MEMORANDUM

Date: December 17, 2012

From: Lisa Grogan-McCulloch, US EPA

Subject: Summary of Evaluation of Greenhouse Gas Reporting Program (GHGRP) Part 98 "Inputs to Emission Equations" Data Elements Deferred Until 2013

To provide time to fully evaluate the potential impact from the possible release of Part 98 data that are identified as inputs to equations, EPA deferred the deadline for reporting inputs to emissions equations until March 2013 for some data elements and March 2015 for others (76 FR 53057, August 25, 2011, and 77 FR 48072, August 13, 2012). The purpose of this memorandum is to document EPA's evaluation of inputs to equations whose reporting deadline was deferred until March 2013 (hereinafter referred to as 2013 inputs).

In the final deferral rule (76 FR 53057) and the accompanying memorandum entitled "Process for Evaluating and Potentially Amending Part 98 Inputs to Emission Equations" (Docket ID EPA-HQ-OAR-2010-0929), EPA described a four-step evaluation process for the inputs, which are as follows):

- Step 1: Determine whether each input is already publicly available.
- Step 2: For inputs that are not publicly available, evaluate whether release of the information is likely to result in substantial competitive harm.
- Step 3: For inputs that are likely to cause substantial competitive harm if disclosed, evaluate potential alternative calculation methods.
- Step 4: For inputs that are likely to cause substantial competitive harm if disclosed, evaluate potential alternative verification methods.

In general, EPA found that the 2013 inputs were either publicly available or are not the types of data that would allow competitors to gain a competitive advantage if publicly released. As a result, EPA did not need to proceed to Steps 3 and 4 above. The details of the analysis, by subpart, are found in the following seven attachments:

- Attachment 1 - Subpart C – General Stationary Fuel Combustion[1]
- Attachment 2 - Subpart DD – Electrical Transmission and Distribution Equipment
- Attachment 3 - Subpart FF – Underground Coal Mines
- Attachment 4 - Subpart HH – Municipal Solid Waste Landfills
- Attachment 5 - Subpart II – Industrial Wastewater Treatment
- Attachment 6 - Subpart SS – Electrical Equipment Manufacture or Refurbishment
- Attachment 7 - Subpart TT – Industrial Waste Landfills

Each attachment listed above includes: 1) A summary of whether any of the data elements are already publicly available in federal databases or facility permits; 2) A table documenting

[1] Subpart D, Electricity Generation, requires reporting of some of the subpart C reporting requirements deferred until 2013.

whether there were public comments claiming that the data elements were confidential or that release of the data elements would cause harm to the facility; and 3) A table listing the data elements deferred until 2013 and the assessment related to Step 2 for each of the data elements.

Consistent with Step 2 of the evaluation process, EPA also conducted a quantitative market structure analysis for the subparts with facilities located at manufacturing industries (summarized in Attachment 8).[2] Market structure affects firms' ability to use information about other firms in their market. Market structure is defined in terms of the number of firms supplying a commodity in the market, and the degree of control that individual firms have over the price they obtain for their product. For firms to be able to use information to gain a competitive advantage, the number of firms in the market must be small enough that firms can identify their competitors, and identify critical information about their competitors' operations. Markets with a relatively small number of firms are termed "concentrated."

While the level of concentration is an indicator of the potential for harm, the types of data elements whose release would provide the opportunity for some firms to gain a competitive advantage over others must still be identified. As a result, if the market structure analysis indicated a concentrated market, the specific data elements deferred until 2013 were then assessed (as described in Attachments 1-7). Note that some industries identified in Attachment 8 may be "unconcentrated" at the national level, but still have regional concentration that could affect whether a data element's release could result in harm. In some cases, this did not affect the analysis of the 2013 inputs, but EPA recognizes that it may be a factor that will need to be considered for the market structure analysis of 2015 inputs.

[2] A quantitative market structure analysis was not conducted for subparts DD and HH because these are not manufacturing sectors and the quantitative concentration analysis would not be applicable to them. For these sectors EPA did undertake a qualitative market structure analysis, as described in Attachments 2 and 4.

ATTACHMENT 1 -- SUBPART C
(GENERAL STATIONARY FUEL COMBUSTION SOURCES)
SUMMARY OF INFORMATION

1. General Summary of EPA's Evaluation under Steps 1 and 2

Subpart C applies to general stationary fuel combustion. Many of the facilities reporting under subpart C are industrial facilities that manufacture products. Industry sectors reporting under subpart C include petroleum refining, chemicals, pulp and paper, metals, and mineral products (e.g., glass, cement). Because there are many different sectors within subpart C, many of the sectors may demonstrate at least moderate concentration either nationally, or in regional or product-specific markets, and may allow firms to identify their competitors. As a result, EPA could not conclude that markets would not be concentrated for some subpart C reporters, and further evaluated the individual data elements that were deferred until 2013.

The deadline for reporting nine "Inputs to Emission Equations" data elements from subpart C was deferred until 2013.[3] Attachment 1 Table C-1 lists the inputs for which reporting was deferred until 2013. Three of the nine data elements are reported only for units that are subject to 40 CFR Part 75 (the Acid Rain Program) and provide the **total heat input from each type of fuel combusted** during the reporting year. The total annual heat inputs are reported under Part 75 and made available to the public through the EPA's acid rain website.

Of the remaining six data elements, one data element is the **molar volume constant** at standard conditions used to convert volume to mass in equation C-5. Reporters select from one of two constants provided in the rule based on whether they use 60 deg. F or 68 deg. F as the standard temperature at which volume measurements are recorded. Therefore, the only information that can be inferred from the molar volume constant are the standard conditions used by the measuring devices. These constants are industry standards that are specified in the Reporting Rule and thus already publicly available. They are specific to the measuring device used and do not reveal any proprietary information, such as the type and amount of fuel used, production methods, and costs. Two data elements disclose the **amount** and **molecular weight of sorbent used in acid gas control devices** installed on combustion units. A related data element is the **ratio of moles of CO_2 released per mole of the acid gas species removed** (a default factor of 1 is used where the sorbent is $CaCaO_3$ and the acid gas is SO_2). These data elements do not disclose any information considered proprietary such as production capacity, production volumes, or methods of production. For facilities subject to the Acid Rain Program, the type of sorbent used for acid gas control is published on the Acid Rain Program's website. The remaining two data elements whose reporting deadline was deferred until 2013 require reporting of the results of **quarterly analyses of the biogenic portion of wastes and/or fuels** by MSW combustion facilities and facilities that co-fire biogenic fuels and non-biogenic fuels. These data elements provide only the biogenic fraction of the fuels burned by the facility and do not identify the type, composition or amount of waste or other fuels burned. Nor do they disclose information that may be considered proprietary, such as information that could be used to estimate cost structure or operating efficiency of the MSW combustion, co-fired combustion units, and production processes at the facility.

[3] Reporting of the remaining inputs in this subpart was deferred until 2015; inputs that were deferred until 2015 are not discussed in this memorandum.

Although The Fertilizer Institute (TFI) (see EPA-HQ-OAR-2010-0964-0011.1) and the Council of Industrial Boiler Owners (CIBO) (see EPA-HQ-OAR-2010-0964-0014.1) submitted comments on the proposed deferral notice (75 FR 81350, December 27, 2012) and the Call for information (75 FR 81366, December 27, 2012), their comments consisted of very general claims that all subpart C data elements are proprietary. None of their arguments were specific to the nine 2013 data elements. Most of their comments focused on industrial production facilities and expressed concern that the type and quantities of fuel burned at a facility reveal information on production costs. TFI asserted that the quantity and types of fuels consumed by a facility would cause harm if released because that information can be combined with other data reported under subpart G to provide knowledge about cost structure. TFI stated that the fuel costs are a significant portion of the overall production costs for ammonia manufacturers and that knowing the type and quantities of fuels consumed at a facility would give competitors valuable insight into production costs and pricing structures. However, TFI did not explain how disclosure of the 2013 data elements would lead competitors to proprietary cost data. None of the 2013 data elements reveal the type or quantity of fuels consumed or any information regarding fuel costs or any other insight into production costs and profit margins. CIBO expressed concern that identifying facilities that use "non-traditional fuel" could put companies at a competitive disadvantage and recommended that the type, composition of biomass combusted, molecular weights, carbon content, and high heating values should not be disclosed because this information could be used to calculate cost of production. However, none of the 2013 data elements provide information on the type, composition, molecular weight, carbon content or higher heating values of fuels combusted.

Based on the analysis above, we did not proceed to Steps 3 and 4 of the assessment, evaluation of potential alternative calculation and verification methods.

2. Summary of Public Availability of Subpart C Deferred Data Elements

Three of the data elements deferred until 2013 are reported by facilities subject to the Acid Rain Program and are made available to the public through the U.S. EPA's Acid Rain Program website (see http://ampd.epa.gov/ampd/):

- §98.36(d)(1)(iv) - For stationary combustion units that are subject to subpart D: The total heat input from each fuel listed in Table C-2 of subpart C combusted during the year (except as otherwise provided in 98.33(c)(4)(ii)(B)), expressed in mmBtu.

- §98.36(d)(2)(ii)(G) - For subpart D units that use the alternative methods specified in §98.33(a)(5)(i) and (ii) to monitor and report heat input data year-round according to appendix D to Part 75 or §75.19: Report annual heat input from each type of fuel listed in Table C-2 of subpart C combusted during the reporting year, expressed in mmBtu.

- §98.36(d)(2)(iii)(G) - For subpart D units with CEMS that use the alternative methods specified in §98.33(a)(5)(iii) to monitor and report heat input data year-round according Part 75: Report annual heat input from each type of fuel listed in Table C-2 of subpart C combusted during the reporting year, expressed in mmBtu.

The Acid Rain Program also publishes information on the type of acid gas control used on their website. The data on the website includes the type sorbent used for acid gas control (e.g., wet limestone, fluidized bed limestone injection, dry lime flue gas desulfurization (FGD)). This is less specific than deferred data element §98.36(e)(2)(viii)(B) (molecular weight of sorbent); however, the molecular weight of the sorbent can be determined if the type of sorbent is known.

These data are available at http://www.epa.gov/ttn/atw/boiler/boilerpg.html under the "Technical Information" section. Download the databases zip file and open the database named: "*Emissions Database for Boilers and Process Heaters Containing Stack Test, CEM, & Fuel Analysis Data Reported under ICR No. 2286.01 & ICR No. 2286.03 (version 7).accdb*". The table named "**Major Source Data: 30day Control**" contains the control parameter monitoring data including fields for "ControlDevice" and "SorbentInjRate" and other notes about the injection systems.

We have found no public source for the remaining 2013 subpart C data elements. These data elements are very specific to the GHG Reporting Program and are not likely to be available for a significant number of combustion sources in EPA or other publicly available databases.

3. Summary of Public Comments on CBI and Data Deferral Actions

Table C-1. Summary of Public Comments on CBI and Data Deferral

Federal Register Notice	Summary of Comments
July 7, 2010 Part 98 Confidentiality Determination Proposal (75 FR 39094)	Although many commenters suggested that disclosure of subpart C inputs to emission equations could cause harm, none mentioned specific 2013 data elements. Commenters that identified specific subpart C data elements, claimed that the type and quantity of fuel burned were proprietary since they provide insight into production costs. However, none of the 2013 subpart C elements provide information on the types or quantities of fuels combusted.
December 27, 2010 Proposed Deferral (75 FR 81350) and Call for Information (75 FR 81366)	Two commenters (The Fertilizer Institute (TFI) (EPA-HQ-OAR-2010-0964-0011.1) and the Council of Industrial Boiler Owners (CIBO) (EPA-HQ-OAR-2010-0964-0014.1) submitted general comments claiming that all subpart C data elements are proprietary. However, none of their arguments were specific to the 2013 data elements. Their comments focus on industrial production facilities and express concern that the type and quantities of fuel burned at a facility reveals information on production costs. TFI argued that subpart C data would cause harm if released because they can be combined with data reported under subpart G to provide information about cost structure; however, they did not discuss how the 2013 data elements could provide proprietary cost structure data. CIBO expressed concern that identifying facilities that use "non-traditional fuel" could put companies at a competitive disadvantage and recommended that the type, composition of biomass combusted, molecular weights, carbon content, and high heating values should not be disclosed because this information could be used to calculate cost of production. Comments from state agencies (Massachusetts, New Jersey, and Maine) stated that subpart C inputs should be made public and noted that data for utilities are already

	publicly available. Some states also stated that some data collected by their own GHG reporting programs are already made public; however, the data elements identified by these commenters are not the same as the 2013 data elements. The Iowa Department of Natural Resources (EPA-HQ-OAR-2010-0929-0014.1) that many of the data elements reported by facilities subject to the Acid Rain Program are public and specifically identified 98.36(d)(1)(iv) as an example. The Sierra Club (EPA-HQ-OAR-2010-0964-0029.1) identified the data elements reported under subpart D (utilities) and the biomass composition data reported under §98.36(e)(2)(x)(A) and §98.36(e)(2)(xi) as data that are already public. They also stated that data elements §98.36(e)(2)(viii)(A) through (C) (related to sorbent usage) would not likely cause harm if released.

4. Evaluation of Individual 2013 Inputs

Table C-2. Evaluation of Individual Subpart C (Stationary Combustion Units) 2013 Inputs

Citation	Data Element	Assessment by Data Element
98.36d1iv	For stationary combustion units that are subject to subpart D: The total heat input from each fuel listed in Table C-2 of subpart C combusted during the year (except as otherwise provided in 98.33(c)(4)(ii)(B)), expressed in mmBtu	These data elements are reported only for units that are subject to 40 CFR Part 75 (the Acid Rain Program). The total annual heat inputs are already reported under Part 75 and made available to the public through the EPA's acid rain website (http://ampd.epa.gov/ampd/).
98.36d2iiG	For subpart D units that use the alternative methods specified in §98.33(a)(5)(i) and (ii) to monitor and report heat input data year-round according to appendix D to Part 75 or §75.19: Report annual heat input from each type of fuel listed in Table C-2 of subpart C combusted during the reporting year, expressed in mmBtu	
98.36d2iiiG	For subpart D units with CEMS that use the alternative methods specified in §98.33(a)(5)(iii) to monitor and report heat input data year-round according Part 75: Report annual heat input from each type of fuel listed in Table C-2 of subpart C combusted during the reporting year, expressed in mmBtu.	
98.36e2ivG	The value of the molar volume constant (MVC) at standard conditions used in Eq. C-5	The value of the conversion factor is specified in the rule. Reporters select from two values provided in the rule based on the temperature used to record fuel measurements. The information does not reveal the amount or type of fuel combusted or provide any insight into production methods, capacity, or costs.
98.36e2viiiA	The amount of sorbent used in acid gas control devices during the reporting year.	Because this information does not disclose any proprietary information regarding production capacity, production volumes, methods of production, or any other information about a production facility.
98.36e2viiiB	The molecular weight of the sorbent.	
98.36e2viiiC	The ratio ("R") in Equation C-11. This is the ratio of moles of CO_2 released per mole of the acid gas species removed (a default factor of 1 is used	

Citation	Data Element	Assessment by Data Element
	where the sorbent is $CaCaO_3$ and the acid gas is SO_2)	
98.36e2xA	When ASTM methods D7459-08 (incorporated by reference, see 98.7) and D6866-08 (incorporated by reference, see 98.7) are used to determine the biogenic portion of the annual CO2 emissions from MSW combustion, as described in 98.34(d), report the results of each quarterly sample analysis	This information provides only the biogenic fraction of the fuels burned by the facility. This information does not provide any insight into proprietary information, such as the type and amount of fuels combusted, production costs, or operating efficiency of the MSW combustion or co-fired combustion units or insights into any production processes at the facility.
98.36e2xi	When ASTM methods D7459-08 (incorporated by reference, see 98.7) and D6866-08 (incorporated by reference, see 98.7) are used in accordance with 98.34(e) to determine the biogenic portion of the annual CO2 emissions from a unit that co-fires biogenic fuels (or partly-biogenic fuels, including tires if you are electing to report biogenic CO2 emissions from tire combustion) and non-biogenic fuels: Report the results of quarterly sample analysis	

ATTACHMENT 2 -- SUBPART DD
(ELECTRICAL TRANSMISSION AND DISTRIBUTION SYSTEM USE)
SUMMARY OF INFORMATION

1. General Summary of EPA's Evaluation under Steps 1 and 2

This subpart applies to electric transmission and distribution systems and requires reporting of emissions from SF_6- and PFC-containing equipment. Facilities reporting under this subpart consist of public utilities, including electric cooperatives, public supply corporations (e.g., Tennessee Valley Authority), Federal agencies (e.g., Bonneville Power Administration), and municipally owned electric utilities. The qualitative assessment of the market structure determined that these facilities are public or publicly-regulated utilities and are not likely to be affected by competitive market conditions that may apply to other industries.[4] Nonetheless, EPA assessed the individual data elements.

Reporting of all 11 "Inputs to Emission Equations" data elements in Subpart DD was deferred until 2013. Attachment 2 lists the deferred input data elements. The 2013 inputs relate to maintenance activities and installation of new/replacement of existing gas-insulated equipment (e.g., circuit breakers, switchgear, power transformers, etc) and amounts of SF_6 and PFC used or recovered in servicing or replacing such equipment. These data elements do not disclose information considered proprietary for this sector, such as specific information about manufacturing processes, operating conditions, operating costs, or price structures.

There were no comments in response to the initial CBI proposal (75 FR 39094, July 7, 2010), proposed deferral notice (75 FR 81350, December 27, 2012), and associated Call for Information (75 FR 81366, December 27, 2012) indicating that release of subpart DD inputs to emission equations would cause harm.

Based on the above analysis for this subpart, EPA did not proceed to Steps 3 and 4 of the assessment, evaluation of potential alternative calculation or verification methods.

2. Summary of Public Availability of Subpart DD Deferred Data Elements

The specific deferred data elements in subpart DD were not found to be available in EPA databases or facility permits. The 2013 subpart DD data elements are obscure data that are unlikely to be available in other published data sources.

3. Summary of Public Comments on CBI and Data Deferral Actions

Table DD-1. Summary of Public Comments on CBI and Data Deferral

Federal Register Notice	Summary of Comments
July 7, 2010 Part 98 Confidentiality	There were no public comments claiming that release of subpart DD inputs to emission equations would cause harm.

[4] A quantitative market concentration analysis was not done for this subpart because of the unique market structure of the source category and because concentration data are only available for manufacturing sector NAICS codes.

Federal Register Notice	Summary of Comments
Determination Proposal (75 FR 39094)	
December 27, 2010 Proposed Deferral (75 FR 81350) and Call for Information (75 FR 81366)	There were no public comments claiming that release of subpart DD inputs to emission equations would cause harm in response to the proposed Deferral notice and associated Call for Information.

4. Evaluation of Individual 2013 Inputs

Table DD-2. Evaluation of Individual Subpart DD (Electrical Transmission and Distribution System Use) 2013 Inputs

Citation	Data Element	Assessment by Data Element
98.306a2	New during the year (all SF_6-insulated equipment, including hermetically sealed-pressure switchgear).	Facilities reporting under this subpart consist of public utilities, including electric cooperatives, public supply corporations (e.g., Tennessee Valley Authority), Federal agencies (e.g., Bonneville Power Administration), and municipally owned electric utilities. These are public or publicly-regulated utilities that are not affected by competitive market conditions that may apply to other industries. The reported data relate to maintenance activities and installation of new/replacement of existing gas-insulated equipment (e.g., circuit breakers, switchgear, power transformers, etc) and amounts of SF_6 and PFC used or recovered in servicing or replacing such equipment. These data elements do not disclose any information about a manufacturing process or operating conditions that would be proprietary.
98.306a3	Retired during the year (all SF_6-insulated equipment, including hermetically sealed-pressure switchgear).	
98.306d	Pounds of $SF_6$and PFC stored in containers, but not in energized equipment, at the beginning of the year.	
98.306e	Pounds of SF6 and PFC stored in containers, but not in energized equipment, at the end of the year.	
98.306f	Pounds of $SF_6$and PFC purchased in bulk from chemical producers or distributors.	
98.306g	Pounds of $SF_6$and PFC purchased from equipment manufacturers or distributors with or inside equipment, including hermetically sealed-pressure switchgear.	
98.306h	Pounds of $SF_6$and PFC returned to facility after off-site recycling.	
98.306i	Pounds of $SF_6$and PFC in bulk and contained in equipment sold to other entities.	
98.306j	Pounds of $SF_6$and PFC returned to suppliers.	
98.306k	Pounds of $SF_6$and PFC sent off-site for recycling.	
98.306l	Pounds of $SF_6$and PFC sent off-site for destruction.	

ATTACHMENT 3 -- SUBPART FF (UNDERGROUND COAL MINES) SUMMARY OF INFORMATION

1. General Summary of EPA's Evaluation under Steps 1 and 2

Subpart FF applies to active underground coal mines and to any underground coal mines under development that have pre-mining degasification systems. Coal mine emissions must be reported under subpart FF only if the mine liberates at least 36,500,000 actual cubic feet of CH_4 per year.

The market structure analysis showed that the coal industry was moderately concentrated at the national-level with five companies accounting for about 60% of production (see Attachment 8). Therefore, EPA proceeded to evaluate the individual data elements that were deferred until 2013.

Reporting of all 14 "Inputs to Emission Equations" data elements in Subpart FF was deferred until 2013. Twelve of these data elements were initially deferred in the August 25, 2011 final deferral notice. Two additional input data elements added by the Technical Corrections final rule (76 FR 73886) were finalized in the August 13, 2012 final CBI and deferral revisions (77 FR 48072). Table FF-1 of Attachment 3 lists the deferred inputs. Information generally considered proprietary for this sector includes information about the amount or grade of coal produced, information about production efficiency or costs, information about the operation of the mine, and forward-looking information concerning anticipated future production and profit margins..

Eight of the data elements deferred until 2013 (§98.326(a) through (k)) are various **CH_4 quantities**, **CH_4 concentrations**, or **flow rates** from mine ventilation and degasifications systems. The data elements do not disclose the type of information listed above that is considered proprietary by this industry. The deferred data element, **quarterly CH_4 concentration from each ventilation monitoring device** (§98.326(g)), does not reveal any proprietary information, such as the grade of coal mined, amount of coal produced, or costs of production. Release of §98.326(g) would not disclose actual production rates, production capacity, production efficiency, production costs, pricing structure, or any other information that could be used by competitors to develop marketing strategies that would undermine the reporter's competitive position.

Three data elements (**temperature** and **pressure** at which flow rate in ventilation and degasification systems was measured and **moisture content** of the gas (§98.326(o))) do not provide any significant information regarding the design or operation of the underground coal mine or any other information listed above that is typically considered proprietary for this sector. Similarly, the **gaseous organic correction factor** (§98.326(o)), which is required to be reported only if the reporter selects a particular method to measure methane concentration, would not reveal proprietary information on mine design and operation or other information listed above that is considered proprietary for the sector.

The remaining two data elements are the assumed **destruction efficiencies** for control devices (§98.326(p)). Reporters may use either the manufacturer's specified destruction efficiency, a default value of 0.99, or a default value of 1.0 if methane is sent off-site for destruction. Therefore, the destruction efficiency is either a default value provided in the rule or a value that is provided in manufacturer's literature, both of which are publicly available.

There were no comments in response to the initial CBI proposal (75 FR 39094, July 7, 2010), proposed deferral notice (75 FR 81350, December 27, 2012), and associated Call for Information (75 FR 81366, December 27, 2012) indicating that release of subpart FF inputs to emission equations would cause harm.

Based on the above analysis for this subpart, EPA did not proceed to Steps 3 and 4 of the assessment, evaluation of potential alternative calculation or verification methods.

2. Summary of Public Availability of Subpart FF Deferred Data Elements

The 2013 subpart FF deferred data elements were not available in EPA databases or facility permits. Reports produced by EPA's Coalbed Methane Outreach Program (CMOP) provide information on annual emissions for some mines, but do not provide the detailed information included in the deferred input data elements (e.g., quarterly or weekly concentrations and flow rates at individual measurement locations). The subpart FF input data elements are unlikely to be available in other published data sources. The following three data elements are collected by MSHA :

- Quarterly CH_4 liberated from each ventilation monitoring point (CH_{4Vm})(metric tons CH_4), §98.326(a)
- Quarterly volumetric flow rate (scfm) or each ventilation monitoring point, §98.326(f)
- Quarterly CH_4 concentration from each ventilation monitoring device, §98.236(g)

MSHA does not publish this information, but indicated during a telephone call that they do not consider this information to be sensitive and would likely release it in response to a Freedom of Information Act (FOIA) request.

3. Summary of Public Comments on CBI and Data Deferral Actions

Table FF-1. Summary of Public Comments on CBI and Data Deferral

Federal Register Notice	Summary of Comments
July 7, 2010 Part 98 Confidentiality Determination Proposal (75 FR 39094)	There were no public comments claiming that release of subpart FF inputs to emission equations would cause harm.
December 27, 2010 Proposed Deferral (75 FR 81350) and Call for Information (75 FR 81366)	There were no public comments claiming that release of subpart FF inputs to emission equations would cause harm in response to the proposed Deferral notice and associated Call for Information. One commenter on the proposed deferral notice noted that some of the input data (e.g., volumetric flows, CH4 concentrations, and CH4 liberated from ventilation and degasification systems) would be available from Mine Health and Safety Administration (MSHA) inspection reports.

4. Evaluation of Individual 2013 Inputs

Table FF-2. Evaluation of Subpart FF (Underground Coal Mines) 2013 Inputs

Citation	Data Element	Assessment by Data Element
98.326a	Quarterly CH_4 liberated from each ventilation monitoring point (CH_{4Vm})(metric tons CH_4)	Release of these data elements would not disclose any proprietary information, such as the amount or grade of coal produced, production efficiency, production costs, operating methods, or remaining coal reserves.
98.326b	Weekly CH4 liberated from each degasification system monitoring point (metric tons CH_4)	
98.326c	Quarterly CH_4 destruction at each ventilation and degasification system destruction device or point of offsite transport ($CH_{2Destroyed}$) (metric tons CH_4)	
98.326f	Quarterly volumetric flow rate (scfm) or each ventilation monitoring point	
98.326g	Quarterly CH_4 concentration from each ventilation monitoring device	
98.326h	Weekly volumetric flow used to calculate CH4 liberated from degasification systems	
98.326j	Weekly volumetric flow used to calculate CH_4 destruction for each destruction device and each point of offsite transport (scf).	
98.326k	Weekly CH_4 concentration (%) used to calculate CH_4 flow to each destruction device or point of offsite transport (C).	
98.326o	Temperature (deg R) at which each sample is collected	
98.326o	Pressure (atm) at which each sample is collected	
98.326o	Moisture content during the measurement period. *Added by Tech Corrections final rule (76 FR 73886) and added to Table A-7 as a 2013 deferred input (see 77 FR 48072, August 13, 2012.)*	
98.326o	Gaseous organic concentration correction factor if Eq FF-9 is required. *Added by Tech Corrections final rule (76 FR 73886) and identified as a 2013 deferred input in 1/10/12 CBI proposal (77 FR 1450)*	Eq. FF-9 is an optional measurement method that allows measurement of total gaseous organic concentration and correction for the fraction that is methane (vs nonmethane organic compounds) instead of directly measuring methane. This data element does not reveal proprietary information regarding the design or operation of the mine, production cost, or any of the other proprietary information identified above.
98.326p	Assumed destruction efficiency for the primary destruction device	Reporters use either a default value specified in the rule or a value publicly available from the control device manufacturer's literature.
98.326p	Assumed destruction efficiency for the backup destruction device	

ATTACHMENT 4 -- SUBPART HH (MSW LANDFILLS) SUMMARY OF INFORMATION

1. General Summary of EPA's Evaluation under Steps 1 and 2

The subpart applies to open and closed MSW landfills that accepted waste during or after 1980 and generate CH_4 in amounts equivalent to 25,000 metric tons CO_2e or more per year. MSW landfill data are widely available and not viewed as proprietary. For example, approximately 60% of landfills are publicly owned and data such as their design capacity, area, waste acceptance rate, opening year, closure year (for closed landfills), and gas collection system information are public records found in municipal or county files and on several state agency websites. Private landfills typically hold long-term waste disposal contracts with municipalities and such information is usually made publicly available in municipal files.

A quantitative market concentration analysis was not done for MSW landfills because it is not a manufacturing industry and data were not available. However, a qualitative assessment of the market structure determined that there is competition among regional landfills for contracts with cities, counties, and other customers to dispose MSW. Because there are few landfills in a region, EPA could not conclude that the market would not be concentrated within the region. Therefore, EPA proceeded to evaluate the individual data elements deferred until 2013.

The types of data that, if available to the public, could be used by competitors to gain an advantage at MSW landfills are economic data such as: landfill-specific tipping fees (i.e., the charge levied upon a given quantity of waste received at the landfill) and other disposal fees, revenues, landfill construction and operating costs, and contract or client lists. Such data could provide competitors insights that they could use to develop pricing structures.

Reporting of all 25 "Inputs to Emission Equations" data elements in Subpart HH was deferred until 2013. Attachment 4 lists the deferred input data elements. None of the deferred data elements are economic data, nor would they reveal economic data of the types listed above. Rather, the deferred data are data such as the year the landfill opened and closed, the quantity of waste disposed in the landfill, waste composition, quantity of methane collected from the landfill, and other technical data used to calculate emissions.

As evidence that MSW landfill data are widely available, four of the deferred data elements (specifically identified in Attachment 4 Table HH-2) are the same as data elements found in the EPA's Landfill Methane Outreach Program (LMOP) database, a publicly available database. Over 2,400 MSW landfills are in the LMOP database, and the data are submitted voluntarily by public and private landfill owners and operators, landfill gas energy developers, states and other stakeholders. Nine of the deferred data elements (also identified in Attachment 4, Table HH-2) are the same as data found in Title V operating permits, many of which are used in the potential to emit calculation required under Title V. Several of the nine data elements are also available on multiple State and company web sites and in commercial landfill directories available for purchase.

Two of the input data elements (**last year landfill accepted waste for landfills using Eq. HH-3 and capacity of the landfill for closed landfills using Eq. HH-3** reported under 98.346(a)) are the same as data elements already submitted by landfills using alternative methods for which the

data are not inputs. Those data elements were finalized as non-CBI in the May 26, 2011 CBI determination notice, and the non-CBI determinations for these two data elements were not challenged. The submitted data have already been publicly released by EPA.

Another deferred data element, **fraction of CH_4 in landfill gas** (98.346(e)), would not reveal any information about landfill fees, revenues, costs, or contracts. And yet another data element, **modeled annual methane generation**, can be back-calculated for landfills without gas collection systems from the reported annual methane emissions (which are emission data and therefore have already been publicly released) and the default oxidation factor, which is the same for all landfills and already publicly available. For landfills with gas collection systems, the quantity of landfill methane generated does not reveal any details about manufacturing processes, products, or raw materials.

There were no public comments asserting that release of any subpart HH data elements would cause harm in response to EPA's July 7, 2010 proposed CBI determination notice or the proposed Deferral notice and associated Call for Information.

Based on the above analysis for this subpart, EPA did not proceed to Steps 3 and 4 of the assessment, evaluation of potential alternative calculation or verification methods.

2. Summary of Public Availability of Subpart HH Deferred Data Elements

Table HH-1. Summary of Public Data Availability for Subpart HH

Public Data Source	Description of Sources Reviewed	Results
EPA's LMOP database	Database containing technical data on over 2,400 landfills and over 570 operational landfill gas energy projects.	4 deferred data elements are publicly available for most of the over 2,400 landfills in the LMOP database: • Year landfill started accepting waste, 98.346a • Year landfill last accepted waste for closed landfills, 98.346a • Capacity of landfill for closed landfills, 98.346a • Fraction of CH4 in landfill gas, 98.346e

Public Data Source	Description of Sources Reviewed	Results
Permits	Over 5 Title V permits from Indiana and 1 from Nebraska	The following data elements were the same as data that is publicly available in permits. The level of detail in permits varies by state. Several of the elements listed below are contained in attachments to the permits that show "potential to emit" calculations. Some states (e.g., Indiana) include such attachments in the permits that are available on the state websites: • Year landfill started accepting waste, 98.346a • Year landfill last accepted waste for closed landfills, 98.346a • Capacity of landfill for closed landfills, 98.346a • Waste disposal quantity for each year, 98.346a • Landfill capacity for open landfills using Eq HH-3, 98.346b • Fraction of CH4 in landfill gas, 98.346e • Decay rate (k), 98.346d2 • Destruction efficiency of primary device, 98.346i5 • Estimated gas collection efficiency, 98.246i7 Permits that contain potential to emit calculations include the methane generation potential (Lo) value which can be converted to DOC using a standard mathematical equation.
Other public data sources	Several state web sites. "Waste Business Journal," available for purchase. Company or municipal websites.	Data elements available on state websites vary by state from basic MSW landfill lists to technical data on capacity, disposal acreage, open year, closure year, annual waste acceptance rate, and liner status. Waste Business Journal contains site-specific technical data. Company or municipal websites can contain data on individual landfills and landfill gas energy projects.

3. Summary of Public Comments on CBI and Data Deferral Actions

Table HH-2. Summary of Public Comments on Data Deferral

Federal Register Notice	Summary of Comments
July 7, 2010 Part 98 Confidentiality Determination Proposal (75 FR 39094)	There were no public comments claiming that any subpart HH data elements would cause harm if collected and released.
December 27, 2010 Proposed Deferral (75 FR 81350) and Call for Information (75 FR 81366)	There were no public comments claiming that release of subpart HH inputs to emission equations would cause harm in response to the proposed Deferral notice and associated Call for Information.

4. Evaluation of Individual 2013 Inputs

Table HH-3. Evaluation of Subpart HH (MSW Landfills) 2013 Inputs

Citation	Data Element	Assessment by Data Element
98.346a	Year in which the landfill first started accepting waste for disposal	All three data elements are publicly available for most landfills in the LMOP database (see Table HH-2). The last year landfill accepted waste and capacity of the landfill for closed landfills are the same as data elements reported by landfills using alternative equations that were previously determined to be non-CBI in the May 26, 2011 CBI rule (see Table HH-3). Therefore, other landfills have already submitted this data and EPA has publicly released it. The cross-cutting assessment described in the next row also applies to these three data elements.
98.346a	Last year the landfill accepted waste for landfills using Eq. HH-3	
98.346a	Capacity of the landfill (for closed landfills using Eq. HH-3)	
98.346a	Waste disposal quantity for each year of landfill required to be included when using Equation HH-1 of this subpart (in metric tons, wet weight)	**Cross-cutting assessment for all subpart HH data elements**: See Section 1 of this attachment for discussion on how these data elements differ from the types of data considered proprietary for this sector. In addition, approximately 60% of landfills are publicly owned and data such as their design capacity, area, waste acceptance rate, opening year, closure year, and gas collection system information are public records. Private landfills typically hold long-term waste disposal contracts with municipalities and such information is typically made publicly available by municipalities. Some of the deferred data elements (specifically identified in Attachment 4 Table HH-2) are the same as data elements that are publicly available for many landfills in EPA's LMOP database or facility Title V permits.
98.346b	For years when waste quantity data are determined using the methods in §98.343(a)(3), report the quantity of waste determined using the methods in §98.343(a)(3)(i)	
98.346b	For years when waste quantity data are determined using the methods in §98.343(a)(3), report the quantity of waste determined using the methods in §98.343(a)(3)(ii)	
98.346b	For historical waste disposal quantities that were not determined using the methods in §98.343(a)(3), report the population served by the landfill for each year the Equation HH-2 of this subpart is applied	
98.346b	For historical waste disposal quantities that were not determined using the methods in §98.343(a)(3), report the value of landfill capacity (LFC) used in the calculation (For open landfills using Equation HH-3 of this subpart).	

Citation	Data Element	Assessment by Data Element
	Note: this is actually waste in place per description under equation.	
98.346c	Waste composition for each year required for Equation HH-1, in percentage by weight, for each waste category listed Table HH-1 of this subpart to calculate the annual modeled CH4 generation.	
98.346d1	Degradable organic carbon (DOC) value used	These are default values specified in the Part 98 regulatory text. Although DOC and k vary by type of waste, landfills can elect to use bulk waste or modified bulk waste options, which don't reveal any unique details about landfill wastes. The cross-cutting assessment in the previous row also applies.
98.346d1	Each waste type used to calculate CH4 generation using Equation HH-1, report the methane correction factor (MCF) values used in the calculations	
98.346d1	Each waste type used to calculate CH4 generation using Equation HH-1, report the fraction of DOC dissimilated (DOCF) values used in the calculations	
98.346d2	Decay rate (k) value	
98.346e	Fraction of CH_4 in landfill gas (F)	This data element would not reveal any information about landfill fees, revenues, costs, or contracts.
98.346f	If multiple cover types are used, report surface area associated with each cover type	See "Cross-cutting assessment for all subpart HH data elements" above.
98.346g	Modeled annual methane generation rate for the reporting year (from Equation HH-1, used in Equation HH-5)	For landfills without gas collection systems, this data element can be back-calculated from reported annual CH4 emissions (which has already been publicly released) and default oxidation factor in the rule which is already publicly available. For landfills with gas collection systems, the quantity of landfill methane generated does not reveal any details about manufacturing processes, products, or raw materials.
98.346i5	Annual operating hours for the primary destruction device	See "Cross-cutting assessment for all subpart HH data elements" above.
98.346i5	Annual operating hours for the backup destruction device	
98.346i5	Destruction efficiency for the primary destruction device	Data elements are either a default value specified in the Part 98 regulatory text or a manufacturer's specified value that are typically available in manufacturer's literature. Also see "Cross-cutting assessment for all subpart HH data elements" above.
98.346i5	Destruction efficiency for the backup destruction device	
98.346i6	Annual quantity of recovered CH_4 (Equation HH-4)	See "Cross-cutting assessment for all subpart HH data elements" above.
98.346i7	Surface area as specified in Table HH-3	
98.346i7	Estimated gas collection system efficiency	
98.346i7	Annual operating hours of the gas collection system (frec in Eq.- HH-7 and HH-8)	
98.346i9	CH_4 generation value (input to Equation HH-6) *Note: per instructions this is LFG generated from HH-1 or LFG recovered from HH-4*	

ATTACHMENT 5 -- SUBPART II (INDUSTRIAL WASTEWATER TREATMENT) SUMMARY OF INFORMATION

1. General Summary of EPA's Evaluation under Steps 1 and 2

Subpart II applies to anaerobic processes used to treat industrial wastewater and industrial wastewater treatment sludge from pulp and paper manufacturing, food processing, ethanol production and petroleum refining, if the facility meets the applicability criteria in Subpart A. The market structure analysis showed that about half the NAICS associated with the industries expected to report under subpart II are moderately concentrated at the national level (see Attachment 8). Therefore, EPA further evaluated the individual data elements that were deferred until 2013.

For these industries, the types of information that are considered proprietary or have previously been determined to be CBI in the May 26, 2011 final CBI determination notice include information on quantities and composition of raw materials used in the manufacturing processes and information on quantities and compositions of manufactured products. In addition, specific operating parameters for certain petroleum refinery manufacturing process units are considered proprietary because they would reveal details about a site-specific manufacturing processes, process efficiencies, or abilities to process certain raw materials or produce specific refinery products. For similar reasons, specific design and capacity data elements for manufacturing process units may be considered proprietary. Reporting of 11 "Inputs to Emission Equations" data elements in Subpart II was deferred until 2013. See attachment 5 for a listing of these data elements.[5]

Four data elements deferred until 2013 include the **volume of wastewater entering anaerobic treatment processes** and the **chemical oxygen demand (COD)** or **biological oxygen demand (BOD)**, as well as the **annual mass of CH_4 generated and recovered**. These volumes, oxygen demand, and CH_4 data or the wastewater treatment process do not provide detailed insights into the design or operation of the facility's manufacturing processes or their raw materials and products.

Three data elements used to calculate methane generation and recovery (**maximum CH4 potential**, **methane conversion factor**, and **collection efficiency**) are default values that are specified in the rule (by general type of treatment system design); their disclosure would not yield further insight into the manufacturing processes at the facility or any significant details of wastewater treatment system design and operation.

Two data elements are **operating hours for destruction devices**. The operating hours of devices that destroy methane collected from wastewater treatment do not provide any information on operating hours or production rates of the manufacturing processes generating the wastewater.

The remaining two data elements are **assumed destruction efficiencies for control devices**, which are either a default value (0.99) or the manufacturer's specified destruction efficiency. Most U.S. manufacturers that sell devices to control biogas from wastewater treatment processes

[5] Five other data elements were deferred until 2015; they are not discussed in this memo.

(e.g., flares) list the destruction efficiencies for the control devices on their web sites (examples are listed in attachment 5).

There were no public comments in response to the proposed Deferral notice and associated Call for Information asserting that release of subpart II inputs to emission equations would cause harm.

Based on the above analysis for this subpart, EPA did not proceed to Steps 3 and 4 of the assessment, evaluation of potential alternative calculation or verification methods.

2. Summary of Public Availability of Subpart II Deferred Data Elements

The specific deferred data elements in subpart II were not found to be elsewhere available in EPA databases or facility permits for petroleum refineries, pulp and paper manufacturing, ethanol, and food processing plants. The data elements are detailed in nature and not likely to be generally available in other published data sources.

3. Summary of Public Comments on CBI and Data Deferral Actions

Table II-1. Summary of Public Comments on CBI and Data Deferral

Federal Register Notice	Summary of Comments
July 7, 2010 Part 98 Confidentiality Determination Proposal (75 FR 39094)	There were no specific comments on any of the proposed subpart II CBI determinations.
December 27, 2010 Proposed Deferral (75 FR 81350) and Call for Information (75 FR 81366)	There were no public comments claiming that release of subpart II inputs to emission equations would cause harm in response to the proposed Deferral notice and associated Call for Information.

4. Evaluation of Individual 2013 Inputs

Table II-2. Evaluation of Subpart II (Industrial Wastewater Treatment) 2013 Inputs

Citation	Data Element	Assessment by Data Element
98.356b1	Weekly average COD or BOD5 concentration of wastewater entering anaerobic wastewater treatment process	Wastewater volumes and characteristics would not provide detailed insight into the design and operation of the facility's manufacturing processes, raw materials, or products.
98.356b2	Volume of wastewater entering each anaerobic wastewater treatment process for each week the anaerobic process was operated.	
98.356b3	For each anaerobic wastewater treatment process, maximum CH4 production potential (Bo) used	This data element is a default value specified in the Part 98 regulatory text (same for all facilities using a given equation); therefore it would not reveal any site-specific information.

Citation	Data Element	Assessment by Data Element
	as an input to Equation II-1 or II-2.	
98.356b4	For each anaerobic wastewater treatment process, methane conversion factor (MCF) used as an input to Equation II-1 or II-2	Reporters use MCF factors from Table II-1 for anaerobic reactors and lagoons. The value selected reveals only the general type of wastewater treatment system and does not reveal any detailed information on the design of the system or any insights into the facility's manufacturing processes.
98.356b5	For each anaerobic wastewater treatment process, annual mass of CH4 generated (calculated using Equations II-1 or II-2)	The CH4 generated by the wastewater and recovered would not reveal details about wastewater composition or insights into the design or operation of the production process.
98.356d1	Annual quantity of CH_4 recovered from the anaerobic process (calculated using Equation II-4 and used as an input in Equation II-5)	
98.356d7	CH_4 collection efficiency (CE) (used in equation II-5)	The collection efficiency is one of 3 default values from table II-2, specified by general type of treatment system and cover. The defaults do not provide any proprietary information about the design or operation of the treatment system.
98.356d8	Annual operating hours for the primary destruction device	The operating hours of the destruction devices for gas collected from wastewater treatment systems would not provide any information about the operating hours of the production process generating the wastewater.
98.356d8	Annual operating hours for the backup destruction device	
98.356d8	Destruction efficiency of the primary destruction device	These data elements are either a default value specified in the Part 98 regulatory text or a manufacturer's specified value. Flares are the control devices typically used to destroy biogas collected from industrial wastewater treatment processes. Most U.S. biogas flare manufacturers publish destruction efficiencies on their websites Examples are: 1. "Our Biogas Enclosed Flare System is specifically designed for stringent emissions requirements including the Code of Federal Regulations (40 CFR 60.18) to meet or exceed a 98% destruction efficiency established by the Environmental Protection Agency." http://www.zeeco.com/pdfs/BioGas_Enclosed_Flare_Web.pdf 2. "Our Biogas Utility Flare System is specifically designed for stringent emissions requirements including the Code of Federal Regulations (40 CFR 60.18) to meet or exceed a 98% destruction efficiency established by the Environmental Protection Agency (EPA)." http://www.zeeco.com/pdfs/BioGas_Utility_Flare_Web.pdf 3. "High destruction efficiency: 99.5% meets U.S. and international emissions standards" http://www.flareindustries.com/products/pdf/1%20FEF%20Flare%201.pdf 4. "Thanks to concealed combustion, the **HOF***GAS*Ò- *IFL1c* flare
98.356d8	Destruction efficiency of the backup destruction device	

Citation	Data Element	Assessment by Data Element
		attains more than 99% combustion efficiency." http://www.hofstetter-uwt.com/web/hofstetter/en/solutions/biogas/ifl1c.html 5. "Methane Destruction: 90% min." http://www.bke.co.th/pdf/Enclosed%20Flares%20(web).pdf

ATTACHMENT 6 – SUBPART SS (ELECTRICAL EQUIPMENT MANUFACTURE OR REFURBISHMENT)

SUMMARY OF INFORMATION

1. General Summary of EPA's Evaluation under Steps 1 and 2

This subpart applies to facilities that manufacture and/or refurbish gas-insulated substations, circuit breakers, other switch-gear, gas-insulated lines, or power transformers containing SF_6 or PFCs. These are facilities that produce or service the electrical equipment, and not facilities that produce SF_6 or PFCs.

The market structure analysis indicated that electrical equipment manufacturing is not concentrated at the national level (see Attachment 8). However, the NAICS codes used in the analysis cover a broader universe of facilities (over 2,000 facilities) than the facilities subject to subpart SS. Also, there is a possibility that there might be concentration at the regional level or by product. Therefore, EPA proceeded to evaluate the individual data elements that were deferred until 2013.

Reporting of all 17 "Inputs to Emission Equations" data elements in Subpart SS was deferred until 2013. Table SS-1 in Attachment 6 lists the deferred input data elements.

Information on the design and quantity of each type of unit produced, production capacity, details of the production processes employed, the number and types of units refurbished or recycled, the costs of production and/or refurbishment, product inventories, profit margins, and forward-looking information regarding customer orders are considered proprietary by this sector. None of the Subpart SS data elements provide this type of information. The 10 data elements in §98.456(a) through (j) consist of the beginning and end of year inventories of **stored SF_6 and PFCs**, disbursements of **SF_6 and PFCs** (**shipped in equipment or containers to customers**, **sent to recyclers**, **sent for offsite destruction**, **returned to gas supplier**), and acquisitions of **SF_6 and PFCs** (**purchases from suppliers**, **returned in equipment**, **returned from offsite recyclers**). Although the amount of SF6 and PFCs stored at a facility at the beginning and end of the reporting year (§98.456(a) and (b)), the amount of each gas purchased from bulk suppliers (§98.456(c)), and the amount of each gas returned to suppliers (§98.456(h)) could indicate changes at the facility, they do not provide any information that would be proprietary since changes in raw material inventories and amount of gas used cannot be linked to the underlying reasons for the change. For example, an increase in bulk purchases and inventory could be due to an expansion of the facility's storage area, an increase in production of a particular unit, change in the design of a new unit, an increase in the number of units refurbished, or a change in the type of units produced or refurbished. The amount of SF_6 and PFCs purchased in bulk from gas suppliers (§98.456(c)), the amount of SF6 and PFCs delivered to customers in new equipment (§98.456(f)), the amount of SF6 and PFCs delivered to customers in containers (§98.456(g)), the amount of SF6 and PFCs returned to suppliers (§98.456(h)), amount of each type of gas sent off site for destruction (§98.456(i)), and the amount sent to be recycled (§98.456(j)) are total amounts for the facility. These data elements do not provide any insight into the design of new products, cost of manufacture of any new products, cost of refurbishment of old equipment, profit margins, or product demand. Based on the information provided in the 2011 GHGRP annual reports, the EPA determined these data elements cannot be used to

calculate the quantity of each type or model of equipment produced or refurbished since manufacturers in this industry produce and/or refurbish a range of different products at each facility. The amount of each type of gas sent off site for destruction (§98.456(i)) and the amount sent to be recycled (§98.456(j)) do not reveal any proprietary information, such as the source of the gas, the number and type of units refurbished, the cost of disposal/recycling, or the name and location of the company that receives the gas for destruction and/or recycling.

Two data elements provide facility-specific information about the equipment used to charge manufactured electrical products, refurbished units, and/or cylinders: **site-specific emission factors** (§98.456(m)) and **number of fill operations** (§98.456(n)) for each valve-hose combination. The number of items/units filled (§98.456(n)) provides only the number of units filled by a particular valve-hose combination and does not provide any sensitive information, such as the type(s) of unit filled (e.g., cylinder, make and model of refurbished units), number of units manufactured, or amount of gas filled into each unit. For example, the units filled may be newly manufactured units, old units being returned to the manufacturer for refurbishment, cylinders, or other containers. The site-specific emission factor (§98.456(m)) provides information about how much gas is emitted per unit during filling operations. Although this information indicates how much gas is lost during filling operations, the costs associated with losses of gas from filling operations represent a small portion of the overall operating costs of the facility and cannot be related directly to the cost of producing or refurbishing a specific model of unit sold by the manufacturer.

Three data elements are used in equation SS-6 to calculate SF6 emissions from equipment that is installed at an off-site electric power transmission or distribution locations before title of the equipment is transferred to the customer: the **nameplate capacity** (§98.456(s))**, amount of SF_6/PFCs charged to the equipment** before it leaves the manufacturing/ refurbishment facility (§98.456(r)), and the **amount of SF_6/PFCs used to fill the equipment onsite** (§98.456(q)). These data elements do not reveal any proprietary information about the design of the individual electrical equipment, the manufacturing processes used to produce individual electrical equipment products, costs of production, or profit margins. They are reported annually as cumulative totals reported at the facility-level and therefore, provide no information regarding the number and type of units sold by an individual facility. They provide no insights into annual sales data since the quantities are not reported by model, type of equipment or by customer. These data elements cannot be used to back-calculate the number of units installed by a manufacturer because each manufacturer installs a number of different types/models of electrical equipment.

The final data element, the **average amount of SF_6 and PFC charged to each type of new product prior to shipment** (§98.456(o)) does not reveal any information about the specific design of new products, manufacturing processes, or production costs. Although the information is reported for each model, the reporter may use any unique identifier and is not required to report the actual model name or model numbers. Therefore, the amount of charge cannot be related to any individual unit. Since emissions are reported by gas at the facility-level and facilities manufacture and/or refurbish several types and models of electrical equipment, the amount of gas charged to each product cannot be used to back-calculate the quantities of each product manufactured or refurbished.

There were no comments in response to the initial CBI proposal (75 FR 39094, July 7, 2010), proposed deferral notice (75 FR 81350, December 27, 2012), and associated Call for Information (75 FR 81366, December 27, 2012) asserting that release of subpart SS inputs to emission equations would cause harm.

Based on the above analysis for this subpart, EPA did not proceed to Steps 3 and 4 of the assessment, evaluation of potential alternative calculation or verification methods.

2. Summary of Public Availability of Subpart SS Deferred Data Elements

Data on nameplate capacities of individual equipment are generally available through product specification documents and maintenance manuals provided by the equipment manufacturer. In some cases, the capacity information is marked on the equipment. Information on the amounts of SF6 and PFCs purchased, beginning and end of year storage inventories, and the amounts of SF6 and PFCs transferred offsite is obscure information that is unlikely to be publicly available from Title V permits, federal and state databases, or journals.

3. Summary of Public Comments on CBI and Data Deferral Actions

Table SS-1. Summary of Public Comments on CBI and Data Deferral

Federal Register Notice	Summary of Comments
July 7, 2010 Part 98 Confidentiality Determination Proposal (75 FR 39094)	There were no public comments claiming that release of subpart SS inputs to emission equations would cause harm.
December 27, 2010 Proposed Deferral (75 FR 81350) and Call for Information (75 FR 81366)	There were no public comments claiming that release of subpart SS inputs to emission equations would cause harm in response to the proposed Deferral notice and associated Call for Information.

4. Evaluation of Individual 2013 Inputs

Table SS-2. Evaluation of Subpart SS (Electrical Equipment Manufacture or Refurbishment) 2013 Inputs

Citation	Data Element	Assessment by Data Element
98.456a	Pounds of SF_6 and PFCs stored in containers at the beginning of the year.	Release of these data elements do not disclose any proprietary information about the design of the electrical equipment, the manufacturing processes used to produce the equipment, production costs, number of new units produced and/or refurbished, market demand for specific models, or profit margins. Data elements §98.456(c) through (j) are reported annually at the facility-level and reveal the overall amount of each gas , but provide no insight into the quantities, types or designs of electrical equipment produced or refurbished. Based on the information
98.456b	Pounds of SF_6 and PFCs stored in containers at the end of the year.	
98.456c	Pounds of SF_6 and PFCs purchased in bulk.	
98.456d	Pounds of SF_6 and PFCs returned by equipment users with or inside equipment.	
98.456e	Pounds of SF_6 and PFCs returned to site from off site after recycling.	
98.456f	Pounds of SF_6 and PFCs inside new equipment delivered to customers.	
98.456g	Pounds of SF_6 and PFCs delivered to equipment users in containers.	

Citation	Data Element	Assessment by Data Element
98.456h	Pounds of SF_6 and PFCs returned to suppliers.	provided in the 2011 GHGRP annual reports, the EPA determined these data elements cannot be used to calculate the quantity of each type or model of equipment produced or refurbished since manufacturers in this industry produce and/or refurbish a range of different products at each facility.
98.456i	Pounds of SF_6 and PFCs sent off site for destruction.	
98.456j	Pounds of SF_6 and PFCs sent off site to be recycled.	
98.456m	The values for EF_C for each hose and valve combination and the associated valve fitting sizes and hose diameters.	Provides facility-specific information about the equipment used to charge manufactured electrical products, refurbished units, and/or cylinders for each valve-hose combination. This would reveal the number of items/units filled and the amount of gas emitted during filling operations, but does not reveal any proprietary information because the identity of the units filled is not reported. The units could be newly manufactured units, old units being returned to the manufacturer for refurbishment, or cylinders or other containers.
98.456n	The total number of fill operations for each hose and valve combination, or, F_{Ci} of Equation SS–5 of this subpart.	
98.456o	The mean value for each make, model, and group of conditions if the mass of SF_6 or the PFC disbursed to customers in new equipment over the period p is determined by assuming that it is equal to the equipment's nameplate capacity or, in cases where equipment is shipped with a partial charge, equal to its partial shipping charge.	The release of this data element would not reveal any proprietary information about the specific design of new products, the cost of production, or any of the other information identified as proprietary above.
98.456q	Pounds of SF_6 and PFCs used to fill equipment at off-site electric power transmission or distribution locations, or M_F, of Equation SS–6 of this subpart.	The total nameplate capacity and total amount of SF_6/PFCs charged to electrical equipment installed at electric power transmission and distribution locations are cumulative totals for all electrical equipment installed onsite and are reported at the facility-level. These data elements do not reveal any proprietary information, such as the design, costs of production, manufacturing processes, or market demand of the individual electrical equipment. Since electrical equipment manufacturers/refurbishers generally supply and/or refurbish several types of equipment and many different models, this information provides no insights into the quantities, pricing structures, types or designs of electrical equipment installed onsite at electrical power transmission and distribution locations.
98.456r	Pounds of SF_6 and PFCs used to charge the equipment that is installed at off-site electric power transmission and distribution stations prior to the equipment leaving the electrical equipment manufacturer or refurbishment facility, or M_C, of Equation SS–6 of this subpart.	
98.456s	The nameplate capacity of the equipment, in pounds, installed at off-site electric power transmission or distribution locations used to determine emissions from installation, or N_I of Equation SS–6 of this subpart.	
98.456t	For any missing data, report the substitute parameters used to estimate emissions in their absence.	Same assessment as provided above for individual parameters.

ATTACHMENT 7 -- SUBPART TT (INDUSTRIAL WASTE LANDFILLS)

SUMMARY OF INFORMATION

1. General Summary of EPA's Evaluation under Steps 1 and 2

Subpart TT applies to open and closed landfills, other than MSW landfills, that have accepted industrial waste during or after 1980 and are located at a facility with a total landfill design capacity above 300,000 metric tons of waste. There are various exemptions, e.g., for landfills accepting only C&D or various inert wastes. The landfills may be located at industrial facilities such as pulp and paper manufacturing or food processing plants or may be located separately.

The market structure analysis showed that about half the NAICS associated with the industries expected to report under subpart TT are moderately concentrated at the national level (see Attachment 8). Therefore, EPA further evaluated the individual data elements that were deferred until 2013.

For industrial facilities that have landfills located on-site, the types of information that are considered proprietary or have previously been determined to be CBI in the May 26, 2011 final CBI determination notice include information on quantities and composition of raw materials used in the manufacturing processes and information on quantities and compositions of manufactured products. However, landfills are an ancillary operation at industrial facilities and are not central to manufacturing processes or to production cost structures. Data about landfill design and operation follows standard waste management practices and does not reveal proprietary information about manufacturing processes, raw materials, or production quantities.

Industrial landfills that are not located at manufacturing facilities can compete for contracts to dispose of industrial waste. The types of data that could potentially be considered proprietary to landfill facility owners if publicly released are economic data such as disposal fees the landfill charges, revenues, landfill construction and operating costs, and contract or client lists. Such data could allow give competitors insights that they could use to develop their own pricing structures.

Reporting of 13 "Inputs to Emission Equations" data elements in Subpart TT (listed in Attachment 7) was deferred until 2013. Four other data elements were deferred until 2015; they are not discussed in this memo. The 2013 input data elements for landfills (such as the **year the landfill opened and closed**, **landfill capacity**, **annual amount of waste**, and **methane generation** from landfills) do not reveal any significant information about the facility production processes. In particular, the subpart TT input data elements do not reveal detailed waste composition data that could be used to determine production process designs, raw material quantities and compositions, or actual production rates or product compositions; nor do they reveal economic information about the industrial landfills.

For several input values (e.g., **fraction of methane** in landfill gas, **degradable organic carbon content (DOC)**, **decay rate (k)**, **methane correction factor**) most landfills will use default values provided in the rule. While the k and DOC defaults vary by general type of waste (e.g., pulp and paper waste, food processing waste), these waste types are not specific enough to provide any insight into facility production processes or the other types of sensitive information discussed above.

One data element, **modeled methane generation**, can be back-calculated for landfills without gas collection systems from the reported annual methane emissions (which are emissions data

and will be publicly released) and the default oxidation factor which is the same for all landfills and is already publicly available in the Part 98 regulatory text. For landfills with gas collection systems, the quantity of landfill methane generated does not reveal any details about manufacturing processes, products, or raw materials.

Three of the data elements (**last year landfill accepted waste and capacity of the landfill for closed landfills using Eq. TT-4** and **landfill surface area by cover type for landfills with gas collection systems**) are the same as data elements that were finalized as non-CBI in the May 26, 2011 CBI determination notice when submitted by landfills using alternative methods for which the data are not inputs. See Attachment 7 Table TT-2 for details. The final non-CBI determinations for these data elements were not challenged.

There was one comment regarding confidentiality of subpart TT data elements in response to EPA's July 2010 proposed confidentiality determinations. As a result the EPA deferred until 2015 four of the input data elements that could reveal manufacturing facility production rates. There were no public comments asserting that release of subpart TT inputs to emission equations would cause harm in response to the proposed Deferral notice and associated Call for Information. Likewise, there were no public comments asserting that release of any new subpart TT data elements would cause harm in response to the January 10, 2012 CBI and deferral revisions proposal.

Based on the above analysis for this subpart, EPA did not proceed to Steps 3 and 4 of the assessment, evaluation of potential alternative calculation or verification methods.

2. Summary of Public Availability of Subpart TT Deferred Data Elements

The specific deferred data elements in subpart TT were not found to be generally available in EPA databases. A preliminary search of National Emissions Inventory identified only a couple industrial landfills that might be subject to subpart TT with little specific data. The LMOP database contains only MSW landfill data and does not contain dedicated industrial landfills. Review of several Title V permits (e.g., for pulp and paper and food processing facilities) did not yield information on industrial landfills. There are some landfills that accept industrial waste listed in the Waste Business Journal, which is available for purchase, but it is not clear which of these would be subject to subpart TT and which are construction and demolition or other excluded landfills. This reference contains data fields such as landfill capacity, waste in place, waste acceptance rate, and open and closure years, but the data fields are not fully populated.

3. Summary of Public Comments on CBI and Data Deferral Actions

Table TT-1. Summary of Public Comments on CBI and Data Deferral

Federal Register Notice	Summary of Comments
July 7, 2010 Part 98 Confidentiality Determination Proposal (75 FR 39094)	ACC was the only stakeholder to identify any subpart TT data elements as CBI. ACC stated that "Knowing key information about waste streams would allow a competitor to determine production information at the affected facility." *[Note that inputs to Eq. TT-2 and TT-3 that would allow back-calculation of production rates are deferred until 2015 and are out of the scope of this memorandum.*

December 27, 2010 Proposed Deferral (75 FR 81350) and Call for Information (75 FR 81366)	There were no public comments claiming that release of subpart TT inputs to emission equations would cause harm in response to the proposed Deferral notice and associated Call for Information. DuPont commented on alternative verification processes that could be used for multiple subparts including TT, but did not provide comments that any subpart TT data elements would cause harm if released.
January 10, 2012 CBI and deferral revisions proposal (77 FR 1434)	There were no public comments claiming that release of any new subpart TT data elements would cause harm in response to this notice, which proposed that new subpart TT data elements were non-CBI and deferred reporting of one new subpart TT input to an emission equation until 2013.

4. Evaluation of Individual 2013 Inputs

Table TT-2. Evaluation of Subpart TT (Industrial Waste Landfills) 2013 Inputs Deferred Until 2013, *updated per August 13, 2012 final CBI and deferral revisions (77 FR 48072)*

Citation	Data Element	Assessment by Data Element
98.466a2	The year the landfill first started accepting waste for disposal	Year landfill opened does not reveal any proprietary information about manufacturing facility production processes, raw materials, or production quantities, nor does it reveal industrial landfill economic information.
98.466a3	Last year the landfill accepted waste (for closed landfills using Equation TT-4)	Per May 26, 2011 final CBI rule, these data elements were determined to be non-CBI when submitted by facilities that use other calculation equations such that the data are not inputs to emission equations. The determination they are non-CBI was not challenged.
98.466a4	Capacity of the landfill in metric tons (for closed landfills using Equation TT-4)	
98.466b3	Fraction of CH_4 in landfill gas	Fraction of CH4 in landfill gas does not reveal detailed information on the composition of the waste or any manufacturing process or economic data. A default value in the rule (0.5) will be used by all landfills without active gas collection systems.
98.466b4	Methane correction factor (MCF) used in calculations. *Identified as a 2013 deferred input in 8/13/12 final CBI and deferral revisions (77 FR48072)*	MCF is dependent on landfill aeration practices, not on waste characteristics. A default will be used by most landfills. MCF does not reveal any information on waste composition, manufacturing processes, or landfill economic data.
98.466c1	For each waste stream identified in 98.466(b), the decay rate (k) value used in the equation TT-1	Default value based on general type of waste (pulp and paper, food processing, wood and wood product, C&D, inert, other) and climate. Does not reveal any details about the production process raw materials, design or operation, or production quantities.
98.466c4i	Value of landfill capacity (LFC) (if Equation TT-4 is used)	These data elements do not provide any proprietary information about the manufacturing facility or its processes, raw materials, and production. They also do not provide any economic information about the landfill.
98.466c4ii	YrData (if Equation TT-4 is used)	
98.466c4iii	YrOpen, either 1960 or year landfill first received waste (if Equation TT-4 is used)	
98.466d2	For each year of landfilling starting with the "start year" and each year thereafter up to the current reporting year, Quantity	These data elements do not provide any proprietary information about the manufacturing facility or its processes raw materials, and production. They also do

Citation	Data Element	Assessment by Data Element
	of waste (Wx) disposed of in the landfill for each waste stream	not provide any economic information about the landfill.
98.466d3	Degradable organic carbon (DOCx) value used in calculations	
98.466e2	Surface area (in square meters) at the start of the reporting year for the landfill sections that contain waste and that are associated with the selected cover type (for facilities using a landfill gas collection system)	Per May 26, 2011 final CBI rule, this data element was determined to be non-CBI when submitted by facilities that use other calculation equations such that the data are not inputs to emission equations. The determination they are non-CBI was not challenged.
98.466f	Modeled annual methane generation rate for the reporting year calculated using Equation TT-1 (used in Equation TT-6)	Landfill methane generation does not provide any information about the production process**.** Also, for landfills without gas collection systems, this data element can be back-calculated from reported annual CH4 emissions and default oxidation factor that is the same for all landfills and is listed in the Part 98 regulatory text.

ATTACHMENT 8 –MARKET STUCTURE ANALYSIS

Importance of Market Structure.

Market structure affects firms' ability to use information about other firms in their market. Market structure is defined in terms of the number of firms supplying a commodity in the market, and the degree of control that individual firms have over the price they obtain for their product. The market, in turn, is defined in terms of the commodity marketed and the geographic scope of the market.

Competitive markets are characterized by many suppliers and products that are identical or nearly identical, in terms of product characteristics that users value. In such markets, firms are "price takers"; that is, they are unable to influence the market price, and must determine their profit-maximizing production level as a function of the price set by the market. In such markets, strategic behavior is not possible because there are too many competitors, making it impossible for them to make decisions based on their competitors' actions, and thereby affect market price.

Thus, for firms to be able to use information to gain a competitive advantage, the number of firms in the market must be small enough that firms can identify their competitors, and identify critical information about their competitors' operations. Markets with a relatively small number of firms are termed "concentrated". The following sections describe methods for assessing whether markets are concentrated and present results.

The concentration analysis was performed only for the coal mining and manufacturing sectors for which GHGRP input to emission equation data elements were deferred until 2013. For the manufacturing sectors, we used the Herfindahl-Hirschman Index (HHI) values published by the Census Bureau. For the coal mining sector, we evaluated production data and other industry statistics since the Census Bureau does not provide HHI data for the non-manufacturing sectors.

The concentration analysis was not performed for subparts DD (electrical transmission and distribution)) and HH (MSW landfills). This analysis is not applicable to these sectors because they have different market structures. For these sectors, a qualitative assessment of the market structure was completed.

Process for Identifying Markets That Are Concentrated or Moderately Concentrated.

Economists assess market concentration using measures that characterize the share of the market served by the largest firms. Specific tools used include the Herfindahl-Hirschman Index (HHI). For a given market, the HHI is calculated by squaring the market share of each firm competing in the market, then summing the squared shares.

$$HHI = \Sigma_i s_i^2 \text{, where } s_i = \text{the market share of the } i^{th} \text{ firm.}$$

Potential values of the HHI range from near zero (if each of the top 50 firms has one-50th if the output of the group(50*(1/50^2)), to 10,000, if one firm has 100 percent of the value

(100^2=10,000). The HHI reflects both the number of firms in the market and the relative size of the firms, and assumes larger values, (1) the smaller the number of firms in the market and (2) the greater the disparity in size between the firms. The U.S. Department of Justice (DOJ) [6] and the Federal Trade Commission (FTC) use the HHI to identify markets where there are potential anti-trust concerns. They consider markets with and HHI below 1,000 to be unconcentrated; markets with HHI between 1,000 and 1,800 are considered moderately concentrated, and markets with HHI above 1,800 to be highly concentrated. The Census Bureau computes and publishes HHI for the manufacturing sectors, defined using North American Industry Classification System codes or NAICS codes.[7]

Economists define markets at the product or process level, because customers make purchasing decisions for specific products or services. Some sectors (defined at the 6-digit NAICS code level) that are not concentrated at the national sector level may produce some products for which there are sufficiently few suppliers that either reduced competition or the use of information to gain a competitive advantage could be possible. Similarly, some products are traded in regional, rather than national markets; for these, even if the sector is not concentrated at the national level, based upon its HHI, one or more of the regional markets may be concentrated. While identifying a concentrated or moderately concentrated NAICS is sufficient to identify subparts in which facilities are aware of their competitors and thus revealing sensitive information would have the potential to lead to a competitive advantage or disadvantage, it is not the only indicator. Some NAICS may include multiple industry sectors, only one of which is covered by a subpart. If this is the case, the industry sector may have concentrated or moderately concentrated markets even if the overall NAICS is not concentrated or moderately concentrated. Similarly, the sector represented by a subpart may have markets that are regional in nature. While the sector does not appear concentrated or moderately concentrated at the national level, regional markets, with fewer suppliers, may be concentrated.

Therefore, while the market structure analysis provides an indication of the potential for harm, EPA further evaluated each of the individual data elements that were deferred until 2013 to determine, per the "Process for Evaluating and Potentially Amending Part 98 Inputs to Emission Equations" (Docket ID EPA-HQ-OAR-2010-0929), whether such harm would be likely to occur if collected and released. This assessment of the individual data elements is described in Attachments 1 - 7.

Results for subparts II, SS, and TT.

[6] http://www.justice.gov/atr/public/testimony/hhi.htm

[7] http://www.census.gov/econ/concentration.html

EPA identified the 6-digit NAICS codes associated with the industries that are required to submit GHGRP reports under these subparts.[8] We then obtained concentration information that is compiled by the Census Bureau for manufacturing NAICS. (The census does not provide concentration information for non-manufacturing NAICS). To begin our assessment of the potential for the release of the input data elements to lead to reduced competition or one firm gaining a competitive advantage, we conducted an assessment of the level of sector concentration at the NAICS code level. If the NAICS codes identified are concentrated or moderately concentrated at the national level, the firms in the subpart likely are aware of each others' actions.

The table below lists concentration ratios for the 6-digit NAICS codes listed in the preamble of the rules that finalized these subparts (75 FR 74774 and 75 FR 39736), as well as values of the Herfindahl-Hirschman Index (HHI) published by the U.S. Census Bureau for affected manufacturing NAICS codes.

Table. Herfindahl-Hirschman Index Values for Subparts II, SS, and TT

Subpart	NAICS	NAICS Description	HHI, VOS	HHI, VA	Finding
II Industrial Wastewater	311411	Frozen fruit, juice and vegetable manufacturing facilities.	586.6	648.1	Unconcentrated
II Industrial Wastewater	311421	Fruit and vegetable canning facilities.	254.8	295.2	Unconcentrated
II Industrial Wastewater	311611	Meat processing facilities.	1046.5	644	Moderately Concentrated
II Industrial Wastewater	322110	Pulp mills	1023.5	1235.7	Moderately Concentrated
II Industrial Wastewater	322121	Paper mills.	758.9	1036.2	Moderately Concentrated
II Industrial Wastewater	322122	Newsprint mills.	N/A	N/A	N/A
II Industrial Wastewater	322130	Paperboard mills.	713.1	768.6	Unconcentrated
II Industrial Wastewater	324110	Petroleum refineries	806.5	811.6	Unconcentrated
II Industrial Wastewater	325193	Ethanol manufacturing facilities.	275.1	298	Unconcentrated
SS Electrical Equip Manuf.	335311	Power, distribution, and specialty	524.2	541.7	Unconcentrated

[8] The NAICS codes used were based on expected reporters as verified data for these subparts was not yet available.

		transformer manufacturing			
SS Electrical Equip Manuf	335312	Motor and generator manufacturing	421.6	430.7	Unconcentrated
SS Electrical Equip Manuf	335313	Switchgear and switchboard apparatus manufacturing	718.8	693.8	Unconcentrated
SS Electrical Equip Manuf	335314	Relay and industrial control manufacturing	359.4	348.4	Unconcentrated
TT Industrial Landfills	221320	Sewage treatment facilities	N/A	N/A	N/A
TT Industrial Landfills	311411	Frozen fruit, juice and vegetable manufacturing facilities.	586.6	648.1	Unconcentrated
TT Industrial Landfills	311421	Fruit and vegetable canning facilities.	254.8	295.2	Unconcentrated
TT Industrial Landfills	311611	Meat processing facilities.	1046.5	644	Moderately Concentrated
TT Industrial Landfills	322110	Pulp mills	1023.5	1235.7	Moderately Concentrated
TT Industrial Landfills	322121	Paper mills.	758.9	1036.2	Moderately Concentrated
TT Industrial Landfills	322122	Newsprint mills.	N/A	N/A	N/A
TT Industrial Landfills	322130	Paperboard mills.	713.1	768.6	Unconcentrated
TT Industrial Landfills	562212	Solid waste landfills	N/A	N/A	N/A

Notes: HHI VA is the Herfindahl-Hirschman Index calculated on value added data (US Census Bureau). HHI VOS is the Herfindahl-Hirschman Index calculated on value of shipments data (US Census Bureau.) N/A indicates than an HHI was not available because some of the data needed to compute it is missing, or because the NAICS is not a manufacturing NAICS.

Results for subpart C

Many sources subject to subpart C are also reporters for other subparts. Thus, there are numerous NAICS codes that would apply to subpart C units. Because there are many different sectors within subpart C, many of the sectors may demonstrate at least moderate concentration either nationally, or in regional or product-specific markets, and may allow firms to identify their competitors. As a result, EPA could not conclude that markets would not be concentrated for some subpart C reporters, and proceeded to review the individual data elements.

The one segment of subpart C reporters for which reporting input data elements is not likely to result in reduced competition is EGUs that are owned and operated by electric utilities. Electric utilities are highly regulated, and in most states have service monopolies in their service territories. Many traditional electric utilities are vertically integrated, from generation through transmission and distribution. As a result, within their service territories, these utilities have no competition.

Results for subpart FF

Although we were not able to use HHI values to determine the market concentration for the coal mining industry, we were able to use other data to assess the relative market concentration and thereby determine the potential economic harm. The U.S. coal industry includes about 650 mining companies.[9] However, data published by the U.S. Energy Information Administration shows that five companies account for about 60% of total U.S. production.[10] Furthermore, imports account for only 5 percent of the U.S. market due to the high cost of transportation compared to price.[6] Thus, we conclude that the coal mining industry is a moderately concentrated industry in which the major firms are aware of each others' actions.

References

Census Bureau. Economic Census, Concentration Ratios http://www.census.gov/econ/concentration.html

Economic Census 2007, datasets EC0731SR12 and EC0731SR13

[9] First Research, Inc. *Market Research Report for the Coal Mining Industry.* Published October, 8, 2012.
[10] U.S. Energy Information Administration, *Annual Coal Report 2011. Table 10. http://www.eia.gov/coal/annual/pdf/acr.pdf.*