority of its fuel supply.”¹⁴²

Company name: Georgia Biomass LLC

Company website: <http://www.gabiomass.com/>

Company profile: Georgia Biomass LLC is a wholly owned U.S. subsidiary of European electricity and gas company RWE Innogy. Biomass power plants in Europe are largely fueled by wood pellets manufactured in North America from wood harvested from North American forests.

¹⁴¹ Promotional video, available at http://www.youtube.com/watch?feature=player_embedded&v=UdVbknG7WNk#! (Accessed July 9, 2014).

¹⁴² <http://www.enovaenergygroup.com/projects-plainfield.html> (Accessed July 8, 2014).

Biomass power plant(s) description (location, size, status): Georgia Biomass owns and operates the largest pellet manufacturing facility in the world, located in Waycross, GA.

Claims about reduced carbon emissions: “Carbon Neutral. Trees, as part of their natural life cycle, absorb CO₂ through photosynthesis while they are alive, and release CO₂ when they decay or burn – therefore the carbon in wood has always been in the active carbon cycle (biosphere). When the trees are replanted, carbon sequestration begins again.”

Claims that biopower is “clean”: “Using biomass in power plants produces clean energy. For instance, using wood pellets in lieu of coal to produce power would drastically reduce high levels of sulfur dioxide and nitrogen oxide emissions. The same holds true when substituting biomass for other fossil fuels such as natural gas and oil.”¹⁴³

Company name: Greenleaf Power LLC

Company website: <http://www.greenleaf-power.com/>

Company profile: Greenleaf Power develops, owns and operates biomass power plants in Northern and Southern California.

Biomass power plant(s) description (location, size, status): Greenleaf has five biomass power plants - four in the U.S., one in Canada - totaling 120 MW. The U.S. power plants provide around 100 MW and are located in California. They are the Honey Lake Facility (Wendel, CA, 30 MW), Eel River Facility (Scotia, CA, 28 MW), Desert View Facility (Mecca, CA, 47 MW) and Tracy Biomass Facility (Tracy, CA, 19 MW).

Claims about reduced carbon emissions: “Biomass power... is one of the most environmentally beneficial; biomass energy plants have a net negative emission of greenhouse gases. This is possible because the alternatives for this biomass material, if not used in our facilities, emit substantially higher levels of greenhouse gases include carbon dioxide, methane, and nitrous oxide as a result of their biodegradation in the landfills or in the forest, or from their open-burning in agricultural fields.”¹⁴⁴

Claims that biopower is “clean”: “Biomass power plants are one of the cleanest and most reliable ways to convert excess biomass material into energy.”

Company name: Laidlaw Energy Group, Inc.

Company website: <http://www.nyenrg.com/>

Company profile: Laidlaw Energy is engaged in the development of independent power plants that generate electricity from renewable resources, with a particular emphasis is on biomass power generation.

Biomass power plant(s) description (location, size, status): Laidlaw has a proposed 65 MW biomass plant conversion project in Berlin, NH and a small 7 MW proposed biomass conversion in Cattaraugus County, NY.

Claims about reduced carbon emissions: “A key environmental attribute of biomass power is that it is carbon-neutral, so it does not create greenhouse gas emissions that contribute to global warming and climate change.”¹⁴⁵

¹⁴³ <http://www.gabiomass.com/whybiomass> (Accessed July 8, 2014). Georgia Biomass LLC is a wholly owned U.S. subsidiary of European electricity and gas company RWE Innogy. Biomass power plants in Europe are largely fueled by wood pellets manufactured in North America from wood harvested from North American forests. Georgia Biomass owns and operates the largest pellet manufacturing facility in the world.

¹⁴⁴ <http://www.greenleaf-power.com/biomass-technologies.html> (Accessed July 8, 2014).

¹⁴⁵ <http://www.nyenrg.com/investors.html> (Accessed July 8, 2014).

Claims that biopower is “clean”: Header: “Cleaner Energy for a Greener Future” “Laidlaw Energy is engaged in the development of independent power plants that generate electricity from renewable resources. Our particular emphasis is on biomass power generation, which is the production of electricity and heat as a result of converting trees, plants or other similar organic sources into energy.”¹⁴⁶

Company name: MacPherson Energy Corporation

Company website: <http://macphersonenergy.com/>

Company profile: MacPherson is California onshore oil production company with a small renewable energy production subsidiary.

Biomass power plant(s) description (location, size, status): MacPherson operates the 44 MW Mt. Poso Cogeneration Plant, a coal plant converted to biomass in 2012, in partnership with DTE Energy.

Claims about reduced carbon emissions: “The use of biomass to produce energy is considered ‘carbon neutral,’ because biomass energy production makes use of carbon that is already a part of the carbon cycle. Fossil fuel use releases trapped carbon into the atmosphere, thereby raising the overall level of carbon.”¹⁴⁷

Claims that biopower is “clean”: “Macpherson is co-owner of the Mt. Poso Cogeneration Plant in Kern County east of Bakersfield. The plant uses 100% biomass fuel — principally wood waste from nearby urban and agricultural sources — to produce 44 megawatts of clean, renewable energy, enough to power more than 30,000 homes.”

Other claims about emissions: “Additionally, wood waste that otherwise might end up in landfills or left in place to decay instead is burned as fuel at MPCC, reducing the release of methane gas which is considered to be one of the major contributors to climate change.”¹⁴⁸

Claims about environmental benefits: “Energy produced from biomass residues displaces the production of an equivalent amount of energy from fossil fuels, leaving the fossil carbon in storage. It also shifts the composition of the recycled carbon emissions associated with the disposal of the biomass residues from a mixture of CO₂ and CH₄, to almost exclusively CO₂... Because CH₄ is a much stronger greenhouse gas than CO₂, shifting CH₄ emissions to CO₂ by converting biomass residues to energy significantly reduces the greenhouse warming potential of the recycled carbon associated with other fates or disposal of the biomass residues.”¹⁴⁹

Company name: Novo Power LLC

Company website: <http://www.novopower.com/>

Company profile: Novo BioPower is a renewable energy company engaged in biomass power generation utilizing wood waste as a primary fuel source.

Biomass power plant(s) description (location, size, status): Novo Biopower operates a 27 MW biomass power plant in Snowflake, AZ, using wood waste as a primary fuel.

Claims about reduced carbon emissions: “Biomass to electrical power facilities are also considered to be carbon neutral as CO₂ emissions generated by combustion is generally offset by the CO₂ emissions consumed during the lifecycle of plant material. By comparison, the CO₂ emissions released from the combustion of fossil fuels (such as coal, oil and natural gas) add to

¹⁴⁶ <http://www.laidlawenergy.com/> (Accessed July 8, 2014).

¹⁴⁷ <http://macphersonenergy.com/mt-poso-conversion.html> (Accessed July 8, 2014).

¹⁴⁸ <http://macphersonenergy.com/mt-poso-conversion.html> (Accessed July 8, 2014).

¹⁴⁹ <http://macphersonenergy.com/mt-poso-conversion.html> (Accessed July 8, 2014).

the imbalance of carbon emissions in our atmosphere, which contributes to global warming.”¹⁵⁰

Claims that biopower is “clean”: “Biomass power generation facilities harness the energy stored in organic materials to produce clean, renewable power.”

Claims about environmental benefits: “In addition to diverting waste from already overburdened landfills, biomass facilities are also valued for their negative greenhouse gas footprint as they displace more potent greenhouse gas emissions of methane that would otherwise result from the decomposition and decaying of organic materials that occurs as a result of landfill accumulation, forest accumulation or composting.”¹⁵¹

Company name: NRG Energy, Inc.

Company profile: <http://www.nrgenergy.com/>

Biomass power plant(s) description (location, size, status): NRG is developing a 40 MW biomass plant in Uncasville, CT.

Claims about reduced carbon emissions: “Using biomass, together with fossil fuels, in our existing fleet is one of the quickest and most efficient ways to reduce carbon intensity. Using renewable biomass, such as chipped wood, to produce electricity helps reduce the net carbon footprint of power production. NRG is developing and has fully permitted a project that will convert our Montville plant in Uncasville, Conn., from heavy fuel oil and natural gas to open-loop biomass as feedstock. When completed, the station will use forestry residues, tree trimmings and clean, recycled wood to produce 40 MW of carbon-neutral electric power.”¹⁵²

Company name: ReEnergy Holdings LLC

Company website: <http://www.reenergyholdings.com/>

Company profile: ReEnergy is an integrated waste fuel/biomass renewable energy company.

Biomass power plant(s) description (location, size, status): ReEnergy owns and/or operates nine biomass power plants in the Northeast and North Carolina, including the 58 MW Lyonsdale Plant wood-burning power plant in Lewis County, NY.

Claims about reduced carbon emissions: “We own facilities that recycle debris into usable raw materials, and power plants that use biomass and other residuals in an environmentally friendly way to produce electricity and reduce greenhouse gases.”¹⁵³

Claims that biopower is “clean”: “Biomass offers other significant environmental and consumer benefits, including improving forest health, protecting air quality, and offering the most dependable renewable energy source”¹⁵⁴

“Our Vision. We see a greener, cleaner planet with abundant energy that is produced by ReEnergy, and companies like us, using waste residue and biomass as fuel...”

“Waste Residues into Energy: Where others see forest residue or waste products, we see clean, abundant fuel – and are using it to make clean, reliable, stable and renewable energy.”¹⁵⁵

Other claims about emissions: “Biomass power is carbon neutral electricity generated from renewable organic waste that would otherwise be dumped in landfills, openly burned, or left as

¹⁵⁰ <http://www.novopower.com/what-is-biomass.html> (Accessed July 8, 2014).

¹⁵¹ <http://www.novopower.com/what-is-biomass.html> (Accessed July 8, 2014).

¹⁵² <http://genon.com/econrg/biomass.html> (Accessed July 8, 2014).

¹⁵³ <http://www.reenergyholdings.com/about-us/our-vision/> (Accessed July 8, 2014).

¹⁵⁴ <http://www.reenergyholdings.com/renewable-energy/what-is-biomass/> (Accessed July 8, 2014).

¹⁵⁵ <http://www.reenergyholdings.com/about-us/our-vision/> (Accessed July 8, 2014).

fodder for forest fires.”¹⁵⁶

Claims about environmental benefits: “ReEnergy Ashland, like the other biomass-to-energy generation facilities in Maine and New York owned by ReEnergy, provides sustainable electricity from responsibly harvested green forest residue biomass, and unadulterated wood. This material otherwise would have been left to decompose on forest floors or in urban lots and in either case resulting in the production of harmful methane gases.”¹⁵⁷ (ReEnergy Chateaugay, Fort Fairfield, Livermore Falls, Lyonsdale, and Stratton websites contain identical claims).

“The [Lyonsdale] plant provides sustainable electricity from responsibly harvested green forest residue biomass, and unadulterated wood. This material otherwise would have been left to decompose on forest floors or in urban lots and in either case resulting in the production of harmful methane gases. In addition to the environmental benefits associated with biomass-to-energy, these facilities are very reasonably priced forms of renewable baseload energy.”¹⁵⁸

Company name: Rollcast Energy

Company website: <http://www.rollcastenergy.com/>

Company profile: Rollcast is a biomass power plant developer and develops, owns and operates biomass power plants.

Biomass power plant(s) description (location, size, status): Rollcast has four biomass power plant projects located around the U.S.: Cadillac Renewable Energy in Michigan, Loblolly Green Power in South Carolina, and Greenway Renewable Power and Piedmont Renewable Power in Georgia. Two of these power plants have been sold to Atlantic Power Corporation.

Claims about reduced carbon emissions: “Increasing the use of biomass in the United States will reduce air pollution, greenhouse gases and reliance on imported sources of energy.”¹⁵⁹

Claims that biopower is "clean": “Rollcast Energy’s mission is to meet the growing demand for clean, renewable and sustainable energy by developing, owning, and operating power plants that run on biomass fuel that is acquired from local sources”¹⁶⁰

Claims about environmental benefits: “Rollcast’s plants will all produce energy using biomass fuels, which offer safe ways to provide environmentally benign and sustainable fuels from reliable and renewable domestic sources of energy.”¹⁶¹

Company name: Sierra Pacific Industries

Company website: www.spi-ind.com/

Company profile: Sierra Pacific Industries is a third-generation family-owned forest products company based in Anderson, California. The firm owns and manages nearly 1.9 million acres of timberland in California and Washington, and is the second largest lumber producer in the United States.

Biomass power plant(s) description (location, size, status): SPI owns and operates five biomass power plants in California and Washington, between 4 and 28 MW, that operate on logging and mill residues.

¹⁵⁶ <http://www.reenergyholdings.com/renewable-energy/what-is-biomass/> (Accessed July 8, 2014).

¹⁵⁷ http://www.reenergyholdings.com/our-facilities/energy-generation-facilities-2/owned-and-operated-by-reenergy/reenergy_ashland/ (Accessed July 8, 2014).

¹⁵⁸ <http://www.reenergyholdings.com/our-facilities/energy-generation-facilities-2/owned-and-operated-by-reenergy/reenergy-lyonsdale/> (Accessed July 8, 2014).

¹⁵⁹ <http://www.rollcastenergy.com/about/> (Accessed July 15, 2014)

¹⁶⁰ <http://www.rollcastenergy.com/about/biomass> (Accessed July 15, 2014)

¹⁶¹ <http://www.rollcastenergy.com/about/biomass> (Accessed July 15, 2014)

Claims that biopower is “clean”: “Clean renewable energy production and environmental stewardship go hand in hand.”¹⁶²

Claims about environmental benefits: “Biomass power produces a number of societal and environmental benefits in addition to its displacement of fossil-fueled electricity generation, which is a benefit common to all renewable generation technologies. In brief, the biomass power industry provides an environmentally responsible means of disposal of about 25 million tons of woody wastes annually, turning waste materials into valuable electricity. It prevents the open burning of a substantial amount of these tons, mostly agricultural and forest residues, with the attendant massive amounts of air pollution. It provides an alternative to landfill disposal of a substantial portion of these tons, with its attendant consumption of landfill volume and resulting generation of landfill gasses.”¹⁶³

Company name: Southern Company and Subsidiaries

Company website: <http://www.southerncompany.com/>, <http://www.alabamapower.com/>,
<http://www.georgiapower.com/>, <http://www.gulfpower.com/>, <http://mississippipower.com/>

Company profile: Southern Company is one of the largest electric utilities in the nation, providing electricity service to over 4.4 million retail customers through its subsidiaries Alabama Power, Georgia Power, Gulf Power, Southern Power, and Mississippi Power.

Biomass power plant(s) description (location, size, status): Southern Company owns and operates the 100 MW Nacogdoches biomass power plant in Sacul, TX and its subsidiaries own biomass power facilities or interest in biomass energy facilities across the United States.

Alabama Power has been co-firing biomass as part of normal operations at its Plant Gadsden for nine years and is planning to add another 22.5 MW of biopower to its generation mix.¹⁶⁴ Mississippi Power is actively researching the use of biomass for re-powering and co-firing its existing plants and is currently working with the U.S. Forest Service to evaluate co-firing biomass from the Talladega National Forest with pulverized coal (wood harvesting is already under way).¹⁶⁵ Georgia Power has a 20-year agreement for power from woody biomass with Yellow Pine Energy Co. LLC in Fort Gaines, GA, a 110 MW biomass plant, and a 15-year contract for biomass power from Greenway Renewable Power LLC near Franklin, GA.¹⁶⁶

Claims about reduced carbon emissions: “Georgia Power is investing in the research and technology required to convert coal-burning plants to biomass. Processing wood as biomass is considered carbon-neutral since the resultant emissions equal the carbon dioxide absorbed by the trees as they matured.”¹⁶⁷

Claims that biopower is “clean”: “Using a renewable resource [biomass] to produce electricity is clean and environmentally responsible, and good for the community.”¹⁶⁸

Company name: United Corrstack/Evergreen Community Power (Interstate Resources/

¹⁶² http://www.spi-ind.com/operations_cogen.aspx (Accessed July 15, 2014)

¹⁶³ http://www.spi-ind.com/html/operations_cogen.cfm (Accessed July 8, 2014).

¹⁶⁴ Corporate Responsibility, Building Renewable Resources, <http://www.southerncompany.com/what-doing/corporate-responsibility/home.cshtml> (Accessed July 8, 2014).

¹⁶⁵ http://www.mississippipower.com/topic_renewable/biomass.asp (Accessed July 8, 2014).

¹⁶⁶ Georgia Farm Bureau, “Georgia’s Largest Biomass Power Plant Under Development,” 8/16/2011 (by Biomass Magazine) <http://www.gfb.org/gfbnews/GFBNewsMoreInfo.asp?RecordID=1993>.

¹⁶⁷ <http://www.georgiapower.com/about-energy/energy-sources/biomass> (Accessed July 8, 2014).

¹⁶⁸ “Nacogdoches Facility Video Update July 2012,” located on Nacogdoches Facility page of company website, and separately, <http://www.youtube.com/watch?v=KbX6uPBVC2g> (Accessed July 8, 2014).

INDEVCO Group)

Company website: <http://www.interstateresources.com/>

Company profile: Evergreen Community Power (ECP) and United Corrstack are business units of Interstate Resources, a major U.S. producer of paper and paper packaging.

Biomass power plant(s) description (location, size, status): The Evergreen Community Power biomass plant is located in Reading, PA and burns 900 tons of biomass per day to generate 30 MW of power.

Claims about reduced carbon emissions: “In using biomass fuel, we help reduce greenhouse gas emissions, providing an additional benefit to our energy production... Using biomass is carbon neutral, as carbon in emissions is sequestered back into cellulosic products, which are harvested and eventually converted into energy. As a result, biomass reduces our costs, our dependency on foreign fuel, and our carbon footprint.”¹⁶⁹

Claims that biopower is “clean”: “Evergreen Community Power creates ‘green’ energy independence for the paper mill”

Claims about environmental benefits: “This thermal- and emissions-efficient, environmentally friendly biomass boiler...[r]emoves 60 truckloads of biomass waste daily from landfills, including organic materials as wood construction debris and agricultural waste.”¹⁷⁰

¹⁶⁹ <http://www.interstateresources.com/#!projects/Bio-Mass-Energy.html> (Accessed July 25, 2014).

¹⁷⁰ <http://www.interstateresources.com/PDF/Interstate-Resources-Evergreen-Community-Power.pdf> (Accessed July 8, 2014).