MEMORANDUM

To: VISTAS State Point Source Contacts and VISTAS EGU Special Interest Workgroup
From: Gregory Stella, VISTAS Technical Advisor - Emission Inventories
Date: June 13, 2005
Re: EGU Emission Factors and Emission Factor Assignment

Purpose

The purpose of this memorandum is to discuss the differences currently known to exist in the base year (2002) and future year (2009 and 2018) forecasts of EGU emission factors for PM and NH3. In particular, it has been identified that E.H. Pechan & Associates, Inc. (Pechan) in their development of post-processed IPM output into NIF structure uses a set of PM and NH3 emission factors that are "the most recent EPA approved uncontrolled emission factors" and which are most likely not the same emission factors used by States and emission inventory preparation contractors for estimating these emissions in 2002 for EGUs in the VISTAS domain. Additionally, through review of the code used to post-process the IPM parsed files, it has also been determined that emission factors are assigned in future years based on Pechan assigned SCCs and not necessarily initial base year SCCs as coded in the original VISTAS NIF files.

A second objective of this memorandum is to propose a resolution to the issues at hand and to recommend a set of modifications to be made to the base year PM and NH3 emission estimates for this source category.

Background

VISTAS Base Year EGU Emissions Preparation

A major component to the development of the VISTAS point source sector of the inventory was the incorporation of data submitted by the VISTAS States and local (S/L) agencies to the United States Environmental Protection Agency (EPA) as part of the Consolidated Emissions Reporting Rule (CERR). Work on incorporating the CERR data into the revised base year involved: 1) obtaining the data from EPA or the S/L agency, 2) evaluating the emissions and pollutants reported in the submittal, 3) augmenting CERR data with annual emission estimates for PM10-PRI and PM25-PRI; 4) evaluating the emissions from electric generating units, and 5) completing quality assurance reviews for each component of the point source inventory.

Data from several sources were used: 1) the inventories that the S/L submitted to EPA from May through July 2004; 2) supplemental data supplied by the S/L agencies that may have been revised or finalized after submittal to EPA, and 3) the original VISTAS 2002 inventory in cases where S/L CERR data were not available.

Particulate matter emissions can be reported in many different forms, as follows:

PM Category	Description
PM-PRI	Primary PM (includes filterable and condensable)
PM-CON	Primary PM, condensable portion only (all less than 1 micron)
PM-FIL	Primary PM, filterable portion only
PM10-PRI	Primary PM10 (includes filterable and condensable)
PM10-FIL	Primary PM10, filterable portion only
PM25-PRI	Primary PM25 (includes filterable and condensable)
PM25-FIL	Primary PM25, filterable portion only

State/local agencies did not report PM emissions in a consistent manner. The State/local inventories submitted for VISTAS included emissions data for either PM-FIL, PM-PRI, PM10-FIL, PM10-PRI, PM25-FIL, PM25-PRI, and/or PM-CON. From any one of these pollutants, EPA has developed augmentation procedures to estimate PM10-PRI, PM10-FIL, PM25-PRI, PM25-FIL, and PM-CON. If not included in a State/local inventory, PM10-PRI and PM25-PRI were calculated by adding PM10-FIL and PM-CON or PM25-FIL and PM-CON, respectively. The procedures for augmenting point source PM emissions are documented in detail in Appendix C of *Documentation for the Final 1999 National Emissions Inventory (Version 3) for Criteria Air Pollutants and Ammonia – Point Sources*, January 31, 2004[1].

Briefly, the PM data augmentation procedure includes the following five steps:

- Step 1: Prepare S/L/T PM and PM10 Emissions for Input to the PM Calculator
- Step 2: Develop and Apply Source-Specific Conversion Factors
- Step 3: Prepare Factors from PM Calculator
- Step 4: Develop and Apply Algorithms to Estimate Emissions from S/L/T Inventory Data
- Step 5: Review Results and Update the NEI with Emission Estimates and Control Information.

Ammonia (NH3) emissions from these sources were assigned using direct incorporation of S/L/T provided emission estimates or via the application of emission factors using ratios of NH3 emission factors to other reported pollutants (e.g., VOC, CO, etc.).

IPM Post Processing

ICF via VISTAS contracts provided an initial spreadsheet file containing unit-level records of both (1) "existing" units and (2) committed or new generic aggregates. All records have unit and fuel type data; existing, retrofit (for SO_2 and NO_x), and separate NO_x control information; annual SO_2 and NO_x emissions and heat input; summer season (May-September) NO_x and heat input; July day NO_x and heat input; coal heat input by coal type; nameplate capacity (MW), and State FIPS code. Existing units also have county FIPS code, a unique plant identifier (ORISPL) and unit ID (also called boiler ID) (BLRID); generic units do not have these data.

[1] ftp://ftp.epa.gov/EmisInventory/finalnei99ver3/criteria/documentation/point/point_99nei_finalv3_0204.pdf

The IPM data were further processed by Pechan using data files and methodology recently approved by EPA. The most current documentation related to this subject is the EPA report titled, *Documentation for the 2002 Electric Generating Unit (EGU) National Emissions Inventory (NEI),* September 2004[2]. The processing includes estimating various types of emissions and adding in control efficiencies, stack parameters, latitude-longitude coordinates, and State identifiers (plant ID, point ID, stack ID, process ID). Additionally, the generic units were sited in a county and given IDs.

Pechan developed SCC assignments for all units; unit/fuel/firing/bottom type data were used for existing units' assignments, while only unit and fuel type were used for generic units' assignments. Additional review of the source code used in developing these post-processed files confirmed this fact. In actuality, not only does it exist that the post-processing code assigns different emission factors for the same SCC but that SCCs assigned in future year IPM output are potentially different than those assigned in the base year inventory, leading to additional, propagating differences in the base year and future year estimates. The full extent of these issues is currently under review by VISTAS and MRPO.

Stack parameters were attached, first using matches to data in the VISTAS 2002 NIF files, secondly using the EPA-provided data files, thirdly using a March 9, 2004 Pechan in-house stack parameter file based on previous EIA-767 data, and lastly using an EPA June 2003 SCC-based default stack parameter file.

Plant ID (within State and county), point ID, process ID, and stack ID were then attached, first using the VISTAS-provided data files, or secondly using EPA or Pechan-generated defaults. Default stack IDs within a plant were assigned for each unique stack height-diameter combination. The process ID and stack ID default data were only used when the data were not matched to the original VISTAS 2002 NIF files.

Additional data were required for estimating VOC, CO, filterable primary PM_{10} and $PM_{2.5}$, PM condensable, and NH_3 emissions for all units. Thus, ash and sulfur contents were assigned by first using 2002 EIA-767 values for existing units or SCC-based defaults; filterable PM_{10} and $PM_{2.5}$ efficiencies were obtained from the 2002 EGU NEI that were based on 2002 EIA-767 control data and the PM Calculator program (a default of 99.2% was used for coal units if necessary); fuel use was back calculated from the given heat input and a default SCC-based heat content; and emission factors were obtained from an EPA-approved October 7, 2004 Pechan emission factor file based on AP-42 emission factors. Table 1 provides the emission factor differences between the "old" emission factor file (used in development of EPA's 1999 NEI v.3) and the updated factors as used in VISTAS latest IPM conversion. Note that this updated file was not the one used for estimating emissions for previous EPA post-processed IPM files (including estimates for CAIR). It should also be noted that this component of emission estimation is only for the filterable component of PM and that the emission factors used for condensable PM did not change between the two versions.

[2] ftp://ftp.epa.gov/EmisInventory/draftnei2002/point/documentation/egu2002doc.pdf

Issue Identification

During a VISTAS TAWG meeting held at the Solution Center in Durham, NC on April 5 and 6, 2005, emission summaries were presented as comparisons of 2002 to 2018 forecasts. Table 2 presents the slide originally used in identifying the increase in PM and NH3 emissions. In this comparison, it was noted that PM and NH3 emissions (highlighted in Table 2) from EGUs were significantly higher in 2018 than in 2002 and based on known regulation and activity, no reason could be identified for this increase. After an initial review of the data, it was determined that the PM and NH3 emission factors used between the base year and future year were most likely the culprit. In fact, for some SCCs, the NH3 emission factor increased by over 5,000% (0.000565 to 0.03 lbs/ton coal burned). Changes in PM emission factors were not as large and limited to only a few SCCs. However, this emissions increase was simply an artifact of the change in emission factor, not anything to do with changes in activity or control technology application.

Additionally, after further review of the post-processing code by VISTAS, it was determined that not only were differing emission factors being used for similar SCCs between the base and future year estimates for those SCCs identified in Table 2, but that the same SCCs were not necessarily being used for emission factor assignment in the base and post-processed IPM scenarios. This issue has implications not only for the different PM and NH3 factors, but for other pollutants (CO, VOC) not initially estimated by IPM.

Table 3 presents those unit-segment (SCC) combinations which have been identified in the 2018 OTW run to have been assigned SCCs in the IPM post-processing step different than those in the 2002 base case. In some instances, the SCCs are comparable enough that the emission factors assigned were the same. However, there are additional instances where significant enough difference exists that review and correction may be warranted. An analysis of the differences in assignment of these SCCs and associated factors has not yet been completed.

Proposed Solution

There are two issues which need to be resolved in the estimation of relative differences in EGU emissions between VISTAS base year 2002 emissions inventory and any forecasts of this source sector using IPM and post-processing steps applied using existing programs provided by Pechan; (1) consistent use of emission factors between the base and future years, and (2) the consistent use of SCCs for determining emission factors between the base and future years.

These issues can be resolved using a variety of ways but the proposal provided here positions VISTAS to regenerate some specific pollutant 2002 emissions for the EGU sector in a fashion consistent, and presumably, more up-to-date, than the estimates provided in the 2002 base year inventory. Additionally, this proposal allows for the existing process to be completed in the post-processing steps but adjusts the resulting non-IPM generated emissions using correct SCCs and emission factors.

Base Year Emissions Adjustment

The first step is the adjustment of the 2002 base year emissions inventory. Using the latest "EPA-approved" uncontrolled emission factors by SCC, VISTAS contactors will utilize CERR or VISTAS reported annual heat input, fuel throughput, heat, ash and sulfur content to estimate annual uncontrolled emissions for units identified as output by IPM. This step will be conducted for non-CEM pollutants (CO, VOC, PM, and NH3) only. For PM emissions, the condensable component of emissions will also be calculated and added to the resulting PM primary estimations. When these fuel characteristic variables are found to be zero, out of range (as identified by AP-42 factors), or invalid, average fuel data collected from EPA's AP-42 documentation on heat, sulfur, and/or ash content will be used. The resulting emissions will then be adjusted by any control efficiency factors reported in the CERR or VISTAS data collection effort.

Future Year Scenario Adjustment

Because the assignment of the SCCs to IPM output is a post-processing step which involves the cross-reference file developed to match IPM units to VISTAS 2002 base year inventory, it should be relatively straightforward to modify the code to assign the same base year SCC to the future year. Then, through assignment of SCCs and associated emission factors (via another cross-reference), similar base year and future year emission factor assignments could be made; just using the projected controls and fuel throughput as predicted by IPM. If modifications can not be made directly to the code for this cross-reference step, VISTAS can modify the resulting post-processed NIF files for those sources identified with alternate SCCs assigned in the future year. Using the same methods as described for the 2002 revisions, those non-IPM generated pollutants would be estimated using IPM predicted fuel characteristics and base year 2002 SCC assignments.

Table 1. Comparison of "Old" vs. "New" Emission Factors for IPM Post-Processing

SCCEMFACforMRPOoldvsnew.xls -- PM+NH3 EF, 12/17/04

This file lists the "Old" and "New" EPA-approved Uncontrolled PM_{10}, $PM_{2.5}$, and NH_3 Emission Factors for the SCCs in the MRPO Scenarios.

SCC[1]	FUEL	"New" PM10EF[4]	"Old" PM10EF[3]	"New" PM25EF[4]	"Old" PM25EF[3]	PMFLAG[2]	"New" NH3EF[4]	"Old" NH3EF[3]
10100201	BIT	2.6000	2.6000	1.4800	1.4800	A	0.030000	0.000565
10100202	BIT	2.3000	2.3000	0.6000	0.6000	A	0.030000	0.000565
10100203	BIT	0.2600	0.2600	0.1100	0.1100	A	0.030000	0.000565
10100204	BIT	13.2000	13.2000	4.6000	4.6000		0.030000	0.000565
10100211	BIT	2.6000	2.6000	1.4800	1.4800	A	0.030000	0.000565
10100212	BIT	2.3000	2.3000	0.6000	0.6000	A	0.030000	0.000565
10100217	BIT	12.4000	12.4000	1.3640	3.2000		0.030000	0.000565
10100221	SUB	2.6000	2.6000	1.4800	1.4800	A	0.030000	0.000565
10100222	SUB	2.3000	2.3000	0.6000	0.6000	A	0.030000	0.000565
10100223	SUB	0.2600	0.2600	0.1100	0.1100	A	0.030000	0.000565
10100224	SUB	13.2000	13.2000	4.6000	4.6000		0.030000	0.000565
10100226	SUB	2.3000	2.3000	0.6000	0.6000	A	0.030000	0.000565
10100238	SUB	16.1000	16.1000	4.2000	4.2000		0.030000	0.000565
10100301	LIG	1.8170	1.8170	0.5214	0.5214	A	0.030000	0.000565
10100302	LIG	2.3000	2.3000	0.6600	0.6600	A	0.030000	0.000565
10100303	LIG	0.8710	0.8700	0.3690	0.1100	A	0.030000	0.000565
10100317	LIG	12.0000	12.0000	1.4000	1.4000		0.030000	0.000565
10100601	NG	1.9000	1.9000	1.9000	1.9000		3.200000	3.200000
10100801	PC	7.9000	7.9000	4.5000	4.5000	A	0.397000	---
10102018	WC	12.0000	12.0000	1.4000	1.4000		0.030000	0.000565
20100201	NG	1.9380	1.9380	1.9380	1.9380		6.560000	---
20100301	IGCC	11.5500	11.5500	11.5500	11.5500		6.560000	---

Notes:

1. SCCs beginning with 101002 (coal), 101003 (coal), 101008 (coke), or 101020 (waste coal), emission factors in LB/TON; SCCs beginning with 101006 (natural gas), 201002 (natural gas), or 201003 (IGCC), emission factors are in LB/E6FT3.
2. If PMFLAG = 'A', then apply ash content to PM emission factor.
3. "Old" emission factors are used for latest EPA IPM post-processing.
4. "New" emission factors are used for MRPO IPM post-processing.

Table 2. Annual Emissions Comparison of 2002 Typical with 2018 OTW; VISTAS Tier 1 Category Totals.

	Annual 2018 OTW - 2002 Typical Emissions (Percent)						
Source Category	**VOC**	**NOx**	**CO**	**SO2**	**PM-10**	**PM-2.5**	**NH3**
Fuel Comb. Elec. Util.	13%	-68%	53%	-63%	69%	82%	3024%
Fuel Comb. Industrial	12%	0%	15%	7%	5%	7%	28%
Fuel Comb. Other	-55%	19%	-28%	15%	-16%	-8%	23%
Chemical & Allied Product Mfg	50%	29%	32%	31%	36%	36%	27%
Metals Processing	43%	27%	29%	37%	20%	20%	60%
Petroleum & Related Industries	-19%	23%	15%	11%	35%	33%	12%
Other Industrial Processes	22%	15%	21%	19%	28%	25%	16%
Solvent Utilization	22%	48%	36%	23%	34%	32%	20%
Storage & Transport	-19%	28%	46%	34%	-4%	2%	40%
Waste Disposal & Recycling	11%	13%	9%	37%	11%	10%	52%
Highway Vehicles	-47%	-70%	-19%	-89%	-34%	-53%	36%
Off-highway	-40%	-30%	23%	-61%	-29%	-29%	35%
Miscellaneous	2%	0%	0%	0%	14%	5%	15%
VISTAS Total	**-19%**	**-52%**	**-8%**	**-50%**	**13%**	**9%**	**19%**

Table 3. Differences in VISTAS Base Year 2002 and IPM Post-Processed SCC Emission Factor Assignments

FIPS	Plant ID	Plant Name	Point ID	Stack ID	Segment	2002 SCC	IPM SCC
01039	0001	ALABAMA ELECTRIC COOPERATIVE - MCWILLIAMS	005	002	01	10100201	20100201
01055	0002	ALABAMA POWER COMPANY - GADSDEN	002	001	01	10100202	20100201
01055	0002	ALABAMA POWER COMPANY - GADSDEN	003	001	01	10100201	20100201
01063	0001	ALABAMA POWER COMPANY - GREENE COUNTY	002	001	01	10100201	10100202
01063	0001	ALABAMA POWER COMPANY - GREENE COUNTY	003	001	01	10100201	10100202
01071	0008	TVA - WIDOWS CREEK	008	002	01	10100202	10100212
01071	0008	TVA - WIDOWS CREEK	009	003	01	10100202	10100212
01085	0008	GENERAL ELECTRIC CO	001	001	01	10200602	20100201
01097	1001	ALABAMA POWER COMPANY - BARRY	002	001	01	10100201	10100212
01097	1001	ALABAMA POWER COMPANY - BARRY	003	001	01	10100201	10100212
01097	1001	ALABAMA POWER COMPANY - BARRY	004	001	01	10100201	10100212
01097	1001	ALABAMA POWER COMPANY - BARRY	005	002	01	10100201	10100212
01097	1001	ALABAMA POWER COMPANY - BARRY	006	003	01	10100201	10100212
01097	1001	ALABAMA POWER COMPANY - BARRY	007	005	01	20200203	20100201
01097	1001	ALABAMA POWER COMPANY - BARRY	008	006	01	20200203	20100201
01097	1001	ALABAMA POWER COMPANY - BARRY	009	007	01	20200203	20100201
01097	1001	ALABAMA POWER COMPANY - BARRY	010	008	01	20200203	20100201
01127	0001	ALABAMA POWER COMPANY - GORGAS	004	003	01	10100201	10100202
01127	0001	ALABAMA POWER COMPANY - GORGAS	005	003	01	10100201	10100202
01127	0001	ALABAMA POWER COMPANY - GORGAS	006	004	01	10100201	10100212
01127	0001	ALABAMA POWER COMPANY - GORGAS	007	004	01	10100201	10100212
01127	0001	ALABAMA POWER COMPANY - GORGAS	008	004	01	10100201	10100212
12001	0010001	PROGRESS ENERGY FLORIDA, INC. U OF FL COGEN	1	1	1	20200203	20100201
12009	0090006	FLORIDA POWER & LIGHT (PCC) CAPE CANAVERAL	1	1	2	10100401	20100201
12009	0090006	FLORIDA POWER & LIGHT (PCC) CAPE CANAVERAL	2	2	2	10100401	20100201
12027	0270016	DESOTO COUNTY GENERATING COMPANY, LLC	2	2	1	20100101	20100201
12031	0310047	JEA KENNEDY	3	3	1	20100101	20100201
12031	0310047	JEA KENNEDY	4	4	1	20100101	20100201
12031	0310047	JEA KENNEDY	5	5	1	20100101	20100201
12031	0310485	JEA BRANDY BRANCH FACILITY	2	2	1	20100101	20100201
12033	0330045	GULF POWER COMPANY CRIST ELECTRIC GENERATING PLANT	2	1	1	10100601	20100201
12033	0330045	GULF POWER COMPANY CRIST ELECTRIC GENERATING PLANT	3	1	2	10100601	20100201

FIPS	Plant ID	Plant Name	Point ID	Stack ID	Segment	2002 SCC	IPM SCC
12049	0490043	VANDOLAH POWER COMPANY, LLC	1	1	1	20100101	20100201
12095	0950203	ORLANDO COGEN LIMITED, L.P.	1	1	1	20200203	20100201
12097	0970014	PROGRESS ENERGY FLORIDA, INC. INTERCESSION CITY PLANT	11	11	1	20100101	20100201
12097	0970014	PROGRESS ENERGY FLORIDA, INC. INTERCESSION CITY PLANT	18	18	2	20100101	20100201
12099	0990042	FLORIDA POWER & LIGHT (PRV) RIVIERA POWER PLANT	3	3	3	10100401	20100201
12099	0990042	FLORIDA POWER & LIGHT (PRV) RIVIERA POWER PLANT	4	4	3	10100401	20100201
12099	0990045	CITY OF LAKE WORTH UTILITIES TOM G. SMITH POWER PLANT	9	9	1	10100601	20100201
12103	1030011	PROGRESS ENERGY FLORIDA, INC. BARTOW PLANT	1	1	2	10100401	20100201
12103	1030011	PROGRESS ENERGY FLORIDA, INC. BARTOW PLANT	2	2	2	10100404	20100201
12103	1030011	PROGRESS ENERGY FLORIDA, INC. BARTOW PLANT	3	3	2	10100404	20100201
12105	1050003	LAKELAND ELECTRIC CHARLES LARSEN MEMORIAL POWER PLANT	4	4	2	10100401	20100201
12105	1050221	CALPINE/AUBURNDALE POWER PARTNERS, LP	6	6	2	20100101	20100201
12105	1050223	PROGRESS ENERGY FLORIDA, INC. TIGER BAY COGENERATION FACILITY	3	3	1	10200602	20100201
12105	1050233	TAMPA ELECTRIC COMPANY POLK POWER STATION	1	1	2	20100201	20100301
12121	1210003	PROGRESS ENERGY FLORIDA, INC. FL POWER SUWANNEE RVR PLANT	1	1	3	10100404	20100201
12121	1210003	PROGRESS ENERGY FLORIDA, INC. FL POWER SUWANNEE RVR PLANT	2	2	3	10100401	20100201
12121	1210003	PROGRESS ENERGY FLORIDA, INC. FL POWER SUWANNEE RVR PLANT	3	3	3	10100401	20100201
12127	1270009	FLORIDA POWER & LIGHT (PSN) SANFORD POWER PLANT	1	1	3	10100401	20100201
12127	1270020	PROGRESS ENERGY FLORIDA, INC. TURNER PLANT	10	10	1	20100101	20100201
12127	1270020	PROGRESS ENERGY FLORIDA, INC. TURNER PLANT	9	9	1	20100101	20100201
12127	1270028	PROGRESS ENERGY FLORIDA, INC. DEBARY FACILITY	17	17	1	20100101	20100201
12127	1270028	PROGRESS ENERGY FLORIDA, INC. DEBARY FACILITY	18	18	1	20100101	20100201
13051	05100006	KRAFT STEAM - ELECTRIC GENERATING PLANT	SG01	CS1	1	10100212	20100201
13051	05100006	KRAFT STEAM - ELECTRIC GENERATING PLANT	SG02	CS1	1	10100212	20100201
13067	06700003	GEORGIA POWER COMPANY, MCDONOUGH STEAM-ELECTRIC GENERATING PLANT	CT6M	ST6M	1	20100101	20100201
13067	06700003	GEORGIA POWER COMPANY, MCDONOUGH STEAM-ELECTRIC GENERATING PLANT	CT7M	ST7M	1	20100101	20100201
13115	11500003	GEORGIA POWER COMPANY, HAMMOND STEAM-ELECTRIC GENERATING PLANT	SG01	ST1	1	10100212	10100202
13115	11500003	GEORGIA POWER COMPANY, HAMMOND STEAM-ELECTRIC GENERATING PLANT	SG02	ST1	1	10100212	10100202
13115	11500003	GEORGIA POWER COMPANY, HAMMOND STEAM-ELECTRIC GENERATING PLANT	SG03	ST1	1	10100212	10100202

FIPS	Plant ID	Plant Name	Point ID	Stack ID	Segment	2002 SCC	IPM SCC
13115	11500003	GEORGIA POWER COMPANY, HAMMOND STEAM-ELECTRIC GENERATING PLANT	SG04	ST2	1	10100212	10100202
13207	20700008	GEORGIA POWER COMPANY, SCHERER STEAM-ELECTRIC GENERATING PLANT	SG01	ST1	1	10100212	10100226
13207	20700008	GEORGIA POWER COMPANY, SCHERER STEAM-ELECTRIC GENERATING PLANT	SG02	ST2	1	10100212	10100226
13207	20700008	GEORGIA POWER COMPANY, SCHERER STEAM-ELECTRIC GENERATING PLANT	SG03	ST3	1	10100212	10100226
13207	20700008	GEORGIA POWER COMPANY, SCHERER STEAM-ELECTRIC GENERATING PLANT	SG04	ST4	1	10100212	10100226
13237	23700008	GEORGIA POWER COMPANY, BRANCH STEAM-ELECTRIC GENERATING PLANT	SG01	ST1	1	10100212	10100202
13237	23700008	GEORGIA POWER COMPANY, BRANCH STEAM-ELECTRIC GENERATING PLANT	SG02	ST1	1	10100212	10100202
13237	23700008	GEORGIA POWER COMPANY, BRANCH STEAM-ELECTRIC GENERATING PLANT	SG03	ST2	1	10100212	10100202
13237	23700008	GEORGIA POWER COMPANY, BRANCH STEAM-ELECTRIC GENERATING PLANT	SG04	ST2	1	10100212	10100202
21111	0126	LOU GAS & ELEC, CANE RUN	06	06	01	10100212	10100202
21111	0127	LOU GAS & ELEC, MILL CREEK	03	03	01	10100212	10100202
21111	0127	LOU GAS & ELEC, MILL CREEK	04	04	01	10100212	10100202
21157	2115700053	DUKE ENERGY MARSHALL COUNTY,LLC	001A	1	2	20100101	20100201
21223	2122300002	LOUISVILLE GAS & ELECTRIC TRIMBLE CO GEN STATION	001	1	1	10100202	10100212
28007	2800700032	ATTALA GENERATING COMPANY, LLC	003	3	1	10100602	20100201
28047	2804700055	MISSISSIPPI POWER COMPANY, PLANT JACK WATSON	004	4	1	10100101	10100202
28047	2804700055	MISSISSIPPI POWER COMPANY, PLANT JACK WATSON	005	5	1	10100101	10100202
28059	2805900090	MISSISSIPPI POWER COMPANY, PLANT DANIEL	001	1	1	10100223	10100212
28059	2805900090	MISSISSIPPI POWER COMPANY, PLANT DANIEL	002	2	1	10100223	10100212
28059	2805900090	MISSISSIPPI POWER COMPANY, PLANT DANIEL	003	3	1	20100101	20100201
28059	2805900090	MISSISSIPPI POWER COMPANY, PLANT DANIEL	004	4	1	20100101	20100201
28059	2805900090	MISSISSIPPI POWER COMPANY, PLANT DANIEL	005	5	1	20100101	20100201
28059	2805900090	MISSISSIPPI POWER COMPANY, PLANT DANIEL	006	6	1	20100101	20100201
37017	3701700043	ELIZABETHTOWN POWER, LLC	G-17A	S-1	8	10101202	10100204
37035	3703500073	DUKE ENERGY CORPORATION - MARSHALL STEAM STATION	G-1	S-3	5	10100202	10100212
37035	3703500073	DUKE ENERGY CORPORATION - MARSHALL STEAM STATION	G-2	S-4	13	10100202	10100212
37035	3703500073	DUKE ENERGY CORPORATION - MARSHALL STEAM STATION	G-4	S-1	11	10100202	10100212

FIPS	Plant ID	Plant Name	Point ID	Stack ID	Segment	2002 SCC	IPM SCC
37035	3703500073	DUKE ENERGY CORPORATION - MARSHALL STEAM STATION	G-5	S-2	12	10100202	10100212
37071	3707100039	DUKE ENERGY CORPORATION - ALLEN STEAM STATION	G-14	S-1	1	10100202	10100212
37071	3707100039	DUKE ENERGY CORPORATION - ALLEN STEAM STATION	G-15	S-2	3	10100202	10100212
37071	3707100039	DUKE ENERGY CORPORATION - ALLEN STEAM STATION	G-16	S-3	5	10100202	10100212
37071	3707100039	DUKE ENERGY CORPORATION - ALLEN STEAM STATION	G-17	S-4	7	10100202	10100212
37071	3707100039	DUKE ENERGY CORPORATION - ALLEN STEAM STATION	G-18	S-5	9	10100202	10100212
37071	3707100040	DUKE ENERGY CORPORATION - RIVERBEND STEAM STATION	G-17	S-5	20	10100202	10100212
37145	3714500029	CP&L - ROXBORO STEAM ELECTRIC PLANT	G-29	S-1	1	10100212	10100202
37145	3714500029	CP&L - ROXBORO STEAM ELECTRIC PLANT	G-35A	S-3	5	10100212	10100202
37145	3714500029	CP&L - ROXBORO STEAM ELECTRIC PLANT	G-35B	S-3	5	10100212	10100202
37145	3714500029	CP&L - ROXBORO STEAM ELECTRIC PLANT	G-36A	S-4	7	10100212	10100202
37145	3714500029	CP&L - ROXBORO STEAM ELECTRIC PLANT	G-36B	S-4	7	10100212	10100202
37145	3714500045	CP&L - MAYO FACILITY	G-46A	S-1	1	10100212	10100202
37145	3714500045	CP&L - MAYO FACILITY	G-46B	S-1	1	10100212	10100202
37155	3715500147	PROGRESS ENERGY CAROLINAS, INC., W.H. WEATHERSPOON PLANT	G-26	S-2	9	10100202	10100212
37155	3715500166	LUMBERTON POWER, LLC	G-17A	S-1	7	10101202	10100204
37159	3715900004	DUKE ENERGY CORPORATION - BUCK STEAM STATION	G-4	S-6	8	10100202	10100212
37159	3715900163	ROWAN COUNTY POWER LLC	G-1	S-1	1	10100604	20100201
37159	3715900163	ROWAN COUNTY POWER LLC	G-2	S-2	3	10100604	20100201
37159	3715900163	ROWAN COUNTY POWER LLC	G-3	S-3	5	10100604	20100201
37169	3716900004	DUKE ENERGY CORP - BELEWS CREEK STEAM STATION	G-17	S-1	1	10100215	10100202
37169	3716900004	DUKE ENERGY CORP - BELEWS CREEK STEAM STATION	G-18	S-2	2	10100215	10100202
37191	3719100017	PROGRESS ENERGY - F LEE PLANT	G-3	S-1	3	10100212	10100202
37191	3719100017	PROGRESS ENERGY - F LEE PLANT	G-4	S-2	5	10100212	10100202
45021	0600-0081	DUKE ENERGY:MILL CREEK	CA1	1	2	20100101	20100201
45021	0600-0081	DUKE ENERGY:MILL CREEK	CA2	2	2	20100101	20100201
45021	0600-0081	DUKE ENERGY:MILL CREEK	CA3	3	2	20100101	20100201
47145	0013	TVA KINGSTON FOSSIL PLANT	001	S-1	1	10100202	10100212
47145	0013	TVA KINGSTON FOSSIL PLANT	002	S-1	1	10100202	10100212
47145	0013	TVA KINGSTON FOSSIL PLANT	003	S-1	1	10100202	10100212
47145	0013	TVA KINGSTON FOSSIL PLANT	004	S-1	1	10100202	10100212
47145	0013	TVA KINGSTON FOSSIL PLANT	005	S-1	1	10100202	10100212
47145	0013	TVA KINGSTON FOSSIL PLANT	006	S-2	1	10100202	10100212
47145	0013	TVA KINGSTON FOSSIL PLANT	007	S-2	1	10100202	10100212

FIPS	Plant ID	Plant Name	Point ID	Stack ID	Segment	2002 SCC	IPM SCC
47145	0013	TVA KINGSTON FOSSIL PLANT	008	S-2	1	10100202	10100212
47145	0013	TVA KINGSTON FOSSIL PLANT	009	S-2	1	10100202	10100212
47157	00528	ALLEN FOSSIL PLANT	CTrb10	CTrb10	13	20100101	20100201
47161	0011	TVA CUMBERLAND FOSSIL PLANT	001	S-01	1	10100215	10100202
47161	0011	TVA CUMBERLAND FOSSIL PLANT	002	S-02	1	10100215	10100202
51001	00030	COMMONWEALTH CHESAPEAKE POWER STATION	1A	1	1	20100101	20100201
51001	00030	COMMONWEALTH CHESAPEAKE POWER STATION	1B	1	2	20100101	20100201
51001	00030	COMMONWEALTH CHESAPEAKE POWER STATION	1C	1	3	20100101	20100201
51001	00030	COMMONWEALTH CHESAPEAKE POWER STATION	1D	1	4	20100101	20100201
51001	00030	COMMONWEALTH CHESAPEAKE POWER STATION	1E	1	5	20100101	20100201
51001	00030	COMMONWEALTH CHESAPEAKE POWER STATION	1F	1	6	20100101	20100201
51001	00030	COMMONWEALTH CHESAPEAKE POWER STATION	1G	1	7	20100101	20100201
51083	00046	DOMINION - CLOVER POWER STATION	1	1	4	10100501	10100212
51083	00046	DOMINION - CLOVER POWER STATION	2	2	4	10100501	10100212
51153	00002	DOMINION - POSSUM POINT	3	3	1	10100212	20100201
51175	00051	DOMINION - SOUTHAMPTON POWER STATION	1	1	1	10200219	10100204
51191	00180	WOLF HILLS ENERGY LLC	21	1	1	20100209	20100201
51191	00180	WOLF HILLS ENERGY LLC	22	2	1	20100202	20100201
51191	00180	WOLF HILLS ENERGY LLC	23	3	1	20100202	20100201
51191	00180	WOLF HILLS ENERGY LLC	24	4	1	20100202	20100201
51191	00180	WOLF HILLS ENERGY LLC	25	5	1	20100202	20100201
51760	00389	DOMINION - BELLEMEADE	20	1	1	20100101	20100201
51760	00389	DOMINION - BELLEMEADE	21	2	1	20100101	20100201
54023	0014	NORTH BRANCH POWER STATION	002	001	01	10100217	10100202