List of Precedent Policies for CO_2 Neutrality of Biomass

The carbon (CO_2) neutrality of biomass is universally accepted in greenhouse gas reduction programs as reflected in measurement protocols, legislative proposals, implemented regulations, voluntary programs, and in overall global strategies for greenhouse gas (GHG) reduction.

- When measuring carbon flows, international accounting conventions properly recognize the difference between fossil fuel emissions and carbon flows related to the natural carbon cycle. **The Intergovernmental Panel on Climate Change (IPCC) counts the combustion of fossil-based fuel as GHG emissions while accounting for emissions and sequestration related to land use separately.**

- **Inventory of U.S. Greenhouse Gas Emissions and Sinks, 2007.** EPA accounts for the carbon stock changes related to land use in the United States in its national inventory that it reports to the United Nations Framework Convention on Climate Change (UNFCCC) annually. These national GHG inventories recognize the carbon neutrality of biomass and also account for changes in the amount of carbon stored in forests, landfills and other pools.

- **Renewable Fuel Standard, RFS2 (74 Fed. Reg. 24904 (May 26, 2009).** In determining the treatment of CO_2 emitted from combustion of biomass-based fuels during the processing of feedstock into transportation biofuels, EPA makes clear, in VI.B.5.d Processing, that "[*t*]*he emissions from combustion of biomass fuel source are not assumed to increase net atmospheric CO_2 levels. The CO_2 emitted from biomass-based fuels combustion does not increase the atmospheric CO_2 concentrations, assuming the biogenic carbon emitted is offset by the uptake of CO_2 resulting from the growth of new biomass. Therefore, the CO_2 emissions from biomass combustion as a process fuel source are not included in the lifecycle GHG inventory of the ethanol* (and other biofuels) *plant.*"

- **U.S. EPA Mandatory Reporting of GHGs Rule** makes clear the exclusion of biomass CO_2 emissions quantities for the calculation of thresholds for determining regulated facilities.

- In its directive on carbon trading, the **European Union Emissions Trading Scheme (EU ETS)**, the EU Commission 2004 regulation in section 4.2.2.1.6 Emission factors, states "[b]iomass is considered as CO_2-neutral. An emission factor of 0 [t CO_2/TJ or t or m3] shall be applied to biomass."

- The **House passed American Clean Energy and Security Act of 2009 (EISA, Waxman-Markey) and the Senate Clean Energy Jobs and Power Act** lists "fossil fuel based carbon dioxide" as one of the emissions from GHG that could make up the required 25,000 tons of CO_2 eq threshold to be considered a covered entity. The substance of this definition is reinforced in the section related to industrial stationary sources compliance obligation – where there is an exemption for "renewable biomass."

- Further, because CO_2 biomass is widely considered neutral, it is either not reported or reported separately (for information purposes only) in many **reporting protocols such as: U.S. Department of Energy's 1605 (b), World Resources Institute/World Business Council for Sustainable Development (WRI/WBCSD), International Standards Organization (ISO) 14064, IPCC, Environment Canada, U.S. EPA Climate Leaders, Midwest Greenhouse Gas Reduction Accord Advisory Board recommendations, and the final EPA Mandatory GHG Reporting Rule.**

- **International Energy Agency report *Energy Technology Transitions for Industry*,** September 2009, page 185. "Renewable biomass is considered as a CO2-free energy carrier, as it absorbs in its growing phase the carbon it emits when it is combusted."

- As stated in the Intergovernmental Panel on Climate Change Fourth Assessment (IPCC) Report, *Mitigation:*

  "In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fiber or energy from the forest, will generate the largest sustained mitigation benefit."[1]

[1] (Source: IPCC. 2007. *Mitigation, Fourth Assessment Report*)

American Forest & Paper Association

BIOMASS CARBON (CO_2) NEUTRALITY

- Biomass carbon neutrality is a term used to differentiate biomass-derived carbon from fossil-fuel derived carbon with respect to its role in the global carbon cycle. It reflects the fact that biomass-derived carbon is part of a relatively rapid natural cycle that, when in balance, neither adds nor subtracts carbon to/from the atmosphere, whereas fossil fuel-derived carbon is not part of such a rapid cycle.

- The carbon (CO_2) neutrality of biomass is universally accepted in greenhouse gas reduction programs as reflected in measurement protocols, legislative proposals, implemented regulations, voluntary programs, and in overall global strategies for greenhouse gas (GHG) reduction.

- Based on comprehensive accounting reported in EPA's annual greenhouse gas inventory, U.S. forestland carbon stocks are increasing and the biomass carbon cycle in the U.S. is acting as a net sink for CO_2 rather than a source of emissions. Current U.S. domestic policy recognizes the carbon neutrality of CO_2 emissions from the combustion of biomass.

- Failure to recognize the carbon neutrality of biomass will be disruptive to national climate and renewable energy strategies and result in harmful environmental and economic impacts. Policies that treat biomass-derived CO_2 identically to fossil-fuel derived CO_2 will be particularly harmful.

- The life cycle analysis proposed by U.S. EPA in the Renewable Fuels Standard does not challenge, interfere, or negate the CO_2 neutrality of biomass. Rather, it is reinforced since the standard addresses imbalances in the global carbon balance by assessing impacts on stocks of carbon stored on the land.

- Because imbalances in the biomass carbon cycle are relevant only over large areas, it makes most sense to monitor forest carbon stocks over large areas, as is now done in the U.S. Forest Service inventories. Lifecycle assessments that would require costly stand-by-stand accounting or regulation of forest carbon on privately owned forest land in

the U.S., which is comprised predominantly of small landowners, will likely result in the unintended consequence of decreasing forest carbon stores as landowners turn to other economic uses for their land.

- Sustainable forest management, policies to increase biomass supply, and periodic monitoring of carbon stocks on a national scale are the proper policy tools for addressing increased demand for the forest resource due to renewable energy mandates and incentives.

Carbon Neutrality

Biomass carbon neutrality, or biomass CO_2 neutrality, is a term associated with carbon emissions (CO_2) from the oxidation or combustion of biomass.[1]

Biomass CO_2 neutrality is an inherent property of biomass based on the natural carbon cycle. The carbon dioxide (CO_2) removed from the atmosphere during photosynthesis is converted into organic carbon and stored in biomass, such as trees and crops. When harvested and combusted, the carbon in the biomass is released as CO_2, thus completing the carbon cycle. From a technical or scientific perspective, biomass CO_2 neutrality is independent of any consideration of material sustainability of the sources of biomass – the CO_2 released back to the atmosphere is the same CO_2 that was just recently removed or "sequestered" from it. The carbon in biomass will return to the atmosphere regardless of whether it is burned for energy or allowed to biodegrade. When we burn biomass for energy, we are simply inserting a step in the cycle that allows us to recover usable energy that can displace fossil fuels.

However, as public policy increasingly develops incentives for the use of renewable fuels, concern arises over the potential depletion of forest carbon stocks due to the overuse or unsustainable use of the forest resource and, as a result, potential upset of the carbon balance. When measuring carbon flows, international accounting conventions properly recognize the difference between fossil fuel emissions and carbon flows related to the natural carbon cycle. **The Intergovernmental Panel on Climate Change (IPCC) counts the combustion of fossil-based fuel as GHG emissions while accounting for emissions and sequestration related to land use separately. This is because these biomass- related carbon flows only affect atmospheric carbon if there is an imbalance between the rate of uptake of CO_2 by plants and the rate of return of biogenic carbon to the atmosphere (through combustion, decay or respiration).**

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[1] Note that we use the term "biomass CO_2 neutrality" for explicit recognition that certain GHGs like methane and nitrous oxides (CH4 and N2O) are detected in the combustion of biomass fuels in trace amounts and are not part of the carbon cycle, or recycling system, justifying carbon dioxide neutrality. Methane and nitrous oxide are specifically excluded from this discussion.

Critics of the biomass combustion neutrality convention cite concerns that this accounting convention would ignore, or worse, incentivize the wholesale removal of standing forests. These critics ignore the fact that national circumstances and resulting climate change mitigation policies vary greatly. In the U.S., harvested forests are re-planted or re-grown resulting in *increases* in carbon stocks. Using analysis from the U.S. Forest Service, EPA accounts for the carbon stock changes related to land use in the United States in its national inventory that it reports to the United Nations Framework Convention on Climate Change (UNFCCC) annually. These national GHG inventories recognize the carbon neutrality of biomass and also account for changes in the amount of carbon stored in forests, landfills and other pools.

Since their inception, EPA inventories have consistently demonstrated the material sustainability of U.S. forest carbon stocks. Carbon stocks in U.S. forests continue to grow at a rate of over 800 million metric tons of CO_2 equivalents per year (Inventory of U.S. Greenhouse Gas Emissions and Sinks, 2007). This is equivalent to approximately 10% of annual GHG emissions in the U.S. Even on the U.S. timberland supplying wood to the forest products industry, carbon stocks are stable or increasing (NCASI Special Report 08-05, 2008). This annual net gain in forest ecosystem carbon stocks shown in the EPA inventory includes losses due to land use change. Given the evidence that forest carbon stocks in the U.S. are stable or increasing, there is every reason to conclude that the forest carbon cycle in the U.S., involving uptake of atmospheric CO_2 in the forest and return of biomass carbon to the atmosphere, is in balance and, in fact, is accomplishing net removals of CO_2 from the atmosphere.

If carbon stocks start to decline, reductions will show up as net increases in carbon emissions in the U.S. inventory. Because national accounting procedures net emissions and sequestration, counting emissions from biogenic sources would be considered double counting. Thus, eliminating the carbon neutrality accounting convention would require substantial changes in national GHG inventory and accounting methods.

If the maintenance of U.S. forest carbon stocks is not ensured, the carbon cycle may become unbalanced. This issue has been recognized and addressed in public policy primarily through the use of sustainable forestry principles. The manufacturing companies of the forest products industry utilize substantial amounts of renewable biomass. No other industry sector utilizes as much biomass fuel to meet total energy generation requirements in terms of quantity and proportion to total energy needs. Maintaining a sustainable fiber supply is a critical component of the forest products industry's business practices. All American Forest & Paper (AF&PA) member companies are obligated to comply with the sustainability principles and procedures for their forest management and fiber procurement practices and be certified to globally-recognized, sustainable forest management programs. Incorporating sustainable forest management

criteria and incentives into renewable energy policy as a way to increase biomass supplies should be encouraged.

Not only in the U.S., but globally, land can be considered a net sink of greenhouse gases. While on-the-ground measurements may show that globally land use change is a net source of emissions (e.g. 20% of worldwide CO_2 emissions are caused by deforestation), the sequestration from unmeasured or inadequately measured forests and other terrestrial sinks far exceeds this emission.

For example, the IPCC's Fourth Assessment Report (AR4) (Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change) shows that the bookkeeping method for assessing land-use flux (assessing deforestation statistics) results in a net source of emissions for the tropical and pan-tropical regions of the world and a small net sink from the non-tropics (see Table 7.2 AR4)[2]. The total result, according to calculations based on field measurements, is a positive net land-air flux of 1.6 GTC/yr, globally. However, this method shows the net flux according to what we are able to measure. Much progress has been made on determining the net flux between the others reservoirs. The IPCC reports, with low uncertainty, that fossil fuel and cement emit 7.2 GTC/yr between 2000 and 2005. The ocean-atmosphere flux, checked with seven different methods -- all with similar results, is a net sink on the order of 2.2GtC/yr. Netting these, the atmosphere sees an increase of 4.1 GtC/yr. The only other flux is between the terrestrial biosphere (land) and the atmosphere. In order for the mass balance to sum, the net land-to-atmosphere flux must be a sink on the order of 0.9GtC/yr. The IPCC report notes that "The land use carbon source has the largest uncertainties in the global carbon budget." It goes on to say, "If a high value for the land use source is adopted in the global budget, then the residual land uptake over undisturbed ecosystems should be a large sink, and vice versa." In other words, the bookkeeping method can come up with any result, large or small, source or sink, but the net result of the flux between the terrestrial biosphere and the atmosphere is a sink.

Flux	Net emissions	C build up in atmosphere
Fossil fuel emissions	7.2	
Net Ocean-to-atmosphere	(2.2)	
Sum	5.0	4.1
Difference must be net land-	(0.9)	

[2] Denman, K.L, G Brasseur, A. Chidthaisong, P. Ciais, P.M. Cox, R.E. Dickenson, D. Hauglustaine, C. Heinze, E. Holland, D. Jacob, U. Lohmann, S. Ramachandran, P.L. da Silva Dias, S.C. Wofsy and X. Zhang, 2007: Couplings Between Changes in the Climate System and Biogeochemistry. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

atmosphere		

This "accounting error" of a sort is known as the "residual terrestrial sink" and has been attributed to everything from re-growth of temperate forests to increasing productivity from CO_2 fertilization. Though we can't "account" for the net impact of the terrestrial biosphere through bookkeeping, we do know that the land-to-atmosphere flux is a net sink and not a net source.

Decoupling of Life Cycle Assessments of Transportation Biofuels from CO_2 Biomass Neutrality

Lifecycle studies related to the production of certain biofuels from (often agricultural) biomass assess the overall environmental or carbon benefits of its use including direct effects of land use changes. However, in these studies the carbon neutrality of the combustion of biomass fuel is not in question. It is the greenhouse gas impacts of the overall life cycle system from land use changes, cultivation, refining, and transport that are assessed.

The current Renewable Fuel Standard, RFS1, was adopted by the EPA to implement the Energy Policy Act of 2005. More recently, reflecting concerns regarding a more accurate value in the GHG reduction benefits of substituting different types of transportation biofuels for fossil fuel, the Energy Independence and Security Act of 2007 (EISA) mandated the assessment of GHG impacts of biofuels via life cycle assessment studies. These studies aggregate GHG emissions, both direct and indirect, for each biofuel and then compare them to the EISA-required thresholds for the different biofuels. These thresholds are simply the required GHG reduction compared to a fossil-fuel based transportation fuel baseline that each category of biofuel must achieve. For example, the required GHG reduction compared to fossil fuel based transportation fuels is 20% for renewable fuels in general, 60% for cellulose, 50% for biodiesel, 45% for ethanol from sugar cane, etc. These are not determinations on the carbon dioxide neutrality of biomass. Explicit in the EPA assessment is the recognition that CO_2 emissions from the combustion of these transportation biofuels are neutral or zero.

The need for these studies, their conclusions and the establishment of thresholds for different transportation biofuels in no way alters the inherent properties of biomass CO_2 neutrality. This is further confirmed recently by the EPA proposed rule to implement EISA in a new Renewable Fuel Standard, RFS2 (74 Fed. Reg. 24904 (May 26, 2009). In the detailed explanation of the modeling framework for these complex life cycle studies, U.S. EPA identifies a sequence of highly complex models that are used for the determination of whether various fuels achieve the required GHG reductions. In determining the treatment of CO_2 emitted from combustion of biomass-based fuels during the processing of feedstock into transportation biofuels, EPA makes clear that

> "[t]*he emissions from combustion of biomass fuel source are not assumed to increase net atmospheric CO_2 levels. The CO_2 emitted from biomass-based fuels combustion does not increase the atmospheric CO_2 concentrations, assuming the biogenic carbon emitted is offset by the uptake of CO_2 resulting from the growth of new biomass. Therefore, the CO_2 emissions from biomass combustion as a process fuel source are not included in the lifecycle GHG inventory of the ethanol (*and other biofuels*) plant.*" 74 Fed. Reg. 25039 (May 26, 2009).

EPA also clearly states that it does account for GHG emissions from land use changes separately in its analysis:

> *"Net carbon fluxes from changes in biogenic carbon reservoirs in wooded or crop lands are accounted for separately in the land use change analysis as outlined in the agricultural sector modeling above."* 74 Fed. Reg. 25040 (May 26, 2009).

In the preamble to the final RFS2 rule, EPA makes clear that it is retaining the principle that CO_2 emissions from the combustion of these transportation biofuels are neutral or zero. "*For renewable fuels, tailpipe emissions only include non-CO_2 gases, because the carbon emitted as a result of fuel combustion is offset by the uptake of biogenic carbon during feedstock production.*" Final RFS2 Preamble, p. 255.

Carbon neutrality of biomass is simply one input into the total life cycle emissions calculation of biomass fuel production. Meanwhile, determining the scale at which carbon stock depletion or increases from land use change should be incorporated into life cycle analyses presents a challenge. Anything less than national accounting would be difficult to measure and implement and its relevance to atmospheric concentrations of CO_2 questionable. Other lifecycle impacts including emissions associated with the procurement, transport, and use of biomass are only relevant if they are more than those associated with the fossil energy displaced (and its associated refinement and transportation emissions). Specifically, all energy production has upstream emissions. It would only be necessary to account for these if they were so much more for biomass than fossil energy that they were more than the fossil energy and its upstream emissions combined. This is rarely, if ever, the case.

Recognition of Biomass CO_2 Neutrality

The neutrality of biomass CO_2 has been repeatedly recognized for many years by an abundance of studies and is universally accepted by agencies, institutions, regulations and legislation. This is true not only of the IPCC Guidance and the UNFCCC reporting protocols, but of innumerable other agencies and institutions as well. Most recently, in its Mandatory Reporting of GHGs Rule, U.S. EPA makes clear the exclusion of biomass CO_2 emissions quantities for the

calculation of thresholds for determining regulated facilities. In its directive on carbon trading, the European Union Emissions Trading Scheme (EU ETS), the EU Commission 2004 regulation in section 4.2.2.1.6 Emission factors, states"[b]iomass is considered as CO_2-neutral. An emission factor of 0 [t CO_2/TJ or t or m3] shall be applied to biomass."

Further, because CO_2 biomass is widely considered neutral, it is either not reported or reported separately (for information purposes only) in many protocols such as U.S. Department of Energy's 1605 (b), World Resources Institute/World Business Council for Sustainable Development (WRI/WBCSD), International Standards Organization (ISO) 14064, IPCC, Environment Canada, U.S. EPA Climate Leaders, Midwest Greenhouse Gas Reduction Accord Advisory Board recommendations, and the final EPA Mandatory GHG Reporting Rule.

Even further, in the most recent climate change federal action, the House passed American Clean Energy and Security Act of 2009 (EISA, Waxman-Markey) and the Senate Clean Energy Jobs and Power Act lists "fossil fuel based carbon dioxide" as one of the emissions from GHG that could make up the required 25,000 tons of CO_2 eq threshold to be considered a covered entity. The substance of this definition is reinforced in the section related to industrial stationary sources compliance obligation – where there is an exemption for "renewable biomass."

Unintended Consequences of policy responses to address impacts of land use change on forest carbon stocks (or the lack of recognition of Biomass CO_2 Neutrality).

First, if biomass-based fuels are essentially treated the same as fossil fuels under climate policy, it will increase the adverse environmental impacts associated with fossil fuel use. Entities will prefer to use fossil fuels which have higher heating values and are therefore more efficient in terms of energy production. In addition to GHGs, fossil fuels also typically produce more criteria and hazardous air pollutants when burned than do biomass-based fuels.

Second, it will create substantial uncertainty, deter markets for renewable energy, and upset strategies for CO_2 emission reductions to address climate change and energy security. Investors and industries planning to undertake investments in these areas will be paralyzed precisely at a moment when the national and global economies need those types of investments. Legislative and regulatory mandates for increasing renewable fuel use would need to be amended.

Economic and job dislocation will result for jurisdictions that do not recognize biomass as carbon neutral. Climate change policymakers would be eliminating a potential cost mitigating compliance strategy - the use of carbon neutral biomass fuel - for forest products industry facilities and other manufacturing facilities. Due

to increased cost of compliance (and being competitively disadvantaged globally), these facilities may have to close and relocate to other areas outside the U.S. that do not have mandated GHG reduction programs or that do recognize the carbon neutrality of biomass in their GHG reduction programs. In addition, it is possible that biomass from the U.S. may be harvested and transported to other regions that do recognize its carbon neutrality further upsetting the delicate balance of international commerce.

Attempts to apply national inventory GHG accounting conventions in an effort to regulate activities on private domestic forests would result in the unintended effect of accelerating land use change to non-forest uses. U.S. forests and forest products currently serve as net sinks of CO_2. Policies aimed at restricting harvest levels or not crediting landowners for the carbon sequestered in their forests or its carbon neutral properties would incent landowners away from activities that provide both GHG benefits and financial return.

Conclusion

Given recent policy incentives and mandates for renewable energy, concerns over the depletion of forest resources or conversion of forests to other land uses for the production of biomass crops is a significant concern. However, reversing the long-standing principle of carbon neutrality of biomass is not the correct policy response. Instead, policy makers should focus on creating robust incentives for sustainable forest management and increasing forest stocks and alternative biomass supplies, while maintaining EPA's current practice of national accounting for greenhouse gases associated with land use practices.

American Forest & Paper Association

The American Forest & Paper Association is the national trade association of the forest products industry, representing pulp, paper, packaging and wood products manufacturers, and forest landowners. Our companies make products essential for everyday life from renewable and recyclable resources that sustain the environment. The forest products industry accounts for approximately 6 percent of the total U.S. manufacturing GDP, putting it on par with the automotive and plastics industries. Industry companies produce $200 billion in products annually and employ approximately 1 million people earning $54 billion in annual payroll. The industry is among the top 10 manufacturing sector employers in 48 states.

From AF&PA 12/28 comments on EPA's Tailoring Rule:

EPA should exempt CO_2 emissions of biomass origin from PSD applicability thresholds.[1]

EPA has ample authority to exclude CO_2 emissions generated by combustion of biomass from the determination of whether a facility is a major stationary source or is undergoing a major modification for PSD purposes. In fact, EPA has repeatedly asserted that it has similar types of flexibility to interpret the PSD provisions of the Clean Air Act PSD, including in the proposed Tailoring Rule.

For example, EPA has asserted authority in the proposal to define which chemicals are included in the "air pollutant" called "greenhouse gases" that will be subject to PSD. See, e.g., proposed 40 C.F.R. § 52.21(b)(59) and 74 Fed. Reg. 55,292, 55,329. Defining the pollutant that will be subject to PSD permitting (if the emissions threshold is exceeded) as the aggregate of six chemicals whose emissions are thought to contribute to global warming, and not any other chemicals whose emissions might also contribute to global warming—which EPA asserts it has discretion to do under the CAA—is conceptually comparable to defining the "air pollutant" to which the PSD thresholds will be applied as "non-biogenic CO_2" and not including biogenic CO_2.

There is precedent as well in previous EPA regulations implementing the PSD program. For example, EPA has by regulation excluded certain compounds, which are in fact "volatile" and "organic," from the definition of "volatile organic compounds" (VOCs) for purposes of applying the PSD regulations, including applicability thresholds. See 40 C.F.R. §§ 52.21(b)(2)(ii) and 52.21(b)(30) (incorporating by reference 40 C.F.R. § 51.100(s)). Under section 51.100(s), chemicals that would otherwise be considered volatile organic compounds are not defined as VOCs, and their emissions will not be counted toward the VOC applicability thresholds for PSD, if those compounds exhibit negligible photochemical reactivity, i.e., their emission will not contribute significantly to the formation of ground-level ozone. In other words, EPA has defined a class of compounds as a pollutant subject to PSD, but then has excluded some portions of that class of compounds based on the negligible environmental impact those constituents have. Similarly, faced with the fact that ambient air quality standards (and therefore attainment areas) are defined for ozone, whereas it is the emission of ozone precursors, especially volatile organic compounds that can cause nonattainment of the ozone NAAQS, EPA applied the major-source thresholds to VOC emissions rather than to ozone emissions. See 40 C.F.R. § 52.21(b)(2)(ii).

In both of these cases, EPA logically has determined PSD applicability on a functional basis, counting towards the applicability of PSD those emissions that can contribute to the degradation of ambient air quality and noncompliance with ambient air

[1] Page 22-27

quality standards that the PSD program was designed to avoid.[2] It would be entirely consistent with that precedent for EPA to define "greenhouse gases" in the Tailoring Rule to exclude emissions of CO_2 that come from combustion of biomass, since that combustion is carbon-neutral, does not increase atmospheric levels of CO_2, and does not cause or contribute to global warming.

EPA believes that the doctrine of administrative law, that an agency can depart from a literal interpretation of statutory language if to do otherwise would lead to absurd results and frustrate the purposes of the statute, authorizes the provisions of the Tailoring Rule EPA has proposed. That doctrine would apply at least as forcefully to the treatment of CO_2 emissions from combustion of biomass as carbon-neutral. In this case, if EPA counts emissions of biogenic CO_2 towards the threshold for determining whether a facility is a major stationary source or whether the net increase in emissions from the facility constitutes a major modification, EPA would be identifying for further analysis and enhanced emission control requirements sources whose emissions, and whose increases in emissions, do not contribute to global warming. Not only would this be an unnecessary and unfair regulation, it would have unintended consequences that would have a negative effect on atmospheric CO_2 concentrations.

Defining the "pollutant" subject to PSD as excluding biogenic CO_2 would: (1) avoid imposing PSD requirements on emissions that do not cause or contribute to the air quality impact (increased CO_2 concentration in the global atmosphere) that application of PSD permitting is supposed to be addressing, and (2) encourage the substitution of renewable fuels for fossil fuels—which EPA already is seeking to accomplish through other measures, such as provisions in the proposed GHG tailpipe standards that give manufacturers extra credit for alternative fuel vehicles. In fact, it would be arbitrary and capricious for EPA to impose PSD analysis requirements and BACT on a source's CO_2 emissions if those emissions do not have the potential to degrade air quality (i.e., increase atmospheric CO_2 concentrations).

Biomass CO_2 neutrality is an inherent property of biomass based on the natural carbon cycle. The CO_2 removed from the atmosphere during photosynthesis is converted into organic carbon and stored in biomass such as trees and crops. When harvested and combusted, the carbon in the biomass is released into the atmosphere as CO_2, thus completing the carbon cycle.[3]

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[2] Likewise, EPA has distinguished in the PSD regulations between total particulate matter and the subset PM_{10}, for purposes of the significant emissions increase threshold for determining whether a modification has triggered PSD. See 40 C.F.R. § 52.21(b)(23)(i).

[3] From a technical or scientific perspective, biomass CO_2 neutrality is independent of any consideration of material sustainability of the sources of biomass – the CO_2 released back to the atmosphere is the same CO_2 that was just recently removed or "sequestered" from it. The carbon in biomass will return to the atmosphere regardless of whether it is burned for energy or allowed to biodegrade. When we burn biomass for energy we are simply inserting a step in the cycle that allows us to recover usable energy that can displace fossil fuels.

The neutrality of biomass CO_2 has been repeatedly recognized for many years by an abundance of studies and is widely accepted by agencies, institutions, regulations, and legislation. This is true not only of the IPCC Guidance and the UNFCCC reporting protocols, but of innumerable other agencies and institutions as well.

The globally accepted accounting practice for sovereigns of the UN Framework Convention on Climate Change Treaty, of which the United States is a signatory, is developed in the IPCC Guidelines of 1996 and 2006 and the Guidance of 2003 for Land Use/Land Use Change and Forestry (LULUCF). Unequivocally, in the 2006 IPCC Guidelines, Volume 1, Section 1.2, IPCC states that "CO_2 from the combustion or decay of short-lived biogenic material removed from where it is grown, is reported as zero in the Energy, Industrial Processes Product Use (IPPU) and Waste Sectors."

Similarly, other countries and regional entities follow the same best practices. For example, in its directive on carbon trading, the European Union Emissions Trading Scheme (EU ETS), the EU Commission 2004 regulation in section 4.2.2.1.6 Emission factors, states "[b]iomass is considered as CO_2-neutral. An emission factor of 0 [t CO_2/TJ or t or m^3] shall be applied to biomass."

EPA recently confirmed its position that the combustion of biomass should be considered as CO_2-neutral, regardless of the source of the biomass, in its proposed rule to implement the Energy Independence and Security Act of 2007 through a new Renewable Fuel Standard, RFS2 (74 Fed. Reg. 24904 (May 26, 2009)). In the detailed explanation of the modeling framework for these complex life cycle studies, EPA identifies a sequence of highly complex models that are used in conducting a complete, global, and consequential type of life cycle assessment mandated by Congress for the determination of whether various fuels achieve the required GHG reductions. In this case, the study is not to verify the neutral characteristic of the CO_2 emissions from the biomass combustion stage, but rather if the totality of the emissions in the life cycle of the fuel result in the required reductions. This was confirmed when, in determining the treatment of CO_2 emitted from combustion of biomass-based fuels during the processing of feedstock into transportation biofuels, EPA made clear, in VI.B.5.d Processing, that "The emissions from combustion of biomass fuel source are not assumed to increase net atmospheric CO_2 levels. The CO_2 emitted from biomass-based fuels combustion does not increase the atmospheric CO_2 concentrations, assuming the biogenic carbon emitted is offset by the uptake of CO_2 resulting from the growth of new biomass. Therefore, the CO_2 emissions from biomass combustion as a process fuel source are not included in the lifecycle GHG inventory of the ethanol (and other biofuels) plant." 74 Fed. Reg. at 25,039.

Further, because CO_2 emitted from combustion of biomass is widely considered carbon-neutral, it is either not reported (or reported separately for information purposes only) in many protocols such as U.S. Department of Energy's 1605(b), World Resources Institute/World Business Council for Sustainable Development, International Standards

Organization 14064, IPCC, Environment Canada, U.S. EPA Climate Leaders, Midwest Greenhouse Gas Reduction Accord Advisory Board recommendations, and the final EPA Mandatory GHG Reporting Rule. Also, in its Mandatory Reporting of GHGs Rule, EPA makes clear the exclusion of biomass CO_2 emissions quantities from the calculation of thresholds for determining regulated facilities.

Even further, the most recent climate change legislative actions, the House-passed American Clean Energy and Security Act of 2009 (ElSA, Waxman-Markey) and the Senate Clean Energy Jobs and Power Act, list "fossil fuel based carbon dioxide" (emphasis added) as one of the emissions from GHG that could make up the required 25,000 tons of CO_2 eq threshold to be considered a covered entity. The substance of this definition is reinforced in the section related to industrial stationary sources' compliance obligation – where there is an exemption for "renewable biomass."

Note that when a tree is harvested, the removal of carbon from the forest sink is counted in national accounting systems concerning land use changes. If the carbon were counted again in terms of the emissions when the tree or its residues are combusted at a forest products mill, this would be a double-counting of the CO_2 emissions. Since the standard convention around the world is to count the transaction when the harvesting occurs, that is the proper place, rather than at the smokestack. It is also proper to track the transaction at the point of harvest because that is where increases in carbon sequestration on the land are accounted for, to see if sequestration equals or exceeds the amount removed by harvesting. In the United States, the forest products industry is a net sink for carbon, growing more biomass than we harvest, so the carbon cycle is in balance here, independent of any combustion of harvested biomass.

It would be arbitrary and capricious for EPA, having recognized in other contexts that emissions from biomass combustion do not increase global CO_2 concentrations, nevertheless to insist that such emissions be counted in determining whether a new source or modification involves a "major" increase in CO_2 emissions. It would be akin to basing PSD applicability in a carbon monoxide attainment area on the source's aggregate emissions of all oxides of carbon, even though only carbon monoxide emissions have the effect on NAAQS attainment and on human health that PSD is designed to prevent.

Note also that EPA failure to recognize the carbon-neutrality of biomass combustion could lead to decidedly counterproductive results. If coal firing and wood firing are compared, it could appear that burning coal is preferable from a GHG emission perspective (since coal has a higher heat value than wood and therefore less coal will have to be burned to generate a desired amount of steam), even though the CO_2 emissions from wood burning are simply returning carbon to the atmosphere that was removed from the atmosphere by the biomass, while coal burning adds carbon to the atmosphere which has been sequestered underground for eons. Also, if EPA does not exempt biogenic CO_2 emissions from PSD, then facilities, like many forest products mills, that already rely mostly or entirely on biomass for their fuel will be faced with

uncertain and unproductive BACT analyses (since their use of biomass already minimizes contribution to atmospheric CO_2 loadings) whenever they have a project that is "major" for any pollutant. Based on available data, AF&PA estimates that an additional 136 wood product mills (roughly half of all wood product mills) would be considered major sources for PSD if biogenic CO_2 emissions are included in threshold determinations. Only 2 percent of wood product mills (5 mills) would be major sources if biogenic CO_2 emissions are excluded using a 25,000 ton threshold.

In fact, it appears that EPA already has proposed that CO_2 emissions from biomass combustion not be counted towards applicability thresholds for the PSD or Title V programs. In the proposed 40 C.F.R. § 52.21(b)(60), EPA specifies how sources are to calculate CO_2e emissions: "The applicable GWPs and guidance on how to calculate a source's GHG emissions in tpy CO_2e can be found in EPA's "Inventory of U.S. Greenhouse Gas Emissions and Sinks,..." The referenced inventory states, at pp. 91-92 (emphasis added):

> The combustion of biomass and biomass-based fuels also emits greenhouse gases. Carbon dioxide emissions from these activities, however, are not included in national emissions totals because biomass fuels are of biogenic origin. It is assumed that the C released during the consumption of biomass is recycled as U.S. forests and crops regenerate, causing no net addition of CO2 to the atmosphere. The net impacts of land-use and forestry activities on the C cycle are accounted for separately within the Land Use, Land-Use Change, and Forestry chapter. Emissions of other greenhouse gases from the combustion of biomass and biomass-based fuels are included in national totals under stationary and mobile combustion.

Similarly, the Inventory states at p. 149 (emphasis added):

> 3.10. Wood Biomass and Ethanol Consumption (IPCC Source Category 1A)
> The combustion of biomass fuels such as wood, charcoal, and wood waste and biomass-based fuels such as ethanol from corn and woody crops generates CO2. However, in the long run the CO2 emitted from biomass consumption does not increase atmospheric CO2 concentrations, assuming that the biogenic C emitted is offset by the uptake of CO2 that results from the growth of new biomass. As a result, CO2 emissions from biomass combustion have been estimated separately from fossil fuel-based emissions and are not included in the U.S. totals. Net C fluxes from changes in biogenic C reservoirs in wooded or crop lands are accounted for in the Land Use, Land-Use Change, and Forestry chapter. . . "

While the effect of these provisions is that the Tailoring Rule as proposed would not count biogenic CO_2 emissions towards PSD and Title V applicability thresholds, EPA should make that clearer in the final Tailoring Rule.[4]

[4] Also, AF&PA encourages EPA to include the GWP factors that are to be used in determining whether PSD and Title V applicability thresholds have been exceeded in the Tailoring Rule regulations themselves, rather than referring to another document, and moreover a document that may change over time.

Legal Basis for Excluding Biogenic CO_2 Emissions from GHG Regulations

EPA has ample authority to exclude CO_2 emissions generated by combustion of biomass from the determination of whether a facility is a major stationary source or is undergoing a major modification for PSD purposes. In fact, EPA has repeatedly asserted that it has similar types of flexibility to interpret the PSD provisions of the Clean Air Act PSD, including in the proposed Tailoring Rule.

For example, EPA has asserted authority in the proposal to define which chemicals are included in the "air pollutant" called "greenhouse gases" that will be subject to PSD. See, e.g., proposed 40 C.F.R. § 52.21(b)(59) and 74 Fed. Reg. 55,292, 55,329. Defining the pollutant that will be subject to PSD permitting (if the emissions threshold is exceeded) as the aggregate of six chemicals whose emissions are thought to contribute to global warming, and not any other chemicals whose emissions might also contribute to global warming—which EPA asserts it has discretion to do under the CAA—is conceptually comparable to defining the "air pollutant" to which the PSD thresholds will be applied as "non-biogenic CO_2" and not including biogenic CO_2.

There is precedent as well in previous EPA regulations implementing the PSD program. For example, in defining volatile organic compounds (VOCs) for purposes of applying the PSD regulations, including applicability thresholds, EPA incorporates by reference 40 C.F.R. § 51.100(s). See 40 C.F.R. § 52.21(b)(30). Under section 51.100(s), chemicals that would otherwise be considered volatile organic compounds are not defined as VOCs, and their emissions will not be counted toward the VOC applicability thresholds for PSD, if those compounds exhibit negligible photochemical reactivity, i.e., their emission will not contribute significantly to the formation of ground-level ozone. Similarly, faced with the fact that ambient air quality standards (and therefore attainment areas) are defined for ozone, whereas it is the emission of ozone precursors, especially volatile organic compounds, that can cause nonattainment of the ozone NAAQS, EPA applied the major-source thresholds to VOC emissions rather than to ozone emissions. See 40 C.F.R. § 52.21(b)(2)(ii).

In both of these cases, EPA logically has determined PSD applicability on a functional basis, counting towards the applicability of PSD those emissions that can contribute to the degradation of ambient air quality and noncompliance with ambient air quality standards that the PSD program was designed to avoid. It would be entirely consistent with that precedent for EPA to define "greenhouse gases" in the Tailoring Rule to exclude emissions of CO_2 that come from combustion of biomass, since that combustion is carbon-neutral, does not increase atmospheric levels of CO_2, and does not cause or contribute to global warming.

Doing so also is supported by the doctrine of administrative law, relied on by EPA in support of the proposed Tailoring Rule, that an agency can depart from a literal interpretation of statutory language if to do otherwise would lead to absurd

results and frustrate the purposes of the statute. In this case, if EPA counts emissions of biogenic CO_2 towards the threshold for determining whether a facility is a major stationary source or whether the net increase in emissions from the facility constitutes a major modification, EPA would be identifying for further analysis and enhanced emission control requirements sources whose emissions, and whose increases in emissions, do not contribute to global warming. Not only would this be an unnecessary and unfair regulation, it would have unintended consequences that would have a negative effect on atmospheric CO_2 concentrations.

The following sentence could be added to the end of what was proposed as new 40 C.F.R. § 52.21(b)(60) in the proposed Tailoring Rule. It would make clear that, consistent with the 2009 Inventory of U.S. Greenhouse Gas Emissions and Sinks and reporting protocols followed by EPA and international organizations in other contexts, CO_2 emissions need not be included when calculating a source's potential to emit CO_2e, because those emissions have been or will be offset by uptake of atmospheric CO_2 during biomass growth:

> The GWP for CO_2 emissions (but not emissions of other GHGs) from the combustion of biomass fuels (such as wood, charcoal, and wood waste) and the combustion of biomass-based fuels is zero, to reflect the biogenic origin of those CO_2 emissions.

The following preamble language could be used to explain the added sentence:

> Several commenters asked that EPA specify in the final Tailoring Rule that CO_2 emissions from burning of biomass and biomass fuels do not have to be counted as part of the source's potential to emit GHGs for determining PSD applicability. As proposed, Section 52.21(b)(60) indicated that the determination of a source's potential to emit GHGs, in tpy CO_2e, should be based on GWPs and guidance for calculating CO_2e emissions in EPA's "Inventory of U.S. Greenhouse Gas Emissions and Sinks." That document states that CO_2 emissions from combustion of biomass fuels (such as wood, charcoal, and wood waste) and the combustion of biomass-based fuels are not included in calculating CO_2e emissions. That is because in the long run the CO_2 emitted from biomass combustion does not increase atmospheric CO_2 concentrations, because the biogenic carbon emitted is offset by the uptake of atmospheric CO_2 that results from the growth of new biomass. See 2009 Inventory of U.S. Greenhouse Gas Emissions and Sinks pp. 91-92, 149. EPA has used that same approach in other rules and activities concerning climate change, as have international organizations. See, e.g., 74 Fed. Reg. 24904, 25039 (May 26, 2009) (explaining why CO_2 emissions from burning biomass as a process fuel during the production of biomass-based fuel were not included when calculating lifecycle CO_2 emissions of biomass-based fuels). To make this clearer, EPA added a sentence to the end of Section 52.21(b)(60) that provides that a GWP of zero should be applied to CO_2 emissions from combustion of biomass or biomass-based fuels; i.e., those CO_2 emissions will not count towards determining a source's potential to emit GHGs or whether a modification of the source will result in a significant net increase in GHG emissions.

Preamble language for final Tailoring Rule to explain that following the guidance in the U.S. Inventory of Greenhouse Gas Emissions and Sinks means that biogenic CO_2 emissions need not be included when calculating a source's potential to emit CO_2e:

> Several commenters asked that EPA specify in the final Tailoring Rule that CO_2 emissions from burning of biomass and biomass fuels do not have to be counted as part of the source's potential to emit GHGs. As proposed and as promulgated, Section 52.21(b)(60) provides that the determination of a source's potential to emit GHGs, in tpy CO_2e, is to be based on GWPs and guidance for calculating CO_2e emissions in EPA's "Inventory of U.S. Greenhouse Gas Emissions and Sinks." The current version of that document states that CO_2 emissions (but not emissions of other GHGs) from combustion of biomass fuels (such as wood, charcoal, and wood waste) and the combustion of biomass-based fuels are not included in calculating CO_2e emissions. That is because in the long run the CO_2 emitted from biomass combustion does not increase atmospheric CO_2 concentrations, because the biogenic carbon emitted is offset by the uptake of atmospheric CO_2 that results from the growth of new biomass. See 2009 Inventory of U.S. Greenhouse Gas Emissions and Sinks pp. 91-92, 149; see also, e.g., 74 Fed. Reg. 24904, 25039 (May 26, 2009) (explaining why CO_2 emissions from burning biomass as a process fuel during the production of biomass-based fuel were not included when calculating lifecycle CO_2 emissions of biomass-based fuels). Thus, sources following that guidance for calculating CO_2e emissions, as provided in Section 52.21(b)(60), need not include CO_2 emissions from combustion of biomass or biomass-based fuels when determining the source's potential to emit CO_2e or assessing whether a modification will result in a significant net increase in CO_2e emissions.

American Forest & Paper Association

BIOMASS CARBON NEUTRALITY

The carbon neutrality of biomass is a longstanding and widely established principle. Organizations recognizing the carbon neutrality of biomass emissions include the European Union, U.S EPA and the UN's Intergovernmental Panel on Climate Change (IPCC), as well as recent federal and state legislation promoting renewable electricity and biofuels.

The combustion of biomass is carbon neutral.
When biomass such as wood is combusted for energy, it releases back into the atmosphere carbon dioxide that it had absorbed from the atmosphere during growth[1]. When harvested biomass is replanted, the cycle repeats. In contrast, combustion of fossil fuel is not carbon neutral. The combustion of natural gas, coal and petroleum fuels results in a net increase of carbon dioxide in the atmosphere. This carbon dioxide is from natural sinks created million of years ago and, unlike when harvested biomass is replanted, there is no balancing cycle to remove it from the atmosphere. When combusted, it is properly counted as a carbon emission.[2]

The carbon neutrality of biomass combustion is a widely-accepted carbon accounting convention.
The EPA's comprehensive accounting of total US carbon emissions accounts for carbon stock changes related to land use. In its most recent 2007 report to the UN Framework Convention on Climate Change, EPA reported that carbon stocks in U.S. forests continue to increase at a rate of more than 800 million metric tons of carbon dioxide equivalents annually. Based on this accounting, the fact that forestland in the US serves as a net sink for carbon dioxide rather than a source of emissions, is reflected in current US domestic policy that recognizes emissions from the combustion of biomass as carbon neutral.

Forests carbon stocks are increasing in the U.S.
The benefits of the carbon neutrality of biomass combustion are sustained when overall biomass stock is renewed. Policymakers have indicated that this is best considered at a national level. Because biomass is the raw material for the forest products industry, its re-growth and management is essential to our industry's existence, which is why we put significant emphasis on sustainable forestry practices. There is more forestland in the U.S. today than just 20 years ago and, as a signatory to the UN Framework Convention on Climate

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[1] Other greenhouse gases are also emitted in trace amounts during combustion. This paper only refers to carbon dioxide when using the term "carbon neutrality."

[2] Recently, there has been some confusion about this principle. For example, a recent policy article in *Science* magazine, "Fixing a Critical Climate Accounting Error," Searchinger, et al., calls the carbon neutrality of biomass combustion an accounting error that can only be corrected by a detailed accounting of land use, which would allegedly show biomass combustion as not carbon neutral. The article seems to promote proper life cycle accounting to avoid the theoretical case in which the carbon neutrality at the combustion stage may be overcome by emissions in other life cycle stages. However, additional net emissions which occur and are accounted for in other life cycle stages of a fuel do not negate biomass combustion carbon neutrality at a given stage. The article also fails to recognize that this accounting is performed annually in the United States and its results support the basis for carbon neutrality of biomass in U.S. domestic policy. In addition, it does not acknowledge that while we cannot account through bookkeeping for the net impact of the land around the world on emissions, we do know that the land-to-atmosphere flux is a net sink and not a net source.

Change, the U.S. EPA has reported since 2000 that the nation's supply of wood fiber is sustainable and not diminishing. Carbon stored in forests and forest products offsets 10 percent of annual U.S. carbon dioxide emissions. Given recent policy incentives and mandates for renewable energy which recognize biomass carbon neutrality but do not incorporate incentives for additional biomass supplies to increase carbon stocks, concerns over the depletion of forest resources or conversion of forests to other land uses for the production of biomass crops other than trees is a significant concern. However, reversing the long standing principle of carbon neutrality of biomass is not the correct policy response. Instead, policy makers should focus on promoting sustainable forest management and increasing forest stocks.

Failure to recognize the carbon neutrality of biomass could lead to unintended negative consequences.

Increasing fossil fuel use and GHG emissions: Absent policies to encourage the use of biomass for energy as a result of its carbon neutrality, energy users will prefer fossil fuels as they have higher heating values, and therefore, are more efficient. This will increase carbon in the atmosphere and do nothing to stop the natural, ongoing carbon cycle of biomass which will continue with or without human intervention as trees fall, die and re-grow.

Reducing forest land: The sophisticated and accurate national accounting methods to conduct and report carbon stocks in GHG inventories are not applicable at the local level. Further, applying complicated land-use accounting conventions to domestic circumstances at the local level is unnecessary and would create dis-incentives for private forest owners—who own 70 percent of all forests in the US— who may convert their land to other uses, such as development, thereby permanently reducing U.S. forests and carbon stocks.

Creating substantial uncertainty and deterring growth of renewable energy: Removing the carbon neutrality of biomass eliminates the fundamental tenet underlying its favorable consideration as an energy source, which could scare away investors and industries just as they are poised to commit to major investments in emerging technologies.

Driving jobs away from the U.S. and toward jurisdictions that recognize biomass carbon neutrality: Eliminating biomass carbon neutrality would eliminate a potential cost mitigating compliance strategy for companies under upcoming U.S. climate change policies. The resulting increases in operation costs would likely render some facilities uncompetitive and force them to relocate outside of the U.S. to jurisdictions without carbon regulations.

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Unintended Consequences if Biomass CO_2 Neutrality is not Recognized

Case by case determinations of carbon neutrality will create uncertainty and an unlevel playing field among biomass users.

- GHG impacts of land use change are only relevant to atmospheric concentrations when considered over large land areas
- The life cycle impacts of fossil fuel use is not part of permitting/BACT decisions so doing so for biomass projects would create further disincentives.

It will create substantial uncertainty, deter markets for renewable energy, and upset strategies for CO_2 emission reductions to address climate change and energy security.

- U.S. Administration is promoting renewable energy and investing in its development.
- Investors and industries planning to undertake investments in these areas will be paralyzed precisely at a moment when the national and global economies need those types of investments.
- Legislative and regulatory mandates for increasing renewable fuel use would need to be reconsidered and amended.

Example:

Recovery Act Announcement: Secretaries Chu and Vilsack Announce More Than $600 Million Investment in Advanced Biorefinery Projects

December 4, 2009

U.S. Department of Energy Secretary Steven Chu and Agriculture Secretary Tom Vilsack today announced the selection of 19 integrated biorefinery projects to receive up to $564 million from the American Recovery and Reinvestment Act to accelerate the construction and operation of pilot, demonstration, and commercial scale facilities. The projects—in 15 states—will validate refining technologies and help lay the foundation for full commercial-scale development of a biomass industry in the United States. The projects selected today will produce advanced biofuels, biopower, and bioproducts using biomass feedstocks at the pilot, demonstration, and full commercial scale. The projects selected today are part of the ongoing effort to reduce U.S. dependence on foreign oil, spur the creation of the domestic bio-industry, and provide new jobs in many rural areas of the country.

"Advanced biofuels are critical to building a cleaner, more sustainable transportation system in the U.S." said Secretary Chu. "These projects will help establish a domestic industry that will create jobs here at home and open new markets across rural America."

Economic and job dislocation will result for jurisdictions that do not recognize biomass as carbon neutral.

- It is accepted and implemented internationally
- Climate change policymakers would be eliminating a potential cost mitigating compliance strategy - the use of carbon neutral biomass fuel - for forest products industry facilities and other manufacturing facilities.
- Due to resulting increased cost of compliance (and being competitively disadvantaged globally), these facilities may have to close and relocate to other areas outside the U.S. that do not have mandated GHG reduction programs or that do recognize the carbon neutrality of biomass in their GHG reduction programs.
- In addition, it is possible that biomass from the U.S. may be harvested and transported to other regions that do recognize its carbon neutrality further upsetting the delicate balance of international commerce.

All design and cost benefit analysis of domestic Cap and Trade programs Renewable Electricity and Fuels Standards are predicated on the carbon neutrality of biomass.

- EPA calculations of direct emissions and subsequent allowance allocation determinations do not include emissions from biogenic sources. The cap would need to be adjusted to reflect higher levels of U.S. emissions and substantially more allowances would be needed to be allocated.
- RES and RFS goals were developed taking into account biomass as a renewable fuel source and its contribution toward mitigating climate change.

It will increase the adverse environmental impacts associated with fossil fuel use. Entities will prefer to use fossil fuels which have higher heating values and are therefore more efficient in terms of energy production.

Double counting - Under accepted GHG accounting principles, emissions from biogenic sources are captured as part of land use measurements, and counting emissions from the combustion of biomass results in double counting.

Potential to accelerate land use change to non-forest uses. U.S. forests and forest products currently serve as net sinks of CO_2. Policies aimed at restricting harvest levels or not crediting landowners for the carbon sequestered in their forests or its carbon neutral properties would incent landowners away from activities that provide both GHG benefits and financial return.