

WTO-Compatible Methodologies to Determine Export Rebates and Import Charges for Products of Energy-Intensive, Trade- Exposed Industries, If There Is an Upstream Tax on Greenhouse Gases

Jan W. Mares and Brian P. Flannery

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Overview

Based on the companion [Framework](#) report, the Compendium describes approaches to determine export rebates and import charges (Border Tax Adjustments: BTAs) for products in 35 Energy Intensive Trade Exposed (EITE) industry sectors. These sectors are largely drawn from those considered in 2009 in connection with the Waxman Markey cap and trade bill. However, trade circumstances have changed significantly since then, notably in energy. Moreover, the Framework and Compendium require information beyond CO₂ emissions and information from other sectors that we do include: coal mining, oil and gas production, petroleum refining, electricity and industrial gases.

Information to determine BTAs is available from GHG regulatory reporting by facilities in many nations, or from well-established voluntary reporting guidelines developed and endorsed by most EITE sectors. Because BTAs apply to products, to calculate them manufacturers must extend and transform information for facilities: first, to account for GHG emissions from materials and electricity purchased from suppliers (often referred to as scope or tier 2 emissions), and second, to allocate to specific products their share of emissions from a given facility.

The Compendium describes how this may be done and special circumstances and challenges that may apply in each sector, e.g., recycling, and cogeneration. It also proposes ways to simplify administrative efforts to allocate emissions to product slates that may number in the thousands in some sectors. The goal is to achieve the dual tasks of utilizing an efficient upstream GHG tax with WTO-compliant BTAs without undue administrative burden.

Import charges are determined and applied without discrimination based on national origin—as required by WTO (see Framework section 3.2). Accordingly, import charges do not take account of GHG policies, regulations and costs imposed in exporting nations—which differ enormously among US trading partners. Consequently, we anticipate that foreign affiliates of multinational companies, foreign firms and their trade associations will be motivated to seek appropriate domestic rebates for their exports to the US.

We recommend that EITE sectors begin now to undertake voluntary pilot programs to develop prototype methods suited to their particular circumstances. These may take time, but appear to be less complex than efforts starting in the 1990s (and still ongoing as circumstances evolve) to estimate GHG emissions from facilities and operations.

Contents

- Introduction 1**
- 1. Oil & Gas Upstream GHG Tax and Border Tax Adjustments13**
 - 1.1. Introduction13
 - 1.2. Treatment of Products within NAICS sector13
 - 1.3. Benefitting Exporters and Their Carbon Usage Data 14
 - 1.4. Energy-Intensive Raw Materials 14
 - 1.5. Frequency of Determinations 14
 - 1.6. Production and Use of CO₂ in Enhanced Oil Recovery15
 - 1.7. Export Rebate Determination for Oil and Gas Products and LNG15
 - 1.8. GHG Charges on Imports of Upstream Oil and Gas Products and LNG 16
- 2. Coal Upstream GHG Tax and Border Tax Adjustments17**
 - 2.1. Introduction17
 - 2.2. Treatment of Products within NAICS sector17
 - 2.3. Benefitting Exporters and Their Carbon Usage Data 18
 - 2.4. Energy-Intensive Raw Materials 18
 - 2.5. Frequency of Determinations 18
 - 2.6. Export Rebate Determination 18
 - 2.7. GHG Charges on Imports of Coal Products 18
- 3. Electricity Border Tax Adjustments 19**
 - 3.1. Introduction19
 - 3.2. Treatment of Electricity 19
 - 3.3. Benefitting Exporters and Their Carbon Usage Data19
 - 3.4. Energy-Intensive Raw Materials 20
 - 3.5. Frequency of Determinations 20
 - 3.6. Export Rebate Determination 20
 - 3.7. GHG Charges on Imports of Electricity 20
- 4. Refinery Products Border Tax Adjustments20**
 - 4.1. Introduction 20
 - 4.2. Treatment of Products within NAICS sector21

4.3. Benefitting Exporters and Their Carbon Usage Data.....	22
4.4. Energy-Intensive Raw Materials.....	22
4.5. Frequency of Determinations.....	22
4.6. Export Rebate Determination.....	22
4.7. GHG charges on Imports of Refinery Products.....	23
5. Wet Corn Milling Products GHG Tax and Border Tax Adjustments.....	23
5.1. Treatment of Products within NAICS sector.....	23
5.2. Export Rebate Determination.....	24
5.3. GHG charges on Imports of Wet Corn Milled Products.....	24
6. Pulp Mills GHG Tax and Border Tax Adjustments.....	25
6.1. Treatment of Products within NAICS sector.....	25
6.2. Recovered Paper Computations and Energy-Intensive Raw Materials.....	26
6.3. Export Rebate Determination.....	26
6.4. GHG Charges on Imports of Pulp products.....	26
7. Paper from Paper Mills GHG Tax and Border Tax Adjustments.....	27
7.1. Treatment of Products Within NAICS sector.....	27
7.2. Recovered Paper Computations and Energy-Intensive Raw Materials.....	28
7.3. Export Rebate Determination.....	28
7.4. GHG charges on Imports of Paper Products.....	29
8. Newsprint Mills GHG Tax and Border Tax Adjustments.....	29
8.1. Treatment of Products within NAICS sector.....	29
8.2. Recovered Paper Computations and Energy-Intensive Raw Materials.....	30
8.3. Export Rebate Determination.....	30
8.4. GHG charges on Imports of Newsprint products.....	31
9. Paperboard GHG Tax and Border Tax Adjustments.....	31
9.1. Treatment of Products Within NAICS sector.....	31
9.2. Recovered Paper Computations and Energy-Intensive Raw Materials.....	32
9.3. Export Rebate Determination.....	33
9.4. GHG charges on Imports of Paperboard Products.....	33
10. Petrochemical Products Border Tax Adjustments.....	34

10.1. Treatment of Products within NAICS sector	34
10.2. Export Rebate Determination.....	34
10.3. GHG Charges on Imports of Petrochemical Products	35
11. Industrial Gases GHG tax and Border Tax Adjustments.....	35
11.1. Treatment of Products within NAICS sector.....	35
11.2. Export Rebate Determination	36
11.3. GHG Charges on Imports of Industrial Gas Products.....	36
12. Inorganic Dye and Pigment Manufacturing Products Border Tax Adjustments	37
12.1. Treatment of Products within NAICS sector.....	37
12.2. Export Rebate Determination.....	38
12.3. GHG Charges on Imports of Inorganic Dye and Pigment Products.....	38
13. Alkalis and Chlorine Products Border Tax Adjustments.....	39
13.1. Treatment of Products within NAICS sector.....	39
13.2. Export Rebate Determination.....	39
13.3. GHG Charges on imports of Alkalis and Chlorine Products.....	39
14. Carbon Black Border Tax Adjustments	39
14.1. Treatment of Products within NAICS sector.....	39
14.2. Export Rebate Determination	40
14.3. GHG charges on imports of Carbon Black Products.....	40
15. All Other Basic Inorganic Chemical Manufactured Products Border Tax Adjustments.....	41
15.1. Treatment of Products within NAICS sector.....	41
15.2. Export Rebate Determination.....	41
15.3. GHG charges on imports of Inorganic Chemical Products.....	42
16. Cyclic, Crude & Intermediate Mfg. Chemical Products Border Tax Adjustments.....	42
16.1. Treatment of Products within NAICS sector.....	42
16.2. Export Rebate Determination	43
16.3. GHG Charges on Imports of Cyclic Crude and Intermediate Products.....	43
17. All Other Basic Organic Chemical Border Tax Adjustments.....	44
17.1. Treatment of Products within NAICS sector.....	44
17.2. Export Rebate Determination.....	45

17.3. GHG Charges on Imports of Basic Organic Chemical Products	45
18. Plastic Resins Border Tax Adjustments.....	46
18.1. Introduction.....	46
18.2. Treatment of Products Within NAICS sector	46
18.3. Benefitting Exporters and Their Carbon Usage Data.....	47
18.4. Energy-Intensive Raw Materials.....	47
18.5. Frequency of Determinations.....	47
18.6. Export Rebate Computation	48
18.7. GHG charges on imports of Plastic Resins	49
19. Synthetic Rubber Border Tax Adjustments.....	49
19.1. Treatment of Products within NAICS sector.....	49
19.2. Export Rebate Determination	50
19.3. GHG Charges on Imports of Synthetic Rubber Products.....	50
20. Cellulosic Organic Fiber Border Tax Adjustments.....	51
20.1. Treatment of Products within NAICS sector.....	51
20.2. Export Rebate Determination.....	52
20.3. GHG Charges on Imports of Cellulosic Organic Fiber Products.....	52
21. Noncellulosic Organic Fiber Border Tax Adjustments.....	53
21.1. Treatment of Products within NAICS sector.....	53
21.2. Export Rebate Determination.....	53
21.3. GHG charges on imports of Noncellulosic Organic Fiber Products.....	54
22. Nitrogenous Fertilizer Products Border Tax Adjustments.....	55
22.1. Treatment of Products within NAICS sector	55
22.2. Export Rebate Determination.....	55
22.3. GHG charges on imports of Nitrogenous Fertilizers Products	55
23. Flat Glass GHG Tax and Border Tax Adjustments.....	56
23.1. Treatment of Products within NAICS sector 327211	56
23.2. Scrap Computations and Energy-Intensive Raw Materials.....	57
23.3. Export Rebate Determination.....	57
23.4. GHG charges on imports of Flat Glass Products.....	57

24. Pressed and Blown Glass and Glassware GHG Tax and Border Tax Adjustments.....	58
24.1. Treatment of Products within NAICS sector.....	58
24.2. Scrap Computations and Energy-Intensive Raw Materials.....	58
24.3. Export Rebate Determination.....	59
24.4. GHG Charges on Imports of Pressed and Blown Glass and Glassware Products.....	59
25. Glass Containers GHG Tax and Border Tax Adjustments.....	59
25.1. Treatment of Products within NAICS sector.....	59
25.2. Scrap Computations and Energy-Intensive Raw Materials.....	60
25.3. Export Rebate Determination.....	60
25.4. GHG Charges on Imports of Glass Container Products.....	61
26. Lime and Cement Products GHG Tax and Border Tax Adjustments.....	61
26.1. Treatment of Products within NAICS sector.....	61
26.2. Export Rebate Determination.....	62
26.3. GHG charges on imports of Lime and Cement Products.....	62
27. Steel GHG Tax and Border Tax Adjustments.....	62
27.1. Introduction.....	62
27.2. Treatment of Products within NAICS sector.....	63
27.3. Basic Oxygen, Electric Furnace Steel and Scrap Computations and Energy-Intensive Raw Materials.....	63
27.4. Export Rebate Determination.....	64
27.5 GHG Charges on Imports of Steel Products.....	64
28. Electrometallurgical Ferroalloy Product Mfg. GHG Tax and Border Tax Adjustments.....	64
28.1. Introduction.....	64
28.2. Treatment of Products within NAICS sector.....	65
28.3. Scrap Computations and Energy-Intensive Raw Materials.....	65
28.4. Export Rebate Determination.....	65
28.5. GHG Charges on Imports of Ferroalloy Products.....	66
29. Iron/Steel Pipe/Tube Mfg from Purchsd. Steel Border Tax Adjustments.....	66
29.1. Treatment of Products within NAICS sector.....	66
29.2. Scrap Computations and Energy-Intensive Raw Materials.....	67

29.3. Export Rebate Determination.....	67
29.4. GHG Charges on Imports of Pipe/Tube Products.....	67
30. Alumina and Aluminum GHG Tax and Border Tax Adjustments.....	68
30.1. Treatment of Products within NAICS sector.....	68
30.2. Alumina Energy Use, Aluminum Scrap Usage and Energy-Intensive Raw Materials.....	69
30.3. Export Rebate Determination.....	69
30.4. GHG Charges on Imports of Alumina and Aluminum.....	69
31. Primary Smelting of Copper Products Border Tax Adjustments.....	70
31.1. Treatment of Products within NAICS sector.....	70
31.2. Export Rebate Determination.....	71
31.3. GHG charges on imports of Copper Products.....	71
32. Iron Foundries Products Border Tax Adjustments.....	72
32.1. Treatment of Products within NAICS sector.....	72
32.2. Scrap Computations and Energy-Intensive Raw Materials.....	72
32.3. Export Rebate Determination.....	72
32.4. GHG charges on imports of Iron Foundries Products.....	73
33. Carbon and Graphite Product GHG Tax and Border Tax Adjustments.....	73
33.1. Treatment of Products within NAICS sector.....	73
33.2. Energy-Intensive Raw Materials.....	74
33.3. Export Rebate Determination.....	74
33.4. GHG Charges on Imports of Carbon and Graphite Products.....	75

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Introduction

An interagency study in 2010 identified forty-five North American Industry Classification System (NAICS) sector industries as being both energy-intensive and trade-exposed (EITE) and thus subject to economic and environmental concerns that might result from changes in international trade if there were national legislation to regulate CO₂ emissions.¹ Methods proposed at that time to provide some adjustment for exports and imports of those industries were generally thought to present issues under the World Trading Organization (WTO) rules.

With current interest among some members of Congress and groups in the US to use a tax as the basis for a Greenhouse Gas (GHG) price, this Compendium considers how Border Tax Adjustments (BTAs) for EITE industries might be designed as part of a GHG tax package. The Compendium builds from the recently published [RFF Working Paper](#)² that proposes a Framework based on an upstream³ US GHG tax (on coal, natural gas and crude oil and process GHG emissions from all EITE sectors) with WTO-compatible rebates for products of EITE industries that are exported and charges on imported products. This Compendium could not have been completed without extensive help and advice from Professors Jennifer Hillman and Matthew Porterfield of the Georgetown University Law School, who also were co-authors of the Framework, and their students.⁴

The Framework assumes that a GHG tax rate (US\$ per tonne CO₂e) will apply to the carbon content of produced fossil resources (coal, oil and natural gas) as determined at the mine mouth and wellhead. As well, the GHG tax is also assumed to apply to GHG process emissions (if any) from all

¹ The Effects of H.R. 2454 on International Competitiveness and Emission Leakage in Energy-Intensive Trade-Exposed Industries An Interagency Report Responding to a Request from Senators Bayh, Specter, Stabenow, McCaskill, and Brown December 2, 2009.

² See Framework proposal for a US upstream greenhouse gas tax with WTO-compliant border Adjustments, Brian P. Flannery, Jennifer Hillman, Jan W. Mares, Matthew Porterfield, March 15, 2018.

³ In the oil and gas business “upstream” refers to activities at or near the wells while “downstream” refers to activities at refineries and subsequent distribution. “Midstream” refers to the pipeline system to move oil or gas from producing wells to major users like refineries, power plants or natural gas utilities.

⁴ Jennifer Hillman, Georgetown University Law Center, Matthew Porterfield, Harrison Institute for Public Law, Georgetown University Law Center, and students at the Georgetown University Law Center: Ngo Chin, Mikaela Zhiying Feng, Kara McDonough, Joshua Newton, Xiushan Sun, Alana Toabe, and Airane Yvon.

EITE sectors. Process emissions occur, for example, during calcination of lime and venting and flaring of associated gas during production of fossil resources. The Framework describes how the upstream GHG tax would flow through to affect EITE industries and other sectors and consumers in the economy.

Rebates for exported products and charges on those that are imported are determined based on the Cumulative GHG Emissions for specific Products manufactured in a specific facility in an EITE industry. Note that the Framework report originally used the acronym PCGE for this quantity, but, going forward, we have decided that it is more appropriate to refer to it as a product's GHG index: GGI. Units for GGI are: tonnes CO₂e per tonne of product, and for electricity: CO₂e per MWh, where CO₂e represents equivalent CO₂ emissions accounting for contributions of GHGs besides CO₂ (see the [Framework paper](#) for details).

GGI include three contributions: 1) the carbon content of produced fossil resources (coal, oil and natural gas) as determined at the mine mouth and wellhead and under the assumption that 100% of the contained carbon ultimately will be emitted to the atmosphere as CO₂ as a result of further processing and combustion by end-users; 2) process GHG emissions (if any) from activities of the EITE manufacturer; and 3) GHG emissions associated with all products or electricity purchased from EITE suppliers and utilized by the manufacturer. For each such product, e.g. a commercial fuel or electricity, the third contribution is given by the total amount of purchased product (in tonnes) or electricity (in MWh) multiplied by GGI for that product. As discussed in the Framework, the approach is analogous to the familiar value added tax (VAT) used in many countries, but here applied to cumulative GHG emissions built up along the supply chain to produce specific products. Note, however, that GGI is not a tax: it is an index that allows administrators to determine the amount of rebate for exported products and the charge on imports from EITE industries. Multiplying GGI by the US GHG tax rate provides the rate (US \$ per tonne of product, and US \$ per MWh for electricity)—to be used both for export rebates and import charges on particular products.

The following provides a concise description of the elements of the Framework used to determine the GHG tax for EITE sectors, GGI for products from a specific EITE facility, and BTAs for their products.

Factors in the Framework to Apply an Upstream Tax on Domestic GHG Emissions with WTO-Compliant Border Adjustments:

Rebates of associated GHG charges for exported products and a charge on imported products

Upstream GHG Tax

- The Upstream Tax rate (US\$ per tonne CO₂e) applied to:
 - GHG process emissions that occur to extract and initially process natural resources: coal, oil and gas, and in some other sectors such as cement.
 - The carbon content of produced fossil resources: coal, oil and natural gas, applied at mine mouth and wellhead—under the assumption that 100 percent of the carbon will ultimately be emitted as CO₂ during further processing or combustion.
- Unit: US\$ per tonne CO₂e where CO₂e includes contributions from all covered greenhouse gases on an equivalent-CO₂ basis per unit weight.
- Note that the rate per tonne of Carbon would be larger by a factor (44/12) ~ 3.667—to account for the difference in atomic weight of CO₂ (44) relative to carbon (12), i.e., ~3.667 tonnes of CO₂ contain one tonne of Carbon.

Greenhouse Gas Index: GGI

- For product P produced in an EITE sector in a specific facility or operation, GGI denotes Cumulative GHG Emissions (CO₂e per tonne of product) along the entire supply chain to produce and, in the case of fossil resources, to utilize the product. It includes contributions both from inputs purchased by the manufacturer from EITE suppliers (e.g., commercial fuels and electricity), as well as process emissions (if any) from on-site activities, and the carbon content of produced coal, oil and natural gas.
- Unit: tonnes CO₂e per tonne of product, and for electricity: tonnes CO₂e per MWh.

GHG Rebate and Import Charge for Product P:

- The Framework uses the average value <GGI> for a firm's entire domestic production of product P as the basis for US export rebates and foreign import charges (or the national sector-average if firm-specific information is not available). The rebate or import charge rate is given by <GGI> x (US GHG Tax).
- Unit: US\$ per tonne of product, and for electricity: US\$ per MWh.

This Compendium describes how these elements apply in particular North American Industry Classification System (NAICS) sectors. To the earlier list of 45 EITE sectors identified in 2010, the Framework adds five additional, sectors, namely oil and natural gas production, coal mines, electricity, refinery products and industrial gases. We include these additional sectors for several reasons (see the Framework section 3.5 for additional details)—notably because information on GGIs of their products, e.g., produced oil, gas and coal, commercial fuels and electricity, underpins the ability to evaluate GGI and thereby export rebates and import charges of products in all EITE sectors. This Compendium provides principles and approaches that could be used to develop sector-specific, WTO-compatible export rebates and import charges. Methodologies are discussed in detail for four of the additional sectors and several of the original sectors while a shorter form is provided for the remaining NAICS sectors.

We view this report as a work in progress which we intend to update from time to time as we understand better the issues associated with implementing the proposed methodologies in various sectors.

The combination of a GHG tax on fossil fuel producers and other GHG emitting sources, and related rebates for exports and charges on imports for products of EITE industries should encourage such domestic industries to collaborate now, perhaps in private and public-private partnerships involving experts from industry, non-governmental organizations and authorities, to further develop essential details as described in the sector discussions. In that way, there can be a solid basis for them to contribute to and ultimately to work, at their request, with relevant legislative and executive branch personnel to design and implement formal procedures efficiently and effectively based on experience and the particular circumstances of each sector.

While there are significant limits under the Administrative Procedure Act on the role that industry groups could play in drafting administrative regulations implementing carbon tax legislation, there should be broader latitude and support for industry groups to participate and cooperate with others in the development of “voluntary consensus standards” regarding technical issues like the calculation of GGIs. This approach was used by many EITE sectors⁵ (see Section 3.1 of the Framework Paper) two decades ago and since then to develop and improve voluntary guidelines to measure and report GHG emissions.

⁵ As examples, see The Greenhouse Gas Protocol (GHGP) developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). <http://www.ghgprotocol.org>, and [Petroleum industry guidelines for reporting greenhouse gas emissions](#) - 2nd edition

The following methodologies for individual NAICS sectors have benefitted from discussion with trade associations. However, they are not endorsed by, nor was endorsement sought from, associations for the specifics of any segment.

Key assumptions underpinning this Compendium include:

- EITE industries, as well as parties interested in reducing GHG emissions, and government agencies will benefit from a public analysis of WTO-acceptable BTAs.
- The process ultimately to enact a GHG tax with appropriate BTAs will take many, many months, if not years.
- During such time affected industries will have the opportunity to consider and improve upon the methodologies suggested here in order to be able to assist the relevant government agency when it is selected.
- Because of the substantial amounts of funds to be provided as rebates or collected as import charges, the Treasury Department and the Internal Revenue Service should have a major role in implementing these BTAs. Similarly, because of its extensive involvement with trade issues, tariffs, domestic and foreign companies and foreign governments, including via investigations carried out in foreign countries, the Federal agency with the most relevant experience to administer these border adjustment methodologies, other than as the collector or payer of the import charge or export rebate, is the Office of Enforcement and Compliance in the Office of International Trade Administration at the Department of Commerce.
- The government agencies selected to implement this process will desire to work with affected industries as soon as possible to develop systems that will work effectively—the Treasury Department, Internal Revenue Service and Office of Enforcement and Compliance have demonstrated that trait.
- Trading partners of US and industries thereof would probably evaluate whether to adjust some of their domestic GHG-related regulations. There are likely to be extensive discussions between relevant associations in such countries and the US about these issues as soon as there is serious US discussion of such a border tax adjustment.
- We have sought to consider and address various administrative issues that would be involved in implementing these various modules. As we continue to analyze these issues and do pilot cases for some of the NAICS sectors, we may suggest modifications in the proposed modules.
- We have made no attempt to define what EITE industries and related NAICS sector products should be entitled to border adjustments. Instead, we have focused on the forty-five NAICS sector industries identified in the above referenced interagency study with the additional five

sectors discussed above that are included because information from them is essential for the Framework to operate.

- Suppliers of electricity and other energy-intensive products from EITE industries already should know their GHG emissions, be able to determine GGI for their products (using methods described in the report) and share that information with their customers.

The export rebate for a NAICS sector product and import charge is based on its GGI. As described in the specific methodologies, inputs from products purchased from suppliers that contribute to GGI include not only fossil resources, electricity, and commercial fuels. In some sectors they include additional energy-intensive products, e.g., oxygen, hydrogen, and electrodes. There may also be energy-intensive chemicals or other inputs used to manufacture the given product. The administering agency would decide which, if any, of such input products have sufficient GHG emissions in their manufacture that the administrative effort to determine them and add their contribution to determine GGI for the subject product, is worthwhile. In making that decision, the agency needs to bear in mind that, if an input is determined and its contribution to GGI is included in a product's export rebate determination, that same input will need to be considered in determining the related import charge for products exported to the United States from other countries.

While the GHG tax is imposed only in a few sectors, the tax affects prices that purchasers of produced fossil resources and fuels (and other products produced in sectors that use them) pay in all EITE and other sectors. As described in the Framework paper (section 3.3), GGI for a product accounts for GHG emissions and carbon flows along the entire supply chain required to manufacture specific products.

The following five Figures illustrate the flow of products (whose price will be affected by the upstream GHG tax on produced oil, natural gas and coal) through various EITE manufacturing sectors that transform raw materials, with inputs of electricity, commercial fossil fuels, other energy-intensive products and, in some sectors, recycled scrap, into final products within NAICS sectors that are eligible for BTAs.

Figure 1, also discussed in the Framework proposal, illustrates the extensive interactions that occur among the oil and gas, coal, electricity and petroleum refinery sectors as fossil resources are produced and transformed into commercial fuels and electricity that are used in all EITE sectors. Lines in Figure 1 illustrate payment of the upstream GHG tax, and purchases of electricity, commercial fuels and produced fossil resources along supply chains that link these sectors. Additional examples shown in Figures 2-5 illustrate the flow of goods affected by an upstream GHG tax that occur to produce products in the steel, aluminum, glass and plastic resin sectors covered by NAICS sectors and their markets.

Figure 1. Upstream Tax on GHG Process Emissions & Carbon Content of Produced Fossil Resources, Interactions with Refining and Utilities

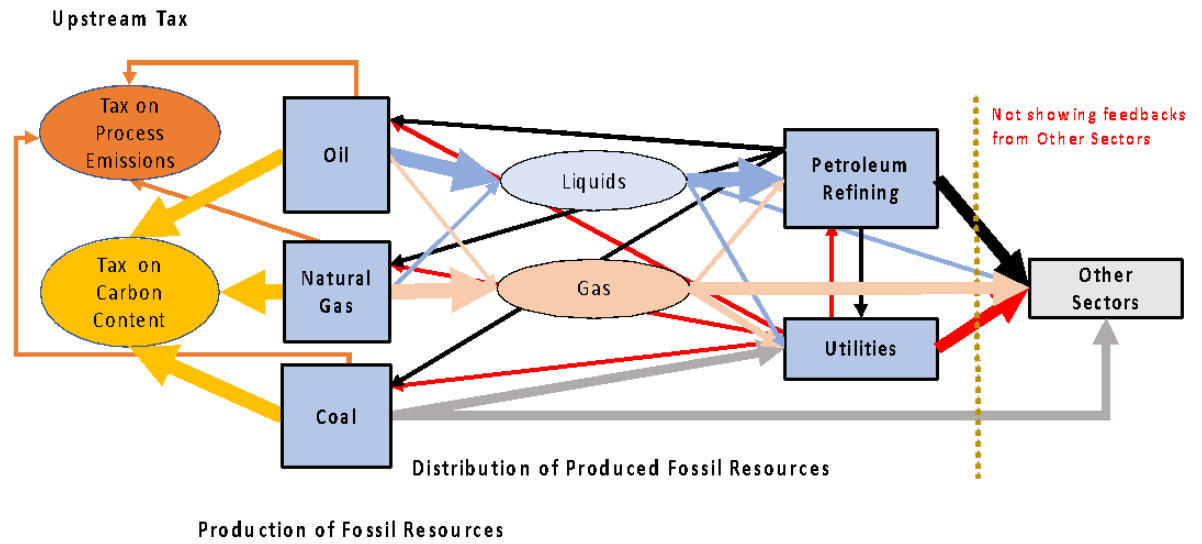


Figure 2. Flow of Goods Affected by Upstream GHG Tax, and Their GHG Emissions through to Steel Products for Market

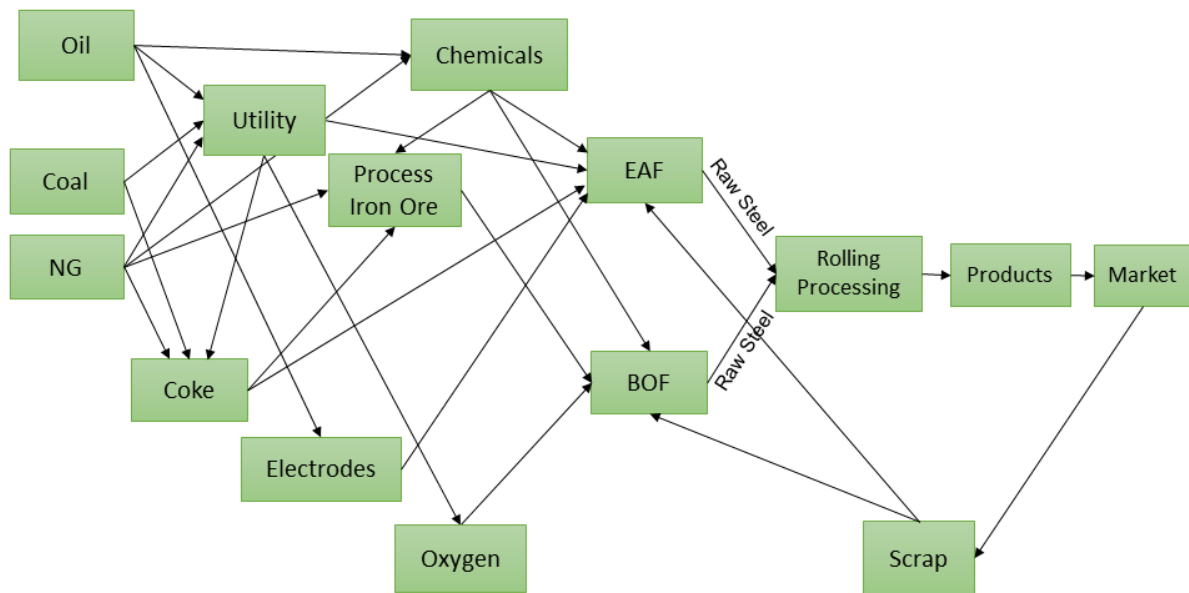


Figure 3. Flow of Goods Affected by Upstream GHG Tax, and Their GHG Emissions through to Aluminum Products for Market

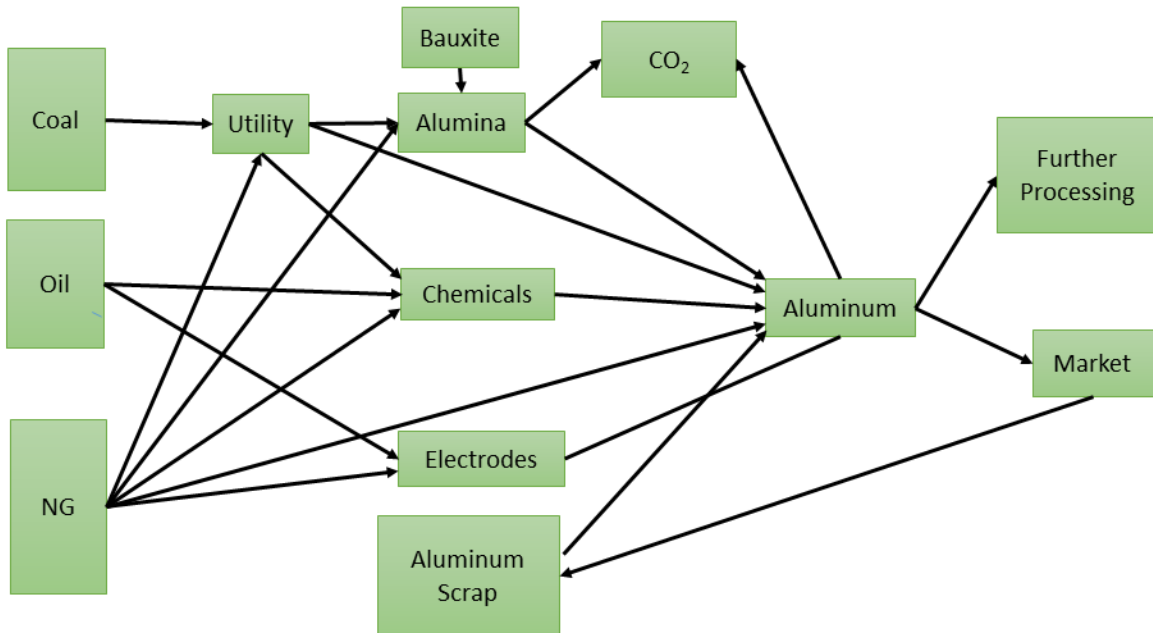


Figure 4. Flow of Goods Affected by Upstream GHG Tax, and Their GHG Emissions through to Glass Products for Market

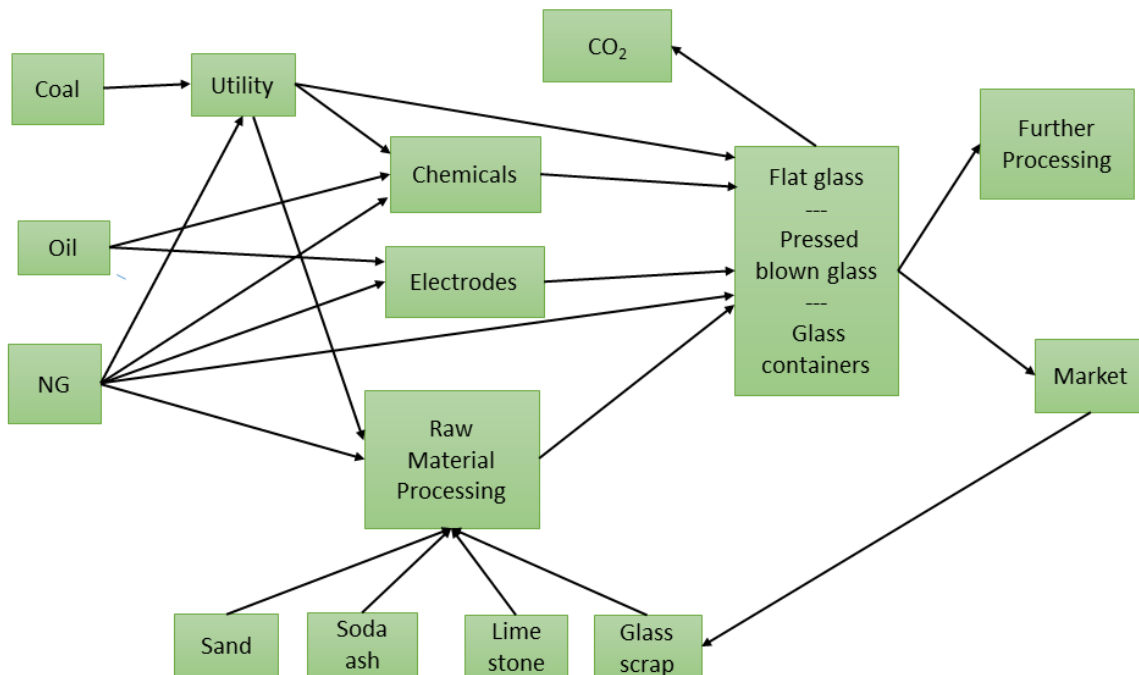
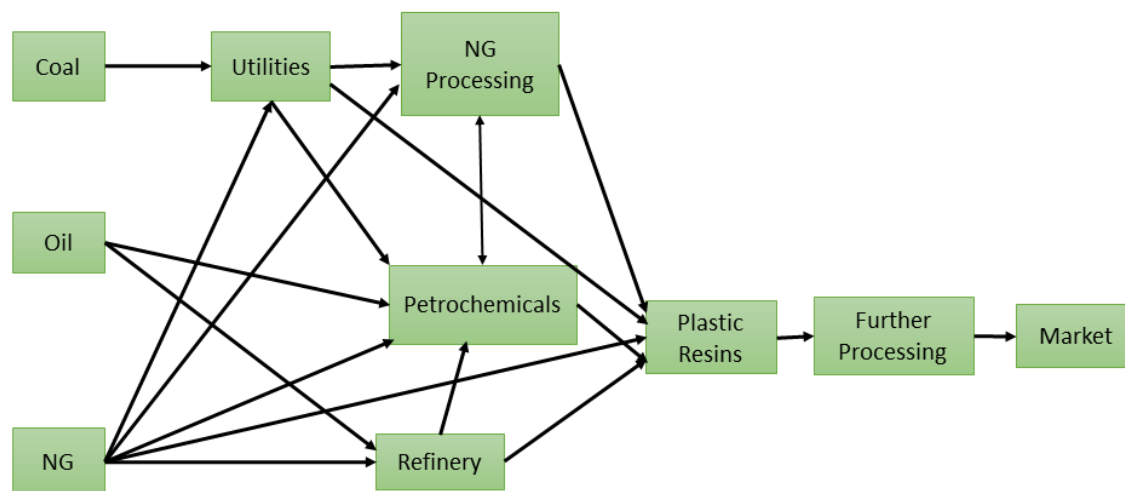


Figure 5. Flow of Goods Affected by Upstream GHG Tax, and Their GHG Emissions through to Plastic Resin Products for Market



CO₂ and other GHG emissions occur from manufacturing operations and use of products from other EITE sectors, in addition to those from fossil fuels. For instance, limestone emits CO₂ when it is converted to lime. Glass melting furnaces emit CO₂ as do some wet corn milling processes. Aluminum manufacture emits CO₂ during the consumption of electrodes.

The number of individual goods in a NAICS sector varies from one to almost 2,000. The Framework and the sectoral modules in this Compendium propose a number of practices to simplify and streamline the administrative effort required to develop export rebates and import charges for the range of products in a given NAICS sector.

The Administering Agency (AA) after consultation with the relevant industry will decide on the desirable administrative approach to determine product-specific GGIs, export rebates and import charges for their respective NAICS sector products. The following are possible approaches:

- A. In the case of oil and gas production and refining of petroleum, as described below, GGI is determined for a specific product based on the carbon content of that product and the average [GGI] for the entire slate of products.
- B. In the case of steel, GHG emissions required to create raw steel would be computed and converted into GGI (CO₂e per tonne of raw steel). Then for all other products in its NAICS sector, GGIs would be based on their usage by weight of raw steel and GGI for raw steel. This approach assumes that little of the total emissions involved with making the products covered by the NAICS sector for steel occur after the creation of raw steel and, thus, they can be neglected.

- C. For some NAICS sectors, the approach used assumes that GGI for each product will be determined separately.
- D. In some other NAICS sectors it is appropriate to determine an average GGI using only some of the large volume products of the relevant NAICS sector, and to apply this average, on a weight basis, to all other products in such sector. However, in this case a US manufacturer or a foreign manufacturer would have the option to provide company-specific information to evaluate GGI for the subject product to the AA, which if approved by the AA, would become the basis for a different export rebate or import charge for that product for the specific manufacturer.
- E. Yet another approach would be for all the products within a given tariff class to be treated as a single product rather than trying to determine GGI for each. In this case, domestic and foreign manufacturers would not be allowed the right to provide information that would lead to different company-specific export rebates or import charges.
- F. An approach not used in this Compendium but one that may be administratively desirable, would be for the US International Trade Commission (USITC) to divide NAICS sectors with very large numbers of products into a number of NAICS sectors, each with a smaller number of more similar products. This may reduce administrative and other costs. Industries and their trade associations who are concerned about determining BTAs where their NAICS sectors have many products, may desire to propose such an approach to the administering agency and the USITC.

The administrative effort to determine the very large number of export rebates or import charges based on each firm's production of particular products would be significant. As an example: there could be about 34,000 such determinations if there were 50 products in each of 45 NAICS sectors and 5 US and 10 foreign producers of each product. It will be important also to recognize the challenges and tradeoffs of seeking precise estimates for GGI. While the contribution to GGI may be evaluated quite reliably for combustion of well characterized commercial fuels, e.g. natural gas or gasoline, estimates for some less well characterized products and for process emissions, such as those occurring during extraction of fossil resources, are not nearly so precise. It may be desirable for the AA to specify and account for such limitations. Similarly, it will be unwise to demand similar accuracy for GGI across all sectors and products.

Finally, treatment of recycled materials and co-generation of heat and electricity present additional challenges. Their use reduces GHG emissions from manufacturing but complicates determination of GGI in several ways (as discussed in the Framework paper section 4.2). Developing

appropriate procedures to account for them will require consultation involving administrators, experts from relevant manufacturing sectors and other stakeholders. Several NAICS sector products rely significantly on purchased, recycled materials. However, there is no way to know their GHG emissions history. Several possible approaches exist:

- A. One is to use the average national usage of fuels and electricity to make the basic oxygen and electric arc furnace raw steel, and apply that to evaluate and average GGI for all purchased scrap.
- B. Another is similar where the national average usage of fuels and electricity to make glass products in the three glass-related NAICS sectors is used to estimate GGI of such purchased scrap.
- C. For pulp, paper, newsprint and paperboard various categories of recovered paper exist. Recovered newsprint is assumed here to have same GGI as new newsprint. However, a method needs to be developed for estimating GGI for the other four types of recovered paper.

“Startup” issues for scrap will need to be addressed, since the upstream GHG tax will not have been in place and affected the price of existing scrap manufactured at earlier times and purchased during initial periods. The AA, with help from knowledgeable sources, will need to determine appropriate times and rates to adjust GGI for purchased scrap. Also, they will need to determine the implications of assessing costs of the program on material that may be recycled many times. We believe it would be appropriate to account only for the most recent regeneration.

Note that the quantity GGI applies to specific products from a specific manufacturing facility. However, many companies produce single products in more than one facility. Thus, they could determine that GHG emissions for production in one facility were more or less than another and claim that exports were from the more GHG emitting facility. Similarly, an exporter to the US could claim that its exports were made in facilities using hydro power or other low emission sources while its other facilities did not use hydro power or such sources. To avoid such “gaming”, the approach suggested here is to use the average GGI for the entire production of the particular product by the company from all of its domestic facilities.

GHG emissions involved with transportation of raw materials or finished products are not included in the determinations of export rebates or import charges because for these energy-intensive products such emissions are judged to be a very small portion of emissions created by manufacture of these products and, in any event, would be exceedingly difficult to determine.

More detailed discussion of the proposed methodology is included in the segments concerning oil and natural gas production, coal mines, electricity, refinery products, plastics, iron and

steel products, alumina and aluminum and a few others. Descriptions in the remaining EITE industry segments are shorter, although they could have been lengthened by using significant portions of the earlier, longer segments.

These modules and proposed methodologies have benefitted from discussions with trade associations. However, as noted above, they are not endorsed by, nor was endorsement sought from, associations for the specifics of any segment.

The industries (and their NAICS sector numbers) listed below beginning with wet corn milling (but excluding industrial gases) are among those identified in the interagency study in 2010. As noted above Figures 2-5 provide an added perspective on the flow of goods and creation of GHG emissions that need consideration in determining the export rebates and import charges.

1. Oil and natural gas production (211111)
2. Coal mining (212111, 212112, 212113)
3. Electricity Production (221112)
4. Refinery Products (324110)
5. Wet Corn Milling (311221)
6. Pulp Mills (322110)
7. Paper (except Newsprint) Mills (322121)
8. Newsprint Mills (322122)
9. Paperboard Mills (322130)
10. Petrochemical Manufacturing (325110)
11. Industrial Gases (325120)
12. Inorganic Dye and Pigment Manufacturing (325131)
13. Alkalis and Chlorine Manufacturing (325181)
14. Carbon Black Manufacturing (325182)
15. All Other Basic Inorganic Chemical Mfg. (325188)
16. Cyclic, Crude & Intermediate Mftg. Chemical Products (325192)
17. All Other Basic Organic Chemical Mfg. (325199)
18. Plastics Material and Resin Manufacturing (325211)
19. Synthetic Rubber (325212)
20. Cellulosic Organic Fiber (325221)
21. Noncellulosic Organic Fiber (325222)
22. Fertilizer Manufacturing (325311)
23. Flat Glass Manufacturing (327211)
24. Pressed and Blown Glass and Glassware Manufacturing (327212)
25. Glass Container Manufacturing (327213)
26. Cement Manufacturing (327310) and Lime Manufacturing (327410)
27. Iron and Steel Mills (331111)
28. Electrometallurgical Ferroalloy Product Mfg. (331112)
29. Iron/Steel Pipe/ Tube Mfg. from Purchsd. Steel (331210)
30. Alumina Refining (331313) and Primary Aluminum Production (331313)
31. Primary Smelting and Refining of Copper (331411)
32. Iron Foundries (331511)
33. Carbon and Graphite Product Manufacture (335991).

1. Oil & Gas Upstream GHG Tax and Border Tax Adjustments

1.1. Introduction

Oil and gas producers extract oil and gas natural resources, and partially process them to create a variety of products that are sold to users, e.g., petroleum refiners, electric utilities and other sectors. Oil and gas production is frequently described as “upstream” activity while refining is described as “downstream” activity. Primary products include crude oil and natural gas. Oil production frequently results in co-production of associated gas and condensate liquids, and gas production produces a variety of condensate and associated liquids. Producers would pay the GHG tax at the US GHG tax rate (US\$ per tonne CO_{2e}), based on the carbon content of produced oil and gas determined at the wellhead (converted into CO₂ emissions under the assumption that 100% of the carbon will be emitted upon combustion by downstream users). In addition, they would also pay the GHG tax on GHG process emissions that occur during extraction and initial on-site processing of oil and gas, e.g., from venting and flaring of associated gas and fugitive emissions such as methane leaks. Upstream oil and gas producers and Liquefied Natural Gas (LNG) producers export significant (and growing) quantities of fuels and other products throughout the world, and the US imports significant quantities of crude oil and other petroleum and natural gas products. Rebates for exports of such oil and gas included in NAICS sector 211111 would be granted and charges imposed on imports.

As discussed and defined in the Framework paper, the rebate rate (US\$ per tonne) for a product exported by a particular firm is determined from the average GGI for its entire domestic production of the product multiplied by the US GHG tax rate. Because the composition, e.g., sulfur content, gravity and other properties of crude oils produced from different basins varies significantly in ways that affect the cost to extract and refine them, we regard them as different products for purposes of evaluating GGI. These can affect GGI by several percent or more, especially in the case of more viscous heavy oils and oil sands.

1.2. Treatment of Products within NAICS sector

Production of oil and natural gas and LNG is covered by NAICS sector 211111. Its principle products are crude oil, condensate wholly from natural gas, liquefied natural gas, and gaseous natural gas. The three products, other than LNG, are hereafter called Oil and Gas Products.

GGIs for products of oil and gas producers include contributions from: (1) the carbon content of produced oil and gas (determined at the wellhead), (2) on-site GHG process emissions, and (3) emissions associated with purchased electricity, commercial fuels, and other energy-intensive

materials (e.g., chemicals and in some cases CO₂) used to extract and process oil and gas. GGIs for products from specific operations vary depending on local (in the ground) geology, reservoir conditions and properties of oil and gas natural resources and inputs from suppliers which can vary from facility to facility. Based on information from suppliers and their own operations, oil and gas producers can determine GGI for the individual products they produce based on their carbon content (see below). Oil and Gas Products and LNG will, in total, amount to the vast majority of relevant GHG emissions from oil and gas products covered by this NAICS sector.

In determining export rebates producing companies and other exporters will be requested to provide the needed data for each of their Oil and Gas Products and for their LNG, as described below.

1.3. Benefitting Exporters and Their Carbon Usage Data

Exporters of Oil and Gas Products and LNG will be entitled to export rebates based on their GGI. If others export their products, producers of oil and gas will need to supply them with GGI values for those products (see below).

1.4. Energy-Intensive Raw Materials

Oil and gas production, especially from enhanced oil recovery and fracking operations, and LNG production are energy-intensive, using significant amounts of commercial fuels and purchased or on-site generated electricity. They may also require significant quantities of other energy-intense products from suppliers including various chemicals and purchased CO₂ for enhanced oil recovery. As described in the Framework paper, suppliers of these materials will provide information on GGIs; their use would also contribute to the rebate for which exporters of Oil and Gas Products and LNG would be eligible.

1.5. Frequency of Determinations

BTAs for domestic rebates will be recomputed annually to recognize any changes in energy efficiency, mining or production processes or changes that affect suppliers of fuels and electricity and associated GHG emissions for mining and producing the products, though in practice some values may be based on statistics from prior years. Updates for import GHG charges will also be recomputed annually to take note of changing circumstances. However, information from nations exporting to the US may not be available in the same time frame as for updates from US domestic sources.

1.6. Production and Use of CO₂ in Enhanced Oil Recovery

CO₂ is sometimes used in enhanced oil recovery. Some stays in the earth permanently and some may escape to the atmosphere with produced oil or by evading from the reservoir. Such CO₂ may be purchased from producers who extracted it from other CO₂-rich reservoirs. In some cases, CO₂ is also created as a product of combustion of fossil fuels or chemical processes; the CO₂ can be separated and sold for further use. Producers of such CO₂ would be assessed the upstream US GHG tax on the assumption that the CO₂ will ultimately be emitted to the atmosphere. To the extent that producers using the CO₂ can demonstrate that some of it has become permanently sequestered underground, they—like other operations that practice carbon capture and storage (CCS) (see discussion in the Framework paper)—would be entitled to an offset fee at the rate of the US GHG tax. Suppliers of CO₂ would communicate to other EITE sectors the GGI value for their CO₂. GGI for such CO₂ would be included by Oil and Gas producers in their determination of GGIs for Oil and Gas Products.

1.7. Export Rebate Determination for Oil and Gas Products and LNG

The administrative burden of determining the GGI for the approximately 1.7 million oil and gas wells in the US, of which many are very small producers, would be enormous. To reduce that burden for determinations of both export rebates and import charges, the Administering Agency (AA) will estimate GGIs for operations by producers in a given basin, using results for wells that are producing 50 barrels per day or more or 300 MCF per day or more, and assume that on a per barrel or per MCF basis lower producing wells have similar GGIs on a unit basis.

Oil and gas producers will determine an average [GGI] from their entire operation and use it as a basis to assign individual GGIs to the slate of products they produce based on the carbon content of each product using the following procedure:

[GGI] is defined as an average for the entire slate of products produced in a basin. As discussed in the Framework paper, it has contributions from three factors: 1) total (GGI x tonnes of supplied product) for all products including electricity purchased from other EITE suppliers: TS (in tonnes CO₂e), 2) total on-site GHG process emissions: TP (in tonnes CO₂e), 3) the total carbon content of all produced oil and gas products TC (in tonnes carbon) as determined at the wellhead. Under the assumption that contained carbon will be entirely emitted as CO₂ once produced oil and gas are combusted by downstream users, 3.6667 x TC represents total CO₂e emissions from combusting all products. Given these inputs producers will determine [GGI] using the following ratio:

$$[GGI] = (TS + TP + 3.6667 \times TC) / TC$$

[GGI] is expressed in units: tonnes CO₂e per tonne of carbon from the entire production of the manufacturer in a specific basin. Because [GGI] included contributions from supplier and process emissions, as well as those that will occur once the resource is combusted, in all cases [GGI] will exceed 3.6667, typically by several percent.

To determine GGIs for products of a specific production operation, we allocate contributions to products in proportion to the average carbon content of each product: CP (in units tonnes carbon per tonne of product):

$$GGI = [GGI] \times CP$$

The AA would request producers of Oil and Gas Products in NAICS sector 211111 to provide carbon content, output production of each product and, for production from wells in excess of --50 barrels per day and or 300 MCF per day, [GGI] for the entire basin and GGI for each Product using procedures approved by the AA to determine rebates for the firm. The AA would use such information to create averages and determine the rebate for exported oil and gas products. To determine export rebates for LNG, the AA would request producers of LNG to provide carbon content, output production of LNG and GGI for LNG using procedures approved by the AA to determine rebates for the firm.

1.8. GHG Charges on Imports of Upstream Oil and Gas Products and LNG

Domestic producers will desire the GHG charge to be assessed on imported Oil and Gas Products and LNG. Thus, domestic producers will be motivated to assist the AA. Information on GGI for individual imported Oil and Gas Products and for LNG shall be determined for specific operations in the nation that produces or manufactures them in the same fashion as described in the previous section and will be used to determine a company average GGI for production of each product P from its facilities or individual basins throughout the country. National averages will be used if firm averages are not available.

The AA would estimate for the subject country GGIs for Oil and Gas Products and GGI for LNG. The AA would create an import charge (US\$ per tonne of product) for imported Oil and Gas Products and LNG by applying the US GHG tax rate to GGI for each product until such time as the importer to the US or the exporter to the US provides company-specific information needed to determine the GHG charge on basin-specific basis information for oil and gas and on a company-specific basis for LNG.

2. Coal Upstream GHG Tax and Border Tax Adjustments

2.1. Introduction

Upstream coal producers convert coal natural resources into produced coal (i.e., coal products) that can be sold to downstream users, e.g., in the electricity or steel sector. Producers would pay the upstream GHG tax, at the US GHG tax rate (US\$ per tonne of product), based on the carbon content of bituminous, sub-bituminous, lignite and anthracite coal as it leaves the mine mouth or site (converted into CO₂ emissions under the assumption that 100% of the carbon will be emitted upon combustion by downstream users), and on GHG process emissions, e.g., from methane leaks (if any) associated with extraction and initial on-site processing of coal. Rebates for exports of such coal included in NAICS sectors 212111, 212112, and 212113 would be granted and charges imposed on imports.

As discussed and defined in the Framework paper, the rebate rate (US\$ per tonne) for a product exported by a particular firm is determined from the average GGI for its entire domestic production of each of bituminous, sub-bituminous, surface lignite, agglomerated lignite and anthracite coal product multiplied by the US GHG tax rate. GGIs for coal producers includes contributions from purchased electricity, commercial fuels, and other energy-intense materials (e.g., chemicals) used in extracting and processing at the mine, as well as on-site GHG process emissions (if any) and the carbon content of produced coal under the assumption it will be entirely emitted as CO₂ by downstream purchasers.

2.2. Treatment of Products within NAICS sector

Five major products (surface lignite and agglomerated lignite, underground bituminous and sub-bituminous and anthracite), are covered by NAICS sectors 212111, 212112, and 212113 hereafter called Coal Products.

GHG emissions associated with mining and processing Coal Products produced by a given operator vary depending on the specific (in the ground) natural coal resource produced by the operator and use of energy-intense products from its suppliers. They are readily determinable from information provided by suppliers and the on-site producer. They will, in total, amount to the vast majority of GHG emissions required to mine and process all the coal products covered by the three NAICS sectors. In determining export rebates mining companies and/or exporters will be requested to provide the needed data for each of the five major Coal Products.

2.3. Benefitting Exporters and Their Carbon Usage Data

Exporters of Coal Products will be entitled to export rebates. Such exporters can determine (at the mine mouth) the carbon content of products they mine and GHG process emissions from their own operations, and they can obtain from their suppliers GGIs associated with their use of purchased electricity, commercial fuels and other energy-intensive materials.

Such mining companies will know GGI for electricity that they may produce, and their suppliers of purchased electricity will provide GGI for their product.

2.4. Energy-Intensive Raw Materials

Significant quantities of various chemicals may be required. As described in the Framework paper, suppliers of these materials will provide GGI for their products. As with manufacturer's use of purchased electricity and commercial fuels, their use would also contribute to the rebate for which exporters of Coal Products would be eligible.

2.5. Frequency of Determinations

BTAs for domestic rebates will be recomputed annually to recognize any changes in energy efficiency, mining or production processes or changes that affect suppliers of fuels and electricity and associated GHG emissions for mining and producing the products, though in practice some values may be based on statistics from prior years. Updates for import GHG charges will also be recomputed annually to take note of changing circumstances. However, information from nations exporting to the US may not be available in the same time frame as for updates from US domestic sources.

2.6. Export Rebate Determination

Administering Agency (AA) would request mining companies for individual Coal Products in NAICS sectors 212111, 212112 and 212213 to provide GGI for each product using procedures approved by the AA. The average of the export rebates per unit weight for Coal Products shall be used for any other product included within the three NAICS sectors.

2.7. GHG Charges on Imports of Coal Products

Domestic producers will desire GHG charges to be assessed on imported coal. Thus, domestic producers will be motivated to assist the AA. Individual imported Coal Products shall be considered to be made from a national company average of the various mines, processes and energy-intensive inputs used to mine and process each of such products.

The AA would estimate for the subject country GGI for individual Coal Products within NAICS sectors 212111, 212112 and 212213. The AA would create an import charge (US \$ per tonne of product) for imported products by applying the US GHG tax rate to GGI for each product. A national average of such import charge for individual Coal Products shall be used to create the import charge for any other imported products included within such three NAICS sectors until such time as the importer to the US or the exporter to the US provided the AA company-specific information needed to determine the import charge on a company-specific basis.

3. Electricity Border Tax Adjustments

3.1. Introduction

Producers of electricity use a variety of technologies and fuels to generate their product: electricity that is sold to producers in all EITE sectors and to a wide variety of other customers. Electricity providers are not subject to the upstream GHG tax. However, as a result of the US upstream GHG tax they would pay more for commercial fuels they purchase from producers of coal, natural gas, and oil-based fuels, and charge more for the electricity they sell to customers. Rebates for exports of electricity (to Canada and Mexico) affected by these added costs resulting from upstream GHG tax would be granted and charges imposed on imports.

As discussed and defined in the Framework paper, the rebate rate (US\$ per MWh) for electricity exported by a particular firm is determined from the average GGI for its entire domestic production of electricity multiplied by the US GHG tax rate.

3.2. Treatment of Electricity

Electric power generation is covered by NAICS sector 221112. GGI for electricity includes contributions from: purchased electricity (if any), commercial fuels, and other energy-intensive materials (e.g., chemicals) used to produce electricity. Based on information from suppliers and their own operations, electricity producers can determine GGI (see below). In determining export rebates, the electric utilities will be requested to provide the needed data for computation of their rebates.

3.3. Benefitting Exporters and Their Carbon Usage Data

Exporters of electricity will be entitled to rebates. Such exporters can determine GGI from their own operations and obtain from their suppliers GGI associated with their use of purchased electricity, commercial fuels and other energy-intensive materials.

3.4. Energy-Intensive Raw Materials

Significant quantities of various chemicals may be required. As described in the Framework paper, suppliers will provide information on GGI associated with manufacturing these energy-intensive materials, and their use would contribute to the rebate for which exporters of electricity would be eligible.

3.5. Frequency of Determinations

BTAs for domestic rebates will be recomputed annually to recognize any changes in energy efficiency, mining or production processes or changes that affect suppliers of fuels and electricity and associated GHG, though in practice some values may be based on statistics from prior years. Updates for import GHG charges will also be recomputed annually to take note of changing circumstances. However, information from nations exporting to the US may not be available in the same time frame as for updates from US domestic sources.

3.6. Export Rebate Determination

Administering Agency (AA) would request exporting utilities in NAICS sector 221112 to provide output totals (MWh) and GGI (CO₂e per MWh) using procedures approved by the AA, to determine rebates for the firm.

3.7. GHG Charges on Imports of Electricity

Some domestic electric utilities will desire GHG charges to be assessed on imported electricity. Thus, domestic utilities will be motivated to assist the AA. Imported electricity shall be considered to be made from company average of the various facilities and energy inputs used to manufacture the electricity. The AA would estimate GGI (tonnes CO₂e per MWh) for imports from Canada and Mexico. The AA would create an import charge (US\$ per MWh) for imported electricity by applying the US GHG tax rate to GGI for such electricity. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides the AA company-specific information to determine GGI on a company-specific basis.

4. Refinery Products Border Tax Adjustments

4.1. Introduction

Refineries transform crude oil and other inputs into a wide variety of finished refinery products used by manufacturers in EITE industries and other sectors, businesses and end-use consumers, especially for transportation. The majority of these products are petroleum fuels, but

they also include a number of other products such as lubricating oils, chemicals and chemical feedstocks in NAICS sector 324110. To manufacture these products, they rely on significant inputs of electricity, purchased fuels, natural gas, and a variety of other energy-intensive materials from suppliers in other EITE sectors. Refiners would pay the upstream GHG tax only on GHG process emissions, e.g., leakage of methane, from their operations (if any). However, as a result of the US upstream GHG tax they would pay more for their crude oil and natural gas raw material, electricity, commercial fuels and other energy-intensive materials, and charge more for the products they sell to customers. Refiners export significant quantities of fuels and other products throughout the world. Rebates for exports of refinery products would be granted and charges imposed on imports.

As discussed and defined in the Framework paper, the rebate rate (US\$ per tonne) for a product exported by a particular firm is determined from the average GGI for its entire domestic production of the product multiplied by the US GHG tax rate.

4.2. Treatment of Products within NAICS sector

About one hundred seventy products are covered by NAICS sector 324110; however, the vast majority by weight and by carbon content of refinery products is represented by the following products for which there is general agreement on their broad specifications, including carbon content: Liquefied refinery gas (ethane, propane, butane and isobutane); gasoline; naphtha; kerosene; jet aircraft fuels; diesel fuel; home heating oil, residual fuel oils; lubricating oils; paraffin wax; asphalt, tar; and petroleum coke. Such products are hereafter called Refinery Products.

GGIs for Refinery Products include contributions from: crude oil and other inputs, including purchased electricity, commercial fuels, and other energy-intensive materials (e.g., chemicals), from on-site process emissions (if any), and the carbon content of the product. GGIs for products from specific refineries vary depending on the crude oil being processed, other energy-intensive inputs purchased from suppliers, technologies utilized, and product slates produced in the specific refinery. Based on information from suppliers and their own operations, refinery operators can determine GGIs for products they produce based on their carbon content (see below). Refinery Products will, in total, amount to the vast majority of cumulative GHG emissions from refinery products covered by the NAICS sector 324110.

In determining export rebates manufacturers will be requested to provide the needed data for each of the Refinery Products. For administrative reasons and because they are a very small portion of the refinery output, other products of NAICS sector 324110 will be considered to be the average of the Refinery Products.

4.3. Benefitting Exporters and Their Carbon Usage Data

Exporters of products within NAICS sector 324110 will be entitled to rebates based on GGIs and the US GHG tax. As noted in the Framework paper, it may be necessary to develop methodologies to determine how to treat emissions and products from cogeneration facilities in refineries that produce steam and electricity, especially if electricity is sold for use outside their facility.

4.4. Energy-Intensive Raw Materials

Significant quantities of various chemicals and other energy-intensive materials may be required. Suppliers of these materials will provide information on GGI for these inputs. As with manufacturer's use of purchased electricity and commercial fuels, their use would also contribute to the rebate for which exporters of Refinery Products would be eligible.

4.5. Frequency of Determinations

BTAs for domestic rebates will be recomputed annually to recognize any changes in energy efficiency, mining or production processes or changes that affect suppliers of crude oil, fuels and electricity and associated GHG emissions for mining and producing the products, though in practice some values may be based on statistics from prior years. Updates for GHG charges will also be recomputed annually to take note of changing circumstances. However, information from nations exporting to the US may not be available in the same time frame as for updates from US domestic sources.

4.6. Export Rebate Determination

See section 1.7 on Oil and Gas Production above, for a description of the approach (and definitions of symbols) to determine GGI for each product produced by a specific refinery based on its carbon content: CP in tonnes carbon per tonne of product, and an overall average: [GGI] in tonnes CO_{2e} per tonne of carbon for the production of the entire refinery. As discussed in the Framework paper, [GGI] for refining has contributions from two factors: 1) total for all products and electricity purchased from other EITE suppliers: TS (in tonnes CO_{2e}), and 2) total on-site GHG process emissions (if any) TP in tonnes CO_{2e}. Note that TS includes contributions, in particular, from purchased crude oil and natural gas. TC is the total amount of carbon (tonnes carbon) in the entire product slate of the refinery.

$$[GGI] = (TS + TP) / TC,$$

$$GGI = [GGI] \times CP.$$

Because [GGI] accounts for process emissions (if any) and emissions from suppliers, as well as those that will occur once fuel products are combusted, in all cases [GGI] > 3.6667, typically by 15-20 percent (or more for products derived from oil sands and other heavy crude oils).

The Administering Agency (AA) would require refineries as producers of products in NAICS sector 324110 to provide information on carbon content, output production and GGI for each Refinery Product, [GGI] for the entire refinery, and the carbon content and output production for any other products in such NAICS sector, using procedures approved by the AA to determine rebates for the firm.

4.7. GHG Charges on Imports of Refinery Products

Domestic producers will desire import charges to be assessed on imported refinery products. Thus, domestic producers will be motivated to assist the AA. Information on GGI for individual imported refinery products shall be determined for specific refineries in exporting nations in the same fashion as described in the previous section and will be used to determine company average GGIs for production of products from its facilities throughout the country. National averages will be used if firm averages are not available.

The AA would estimate for the subject country the GGIs of Refinery Products within NAICS sector 324110 and the amount and carbon content of each Refinery Product and all other products covered by such Code. The AA would create an import charge (US \$ per tonne of product) for imported products by applying the US GHG tax rate to GGI for each product. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine GGI for each product. On a company-specific basis an average GGI for Refinery Products shall be used to create the GHG charge for any other imported products included within such NAICS sector.

5. Wet Corn Milling Products GHG Tax and Border Tax Adjustments

5.1. Treatment of Products within NAICS sector

About fifty products are covered by NAICS sector 311221 and are divided into eight tariff groups. GGI associated with manufacturing each product varies. To ease the administrative burden of determining GGI for each product the Administering Agency (AA) shall select four products, glucose, fructose, wheat starch and residues of starch manufacture and similar residue which are henceforth called Selected Wet Corn Milled Products.

GGIs for products manufactured in a given facility account for products of upstream suppliers of electricity and commercial fuels to the facility and for GHG process emissions from operations at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI (CO₂e per tonne of product) by the US GHG tax rate (US\$ per tonne CO₂e).

Producers in this sector will also be subject to the upstream GHG tax because process emissions of CO₂ result from decomposition of limestone used in grinding operations. GGIs for Selected Wet Corn Milled Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGIs for unit weight of such Products will be used to compute rebates for exported products for all the other wet corn milled products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below).

In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Selected Wet Corn Milled Products they manufacture and the weight of each other wet corn milled product in such NAICS sector that they manufacture.

5.2. Export Rebate Determination

The AA would request manufacturers in NAICS sector 311221 of Selected Wet Corn Milled Products to provide in reasonable detail the output and GGI of each Selected Wet Corn Milled Product using procedures approved by the AA and product and output information for firm's production of all other wet corn milled products. AA would compute an average GGI for the Selected Wet Corn Milled Products and use same to compute the rebate for all other products of such sector produced by such firm.

If a manufacturer desired, it could provide the AA the output and GGI for other particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate.

5.3. GHG charges on Imports of Wet Corn Milled Products

Domestic producers will desire import charges to be assessed on imported wet corn milled products covered by NAICS sector 311221. Thus, domestic producers will be motivated to assist the AA. Individual imported wet corn milled products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each such product.

The AA would estimate for the subject country GGI to manufacture Selected Wet Corn Milled Products within NAICS sector 311221 and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for imported products by applying the US GHG tax rate to GGI for each product. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine GGI. An average of such import charge for the Selected Wet Corn Milled Products shall be used to create the import charge for all other NAICS sector 311221 products of the subject country until such time as the importer to the US or the exporter to the US provides company-specific information needed by the AA to determine the import charge on a company-specific basis

6. Pulp Mills GHG Tax and Border Tax Adjustments

6.1. Treatment of Products within NAICS sector

Many products are included within NAICS sector 322110. To ease the administrative burden of determining GGIs, all such products will be divided into the following five categories: dissolving wood pulp, sulfite wood pulp, sulfate wood pulp, semi chemical wood pulp and mechanical wood pulp, all five of which are henceforth called Pulp Products.

GGIs for Pulp Products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. In addition, as described below, pulp mills must also account for contributions from other energy-intensive inputs (e.g., chemicals) from EITE suppliers and for use of recovered paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

Producers in this sector will also be subject to the upstream GHG tax because process emissions of CO₂ result from decomposition of limestone used in grinding operations.

GGIs for Pulp Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such Products will be used to compute rebates for exported products for all the other pulp products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below).

In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Pulp Products they manufacture. GGIs and process GHG emissions associated with manufacturing the various pulp products vary but can be determined.

6.2. Recovered Paper Computations and Energy-Intensive Raw Materials

Recovered paper is used to manufacture Pulp Products and paperboard. There are five categories of recovered paper which are processed and sold according to EPA: old corrugated containers, mixed paper, old newspapers, high grade deinked paper, and pulp substitutes. They are all used to make Pulp Products. GGIs for specific purchases of recovered paper are unknowable. Thus, the national average GGI of each of the five categories of recovered paper must be determined and will be used for such paper, and thus the pulp based on using such recovered paper as raw material. Pulp Products manufacturers will know GGI for electricity that they produce, and suppliers will provide information on GGI of purchased electricity.

6.3. Export Rebate Determination

Export Rebates to make Pulp Products within NAICS sector 322110 would be computed based on the US domestic GHG tax rate multiplied by GGI, where determination of GGI includes contributions from purchased commercial fuels, electricity, and other products (e.g., chemicals) from EITE suppliers. They must also account for contributions from recovered paper, as described above, and if, in addition to purchased electricity, manufacturers also produce their own electricity via cogeneration, they must also determine its contribution to GGI. Single Export Rebates would be computed for each of the Pulp Products for all manufacturing plants and/or processes of the producer thereof.

The Administering Agency (AA) would request manufacturers in NAICS sector 322110 (pulp mills) to provide it in reasonable detail the output and GGI for each Pulp Product using procedures approved by the AA. AA would compute a rebate rate for each of the Pulp Products: GGI multiplied by the US GHG tax rate. AA would determine with such and other information what the average national rebate per tonne of each Pulp Product would be and the national average GGI for the purchased recovered paper. However, a company may provide the AA with GGI for individual products within the Pulp Products so that a product-specific rebate could be computed and provided.

6.4. GHG Charges on Imports of Pulp products

Domestic producers will desire GHG charges to be assessed on imported Pulp Products. Thus, domestic producers will be motivated to assist the AA. Individual imported Pulp Products shall

be considered to be made from a company average of its various facilities and energy-intense inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for Pulp Products and the amount and weight of such products. The AA would also create an import charge rate (US\$ per tonne of Product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to the AA to determine the GGI. Unless and until the importing company provides the AA with GGI for the recovered paper used in manufacturing the imported Pulp Products, the AA shall use the same approach for determining GGI for recovered paper as is used in the US.

7. Paper from Paper Mills GHG Tax and Border Tax Adjustments

7.1. Treatment of Products Within NAICS sector

Many products are included within NAICS sector 322121 and there are important plant configuration and process distinctions that influence the energy use of a paper mill. It may be integrated or non-integrated, that is, mills may produce pulp as an intermediate material or they may purchase the pulp. The source of the fiber may be from virgin materials (wood) or recovered paper or paperboard. Three different pulping processes are common: chemical (kraft and sulfite) and mechanical (ground wood). Finally, the product may or may not be bleached. Distinctions between these various categories are not always sharp.

Thus, to ease the administrative burden of determining GGIs, all products included within NAICS sector 322121 will be assigned to one of the three categories of paper mills and henceforth called Grouped Paper Products: (a) integrated paper mills; (b) non-integrated bleached paper mills; and (d) non-integrated unbleached paper mills.

GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. In addition, as described below, paper mills must also account for contributions from other energy-intense inputs (e.g., chemicals) from EITE suppliers and for use of recovered paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGI for Grouped Paper Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information

provided by suppliers or determined by the operator. A similar procedure will be used to evaluate charges for imported products (see below). In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Grouped Paper Products they manufacture. GGIs associated with manufacturing the various products vary, but can be determined.

7.2. Recovered Paper Computations and Energy-Intensive Raw Materials

Recovered paper is used to manufacture Grouped Paper Products and paperboard. There are five categories of recovered paper which are processed and sold according to EPA: old corrugated containers, mixed paper, old newspapers, high grade deinked paper, and pulp substitutes. They are used to make both Grouped Paper Products and paperboard.

GGI for specific purchases of recovered paper are unknowable. Thus, the national average GGI of each of the five or more categories of recovered paper must be determined and will be used for such paper, and thus the paper products based on using such recovered paper as raw material. Grouped Paper Products manufacturers will know GGI for electricity they produce, and suppliers will provide information on GGI of purchased electricity. Significant quantities of various chemicals and other energy-intense materials may be required. Suppliers of these materials will provide information on GGI for these inputs. As with manufacturer's use of purchased electricity and commercial fuels, their use would also contribute to the rebate for which exporters of Grouped Paper Products would be eligible.

Estimates of GGIs from manufacture of such products can be determined (as described in the Framework paper) using standard methodologies widely adopted for corporate reporting, for example the WRI/WBCSD GHG protocols⁶, or essentially similar procedures imposed by US regulatory authorities, and converted to GGI as described here.

7.3. Export Rebate Determination

Export rebates to make Grouped Paper Products within NAICS sector 322121 would be computed based on US domestic GHG tax rate multiplied by GGI, where determination of GGI includes contributions from purchased commercial fuels, electricity, and other products (e.g., chemicals) from EITE suppliers. They must also account for contributions from recovered paper, as described above. If, in addition to purchased electricity, manufacturers also produce their own electricity via cogeneration, they must also determine its contribution to GGI. Single export rebates

⁶ Through the Greenhouse Gas Protocol (GHGP) World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) work with businesses to develop standards and tools that help companies measure, manage, report and reduce their carbon emissions. <http://www.ghgprotocol.org>

would be computed for each of the Grouped Paper Products for all manufacturing plants and/or processes of the producer thereof.

The Administering Agency (AA) would request manufacturers in NAICS sector 322121 (paper mills) to provide it in reasonable detail the output and GGI for each Grouped Paper Product using procedures approved by the AA. AA would compute a rebate rate for of each of the Grouped Paper Products: GGI multiplied by the US GHG tax rate. AA would determine with such and other information what the average national rebate: $GGI \times \text{the US GHG tax rate}$ per tonne of each Grouped Paper Product would be and the national average GGI for the purchased recovered paper. However, a company may provide the AA with GGI for individual products within the Grouped Paper Products so that a product-specific rebate could be computed and provided.

7.4. GHG charges on Imports of Paper Products

Domestic producers will desire GHG charges to be assessed on imported Grouped Paper Products. Thus, domestic producers will be motivated to assist the AA. Individual imported Grouped Paper Products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country the GGI for Grouped Paper Products and the amount and weight of such products and the amount and weight of all products covered by such sector. The AA would also create an import charge rate (US \$ per tonne of product) for each imported Grouped Paper Product by multiplying its GGI by applying the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to the AA to determine the GGI and the AA determines such charge. Unless and until the importing company provides the AA with the GGI for the recovered paper used in manufacturing the imported Grouped Paper Products, the AA shall use the same approach for determining GGI for recovered paper as is used in the US.

8. Newsprint Mills GHG Tax and Border Tax Adjustments

8.1. Treatment of Products within NAICS sector

Over sixteen products are included within NAICS sector 322122. To ease the administrative burden of determining GGIs, all such products will be considered to be newsprint and are henceforth called Newsprint Products. GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. In addition, as described below, newsprint mills must also account for contributions from other energy-intensive inputs (e.g., chemicals) from EITE suppliers and for use of

recovered paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGI for Newsprint Products produced at different facilities vary depending on each facility's operations and with inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such Products will be used to compute rebates for exported products. A similar procedure will be used to evaluate charges for imported products (see below). In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Newsprint Products they manufacture.

8.2. Recovered Paper Computations and Energy-Intensive Raw Materials

Recovered paper is used to manufacture Newsprint Products. There are five categories of recovered paper which are processed and sold according to EPA: old corrugated containers, mixed paper, old newspapers, high grade deinked paper, and pulp substitutes. Old newspapers are used to make Newsprint Products.

The manufacturer will know GGI for recovered paper produced in its facility which is then used there. GGI for specific purchases of recovered paper are unknowable. Thus, the national average GGI to manufacture Newsprint Products will be used for paper from recovered old newspapers. Estimates of GGIs from manufacture of such products can be determined (as described in the Framework paper) using standard methodologies widely adopted for corporate reporting, for example the WRI/WBCSD GHG (see footnote 5 above) protocols, or essentially similar procedures imposed by US regulatory authorities, and converted to GGI as described here. Newsprint manufacturers will know GGI for electricity that they produce, and suppliers will provide information on GGI of purchased electricity.

8.3. Export Rebate Determination

Export Rebates to make Newsprint Products within NAICS sector 322122 would be computed based on US domestic GHG tax rate multiplied by GGI, where determination of GGI includes contributions from purchased commercial fuels, electricity, and other products (e.g., chemicals) from EITE suppliers. They must account for contributions from recovered paper, as described above. If, in addition to purchased electricity, manufacturers also produce their own electricity via cogeneration, they must also determine its contribution to GGI. Single Export Rebates would be computed for each of the Newsprint Products for all manufacturing plants and/or processes of the producer thereof.

The Administering Agency (AA) would request manufacturers in NAICS sector 322122 to provide in reasonable detail the tonnage and class of recovered paper used and the GGI of each Newsprint Product using procedures approved by the AA. The AA would average GGI for Newsprint Products to compute the rebate rate for Newsprint Products covered by such sector: GGI multiplied by the US GHG tax rate. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate.

However, a company may provide the AA with GGI for individual products within the Newsprint Products so that a product-specific rebate could be computed and provided. AA would determine with such information what the average national rebate per tonne of each Newsprint Product would be and the national average GGI for the old newspaper purchased recovered paper would be.

8.4. GHG charges on Imports of Newsprint products

Domestic producers will desire GHG charges to be assessed on imported newsprint products. Thus, domestic producers will be motivated to assist the AA. Individual imported Newsprint Products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for Newsprint Products and the amount and weight of such products. The AA would also create an import charge (US\$ per tonne of Product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be applied to imports until such time as the importer to the US or the exporter to the US provided the AA company-specific information needed to determine the GHG charge on a company-specific basis and the AA determines such charge. Unless and until the importing company provides the AA with GGI for the recovered paper used in manufacturing the imported Newsprint Products, the AA shall use the same approach for determining GGI for recovered paper as is used in the US.

9. Paperboard GHG Tax and Border Tax Adjustments

9.1. Treatment of Products Within NAICS sector

Many products are included within NAICS sector 322130. Like with Paper Mills there are important plant configuration and process distinctions that influence the energy use of a paperboard mill. It may be integrated or non-integrated, that is, mills may produce pulp as an intermediate material or they may purchase the pulp. The source of the fiber may be from virgin materials (wood) or recovered paper or paperboard. Three different pulping processes are common: chemical (Kraft

and sulfite) and mechanical (ground wood). Finally, the product may or may not be bleached. Distinctions between these various categories are not always sharp.

Thus, to ease the administrative burden of determining GGIs, all products included within NAICS sector 322131 will be assigned to one of three categories based on the type of paperboard mill which manufactured them and henceforth called Grouped Paperboard Products: (a) integrated bleached paperboard mills; (b) integrated unbleached paperboard mills; and (c) non-integrated paperboard mills.

GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. In addition, as described below, paper board mills must also account for contributions from other energy-intensive inputs (e.g., chemicals) from EITE suppliers and for use of recovered paper or paperboard. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGI for Grouped Paperboard Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. A similar procedure will be used to evaluate charges for imported products (see below). In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Grouped Paperboard Products they manufacture. GGIs and process GHG emissions associated with manufacturing the various products vary but can be determined.

9.2. Recovered Paper Computations and Energy-Intensive Raw Materials

Recovered paper is used to manufacture Paperboard Products and paper. There are five categories of recovered paper which are processed and sold according to EPA: old corrugated containers, mixed paper, old newspapers, high-grade deinked paper, and pulp substitutes. They are used to make both paperboard products and paper. The manufacturer will know GGI for fuels and electricity use to produce recovered paper in its facility which is then used there

GGI for specific purchases of recovered paper are unknowable. Thus, the national average GGI to manufacture each of the five or more categories of recovered paper will be used for such recovered paper and thus the Paperboard Products based on using such recovered paper.

Estimates of GGIs from manufacture of such products can be determined (as described in the Framework) using standard methodologies widely adopted for corporate reporting, for example

the WRI/WBCSD GHG protocols (see footnote 5 above), or essentially similar procedures imposed by US regulatory authorities.

9.3. Export Rebate Determination

Export rebates to make Paperboard Products would be computed based on US domestic GHG tax rate multiplied by GGI, where determination of GGI includes contributions from purchased commercial fuels, electricity, and other products (e.g., chemicals) from EITE suppliers. Also, they must account for contributions from recovered paper, as described above. If, in addition to purchased electricity, manufacturers also produce their own electricity via cogeneration, they must also determine its contribution to GGI. Single export rebates would be computed for each of the Paperboard Products for all manufacturing plants and/or processes of the producer thereof.

The Administering Agency (AA) would request manufacturers in NAICS sector 322131 to provide it in reasonable detail the tonnage and class of recovered paper used and the output and GGI for each Grouped Paperboard Product using procedures approved by the AA. The AA would compute a rebate rate for each such product produced by the firm, GGI multiplied by the US GHG tax rate. AA would determine with such information what the average national rebate per tonne of each Grouped Paperboard Product would be and what the national average GGI for the purchased recovered paper would be. However, a company may provide the AA with GGI for individual products within the Grouped Paperboard Products so that a product-specific rebate could be computed and provided.

9.4. GHG Charges on Imports of Paperboard Products

Domestic producers will desire GHG charges to be assessed on imported paperboard products. Thus, domestic producers will be motivated to assist the AA. Individual imported Grouped Paperboard Products shall be considered to be made from a company average of the various facilities and processes it uses to manufacture each of the Grouped Paperboard Products

The AA would estimate for the subject country the GGI for Grouped Paperboard Products and the amount and weight of such products. The AA would also create an import charge rate (US\$ per tonne of Product) for each imported product by multiplying its GGI by the US GHG tax rate. Such GHG charge would be applied to imports until such time as the importer to the US or the exporter to the US provided company-specific information to the AA needed to determine the GGI on a company-specific basis and the AA determines such charge. Unless and until the importing company provides the AA with the GGI for the recovered paper used in manufacturing the imported Grouped Paperboard Products, the AA shall use the same approach to determine GGI for recovered paper used in manufacturing Grouped Paperboard Products as is used in the US.

10. Petrochemical Products Border Tax Adjustments

10.1. Treatment of Products within NAICS sector

Manufacturers of petrochemical products utilize electricity and commercial fuels to transform carbon-containing feedstocks and other raw materials into finished products. About 15 products are covered by NAICS sector 325110 of which the following ten represent the vast majority of GHG emissions and carbon content: ethane, butane, n-pentane, iso-pentane, ethylene, propylene, butylene, butadiene, isoprene, and linear alpha olefins. Such ten listed products are henceforth called Petrochemicals.

Export rebates and GHG import charges for each of the Petrochemicals will be determined individually whereas for the remaining products included within NAICS sector 325110 their rebates and import charges will be based on their individual carbon content and average values for GGI (as described below) to manufacture: ethylene, propylene, butylene, butadiene, isoprene, and linear alpha olefins, henceforth called Similar Products.

GGIs for petrochemical products manufactured in different facilities vary depending on each facility's operations and inputs from their suppliers. GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels, feedstocks and other raw materials, and GHG process emissions (if any). For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) and import charge rate would then be determined by multiplying GGI by the US GHG tax rate.

10.2. Export Rebate Determination

See Section 4.6 above on Refinery Products, for a description of the approach (and definitions of symbols) to determine GGI for each product produced by a specific facility based on its carbon content: CP in tonnes carbon per tonne of product, and an overall average: [GGI] in tonnes CO₂e per tonne of carbon for the production of the entire facility. As discussed in the Framework paper, [GGI] for Petrochemicals has contributions from two factors: 1) total for all products purchased from other EITE suppliers: TS (in tonnes CO₂e), and 2) total on-site GHG process emissions (if any) TP in tonnes CO₂e. Note that TS includes contributions, in particular, from purchased feedstocks, electricity, and other energy-intensive raw materials. TC is the total amount of carbon (tonnes carbon) in the entire petrochemical product slate of the facility.

$$[GGI] = (TS + TP) / TC,$$

$$GGI = [GGI] \times CP.$$

The Administering Agency (AA) would require facilities as producers of products in NAICS sector 325110 to provide information on carbon content, output production and GGI for each Petrochemical, [GGI] for the entire facility, and the carbon content and output production for any other products in such NAICS sector, using procedures approved by the AA to determine rebates for the firm. AA would determine with such information what the average national rebate per tonne of each product of such sector would be (GGI multiplied by the US GHG tax rate).

10.3. GHG Charges on Imports of Petrochemical Products

Domestic producers will desire GHG charges to be assessed on imported petrochemical products. Thus, domestic producers will be motivated to assist the AA. Individual imported Petrochemicals shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for Petrochemicals, their carbon content and the amount and weight of such imported products. The AA would also create an import charge rate (US\$ per tonne of Petrochemicals) for each such imported product by multiplying its GGI by the US GHG tax rate. The AA would also create a GGI and import charge rate by creating an average of the GGI for the Similar Products emissions and applying such average to all other NAICS sector 325110 products of the subject country while also applying the US GHG tax to the carbon content of each of such products. Such import charges based on the GGI and US GHG tax rate would be applied to all such imports of NAICS sector 325110 products until such time as the importer to the US or the exporter to the US provided company-specific information needed to determine the GHG charge on a company-specific basis and the AA determines such charge following the same procedure as with export rebates.

11. Industrial Gases GHG tax and Border Tax Adjustments

11.1. Treatment of Products within NAICS sector

About 27 products are covered by NAICS sector 325120 of which the following six represent the vast majority of GHG emissions: hydrogen, helium, oxygen, argon, nitrogen and carbon dioxide. Such listed products are henceforth called Industrial Gases. GGIs associated with manufacturing the various products vary but can be determined. In determining export rebates manufacturers will be requested to provide the Administering Agency (AA) the relevant data for individual Industrial Gases products. The export rebates and GHG charges for each of the Industrial Gases will be determined individually whereas for the remaining products included within NAICS sector 325120 their rebates

and import charges will be based on the average GGI of the Industrial Gases (excluding CO₂ and H₂ as discussed immediately below).

GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility, from operations at the facility and for producers of CO₂ and H₂ the upstream GHG tax on their feedstocks as described in the Framework paper. (This additional contribution to GGI for CO₂ and H₂ —because they have a GHG precursor feedstock —makes them unlike the other Industrial Gases; so, for that reason, we exclude CO₂ and H₂ when computing the average GGI for Industrial Gases.) For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGI for Industrial Gases produced at different facilities vary depending on each facility's operations and GGI inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of the Industrial Gases excluding CO₂ and H₂ will be used to compute rebates for exported products for all the other products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below).

11.2. Export Rebate Determination

The Administering Agency (AA) would request manufacturers in NAICS sector 325120 to provide it in reasonable detail the GGI of each Industrial Gas using procedures approved by the AA. The AA would compute a rebate rate for each such Industrial Gases product produced by the firm: GGI multiplied by the GHG tax rate; and average GGI for Industrial Gases excluding carbon dioxide and hydrogen to compute the rebate for all other industrial gas products covered by such sector. AA would determine with such information what the average national rebate per tonne of each such industrial gas product would be. However, a company may provide the AA with GGIs for products in such NAICS sector other than the Industrial Gases so that a product-specific rebate could be computed and provided.

11.3. GHG Charges on Imports of Industrial Gas Products

Domestic producers will desire GHG charges to be assessed on imported industrial gas products. Thus, domestic producers will be motivated to assist the AA. Individual imported Industrial Gases shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for Industrial Gases and the amount and weight of such products. The AA would also create a GHG charge by applying the US GHG tax per tonne of product for each imported product by multiplying its GGI by the US GHG tax rate. Such import charge would be applied to imports until such time as the importer to the US or the exporter to the US provided company-specific information needed to determine the GHG charge on a company-specific basis.

The AA would also create an import charge rate (US\$ per tonne of product) by creating an average of the import charge rate for the Industrial Gases, excluding CO₂, and H₂, and applying such average to all other NAICS sector 325120 products of the subject country. Such GHG charge would be applied to all such imports of NAICS sector 325120 products until such time as the importer to the US or the exporter to the US provided company-specific information needed to determine the import charge on a company-specific basis and the AA determines such charge.

12. Inorganic Dye and Pigment Manufacturing Products Border Tax Adjustments

12.1. Treatment of Products within NAICS sector

About thirty-seven products are covered by NAICS sector 325131 and are divided into about ten tariff groups. GGIs vary but can be determined. To ease the administrative burden of determining GGI for each product the Administering Agency (AA) shall select three to eight products with relatively large annual production volumes within the NAICS sector, henceforth called Selected Inorganic Dye and Pigment Products.

In determining export rebates manufacturers will be requested to provide the Administering Agency (AA) the relevant data for the Selected Inorganic Dye and Pigment Products. GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGI for Selected Inorganic Dye and Pigment Manufacturing Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such Products will be used to compute rebates for exported products for all the other inorganic dye and pigment manufacturing products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below).

In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Selected Inorganic Dye and Pigment Products they manufacture and the weight of each other product in such NAICS sector that they manufacture.

12.2. Export Rebate Determination

The AA would request manufacturers in NAICS sector 325131 of Selected Inorganic Dye and Pigment Products to provide in reasonable detail the output and GGI of each Selected Inorganic Dye and Pigment Product using procedures approved by the AA and product and output information for firm's production of all other inorganic dye and pigment products. AA would compute a rebate rate (GGI multiplied by the US GHG tax rate) for each such Product produced by each firm and average GGI for the Selected Inorganic Dye and Pigment Products to compute the rebate for all other products of such sector produced by such firm.

However, a company may provide the AA with GGIs for products other than the Selected Inorganic Dye and Pigment Products so that a product-specific rebate could be computed and provided.

12.3. GHG Charges on Imports of Inorganic Dye and Pigment Products

Domestic producers will desire GHG charges to be assessed on imported inorganic dye and pigment products. Thus, domestic producers will be motivated to assist the AA. Individual imported inorganic dye and pigment products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for Selected Inorganic Dye and Pigment Products within NAICS sector 325131 and the amount and weight of such products. The AA would create an import charge for the individual Selected Inorganic Dye and Pigment Products by multiplying its GGI by the US GHG tax. The AA would also create an import charge by creating an average GGI for the Selected Inorganic Dye and Pigment Products and applying such average to all other NAICS sector 325131 products of the subject country.

Such import charge would be applied to imports until such time as the importer to the US or the exporter to the US provided the AA the company-based information for the Selected Inorganic Dye and Pigment Products needed to determine the import charges for the Selected Inorganic Dye and Pigment Products of such company and/or information needed to determine on a company-wide basis the import charges for its exports of other inorganic dyes and pigment products included in NAICS sector 325131 and the AA determines such charge.

13. Alkalis and Chlorine Products Border Tax Adjustments

13.1. Treatment of Products within NAICS sector

About ten products are covered by NAICS sector 325181. The energy required to manufacture each product varies. In determining export rebates manufacturers will have the opportunity to provide the Administering Agency (AA) the relevant data for specific products they choose and also for all their other products of the NAICS sector 325181.

13.2. Export Rebate Determination

The AA would request manufacturers in NAICS sector 325181 to provide in reasonable detail the national average GGI for each product and output information for the firm's national production of each of the sector's alkalis and chlorine products. AA could compute a rebate rate for each such product: GGI multiplied by the US GHG tax rate produced by each firm.

13.3. GHG Charges on imports of Alkalis and Chlorine Products

The AA would estimate for the subject country the GGIs for products within NAICS sector 325181 and the amount and weight of such products. The AA would create an import charge rate (US\$ per tonne of Product) for each imported product by multiplying its GGI by the US GHG tax rate. Such GGI would be applied to imports until such time as the importer to the US or the exporter to the US provided the company-specific information needed to determine the GGI on a company-specific basis.

14. Carbon Black Border Tax Adjustments

14.1. Treatment of Products within NAICS sector

Manufacturers of carbon black products utilize electricity and commercial fuels to transform carbon-containing feedstocks and other raw materials into finished products. Two products are covered by NAICS sector 325182 with the vast majority of volume represented by carbon black.

Export rebates and GHG import charges for the carbon black products will be determined individually. GGIs for products from a given facility account for inputs from suppliers of feed materials, from suppliers of electricity and commercial fuels to the facility and from GHG process emissions at the facility, as described in the Framework paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) and import charge rate would then be determined by multiplying GGI of the product by the US GHG tax rate. In determining export rebates manufacturers

will be requested to provide the AA the relevant data for the carbon black products they manufacture.

14.2. Export Rebate Determination

See Section 4.6 above on Refinery Products, for a description of the approach (and definitions of symbols) to determine GGI for each carbon black product produced by a specific facility based on its carbon content: CP in tonnes carbon per tonne of product, and an overall average: [GGI] in tonnes CO₂e per tonne of carbon for the production of the entire facility. As discussed in the Framework paper, [GGI] for carbon black has contributions from two factors: 1) total for all products purchased from other EITE suppliers: TS (in tonnes CO₂e), and 2) total on-site GHG process emissions (if any) TP in tonnes CO₂e. Note that TS includes contributions, in particular, from purchased feedstocks, electricity, and other energy-intensive raw materials. TC is the total amount of carbon (tonnes carbon) in the entire carbon black product slate of the facility.

$$[GGI] = (TS + TP) / TC,$$

$$GGI = [GGI] \times CP.$$

The AA would request manufacturers in NAICS sector 325182 of carbon black products to provide in reasonable detail the output and GGI of each carbon black product using procedures approved by the AA. AA would compute a rebate rate for each such product produced by each firm: GGI multiplied by the US GHG tax rate.

14.3. GHG charges on imports of Carbon Black Products

Domestic producers will desire GHG charges to be assessed on imported carbon black products. Thus, domestic producers will be motivated to assist the AA. Individual imported carbon black products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGI to manufacture carbon black products within NAICS sector 325182 and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine GGI.

15. All Other Basic Inorganic Chemical Manufactured Products Border Tax Adjustments

15.1. *Treatment of Products within NAICS sector*

About three hundred products are covered by NAICS sector 325188 and are divided into about fifty tariff groups. GGIs associated with manufacturing each product vary. To ease the administrative burden of determining GGI for each product the Administering Agency (AA) shall select five to ten products with relatively large annual production volumes within the NAICS sector, henceforth called Selected Inorganic Products.

GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for each Selected Inorganic Product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGI for Selected Inorganic Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such Products will be used to compute rebates for exported products for all the other inorganic chemical products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below). In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Selected Inorganic Products they manufacture and the weight of each other inorganic chemical product in such NAICS sector that they manufacture.

15.2. *Export Rebate Determination*

The AA would request manufacturers in NAICS sector 325188 of Selected Inorganic Products to provide in reasonable detail the output and GGI for each Selected Inorganic Product using procedures approved by the AA and product and output information for firm's production of all other inorganic chemical products within such NAICS sector. AA would compute a rebate rate for each such Product produced by each firm (GGI multiplied by the US GHG tax rate) and average GGIs for the Selected Inorganic Products to compute the rebate for all other products of such Code produced by such firm. If a manufacturer desired, it could provide the AA the output and GGI for other particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate.

15.3. GHG charges on imports of Inorganic Chemical Products

Domestic producers will desire GHG charges to be assessed on imported inorganic chemical products. Thus, domestic producers will be motivated to assist the AA. Individual imported inorganic chemical products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for Selected Inorganic Products within NAICS sector 325188 and the amount and weight of all products covered by such Code. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by applying the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine (GGI). An average of such GHG charge for the Selected Inorganic Products shall be used to create the import charge for all other NAICS sector 325188 products of the subject country until such time as the importer to the US or the exporter to the US provides the AA the company-specific information needed to determine the GGI on a company-specific basis and the AA determines such charge.

16. Cyclic, Crude & Intermediate Mfg. Chemical Products Border Tax Adjustments

16.1. Treatment of Products within NAICS sector

Manufacturers of Cyclic, Crude & Intermediate Mfg. Chemical Products utilize electricity and commercial fuels to transform carbon-containing feedstocks and other raw materials into finished products. About one hundred sixty products are covered by NAICS sector 325192 and are divided into about ten tariff groups. GGIs associated with manufacturing each product vary, as does the carbon content of each product. To ease the administrative burden of determining GGI for each product the Administering Agency (AA) shall select four to eight products with relatively large annual production volumes within the NAICS sector, henceforth called Selected Cyclic Crude and Intermediate Chemicals Products.

Export rebates and GHG import charges for each of the Selected Cyclic Crude and Intermediate Chemicals Products will be determined individually whereas for the remaining products included within NAICS sector 325192 their rebates and import charges will be based on their individual carbon content and average value for GGI (as described below) to manufacture such Selected Cyclic Crude and Intermediate Chemicals Products. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) and import charge rate would then be determined by multiplying GGI by the US GHG tax rate.

GGI for Selected Cyclic Crude and Intermediate Chemicals produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Selected Cyclic Crude and intermediate Chemical Products they manufacture and the carbon content and weight of each other cyclic crude and intermediate chemical product in such NAICS sector that they manufacture.

16.2. Export Rebate Determination

See Section 4.6 above on Refinery Products, for a description of the approach (and definitions of symbols) to determine GGI for each product produced by a specific facility based on its carbon content: CP in tonnes carbon per tonne of product, and an overall average: [GGI] in tonnes CO₂e per tonne of carbon for the production of the entire facility. As discussed in the Framework paper, [GGI] for Selected Cyclic Crude and Intermediate Chemicals has contributions from two factors: 1) total for all products purchased from other EITE suppliers: TS (in tonnes CO₂e), and 2) total on-site GHG process emissions (if any) TP in tonnes CO₂e. Note that TS includes contributions, in particular, from purchased feedstocks, electricity, and other energy-intensive raw materials. TC is the total amount of carbon (tonnes carbon) in the entire cyclic, crude and intermediate product slate of the facility.

$$[\text{GGI}] = (\text{TS} + \text{TP}) / \text{TC},$$

$$\text{GGI} = [\text{GGI}] \times \text{CP}.$$

The Administering Agency (AA) would require facilities as producers of products in NAICS sector 325192 to provide information on carbon content, output production and GGI for each Selected Cyclic Crude and Intermediate Chemicals product, [GGI] for the entire facility, and the carbon content and output production for any other products in such NAICS sector. Using procedures approved by the AA to determine rebates for the firm. AA would determine with such information what the average national rebate per tonne of each cyclic, crude and intermediate product would be. If a manufacturer desired, it could provide the AA the output and GGI for other particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate.

16.3. GHG Charges on Imports of Cyclic Crude and Intermediate Products

Domestic producers will desire GHG charges to be assessed on imported cyclic crude and intermediate chemicals. Thus, domestic producers will be motivated to assist the AA. Individual

imported cyclic crude and intermediate chemicals shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for Selected Cyclic Crude and Intermediate Chemicals within NAICS sector 325192 and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine (GGI). An average of such GHG charge for the Selected Cyclic Crude and Intermediate Chemicals shall be used to create the import charge for all other NAICS sector 325192 products of the subject country until such time as the importer to the US or the exporter to the US provides the AA company-specific information needed to determine the GGI on a company-specific basis and the AA determines such charge.

17. All Other Basic Organic Chemical Border Tax Adjustments

17.1. Treatment of Products within NAICS sector

Manufacturers of basic organic chemicals utilize electricity and commercial fuels to transform carbon-containing feedstocks and other raw materials into finished products. About thirteen hundred products are covered by NAICS sector 325199 and are divided into about fifty tariff groups. GGIs associated with manufacturing each product vary as does the carbon content of each product. To ease the administrative burden of determining the GGI for each product the Administering Agency (AA) shall select 15 to 30 products with relatively large annual production volumes within the NAICS sector, henceforth called Selected Basic Organic Chemicals Products.

Export rebates and GHG import charges for each of the Selected Basic Organic Chemicals Products will be determined individually whereas for the remaining products included within NAICS sector 325199, their rebates will be based on their individual carbon content and average values for GGI (as described below) to manufacture the Selected Basic Organic Chemicals Products. GGIs for Selected Basic Organic Chemicals Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers.

GGIs for products produced in a given facility account for inputs from suppliers of electricity and commercial fuels, feedstocks, and other raw materials, and GHG process emissions (if any). For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) and import charge rate would

then be determined by multiplying GGI (CO₂e per tonne of product) by the US GHG tax rate (US\$ per tonne CO₂e).

17.2. Export Rebate Determination

See Section 4.6 above on Refinery Products, for a description of the approach (and definitions of symbols) to determine GGI for each product produced by a specific facility based on its carbon content: CP in tonnes carbon per tonne of product, and an overall average: [GGI] in tonnes CO₂e per tonne of carbon for the production of the entire facility. As discussed in the Framework paper, [GGI] for Selected Basic Organic Chemical Products has contributions from two factors: 1) total for all products purchased from other EITE suppliers: TS (in tonnes CO₂e), and 2) total on-site GHG process emissions (if any) TP in tonnes CO₂e. Note that TS includes contributions, in particular, from purchased feedstocks, electricity, and other energy-intensive raw materials. TC is the total amount of carbon (tonnes carbon) in the entire basic organic chemical product slate of the facility.

$$[GGI] = (TS + TP) / TC,$$

$$GGI = [GGI] \times CP.$$

The Administering Agency (AA) would require facilities as producers of Products in NAICS sector 325199 to provide information on carbon content, output production and GGI for each Selected Basic Organic Chemical product, [GGI] for the entire facility, and the carbon content and output production for any other products in such NAICS sector, using procedures approved by the AA to determine rebates for the firm. AA would determine with such information what the average national rebate per tonne of each such product would be.

17.3. GHG Charges on Imports of Basic Organic Chemical Products

Domestic producers will desire import charges to be assessed on imported basic organic chemical products. Thus, domestic producers will be motivated to assist the AA. Individual imported basic organic chemical products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGI to manufacture Selected Basic Organic Chemical Products within NAICS sector 325199 and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for imported products by applying the US GHG tax rate to GGI for each product. An import charge based on national average GGIs for the Selected Basic Organic Chemical Products would be used until such time as the importer to the US or the exporter to the US provides information to determine the GGI

and import charge for Selected Basic Organic Chemical Products on a company-specific basis and the AA determines such charge.

18. Plastic Resins Border Tax Adjustments

18.1. Introduction

Manufacturers of plastic resins utilize electricity and commercial fuels to transform carbon-containing feedstocks and other raw materials into finished products. The upstream GHG taxes paid by sellers of coal, oil, and gas depend on the emissions released to extract and process the resource and the amount of carbon in the coal, oil, and gas they sell to users.

Taxes on coal, oil and gas that refiners and electric utilities purchase directly raise their operating costs to produce commercial fuels and electricity. This increases the price they charge for fuels and electricity sold to any industry including the plastics products industry.

The embodied effect of these taxes, per unit of energy contained in fuels and electricity, depends on the specific technologies and practices of refiners and power plants and their sources for coal, oil and gas. In the US fuel suppliers and electricity producers already report emissions associated with their products, e.g., pounds of CO₂ per gallon of gasoline, or tonnes of CO₂ per MWh of electricity.

18.2. Treatment of Products Within NAICS sector

About eighty products are covered by NAICS sector 325211; however, the vast majority of the weight, carbon content and emissions of Plastic Resins is represented by the following products for which there is general agreement on their broad specifications, and thus carbon content:

High density polyethylene (HDPE), low density polyethylene (LDPE), linear low density polyethylene (LLDPE), poly propylene (PP), polyethylene terephthalate (PET), polystyrene (PS), polyvinyl chloride (PVC), epoxide resins, vinyl acetate co-polymers, acrylonitrile-butadiene-styrene (ABS) co-polymers, urea formaldehyde resins, melamine resins, and phenol formaldehyde resins. Such products are hereafter called Plastic Resins.

GGIs associated with manufacturing Plastic Resins vary and are readily determinable and will in total amount to the vast majority of GHG emissions released to manufacture, and carbon content of, all the plastic resins covered by NAICS sector 325211. Export rebates and GHG import charges for each of the Plastic Resins will be determined individually whereas for the remaining products included within NAICS sector 325110 their rebates and import charges will be based on their

individual carbon content and average values for GGI (as described below) to manufacture the Plastics Resins.

GGIs for Plastics Resins manufactured in different facilities vary depending on each facility's operations and inputs from their suppliers. GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels, feedstocks and other raw materials, and GHG process emissions (if any). For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) and import charge rate would then be determined by multiplying GGI by the US GHG tax rate.

In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Plastics Resins they manufacture and the weight of each other plastic resin in such NAICS sector that they manufacture.

18.3. Benefitting Exporters and Their Carbon Usage Data

Exporters of products within NAICS sector 325211 will be entitled to export rebates. Such exporters can determine the GGIs of Plastic Resins they produce and GHG emissions from their own processes, and obtain from their suppliers of electricity and commercial fuels the GGIs for their electricity, fuels and feedstocks. Exporters of products within NAICS sector 325211, other than the Plastics Resins, can determine and provide the Administering Agency (AA) the carbon content of such products. Such manufacturers will know their GGI if they produce their electricity.

18.4. Energy-Intensive Raw Materials

In addition to the carbon content of their products and associated GHG process emissions used to manufacture the Plastics Resins, significant quantities of various chemicals may be required. As described in the Framework paper, GGIs from manufacture of these and the Plastics Resins, can be determined using regulatory methodologies or standard methodologies adopted for corporate reporting in the EITE sectors, for example the WRI/WBCSD GHG Protocols, or essentially similar procedures imposed by US regulatory authorities.

18.5. Frequency of Determinations

GGIs for domestic rebates will be recomputed annually to recognize any changes in energy efficiency, production processes or suppliers of fuels and electricity and associated GHG emissions for producing the products, though in practice some values may be based on statistics from prior years. Updates for import charges will also be recomputed annually to take note of changing

circumstances. However, information from nations exporting to the US may not be available in the same time frame as for updates from US domestic sources.

18.6. Export Rebate Computation

Export Rebates for Plastics Resins and for all plastics products within NAICS sector 325211 would be computed based on US domestic GHG tax rate multiplied by GGI, where determination of GGI includes contributions from purchased commercial fuels, electricity, and other products (e.g., chemicals) from EITE suppliers. Single export rebates would be computed for each of the plastics products for all manufacturing plants and/or processes of the producer thereof.

See Section 4.6 above on Refinery Products, for a description of the approach (and definitions of symbols) to determine GGI for each product produced by a specific facility based on its carbon content: CP in tonnes carbon per tonne of product, and an overall average: [GGI] in tonnes CO_{2e} per tonne of carbon for the production of the entire facility. As discussed in the Framework paper, [GGI] for Plastics Resins has contributions from two factors: 1) total for all products purchased from other EITE suppliers: TS (in tonnes CO_{2e}), and 2) total on-site GHG process emissions (if any) TP in tonnes CO_{2e}. Note that TS includes contributions, in particular, from purchased feedstocks, electricity, and other energy-intensive raw materials. TC is the total amount of carbon (tonnes carbon) in the entire plastic resin product slate of the facility.

$$[GGI] = (TS + TP) / TC,$$

$$GGI = [GGI] \times CP.$$

The Administering Agency (AA) would require facilities as producers of products in NAICS sector 325211 to provide information on carbon content, output production and GGI for each Plastic Resin for the entire facility, and the carbon content and output production for any other products in such NAICS sector, using procedures approved by the AA to determine rebates for the firm. AA would determine with such information what the average national rebate per tonne of each such product would be.

Increasing amounts of plastic products are being collected and recycled. To date the recycled products are not included in NAICS sector 325211 and thus are not entitled to an export rebate in this methodology for BTAs. Also, bio-based versions of some of the Plastic Resins are being developed, manufactured and sold. Here too they are not yet included in NAICS sector 325211 and thus are not entitled to a rebate in this methodology for BTAs.

18.7. GHG Charges on Imports of Plastic Resins

Domestic producers will desire GHG charges to be assessed on imported plastic resins. Thus, domestic producers will be motivated to assist the AA. Individual imported plastic resins shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for Plastics Resins within NAICS sector 325211 and their carbon content and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides the AA company-specific information to determine (GGI). An average of such GGI for the Plastics Resins shall be used to create the import charge for all other NAICS sector 325211 products of the subject country by applying the US GHG tax to the carbon content of such products. Such import charge would be applied until such time as the importer to the US or the exporter to the US provides the AA company-specific information needed to determine the GHG charge for the Plastic Resins on a company-specific basis and the AA determines such charge.

19. Synthetic Rubber Border Tax Adjustments

19.1. Treatment of Products within NAICS sector

Manufacturers of synthetic rubber products utilize electricity and commercial fuels to transform carbon-containing feedstocks and other raw materials into finished products. About thirty-five products are covered by NAICS sector 325212 and are divided into about ten tariff groups. GHG emissions associated with manufacturing each product vary, as does the carbon content of each product.

To ease the administrative burden of determining GGI for each product the Administering Agency (AA) shall select two to five products, including styrene butadiene rubber, with relatively large annual production volumes within the NAICS sector, henceforth called Selected Synthetic Rubber Products. GGIs for products from a given facility account for inputs from suppliers of feedstocks, other raw materials, electricity and commercial fuels to the facility and from GHG process emissions (if any). For a given firm an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGI for Selected Synthetic Rubber Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Selected Synthetic Rubber Products they manufacture and the weight and carbon content of each other synthetic rubber product in such NAICS sector that they manufacture.

GGIs from manufacturing the Selected Synthetic Rubber Products will be determined and then the average GGI for a unit weight of such Products will be used along with the carbon content of the individual product to compute the rebates and import charges for all the other products in such NAICS sector.

19.2. Export Rebate Determination

See Section 4.6 above on Refinery Products, for a description of the approach (and definitions of symbols) to determine GGI for each product produced by a specific facility based on its carbon content: CP in tonnes carbon per tonne of product, and an overall average: [GGI] in tonnes CO_{2e} per tonne of carbon for the production of the entire facility. As discussed in the Framework paper, [GGI] for Synthetic Rubber has contributions from two factors: 1) total for all products purchased from other EITE suppliers: TS (in tonnes CO_{2e}), and 2) total on-site GHG process emissions (if any) TP in tonnes CO_{2e}. Note that TS includes contributions, in particular, from purchased feedstocks, electricity, and other energy-intensive raw materials. TC is the total amount of carbon (tonnes carbon) in the entire synthetic rubber product slate of the facility.

$$[GGI] = (TS + TP) / TC,$$

$$GGI = [GGI] \times CP.$$

The Administering Agency (AA) would require facilities as producers of products in NAICS sector 325212 to provide information on carbon content, output production and GGI for each Selected Synthetic Rubber Product, [GGI] for the entire facility, and the carbon content and output production for any other products in such NAICS sector, using procedures approved by the AA to determine rebates for the firm. AA would determine with such information what the average national rebate per tonne of each synthetic rubber product would be.

19.3. GHG Charges on Imports of Synthetic Rubber Products

Domestic producers will desire import charges to be assessed on imported synthetic rubber products. Thus, domestic producers will be motivated to assist the AA. Individual imported synthetic rubber products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGI for Selected Synthetic Rubber Products within NAICS sector 325212 and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine (GGI) for the Selected Synthetic Rubber Products. An average of the Selected Synthetic Rubber Products shall be used to create the import charge for all other NAICS sector 325212 products of the subject country until such time as the importer to the US or the exporter to the US provides the AA company-specific information for such products needed to determine the GGI on a company-specific basis and the AA determines such new charge

20. Cellulosic Organic Fiber Border Tax Adjustments

20.1. *Treatment of Products within NAICS sector*

Manufacturers of Cellulosic Organic fiber products utilize electricity and commercial fuels to transform carbon-containing feedstocks and other raw materials into finished products. About thirty products are covered by NAICS sector 325221 and are divided into about seven tariff groups. GGI associated with manufacturing each product varies, as does the carbon content of each product. To ease the administrative burden of determining GGI for each product the Administering Agency (AA) shall select cellulose acetate tow and Lyocell staple which are in the NAICS sector 325221 and henceforth called Selected Cellulosic Organic Fiber Products.

GGIs for products from a given facility account for inputs from suppliers of feedstocks, other raw materials, electricity and commercial fuels to the facility and from GHG process emissions (if any). For a given firm an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate. GGI for Selected Cellulosic Organic Fiber Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers.

In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Selected Cellulosic Organic Fiber Products they manufacture and the weight and carbon content of each other cellulosic organic fiber product in such NAICS sector that they manufacture. GGIs from manufacturing the Selected Cellulosic Organic Fiber Products will be determined and then the average GGI for a unit weight of such Products will be used along with the carbon content of the individual product to compute the rebates and import charges for all the other products in such NAICS sector.

20.2. Export Rebate Determination

See section 4.6 above on Refinery Products, for a description of the approach (and definitions of symbols) to determine GGI for each product produced by a specific facility based on its carbon content: CP in tonnes carbon per tonne of product, and an overall average: [GGI] in tonnes CO₂e per tonne of carbon for the production of the entire facility. As discussed in the Framework paper, [GGI] for Selected Cellulosic Organic Fiber Products has contributions from two factors: 1) total for all products purchased from other EITE suppliers: TS (in tonnes CO₂e), and 2) total on-site GHG process emissions (if any) TP in tonnes CO₂e. Note that TS includes contributions, in particular, from purchased feedstocks, electricity, and other energy-intensive raw materials. TC is the total amount of carbon (tonnes carbon) in the entire cellulosic organic fiber product slate of the facility.

$$[GGI] = (TS + TP) / TC,$$

$$GGI = [GGI] \times CP.$$

The AA would require facilities as producers of products in NAICS sector 325212 to provide information on carbon content, output production and GGI for each Selected Cellulosic Organic fiber product, [GGI] for the entire facility, and the carbon content and output production for any other products in such NAICS sector, using procedures approved by the AA to determine rebates for the firm. AA would determine with such information what the average national rebate per tonne of each such product would be. If a manufacturer desired, it could provide the AA the output and GGIs for other particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate.

20.3. GHG Charges on Imports of Cellulosic Organic Fiber Products

Domestic producers will desire GHG charges to be assessed on imported cellulosic organic fiber products. Thus, domestic producers will be motivated to assist the AA. Individual imported Selected Cellulosic Organic Fiber Products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGI for Selected Cellulosic Organic Fiber Products within NAICS sector 325221 and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine (GGI). An average of such import charges for the Selected Cellulosic Organic Fiber Products shall be used to create the import charge for all other NAICS sector 325221 products of the subject country until such time as the importer to the US or the

exporter to the US provides company-specific information to the AA to determine the GGI on a company-specific basis and the AA determines such new charge.

21. Noncellulosic Organic Fiber Border Tax Adjustments

21.1. Treatment of Products within NAICS sector

Manufacturers of noncellulosic organic fiber products utilize electricity and commercial fuels to transform carbon-containing feedstocks and other raw materials into finished products. Over twenty products are covered by NAICS sector 325222 and are divided into about six tariff groups. GGIs associated with manufacturing these products vary, as does the carbon content of each product.

To ease the administrative burden of determining GGIs the Administering Agency (AA) shall select nylon fiber, polyester staple and yarn, and polypropylene staple and yarn which are in NAICS sector 325222 and henceforth called Selected Noncellulosic Organic Fiber Products. Export rebates and GHG import charges for each of the Selected Noncellulosic Organic Fiber Products will be determined individually whereas for the remaining products included within NAICS sector 325222 their rebates and import charges will be based on their individual carbon content and average values for GGI (as described below).

GGIs for Selected Noncellulosic Organic Fiber Products manufactured in different facilities vary depending on each facility's operations and inputs from their suppliers. GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels, feedstocks and other raw materials, and GHG process emissions (if any). For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) and import charge rate would then be determined by multiplying GGI by the US GHG tax rate. The average GGI for such Products will be used to compute rebates for exported products for all the other non-cellulosic organic fiber products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below).

21.2. Export Rebate Determination

See section 4.6 above on Refinery Products, for a description of the approach (and definitions of symbols) to determine GGI for each product produced by a specific facility based on its carbon content: CP in tonnes carbon per tonne of product, and an overall average: [GGI] in tonnes CO₂e per tonne of carbon for the production of the entire facility. As discussed in the Framework paper, [GGI] for Selected Non-Cellulosic Organic Fiber Products has contributions from two factors: 1) total for all products purchased from other EITE suppliers: TS (in tonnes CO₂e), and 2) total on-site

GHG process emissions (if any) TP in tonnes CO₂e. Note that TS includes contributions, in particular, from purchased feedstocks, electricity, and other energy-intensive raw materials. TC is the total amount of carbon (tonnes carbon) in the entire non-cellulosic organic fiber product slate of the facility.

$$[GGI] = (TS + TP) / TC,$$

$$GGI = [GGI] \times CP.$$

The AA would require facilities as producers of products in NAICS sector 325222 to provide information on carbon content, output production and GGI for each Selected Non-Cellulosic Organic fiber product, [GGI] for the entire facility, and the carbon content and output production for any other products in such NAICS sector, using procedures approved by the AA to determine rebates for the firm. AA would determine with such information what the average national rebate per tonne of each such product would be. If a manufacturer desired, it could provide the AA the output and GGIs for other particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate.

21.3. GHG charges on imports of Noncellulosic Organic Fiber Products

Domestic producers will desire GHG charges to be assessed on imported non-cellulosic organic fiber products. Thus, domestic producers will be motivated to assist the AA. Individual imported Selected Non-Cellulosic Organic Fiber Products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGI for Selected Non-Cellulosic Organic Fiber Products within NAICS sector 325222 and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for each such imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine (GGI). An average of such import charges for the Selected Non-Cellulosic Organic Fiber Products shall be used to create the import charge for all other NAICS sector 325222 products of the subject country until such time as the importer to the US or the exporter to the US provides the AA company-specific information needed to determine the GGI on a company-specific basis and the AA determines such new charge.

22. Nitrogenous Fertilizer Products Border Tax Adjustments

22.1. *Treatment of Products within NAICS sector*

Manufacturers of nitrogenous fertilizer products utilize electricity and commercial fuels to transform carbon-containing feedstocks and other raw materials into finished products. About twenty products are covered by NAICS sector 325311. GGI associated with manufacturing each product varies but can be determined readily in some cases and not for others. Export rebates and GHG import charges for: ammonia, ammonium sulfate, ammonium nitrate, ammonium phosphate, ammonium bi-carbonate and ammonium chloride, which are henceforth called Fertilizer Products, shall be determined individually, while the rebates and import charges for the balance of the products covered by NAICS sector 325311 shall be based on their average GGI (as described below).

GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate). GGIs for Fertilizer Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator.

22.2. *Export Rebate Determination*

The AA would request manufacturers in NAICS sector 325311 of Fertilizer Products to provide in reasonable detail the output and GGI per tonne of each Fertilizer Product using procedures approved by the AA and product and output information for firm's production of all other fertilizer products. AA would compute a rebate rate for each such Fertilizer Product produced by each firm: GGI multiplied by the US GHG tax rate. AA would use the average GGIs for the Fertilizer Products to compute the rebate for all other products of such sector produced by such firm. If a manufacturer desired, it could provide the AA the output and GGI for other particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate.

22.3. *GHG charges on imports of Nitrogenous Fertilizers Products*

Domestic producers will desire GHG charges to be assessed on imported fertilizer products. Thus, domestic producers will be motivated to assist the AA. Individual imported Fertilizer Products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs to manufacture Fertilizer Products within NAICS sector 325311 and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for each imported Fertilizer Product by multiplying its GGI by the US GHG tax rate and import charges for the remaining products in such sector by using the average GGI for Fertilizer Products. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides the AA company-specific information to determine GGI and the GHG charge on a company-specific basis and the AA determines such charge.

23. Flat Glass GHG Tax and Border Tax Adjustments

23.1. *Treatment of Products within NAICS sector 327211*

Four major tariff group classifications (7003, cast glass and rolled glass; 7004, drawn glass and blown glass; 7005, float glass and surface ground or polished glass; and 7007, safety glass carboys, bottles other glass containers) with about 40 individual tariffs for flat glass products are covered by NAICS sector 327211. The energy used and associated GGIs required to manufacture the various products vary and cannot be readily determined for individual products but can be determined for all products within NAICS sector 327211.

To ease the administrative burden, all products within each of the four major tariff group classifications, 7003, 70004, 7005, and 7007, shall be considered to be one product for purposes of determining export rebates or GHG charges; thus, there will be four products, one for each tariff group classification, that cover all products for purposes of export rebates and import charges. GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. In addition, as described below, they must also account for contributions from other energy-intensive inputs (e.g., chemicals) from EITE suppliers and for use of recycled scrap glass. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGIs for the four flat glass products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such products will be used to compute rebates for exported products for such four groups of flat glass products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below).

23.2. Scrap Computations and Energy-Intensive Raw Materials

Glass scrap is used to manufacture new flat glass products. The manufacturer will know GGI to produce scrap in its facility which is then used in the facility. GGIs for purchased scrap are unknowable. Thus, the national average GGI to manufacture glass products within NAICS sectors 327211 - Flat glass manufacturing; 327212 - Other pressed and blown glass and glassware manufacturing; and 327213 - Glass container manufacturing will be used for all purchased glass scrap.

23.3. Export Rebate Determination

The AA would request manufacturers in NAICS sector 327211 of Flat Glass Products to provide in reasonable detail the output and GGI for each of the four tariff groups of Flat Glass Products using procedures approved by the AA. AA would compute a rebate rate for each such product produced by each firm and average PGE for the tariff group to compute the rebate for all other products of such tariff group produced by such firm.

The AA would request manufacturers in NAICS sector 327211 (Flat Glass) to provide it the tonnage of purchased scrap used and the GGI and weight of each of the four tariff groups and the weight of products within such groups in reasonable detail so AA could compute an export rebate per unit weight of each product covered by such sector. AA would determine with such and other information what the average GGI for purchased scrap would be.

23.4. GHG charges on imports of Flat Glass Products

Domestic producers will desire GHG charges to be assessed on imported Flat Glass Products. Thus, domestic producers will be motivated to assist the AA. Individual imported Flat Glass Products shall be considered to be made from a company average of its various facilities and energy-intense inputs used to manufacture each of such products.

The AA would estimate for the subject country GGI for the four tariff classes of Flat Glass Products within NAICS sector 327211 and the amount and weight of all products covered by such sector. The AA would create an import charge rate for each class of imported products by multiplying its GGI by the US GHG tax rate. AA would determine with such and other information what the average GGI for purchased scrap would be. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine (GGI) for the four individual tariff classes.

24. Pressed and Blown Glass and Glassware GHG Tax and Border Tax Adjustments

24.1. *Treatment of Products within NAICS sector*

Sixteen major tariff group classifications (ranging from glass in balls, rods, tubes and drawn glass, glass envelopes for lamps to kitchenware and glassware as well as glass fibers, lab glassware, and insulators) with about 160 individual tariffs for pressed and blown glassware products are covered by NAICS sector 327212. GGIs associated with manufacturing the various products vary and cannot be readily determined for individual products but can be determined for all groups of products within NAICS sector 327212. To ease the administrative burden, all products within the sixteen major tariff group classifications, covered by NAICS sector 327212 shall be considered to be one product, i.e. Blown Glass Products for purposes of determining export rebates or GHG charges.

GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. In addition, as described below, they must also account for contributions from other energy-intensive inputs (e.g., chemicals) from EITE suppliers and for use of recycled scrap glass. For a given firm, an average GGI (by weight) for each such group of products will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI for all such group's products by the US GHG tax rate.

GGI for groups of Blown Glass Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight for a group of such Products will be used to compute rebates for exported products for all the blown glass products in such group. A similar procedure will be used to evaluate charges for imported products (see below).

24.2. *Scrap Computations and Energy-Intensive Raw Materials*

Glass scrap is used to manufacture new pressed and blown glass and glassware. The manufacturer will know GGI from fuels and electricity used to produce scrap in its facility which is then used in the facility. GGIs for purchased scrap are unknowable. Thus, the national average GGI to manufacture glass products within NAICS sectors 327211 - Flat glass manufacturing; 327212 - Other pressed and blown glass and glassware manufacturing; and 327211 - Glass container manufacturing will be used to determine a national average for all purchased glass scrap. (BTAs will be created for these three NAICS sectors all of which use purchased scrap.)

24.3. Export Rebate Determination

The AA would request manufacturers in NAICS sector 327212 of Blown Glass Products to provide in reasonable detail the output and GGI for its group of Blown Glass Products and the weight of each product within such group using procedures approved by the AA. AA would compute a rebate rate for each of such products produced by each firm, GGI multiplied by the US GHG tax rate.

If a manufacturer desired, it could provide the AA the output and GGIs for particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate. The AA would request manufacturers in NAICS sector 327212 (Pressed and Blown Glass and Glassware) to provide it the tonnage of purchased scrap used, and the GGI and weight of their Blown Glass Products and the weight of products within such groups in reasonable detail so AA could compute an export rebate per unit weight of each product covered by such sector. AA would determine with such and other information what the average national GGI for the purchased scrap would be.

24.4. GHG Charges on Imports of Pressed and Blown Glass and Glassware Products

Domestic producers will desire GHG charges to be assessed on Blown Glass Products. Thus, domestic producers will be motivated to assist the AA. Individual imported Blown Glass Products shall be considered to be made to be made from a company average of its various facilities and energy-intense inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for all Blown Glass Products within NAICS sector 327212 and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. AA would determine with such and other information what the average GGI for purchased scrap would be. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine GGI for a specific Blown Glass Product and the AA determines such charge.

25. Glass Containers GHG Tax and Border Tax Adjustments

25.1. Treatment of Products within NAICS sector

Three major tariff group classifications (70101, ampoules, 70102, stoppers and 70109, carboys, bottles other glass containers) with about 50 individual tariffs for glass containers products are covered by NAICS sector 327213. GGIs associated with manufacturing the various products vary

and cannot be readily determined for individual products but can be determined for all products within NAICS sector 3273213.

To ease the administrative burden, all products within each of the three major tariff group classifications shall be considered to be one product, henceforth called Glass Container Groups, with a common GGI. GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. In addition, as described below, they must also account for contributions from other energy-intensive inputs (e.g., chemicals) from EITE suppliers and for use of recycled scrap glass. For a given firm, an average GGI (by weight) for each Glass Container Group will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGIs for Glass Container Groups products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such Glass Container Groups will be used to compute rebates for exported products for all the glass container products in such Groups of the NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below).

25.2. Scrap Computations and Energy-Intensive Raw Materials

Glass scrap is used to manufacture new glass containers. The manufacturer will know GGI from fuels and electricity used to produce scrap in its facility which is then used in the facility. GGIs for purchased scrap are unknowable. Thus, the national average GGI to manufacture glass products within NAICS sectors 327211 - Flat glass manufacturing; 327212 - Other pressed and blown glass and glassware manufacturing; and 327213 - Glass container manufacturing will be used for all purchased glass scrap.

25.3. Export Rebate Determination

The AA would request manufacturers in NAICS sector 327212 of Glass Container Groups to provide in reasonable detail the output and GGI of their Glass Container Group products using procedures approved by the AA which would compute a rebate rate for each such Group produced by each firm: GGI multiplied by the US GHG tax rate.

If a manufacturer desired, it could provide the AA the output and GGI for particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate. The AA would request manufacturers in NAICS sector 327212 (Glass Containers) to provide it the

tonnage of purchased scrap used, and the GGI and weight of each of the three Glass Container Groups and the weight of products within such Groups classes in reasonable detail so AA could compute an export rebate per unit weight of each product covered by such sector. AA would determine with such and other information what the average national export rebate per tonne of purchased scrap and what the national average GGI for the purchased scrap would be.

25.4. GHG Charges on Imports of Glass Container Products

Domestic producers will desire GHG charges to be assessed on imported glass container products. Thus, domestic producers will be motivated to assist the AA. Individual imported glass container products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture the relevant Glass Container Groups.

The AA would estimate for the subject country GGIs for each of the three Glass Containers Groups within NAICS sector 327212 and the amount and weight of all products covered by each such Group. The AA would create an import charge rate (US \$ per tonne of product) for each such Group of imported products by multiplying its GGI by the US GHG tax rate. AA would determine with such and other information what the average GGI for purchased scrap would be. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides the AA company-specific information to determine (GGI) on a company-specific basis and the AA determines such charge.

26. Lime and Cement Products GHG Tax and Border Tax Adjustments

26.1. Treatment of Products within NAICS sector

Three products (calcium dolomite, quicklime and slaked lime) are covered by NAICS sector 327410 and six products (hydraulic lime, cement clinker, white Portland cement, other Portland cement, aluminous cement and other hydraulic cement) are covered by NAICS sector 327310. GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from process emissions at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

Producers in this sector will also be subject to the upstream GHG tax because process emissions of CO₂ result from decomposition of limestone. GGI for lime and cement products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by

the operator. The average GGI for unit weight of such products will be used to compute rebates for exported products for all the lime and cement products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below). In determining export rebates manufacturers will be requested to provide the AA the relevant data for the lime and cement products they manufacture.

26.2. Export Rebate Determination

The AA would request manufacturers in NAICS sectors 327310 and 327410 of lime and cement products to provide in reasonable detail the output, carbon dioxide generated from the raw material, and GGI per tonne of each lime and cement product using procedures approved by the AA. AA would compute a rebate rate for each lime and cement product: GGI multiplied by the US GHG tax rate.

26.3. GHG charges on imports of Lime and Cement Products

Domestic producers will desire GHG charges to be assessed on imported lime and cement products. Thus, domestic producers will be motivated to assist the AA. Individual imported lime and cement products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGI to manufacture lime and cement products within NAICS sectors 327310 and 327410 and the amount and weight of all products covered by such sectors. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine (GGI).

27. Steel GHG Tax and Border Tax Adjustments

27.1. Introduction

Steel manufacturers utilize electricity, commercial fuels and other energy-intensive inputs to transform iron ore and recycled steel scrap into finished products. Because the amount of fuels and electricity used in later stages to convert raw steel into steel products within NAICS sector 331111 is quite small, that will not be used in determining export rebates or import charges. Rebates for exports of steel products included in NAICS sector 331111 would be granted and import charges would be imposed based on their usage of raw steel as described below.

27.2. Treatment of Products within NAICS sector

Raw steel and hot rolled and cold rolled steel products are covered by NAICS sector 331111. The NAICS sector 331111 for steel includes about 800 alloy, stainless steel, and non-alloy (carbon) steel products in 38 categories of 10 digit import numbers and 800 individual tariffs. Energy required for rolled steel products is a small fraction of total required, i.e. most of the energy required is needed to produce raw steel. Thus, in determining BTAs for products within NAICS sector 331111, the energy for the rolling part is not included in the determination.

GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels, from the use of recycled, scrap steel, and from other energy-intensive inputs used in operations at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for raw steel product will be determined based on production from all its domestic facilities. The export rebate rate (US\$ per tonne of product) for products derived from raw steel would then be determined by multiplying GGI by the US GHG tax rate and by the share of raw steel in the exported or imported product.

GGI for raw steel produced at different facilities varies depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such products will be used to compute rebates for exported products for all the other steel products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below).

27.3. Basic Oxygen, Electric Furnace Steel and Scrap Computations and Energy-Intensive Raw Materials

Basic Oxygen and Electric Furnace steel use different amounts of fuels, electricity and scrap. Manufacturers seeking rebates would report weight of production and GGI of raw steel from each process used to make raw steel which in turn is used to make such finished products. Manufacturer will know GGI and electricity use to produce scrap in its facility. GGIs for purchased scrap are unknowable. Thus, the national average GGI to manufacture products produced both from basic oxygen and electric arc furnaces and their respective tonnage of raw steel will be used for all purchased scrap. Oxygen is an energy-intensive product. Estimates of GGI from its manufacture can be determined (as described in the Framework paper) using standard methodologies widely adopted for corporate reporting, for example the WRI/WBCSD GHG protocols, or essentially similar procedures imposed by US regulatory authorities, and converted to GGI as described here.

27.4. Export Rebate Determination

Export rebates to make steel products within NAICS sector 331111 would be computed based on the US domestic GHG tax rate multiplied by GGI, where determination of GGI includes contributions from purchased commercial fuels and electricity, other products (e.g., oxygen) from EITE suppliers, and the carbon contained in electrodes for cells. Also, they must account for contributions from recycled scrap steel as described above.

The AA would request manufacturers in NAICS sector 311111 of raw steel and iron and steel products to provide in reasonable detail the raw steel content and output, and GGI per tonne of raw steel produced using procedures approved by the AA and product and output information for firm's production of all other steel products covered by such sector. AA would compute a rebate rate for each such product produced by each firm: GGI multiplied by the US GHG tax rate. AA would determine a national average GGI for each tonne of purchased scrap based on the average of basic oxygen and electric furnace raw steel.

27.5 GHG Charges on Imports of Steel Products

Domestic producers will desire GHG charges to be assessed on imported steel products. Thus, domestic producers will be motivated to assist the AA. Individual steel imported products shall be considered to be made from a company average of the various facilities and processes it uses to manufacture of the products. AA would estimate national average GGI for each tonne of estimated scrap use based on the average of basic oxygen and electric furnace raw steel production.

The AA would estimate for the subject country GGI to manufacture raw steel and the amount and weight of all products covered by NAICS sector 331111 and the amount and weight of raw steel. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values for raw steel would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine GGI for scrap and for raw steel and its content in imported steel products.

28. Electrometallurgical Ferroalloy Product Mfg. GHG Tax and Border Tax Adjustments

28.1. Introduction

Rebates for exports of steel products included in NAICS sector 331112 would be granted and import charges would be imposed as provided here based on GGI from commercial fuels and

electricity, and from scrap and other energy-intensive inputs used to manufacture such ferroalloy products.

28.2. Treatment of Products within NAICS sector

About forty products divided into 12 categories are covered by NAICS sector 331112. To ease the administrative burden of determining GGI for each product the Administering Agency (AA) shall select three to six products with relatively large annual production volumes within the NAICS sector, henceforth called Selected Ferroalloy Products.

GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGIs for Selected Ferroalloy Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such Products will be used to compute rebates for exported products for all the other products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below).

28.3. Scrap Computations and Energy-Intensive Raw Materials

The ferroalloy manufacturer will know GGI and electricity use to produce scrap in its facility. GGI and electricity usage for purchased scrap are unknowable. Thus, the AA will determine the national average GGI to manufacture products produced both from basic oxygen and electric arc furnaces and their respective tonnage of raw steel will be used for all purchased scrap.

Oxygen is an energy-intensive product. Estimates of GGI from its manufacture can be determined (as described in the Framework paper) using standard methodologies widely adopted for corporate reporting, for example the WRI/WBCSD GHG protocols (see footnote 5 above), or essentially similar procedures imposed by US regulatory authorities, and converted to GGI as described here.

28.4. Export Rebate Determination

Export Rebates to make Selected Ferroalloy Products within NAICS sector 331112 would be computed based on US domestic GHG tax rate multiplied by GGI, where determination of GGI

includes contributions from purchased commercial fuels and electricity, other products (e.g., oxygen) from EITE suppliers, and the carbon contained in electrodes for cells. Also, they must account for contributions from recycled scrap steel as described above.

The AA would request manufacturers in NAICS sector 311112 of Selected Ferroalloy Products to provide in reasonable detail the output and GGI for each Selected Ferroalloy Product using procedures approved by the AA and product and output information for firm's production of all other ferroalloy products covered by such sector. AA would compute a rebate rate per unit weight of each such Product produced by each firm: GGI multiplied by the US GHG tax rate, and an average GGI for the Selected Ferroalloy Products to compute the rebate for all other products of such sector produced by such firm. AA would determine national average rebate and the national average GGI for each tonne of purchased scrap based on the averages of basic oxygen and electric furnace raw steel. If a manufacturer desired, it could provide the AA the output and GGI for other particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate.

28.5. GHG Charges on Imports of Ferroalloy Products

Domestic producers will desire GHG charges to be assessed on imported ferroalloy products. Thus, domestic producers will be motivated to assist the AA. Individual imported ferroalloy products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

AA would estimate national average GGI for each tonne of estimated scrap use based on the average of basic oxygen or electric furnace raw steel. The AA would estimate for the subject country GGIs for Selected Ferroalloy Products and the amount and weight of all products covered by NAICS sector 331112 and the amount and weight of raw steel. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides the AA company-specific information to determine (GGI) and national average GGI for scrap use for imported ferroalloy products and the AA determines such charge.

29. Iron/Steel Pipe/Tube Mfg from Purchsd. Steel Border Tax Adjustments

29.1. Treatment of Products within NAICS sector

Two products are covered by NAICS sector 331210 and henceforth called Steel Pipe. GGI for manufacturing each product vary. GGIs for products from a given facility account for inputs from

suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate. GGI for Steel Pipe produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. A similar procedure will be used to evaluate charges for imported products (see below).

29.2. Scrap Computations and Energy-Intensive Raw Materials

The Steel Pipe manufacturers seeking rebates would report weight of production of Steel Pipe and their purchased scrap. The Steel Pipe manufacturer will know GGI and electricity use to produce scrap in its facility. GGI and electricity usage for purchased scrap are unknowable. Thus, the AA will determine the national average GGI to manufacture products produced both from basic oxygen and electric arc furnaces and their respective tonnage of raw steel will be used for all purchased scrap.

Oxygen is an energy-intensive product. Estimates of GGI from its manufacture can be determined (as described in the Framework paper) using standard methodologies widely adopted for corporate reporting, for example the WRI/WBCSD GHG protocols, or essentially similar procedures imposed by US regulatory authorities, and converted to GGI as described here.

29.3. Export Rebate Determination

The AA would request manufacturers in NAICS sector 331511 of Steel Pipe to provide in reasonable detail GGIs for each product produced using procedures approved by the AA. AA would compute a rebate per unit weight of each such product produced by each firm. AA would determine national average GGI for each tonne of purchased scrap based on the average of basic oxygen or electric furnace raw steel.

29.4. GHG Charges on Imports of Pipe/Tube Products

Individual steel pipe imported products shall be considered to be made from a company average of the various facilities and processes it uses to manufacture of the products. Domestic producers will desire GHG charges to be assessed on imported steel pipe products. Thus, domestic producers will be motivated to assist the AA. AA would estimate national average GGI for each tonne of estimated scrap use based on the average of basic oxygen and electric furnace raw steel.

The AA would estimate for the subject country GGI to manufacture Steel Pipe. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine GGI for Steel Pipe. Unless and until the importing company provides the AA with GGI for the scrap steel used in manufacturing the imported pipe/tube products, the AA shall use the same approach for determining GGI for scrap used to make Steel Pipe as is used in the US.

30. Alumina and Aluminum GHG Tax and Border Tax Adjustments

30.1. Treatment of Products within NAICS sector

Nine products are included within the NAICS 331313 sector; eight for aluminum and one for alumina. GGIs associated with manufacturing the various products vary but can be determined. Aluminum products included in such sector are manufactured by two significantly different processes relative to their energy-intensity and use of aluminum scrap and are called primary aluminum and secondary aluminum. Primary aluminum is based on little if any scrap and is made from alumina while secondary aluminum is based primarily on scrap and needs much less energy to be manufactured. As a result, secondary aluminum manufacture causes fewer GHG emissions than primary aluminum. Herein all such primary aluminum sector products are called P Products and all such secondary aluminum sector products are called S Products while combined they are called PS Products.

GGIs for products produced in a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGIs for Alumina and PS Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such Products will be used to compute rebates for exported products for all the alumina, P Products, and S Products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below). In determining export rebates manufacturers will be requested to provide the Administering Agency (AA) the relevant data for the alumina and PS Products they manufacture. Producers in this sector will also be subject to the upstream GHG tax because of process emissions of CO₂ resulting from decomposition of ores in alumina operations.

30.2. Alumina Energy Use, Aluminum Scrap Usage and Energy-Intensive Raw Materials

GGI from production of alumina should be used in determining same for production of PS Products. Much scrap is used to produce S Products. Where it is purchased, and not made by the manufacturer, GGI associated with its manufacture will be unknowable. The amounts used and associated GGI for some chemicals used in manufacturing aluminum also make a significant contribution to GGI of aluminum. Estimates of GGIs from manufacture of such products can be determined (as described in the Framework paper) using standard methodologies widely adopted for corporate reporting, for example the WRI/WBCSD GHG protocols, or essentially similar procedures imposed by US regulatory authorities, and converted to GGI as described here.

30.3. Export Rebate Determination

Export rebates to make alumina or aluminum within the NAICS sector 331313 would be computed based on US domestic GHG tax rate multiplied by GGI, where determination of GGI includes contributions from process emissions of CO₂, purchased commercial fuels and electricity, and from recycled scrap as described above.

The AA would request manufacturers in NAICS sector 331313 of Alumina and PS Products to provide in reasonable detail the output and GGI for each such Product using procedures approved by the AA. AA would compute a rebate rate for each of the Alumina and PS Products: GGI multiplied by the US GHG tax rate. The AA would request relevant manufacturers to provide the usage of purchased scrap and GGI for their production of aluminum and alumina covered by the subject NAICS sectors in reasonable detail so that the AA could compute a companywide rebate rate per unit weight of such alumina and PS Products that are exported.

The average national usage of fuels, electricity, alumina and anodes to manufacture PS Products in the US will be used to determine such usage for the scrap used by an individual manufacturer. The AA would determine with such information the average national rebate per tonne of aluminum products covered by the subject NAICS sectors and apply that to the purchased aluminum scrap in computing the company-specific rebate per tonne of aluminum exported.

30.4. GHG Charges on Imports of Alumina and Aluminum

Domestic producers will desire GHG charges to be assessed on imported alumina and aluminum products. Thus, domestic producers will be motivated to assist the AA. Individual imported alumina and aluminum products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country products covered by such sectors and the amount and weight of such products. The AA would create an import charge rate (US \$ per tonne of product) for each of such imported products by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine GGI.

Unless and until the importing company provides the AA with GGI for the scrap aluminum used in manufacturing imported aluminum products, the AA shall use the estimated average GGI for aluminum products covered by the subject NAICS sector to determine national average emissions for scrap used to make such aluminum products.

31. Primary Smelting of Copper Products Border Tax Adjustments

31.1. Treatment of Products within NAICS sector

About 21 products are covered by NAICS sector 331411 and are divided into six tariff groups. GGIs associated with manufacturing each product vary. To ease the administrative burden of determining GGI for each product the Administering Agency (AA) shall select the following products with relatively large annual production volumes within the NAICS sector, copper anodes for electrolytic refining, cathodes, wire bars, billets, copper-zinc base alloys and copper-tin base alloys, henceforth called Selected Copper Products.

GGIs produced in a given facility account for inputs from suppliers of electricity and commercial fuels to the facility and from operations at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGIs for Selected Copper Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such Products will be used to compute rebates for exported products for all the other copper products in NAICS sector 331411. A similar procedure will be used to evaluate charges for imported products (see below). In determining export rebates manufacturers will be requested to provide the AA the relevant data for the Selected Copper Products they manufacture and the weight of each other copper product in such NAICS sector that they manufacture.

31.2. Export Rebate Determination

The AA would request manufacturers in NAICS sector 331411 of Selected Copper Products to provide in reasonable detail the usage of purchased scrap and the output and GGI for each Selected Copper Product using procedures approved by the AA and product and output information for firm's production of all other copper products in such sector. AA would compute a rebate rate for each such Product produced by each firm: GGI multiplied by the US GHG tax rate; and average GGIs for the Selected Copper Products to compute the rebate for all other products of such sector produced by such firm.

The average GGI to manufacture Selected Copper Products in the US will be used to determine such usage for the scrap used by an individual manufacturer. The AA would determine with such information the average national rebate per tonne of Selected Copper Products covered by the subject NAICS sector and apply that to the purchased copper scrap in computing the company-specific rebate per tonne of Copper Products exported. If a manufacturer desired, it could provide the AA the output and GGI for other particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate.

31.3. GHG charges on imports of Copper Products

Domestic producers will desire GHG charges to be assessed on imported copper products covered by such sector. Thus, domestic producers will be motivated to assist the AA. Individual imported copper products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for Selected Copper Products within NAICS sector 331411 and the amount and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An import charge based on national average values would be used until such time as the importer to the US or the exporter to the US provides company-specific information to determine (GGI) for Selected Copper Products. An average of such GGI for the Selected Copper Products shall be used to create the import charge for all other NAICS sector 331411 products of the subject country until such time as the importer to the US or the exporter to the US provides the AA company-specific information needed to determine the GGI on a company-specific basis and the AA determines such charge.

32. Iron Foundries Products Border Tax Adjustments

32.1. Treatment of Products within NAICS sector

About thirty-three products are covered by NAICS sector 331511 and are divided into nine tariff groups. GGIs associated with manufacturing each product vary. To ease the administrative burden of determining GGI for each product the Administering Agency (AA) shall select three to six products with relatively large annual production volumes within the NAICS sector, henceforth called Selected Iron Foundries Products.

GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels and recycled scrap to the facility and from operations at the facility as described in the Framework paper. For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities because products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. The rebate rate (US\$ per tonne of product) would then be determined by multiplying GGI by the US GHG tax rate.

GGIs for Selected Iron Foundries Products produced at different facilities vary depending on each facilities operations and inputs. They are readily determinable from information provided by suppliers or determined by the operator. The average GGI for unit weight of such Products will be used to compute rebates for exported products for all the other iron foundries products in such NAICS sector. A similar procedure will be used to evaluate charges for imported products (see below).

32.2. Scrap Computations and Energy-Intensive Raw Materials

Basic Oxygen and Electric Furnace steel use different amounts of fuels, electricity and scrap. Manufacturers seeking export rebates would report weight of scrap used to make Selected Foundries Products. Manufacturer will know GGIs and electricity use to produce scrap in its facility. GGIs and electricity usage for purchased scrap are unknowable. Thus, the national average GGI used in both basic oxygen and electric arc furnaces and their respective tonnage of raw steel will be used for all purchased scrap.

32.3. Export Rebate Determination

The AA would request manufacturers in NAICS sector 331511 of Selected Iron Foundries Products to provide in reasonable detail the output and GGI for each Selected Iron Foundries Product using procedures approved by the AA and product and output information for firm's production of all other iron foundries products in such sector. AA would compute a rebate rate for

each such Product produced by each firm: GGI multiplied by US GHG Tax rate; and the average GGIs for the Selected Iron Foundries Products to compute the rebate rates for all other products of such sector produced by such firm. If a manufacturer desired, it could provide the AA the output and GGI for other particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate.

The AA would request manufacturers in NAICS sector 331511 of Selected Iron Foundries Products to provide the amount of purchased scrap. AA would determine the national average GGI for the purchased scrap and the national rebate per tonne of purchased scrap based on the average of basic oxygen and electric furnace raw steel.

32.4. GHG charges on imports of Iron Foundries Products

The AA would estimate for the subject country GGIs for Selected Iron Foundries Products within NAICS sector 331511 and the amount and weight of such products. The AA would create an import charge rate (US \$ per tonne of product) for the individual Selected Iron Foundries Products by multiplying its GGI by the US GHG tax per tonne. The AA would also create an average of the import charge rate for the Selected Iron Foundries Products and apply such average to all other NAICS sector 331511 products of the subject country to create GGI for them and their import charge rate.

Such import charges would be applied until such time as the importer to the US or the exporter to the US provided to the AA the company-based information for the Selected Iron Foundries Products needed to determine the import charges for the Selected Iron Foundries Products of such company and/or information needed to determine the import charges on a company-wide basis for all other iron foundries products included in NAICS sector 331511 and the AA determines such charge. Unless and until the importing company provides the AA with GGI for the purchased scrap used in manufacturing the imported iron foundries products, the AA shall use the same approach for determining GGI for scrap as is used in the US.

33. Carbon and Graphite Product GHG Tax and Border Tax Adjustments

33.1. Treatment of Products within NAICS sector

Manufacturers of carbon and graphite products utilize electricity and commercial fuels to transform carbon-containing feedstocks and other raw materials into finished products. About fifteen products are covered by NAICS sector 335991 and are divided into four tariff groups. GGIs associated with manufacturing each product vary. To ease the administrative burden of determining GGI for each product the Administering Agency (AA) shall select two to three products with

relatively large annual production volumes within the NAICS sector, henceforth called Selected Carbon and Graphite Products.

Export rebates and GHG import charges for each of the Selected Carbon and Graphite Products will be determined individually whereas for the remaining products included within NAICS sector 335991 their rebates and import charges will be based on their individual carbon content and average values for GGI (as described below).

GGIs for products from a given facility account for inputs from suppliers of electricity and commercial fuels feedstocks and other raw materials, and GHG process emissions (if any). For a given firm, an average GGI (by weight) for each product will be determined based on production from all its domestic facilities. The rebate rate (US\$ per tonne of product) and import charge rate would then be determined by multiplying GGI by the US GHG tax rate. GGIs for Selected Carbon and Graphite Products produced at different facilities vary depending on each facility's operations and inputs from their suppliers. They are readily determinable from information provided by suppliers or determined by the operator.

33.2. Energy-Intensive Raw Materials

Coke and other raw materials are energy-intensive products. Estimates of GGIs from their manufacture can be determined (as described in the Framework paper) using standard methodologies widely adopted for corporate reporting, for example the WRI/WBCSD GHG protocols, or essentially similar procedures imposed by US regulatory authorities, and converted to GGI as described here.

33.3. Export Rebate Determination

See Section 4.6 above on Refinery Products, for a description of the approach (and definitions of symbols) to determine GGI for each product produced by a specific facility based on its carbon content: CP in tonnes carbon per tonne of product, and an overall average: [GGI] in tonnes CO₂e per tonne of carbon for the production of the entire facility. As discussed in the Framework paper, [GGI] for Carbon and Graphite Products has contributions from two factors: 1) total for all products purchased from other EITE suppliers: TS (in tonnes CO₂e), and 2) total on-site GHG process emissions (if any) TP in tonnes CO₂e. Note that TS includes contributions, in particular, from purchased feedstocks, electricity, and other energy-intense raw materials. TC is the total amount of carbon (tonnes carbon) in the entire carbon and graphite product slate of the facility.

$$[\text{GGI}] = (\text{TS} + \text{TP}) / \text{TC},$$

$$\text{GGI} = [\text{GGI}] \times \text{CP}.$$

The AA would request manufacturers in NAICS sector 335991 of Selected Carbon and Graphite Products to provide in reasonable detail the output, carbon content and GGI for each Selected Carbon and Graphite Product using procedures approved by the AA, and product and output information for firm's production of all other carbon and graphite products. AA would compute a rebate rate for each such product produced by each firm: GGI multiplied by the US GHG tax rate. The AA would also use the average GGIs for the Selected Carbon and Graphite Products to compute the rebate for all other products of such sector produced by such firm. If a manufacturer desired, it could provide the AA the output and GGI for other particular products in such NAICS sector. In such event the AA shall calculate and provide the related export rebate.

33.4. GHG Charges on Imports of Carbon and Graphite Products

Domestic producers will desire GHG charges to be assessed on imported carbon and graphite products. Thus, domestic producers will be motivated to assist the AA. Individual imported Selected Carbon and Graphite Products shall be considered to be made from a company average of its various facilities and energy-intensive inputs used to manufacture each of such products.

The AA would estimate for the subject country GGIs for Selected Carbon and Graphite Products within NAICS sector 331511 and the amount, carbon content, and weight of all products covered by such sector. The AA would create an import charge rate (US \$ per tonne of product) for each imported product by multiplying its GGI by the US GHG tax rate. An average of such GGIs for the Selected Carbon and Graphite Products shall be used to create the import charge for all other NAICS sector 331511 products of the subject country until such time as the importer to the US or the exporter to the US provides the AA company-specific information needed to determine GGI on a company-specific basis and the AA determines such charge.

