Exhibit No.
Issues: In-Service Criteria;
New Plant In-Service;
Energy Supply Operating & Maintenance Expense
Witness: Blake A. Mertens
Type of Exhibit: Direct Testimony
Sponsoring Party: Empire District Electric
Case No.:
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Before the Public Service Commission of the State of Missouri

Direct Testimony

Of

Blake A. Mertens

October 2009

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ON BEHALF OF
THE EMPIRE DISTRICT GAS COMPANY
BEFORE THE
MISSOURI PUBLIC SERVICE COMMISSION

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ON BEHALF OF
THE EMPIRE DISTRICT ELECTRIC COMPANY
BEFORE THE
MISSOURI PUBLIC SERVICE COMMISSION
CASE NO.

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Blake A. Mertens. My business address is 602 South Joplin Ave., Joplin, Missouri.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. The Empire District Electric Company ("Empire" or "Company"), I am Associate Director of Strategic Projects.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I graduated from Kansas State University in 2000 with a Bachelor of Science Degree in Chemical Engineering with a minor in Business. I received a Masters Degree in Business Administration from Missouri State University in December of 2007. I am also a professionally licensed engineer in the state of Kansas.

Q. PLEASE GIVE AN OVERVIEW OF YOUR PROFESSIONAL EXPERIENCE.

A. I was employed by Black & Veatch Corp. immediately following my graduation from Kansas State University in May of 2000. From June of 2000 through November of 2001, I held roles as a technical analyst and energy consultant for the Strategic Planning Group of Black & Veatch's Power Sector Advisory Services in the Energy Services Division. My duties included assisting in power plant siting studies, economic analysis of potential power plants using production cost modeling, independent engineering evaluations of plant assets, and market analysis of the California energy crisis of 2000 – 2001. I went to work for Empire in November of 2001 as a Staff Engineer in Energy Supply where my duties included tracking of plant capital and operating & maintenance ("O&M") expenses, involvement in energy supply regulatory issues, evaluation of new generating resource options, assisting in the construction of new plant, and assisting in the

modeling and tracking of fuel and purchased power costs. In 2003, my title was changed to Planning Engineer with similar duties but more responsibilities in the area of generation planning. In the fall of 2004 I took a position as Combustion Turbine Construction Project Manager. In this position I was responsible for the construction and commissioning of a 150 megawatt ("MW") combustion turbine at Empire's Riverton Power Plant, known as Riverton Unit 12. Riverton Unit 12 went into commercial operation in April of 2007. In the fall of 2006 I took on the position of Manager of Strategic Projects. In this role I was responsible for the management of new generation and major projects for Energy Supply facilities. This includes representing Empire's interests at the Iatan, Plum Point, and other off-system generation facilities. In March of 2009 I was promoted to my current position as Associate Director of Strategic Projects. My duties remain much the same as my previous position but with a broader focus on company-wide projects rather than those just related to Energy Supply.

EXECUTIVE SUMMARY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS CASE BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION ("COMMISSION")?

A. I will quantify and describe the investment Empire has made in new power production facilities. These new facilities include the Air Quality Control System ("AQCS") at Iatan Unit 1, the Plum Point Unit 1 coal-fired generating unit, and the Iatan Unit 2 coal-fired generating unit. The ongoing operating and maintenance expenses associated with these new generating units and the Asbury SCR will also be quantified.

IATAN UNIT 1 AIR QUALITY CONTROL SYSTEM ("AQCS") ADDITIONS.

Q. PLEASE DESCRIBE EMPIRE'S INTERESTS AT THE IATAN PLANT.

A. Empire has an undivided twelve percent (12%) ownership share of Iatan Units 1 and 2. The Greater Missouri Operating Company ("GMOC") has an 18% interest in the plant. Kansas City Power & Light ("KCPL") is the majority owner with a 70% interest and is the Operator of the plant. As Operator, KCPL is directly responsible for the day to day operations of the plant as well as construction

management. Empire is responsible for its 12% share of operating, maintenance, fuel, construction, and other miscellaneous costs at the Iatan plant.

Q. PLEASE BRIEFLY EXPLAIN THE AQCS ADDITIONS AT IATAN UNIT 1.

A. The AQCS additions at Iatan Unit 1 include a Selective Catalytic Reduction ("SCR") system for the removal of nitrogen oxides ("NOx"), a wet scrubber for the removal of sulfur dioxides ("SOx"), a fabric filter bag house for the removal of particulate matter, and a powder activated carbon system for the removal of mercury. These additions were made in order to comply with EPA regulations and to ensure that total emissions from the Iatan site after the addition of Iatan Unit 2 would be less than current (pre-2008) emission levels from a single unit (i.e. the combined emission levels from Iatan Unit 1 and Unit 2 will be less than the emission levels from Unit 1 prior to these projects commencing). The Iatan Unit 1 AQCS additions were contemplated as part of Empire's Experimental Regulatory Plan approved by the Commission in its Case No. EO-2005-0263.

Q. DO YOU HAVE PROPOSED IN-SERVICE CRITERIA FOR THE IATAN UNIT 1 AQCS ADDITIONS?

A. Yes. The in-service criteria used to determine in-service for the Iatan Unit 1 AQCS additions in KCPL's recent rate case, ER-2009-0089, are attached to my testimony as Schedule BAM-1. Empire submits that these same criteria should be used to determine in-service for Empire's share of the Iatan Unit 1 AQCS additions.

Q. ARE THE IATAN UNIT 1 AQCS ADDITIONS IN-SERVICE?

A. Yes. These additions became fully operational and went into service as of April 19, 2009. The Commission Staff agreed that the in-service criteria had been met in KCPL's recent case (refer to Michael Taylor's oral testimony in case ER-2009-0089, Item #286). There were no objections or contrary evidence presented by other parties.

<u>IATAN UNIT 2</u>

Q. PLEASE BRIEFLY EXPLAIN THE IATAN UNIT 2 ADDITION.

A. Iatan Unit 2 is an approximately 850 MW, supercritical, pulverized coal-fired generating unit located at the Iatan site near Weston, Missouri. This unit is jointly owned by KCPL, GMOC, Empire, Missouri Joint Municipal Electric Utility

Commission ("MJMEUC"), and Kansas Electric Power Cooperative ("KEPCO"). Empire's share of Iatan Unit 2 is 12 % or approximately 102 MW. This unit has been under construction since early 2006 and is scheduled to be available for service late in the summer of 2010. Empire's ownership in Iatan Unit 2 was also contemplated and approved by the Commission as part of Empire's Experimental Regulatory Plan.

Q. DO YOU HAVE PROPOSED IN-SERVICE CRITERIA FOR THE IATAN UNIT 2 ADDITION?

A. Yes. Attached as Schedule BAM-2 is the in-service criteria KCPL, the Commission Staff, and Empire have jointly drafted for Iatan Unit 2.

Q. HAS IATAN UNIT 2 MET THE IN-SERVICE CRITERIA?

A. No. As previously stated, the unit is not scheduled to be in-service until late in the summer of 2010. I present the in-service criteria here for reference only so that it is clear what criteria will be used at a later time to determine in-service.

PLUM POINT UNIT 1

Q. PLEASE BRIEFLY EXPLAIN THE PLUM POINT UNIT 1 ADDITION.

A. Plum Point Unit 1 is an approximately 665 MW, subcritical, pulverized coal-fired generating unit located near Osceola, Arkansas (the northeast corner of Arkansas along the Mississippi River). This unit is jointly owned by Plum Point Energy Associates, LLC ("PPEA"), (which is a partnership between Dynegy, John Hancock, and Energy Investment Fund), East Texas Electric Cooperative ("ETEC"), Inc., Empire, MJMEUC, and Municipal Energy Association of Mississippi ("MEAM"). Empire's ownership share of Plum Point Unit 1 is 7.52% or approximately 50 MW. Empire also has a purchase power agreement with PPEA for an additional 50 MW of capacity and associated energy from the unit. This unit has been under construction since early 2006 and is scheduled to be available for service in the summer of 2010. Empire's stake in Plum Point Unit 1 was not specifically contemplated and approved as part of Empire's Experimental Regulatory Plan, but was contemplated and discussed as part of the Company's ongoing Integrated Resource Plan ("IRP"), which is regularly discussed with

Commission Staff, the Office of Public Counsel ("OPC"), and other interested parties involved in Empire's regulatory proceedings in Missouri.

Q. DO YOU HAVE PROPOSED IN-SERVICE CRITERIA FOR THE PLUM POINT UNIT 1 ADDITION?

A. Yes. Attached as Schedule BAM-3 is the in-service criteria the Commission Staff and Empire have agreed to for Plum Point Unit 1. These criteria are largely the same as the criteria used for Iatan Unit 2 except for adaptations for specific Plum Point Unit 1 contract guarantees and capacity values.

Q. HAS PLUM POINT UNIT 1 MET THE IN-SERVICE CRITERIA?

A. No. As previously stated, the unit is not scheduled to be in-service until the summer of 2010. I present the in-service criteria here for reference only so that it is clear what criteria will be used at a later time to determine in-service.

CAPITAL COSTS ASSOCIATED WITH NEW PLANT IN-SERVICE

Q. HAVE THE CAPITAL COSTS ASSOCIATED WITH THE AFOREMENTIONED PROJECTS BEEN INCLUDED IN THE REVENUE REQUIREMENT IN THIS RATE CASE?

A. Yes. The filing includes the capital costs associated with Empire's share of Iatan Unit 1 AQCS additions, Empire's share of Iatan Unit 2, and Empire's share of Plum Point Unit 1.

Q. FOR PURPOSES OF THIS RATE CASE, WHAT LEVEL OF EXPENDITURES ARE INCLUDED FOR THESE SPECIFIC CAPITAL ADDITIONS?

A. In total, Empire's filing reflects $425,233,585 in total investment for these capital additions, which includes incurred and projected capital expenditures and AFUDC. The Missouri jurisdictional share of this investment is approximately 83.3% or $354.3 million.

Q. ARE THERE ANY FACTORS THAT COMPLICATE HOW THE AMOUNTS INCLUDED FOR THESE CAPITAL ADDITIONS ARE REPORTED?

A. Yes.

Q. PLEASE EXPLAIN.

A. Specifically as it relates to the Iatan projects, a portion of the Iatan Unit 1 AQCS additions and Iatan Unit 2 project include plant that is designated as Common Property. This designation is for equipment that will be utilized by both Unit 1 and Unit 2, such as the stack shell, limestone handling, fuel handling, etc. This designation had to be made due to the fact that the two units have different ownership structures (i.e. KEPCO and MJMEUC are part owners of Unit 2 but not of Unit 1). From Empire's overall cost perspective this designation is inconsequential since we are a 12-percent owner in both units; however, from a total project accounting and plant in-service perspective this is of importance.

Q. PLEASE CONTINUE.

A. When the Iatan Unit 1 AQCS additions went into service, FERC accounting regulations (specifically 18 CFR Ch.1, Section 107.B) required Common Property to be placed in-service at the same time. The Iatan Unit 1 AQCS and Iatan Unit 2 project budgets included Common Property items in both of them. In other words, there was not a separate budget for Iatan Common Property. As a result, an evaluation of Common Property had to be made to determine what portion of each of the Iatan project budgets were Common Property and thus had to be placed in-service. This evaluation did not change the overall budget for the Iatan projects, but does create some confusion when presenting project actual expenditures compared to project budgets.

Q. WHEN YOU REFER TO THE AMOUNTS OF COMMON PROPERTY INCLUDED IN THE IATAN 1 AQCS AND IATAN 2 PROJECT BUDGETS, COULD YOU PLEASE BE MORE SPECIFIC?

A. Excluding AFUDC and property taxes, the total shared Iatan Unit 1 AQCS budget is approximately $484 million (Empire's share $58.1 million) of which approximately $114 million (Empire's share $13.7 million) is Common Property. Likewise, excluding AFUDC and property taxes, Iatan Unit 2's current total shared budget is approximately $1.9 billion (Empire's share $228 million) of which $269 million ($32.2 million Empire's share) is Common Property.

Q. WITH THE IATAN COMMON PROPERTY ISSUE IN MIND, PLEASE PROVIDE FURTHER DETAIL ON THE APPROXIMATELY $425,000,000

BEING INCLUDED AS NEW PLANT IN-SERVICE FOR THESE PROJECTS.

A. Please refer to Schedule BAM-4 which summarizes the current budgets for each of the projects excluding AFUDC, the amounts incurred through June 30, 2009, the amount of AFUDC accrued through June 30, 2009, the amounts reflected as plant in-service as of June 30, 2009, (end of test year) for Iatan Unit 1 AQCS and Iatan Common Property, and the projected amounts of expenditures and AFUDC accruals through project completion.

Q. DO YOU EXPECT THE FULL $425 MILLION TO BE EXPENDED AS OF THE EFFECTIVE DATE OF THE NEW RATES THAT RESULT FROM THIS CASE?

A. No. Since the Iatan Unit 2 and Plum Point Unit 1 projects are not scheduled to go into service until sometime in the summer of 2010 and rates set in this case are to be effective shortly thereafter, there will undoubtedly be some involved costs that have not been invoiced and/or approved by the date rates become effective in this case. Please refer to Empire witness Kelly Walters' direct testimony for a full description of how Empire proposes that the cost of these particular plant additions will be recovered in its rates over time.

O&M ADJUSTMENTS ASSOCIATED WITH NEW GENERATION FACILITIES

Q. BEYOND CAPITAL EXPENSES, ARE THERE ANY OTHER COSTS ASSOCIATED WITH THESE PROJECTS THAT SHOULD BE ACCOUNTED FOR AND REFLECTED IN RATES?

A. Yes. Specifically the ongoing operating, maintenance, fuel, transmission, and other miscellaneous costs associated with ongoing operations of these facilities need to be accounted for and reflected in Empire's rates for electric service.

Q. PLEASE SUMMARIZE THE O&M ADJUSTMENTS YOU ARE SUPPORTING IN THIS RATE CASE FOR THESE FACILITIES.

A. The proposed adjustments to operating and maintenance ("O&M") expense for Iatan 2 total $3,858,276, which is inclusive of ammonia, limestone, and powder activated carbon for the Unit 2 AQCS. This adjustment is based on the projected O&M budget KCP&L has prepared for the plant for the year 2011, the units first

full year of operation. The proposed adjustments to O&M expenses for Plum Point Unit 1 plant $2,783,975. This adjustment is based on an O&M budget prepared by Dynegy Services Plum Point ("DSPP"), a subsidiary of Dynegy in charge of Plum Point Unit 1 project management, and North America Energy Services, the third party O&M provider for the plant. Additionally, an adjustment of $350,007 has been made to the Iatan Unit 1 O&M expenses to account for a full year of operation of the AQCS. Since the Unit 1 AQCS did not go into service until late April of 2009, very few AQCS operating costs are included in the test year, ending June 30, 2009. This $350,007 in annual O&M is comprised of the cost of limestone, ammonia, and powder activated carbon. Finally, an adjustment of $212,136 has been made for the operation of Iatan Common Property. This adjustment is based on the projected O&M budget KCP&L has prepared for the plant for the year 2011. Please refer to schedules BAM-5 thru BAM-8 for further detail of these adjustments.

Q. DO YOU PROPOSE A SPECIFIC TRANSMISSION ADJUSTMENT FOR ANY OF THE NEW FACILITIES?

A. Yes. Since Plum Point Unit 1 is located in the Entergy transmission region, Empire had to secure firm point-to-point transmission to export the power out of Entergy into the Southwest Power Pool ("SPP"), the regional transmission system Empire operates within. Entergy's tariff rate effective June 1, 2009, for firm, long-term, point-to-point transmission is $1,350 per MW-month. Empire has reserved 100 MW of firm point-to-point transmission service on Entery's system, 50 MW for the ownership share and 50 MW for the purchase power agreement. This equates to $1,620,000 in annual transmission charges.

Q. IS AN ADJUSTMENT TO FUEL EXPENSE REQUIRED?

A. No specific adjustments for fuel are contemplated. Since Empire's share of Plum Point Unit 1 and Iatan Unit 2, in total approximately 200 MW, basically are to replace Empire's purchase power agreement for capacity (162 MW) and energy from the Jeffrey Energy Center coal-fired units, the overall effects to fuel costs are not significant. Please refer to the direct testimony of Empire witness Todd Tarter for additional details on the level of fuel expense to be included in this case.

ENERGY SUPPLY OPERATING AND MAINTENANCE ADJUSTMENT

Q. WHAT AREAS OF ENERGY SUPPLY, AS IT RELATES TO OPERATING AND MAINTENANCE EXPENSES, WILL YOUR TESTIMONY ADDRESS?

A. Energy Supply O&M expenses include operating and maintenance expenses incurred at Empire's Asbury, Energy Center, Ozark Beach, Riverton, and State Line plants. In addition, Empire's 12-percent share of O&M expenses incurred at the KCPL operated Iatan plant are included in O&M expenses.

Q. WHAT WAS THE TEST YEAR (TWELVE-MONTHS-ENDING ("TME") JUNE 30, 2009) LEVEL OF O&M EXPENSES FOR THESE ENERGY SUPPLY FACILITIES, EXCLUDING LABOR?

A. O&M expenses for TME June 2009 totaled $10,165,331, which includes 60 percent of State Line Combined Cycle's ("SLCC's") O&M expenses. This unit is jointly owned – Westar owns 40% and Empire owns 60%. Thus, Empire is responsible for approximately 60 percent of the O&M costs at SLCC.

Q. FOR PURPOSES OF THIS CASE, WERE ANY ADJUSTMENTS MADE TO THE LEVEL OF EXPENSE TO BETTER REPRESENT NORMAL ONGOING O&M EXPENSES IN ENERGY SUPPLY?

A. Yes. One adjustment was made to the level of O&M expenses for the Asbury SCR, which was placed into service February of 2008. The proposed adjustment is $354,000. This adjustment is made to realize a full year of operating and maintenance expenses for the SCR.

Q. IF THE SCR WENT INTO SERVICE IN FEBRUARY OF 2008, WOULD A FULL YEAR'S WORTH OF EXPENSES BE IN THE TEST YEAR?

A. Normally, yes; however, because the EPA's new Clean Air Interstate Rule regulations for NOx emissions did not go into effect until January of 2009, the SCR did not operate at "normal" levels until January of 2009. For this reason little to no ammonia was consumed in the latter half of 2008. The $354,000 adjustment simply doubles the amount of SCR expenses that were actually incurred in the first half of 2009 when the SCR was operating normally.

Q. IS $708,000 EQUAL TO THE NORMAL ANNUAL OPERATING EXPENSES ASSOCIATED WITH THE ASBURY SCR?

A. Based on existing ammonia prices, this is the best estimate available; however, since ammonia prices are highly correlated to natural gas prices, there is a high level of uncertainty related to "normal" annual SCR costs. Since natural gas prices are currently low, it is more likely that annual SCR costs will be higher rather than lower.

FUEL ADJUSTMENT CLAUSE ("FAC") INCLUSION OF AQCS CONSUMABLES

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. I would like to explain why the costs associated with consumables used in AQCS processes should be included in accounts that are passed through as part of the FAC. Specifically, I am referring to the costs of ammonia used by an SCR, the costs of limestone used by scrubbers, and the cost of powder activated carbon used in mercury removal processes. Collectively I will refer to these as "AQCS consumables".

Q. AT WHAT GENERATION FACILITIES ARE THESE AQCS CONSUMABLES TO BE UTILIZED?

A. Empire utilizes ammonia in its SCR at the Asbury and SLCC generating units. Empire will pay for its share of AQCS consumables at the Iatan Unit 1, Iatan Unit 2, and Plum Point Unit 1 generating units.

Q. WHAT LEVEL OF EXPENSES IS EMPIRE INCLUDING IN THIS RATE PROCEEDING FOR AQCS CONSUMABLES?

A. $2,165,183. Please refer to Schedule BAM-9 for a breakdown of consumable costs by generating unit.

Q. WHY SHOULD THESE AQCS CONSUMABLE EXPENSES BE REFLECTED IN FAC ACCOUNTS?

A. There are at least three reasons why these costs should be included in FAC accounts:

1) These costs are highly correlated to the amount of fuel consumed and/or electric generation produced at these generating units.

2) The prices of these AQCS consumables are highly variable.

3) The cost of emission allowances run through the FAC in 509 accounts.

Q. PLEASE PROVIDE SUPPORT FOR THE FIRST REASON?

A. The first reason is self evident. As more energy is produced from a generating unit additional fuel is needed to produce this energy. Likewise, as additional fuel is consumed, additional AQCS consumables are needed to control emissions from the facility. For many of the same reasons that fuel costs run through the FAC, it makes sense for AQCS consumables that are directly tied to the level of fuel used at the generating unit to also run through the FAC. Simply put, the customer will benefit when AQCS consumables, or variable environmental costs, are below base rate levels, and the Company will be made whole when AQCS consumables, or variable environmental costs, are above base rate levels. For example, if demand is above "normal" levels and additional generation is needed to serve customers, it is highly likely additional AQCS consumables will be consumed to provide this generation. While the FAC allows Empire to recover its prudently incurred direct fuel costs, the additional cost of AQCS consumables will not be reflected in rates unless those costs also are included in the FAC. To provide a similar example from the opposite perspective, if one of Empire's baseload units experiences an extended outage, low cost generation that came from this unit will likely have to be replaced with higher cost gas generation or purchased power, both of which are likely to cause fewer AQCS consumables to be consumed. In this case customers may very well be paying for higher cost energy through the FAC but would not benefit from fewer AQCS consumables being consumed.

Q. PLEASE PROVIDE SUPPORT FOR THE SECOND REASON.

A. The second reason for FAC inclusion is related to the volatility of AQCS consumable prices. Just as natural gas and coal are susceptible to price changes due to uncontrollable market factors so are the prices of AQCS consumables. In fact, the ammonia contract in place for Empire's Asbury facility is tied to natural gas price indexes because the cost of natural gas is highly correlated to the production cost of anhydrous ammonia. Since recent history has shown that natural gas prices are highly volatile, so too is the price of anhydrous ammonia.

Q. PLEASE PROVIDE SUPPORT FOR THE THIRD REASON.

A. As it relates to the third reason (costs of emission allowances that are accounted for in FERC account 509 run through the FAC), one must understand that the number of emission allowances a company must procure to comply with emission regulations is related to the cost of AQCS consumables. For example, a company can comply with emission regulations by directly investing in emission control equipment and/or procuring emission allowances or some combination of the two options. There is an asymmetrical incentive in place if the FAC captures the proceeds from the sale of an emission allowance but it does not capture the cost to produce the emission allowance. That appears to be the case in the FAC currently authorized for Empire in Missouri. By placing AQCS consumables in the same position as FERC 509 emission allowance costs, the proper symmetry of cost, revenue and recovery is in place.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

In-Service Criteria for Iatan 1--Particulate and Opacity Control Equipment

1. All major construction work is complete.

2. All preoperational tests have been successfully completed.

3. Equipment successfully meets operational contract guarantees. (Note: Some operational contract guarantee verification periods may extend beyond the duration of the schedule for a rate case. These guarantees will be evaluated for applicability.)

4. The equipment shall be operational and demonstrate its ability to operate at a stack opacity (six minute average) less than or equal to 11% over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (670 MWnet).

5. The equipment shall also demonstrate its ability to operate at a stack opacity (six minute average) less than or equal to 11.5% over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (670 MWnet).

6. Continuous emission monitoring systems (CEMS) are operational and demonstrate the capability of monitoring the opacity emissions to satisfy the parameters in items (4) and (5) above.

In-Service Criteria for Iatan 1--NO_X Control Equipment

1. All major construction work is complete.

2. All preoperational tests have been successfully completed.

3. Equipment successfully meets operational contract guarantees. (Note: Some operational contract guarantee verification periods may extend beyond the duration of the schedule for a rate case. These guarantees will be evaluated for applicability.)

4. The equipment shall be operational and demonstrate its ability to operate at a NO_X emission level of 0.090 lb/mmBtu over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (670 MWnet).

5. The equipment shall also demonstrate its ability to operate at a NO_X emission level of 0.100 lb/mmBtu over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (670 MWnet).

6. Continuous emission monitoring systems (CEMS) are operational and demonstrate the capability of monitoring the NO_X emissions to satisfy the parameters in items (4) and (5) above.

In-Service Criteria for Iatan 1--SO_2 Control Equipment

1. All major construction work is complete.

2. All preoperational tests have been successfully completed.

3. Equipment successfully meets operational contract guarantees. (Note: Some operational contract guarantee verification periods may extend beyond the duration of the schedule for a rate case. These guarantees will be evaluated for applicability.)

4. The equipment shall be operational and demonstrate its ability to operate at a SO_2 reduction efficiency equal to or greater than 91% over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (670 MWnet).

5. The equipment shall also demonstrate its ability to operate at a SO_2 reduction efficiency equal to or greater than 86% over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (670 MWnet).

6. Continuous emission monitoring systems (CEMS) are operational and demonstrate the capability of monitoring the SO_2 emissions to satisfy the parameters in items (4) and (5) above.

Iatan Unit 2 In-Service Test Criteria

1. Unit must demonstrate that it can operate at its design minimum load (340 MWnet) or above.

Hours at or above design minimum load / 400 hours >= 0.80

2. Unit must be able to operate at or above its design capacity factor for a reasonable period of time. If the design capacity factor is not specified it will be assumed to be 0.60 unless the utility can offer evidence justifying a lower value.

Design capacity factor <= energy generated for a continuous period of 168 hours/ (design full load [850 MWnet] x 168 hours)

3. Unit must operate at an average capacity equal to 98% of its design maximum continuous rating [850 MWnet] for four (4) hours.

4. Unit must be operated so as to show a clear and obvious trend toward the predominate use of coal as its primary fuel. Test period will be thirty (30) days. The following items will be used as an indication of the trend for coal operation:

a) Boiler control tuning completed such that the unit can operate safely with all control systems in auto.

b) Ash build up in the furnace and backpass areas shall be monitored and be within expected levels.

c) All boiler/turbine interlocks shall be proven to work as designed.

d) Sootblowing timing and sequences shall be set properly to clean the tube areas.

e) All critical alarms brought into the control room shall be operational and functioning properly.

f) At the end of the test period, oil burn levels, if applicable, will be at or near design levels while burning coal.

g) Oil ignitors are functioning in accordance with specifications.

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h) Coal handling systems, from rail car unloading to pulverizers, are capable of supplying primary fuel for sustained operation during the testing period.

5. Unit must have successfully completed all major equipment startup test procedures. For purposes of this paragraph, major equipment includes: steam generator, turbine-generator, cooling tower/circulating water system, boiler feed pump(s), coal receiving/handling equipment, pulverizers, ash-handling equipment, condensate and feedwater systems, combustion air systems, flue gas systems, on-site electrical distribution system, instrumentation and controls systems (including distributed control system), and chemical storage/transfer systems.

6. All major equipment operates satisfactorily to support compliance with in-service criteria 1 through 4 (as listed above). For purposes of this paragraph, major equipment includes: steam generator, turbine-generator, cooling tower/circulating water system, boiler feed pump(s), coal receiving/handling equipment, pulverizers, ash-handling equipment, condensate and feedwater systems, combustion air systems, flue gas systems, on-site electrical distribution system, instrumentation and controls systems (including distributed control system), and chemical storage/transfer systems.

7. Sufficient transmission interconnection facilities shall exist for the total plant design net electrical capacity at the time the newest unit is declared fully operational and used for service.

8. Sufficient transmission facilities shall exist for EDE's share of the total plant design net electrical capacity from the generating station into the EDE service territory at the time the newest unit is declared fully operational and used for service.

9. Equipment installed to comply with emission requirements shall be operational and demonstrate the ability to remove 93% or more of the NO_x, SO_2, particulate, and mercury emissions they were installed to remove over a continuous four (4) hour period while operating at or above 95% of its design load. This equipment shall also be required to demonstrate that it is able to remove 88% or more of these same emissions it was

installed to remove over a continuous 120 hour period while operating at or above 80% of its design load.

10. Emissions Control Equipment. The utility and the Commission Staff agree that the in-service testing requirements of this Paragraph are equivalent to the performance criteria stated in Paragraph 9 above and contained in the Stipulation.[1] Each equipment system as set forth in Subparagraphs (a) – (d) below shall be evaluated for successful completion of in-service testing on an individual basis. The failure of the utility to achieve the emissions or removal limits specified in the in-service testing for a given system will not impact the utility's ability to include all systems demonstrated to meet the applicable emissions or removal limits in the utility's rate recovery regulatory proceeding for Iatan Unit 2.

a) NO_X Control Equipment

i. All major construction work is complete.

ii. All preoperational tests have been successfully completed.

iii. Equipment successfully meets the operational contract guarantees necessary to achieve the emission levels described in subparagraphs 10(a)(iv) and 10(a)(v) below.

iv. The equipment shall be operational and demonstrate its ability to operate at a NO_X emission level of less than or equal to 0.054 lb/mmBtu over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (850 MWnet).

v. The equipment shall also demonstrate its ability to operate at a NO_X emission level of less than or equal to 0.057 lb/mmBtu over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (850 MWnet).

b) SO_2 Control Equipment

[1] Paragraph 10 identifies the criteria and emissions/removal testing that will demonstrate the utility's achievement of the criteria contained in Paragraph 9. The language of Paragraph 9 is also contained in the Stipulation. The utility and Staff calculated the numerical values and/or percentages contained in Paragraph 10 from the Iatan Unit 2 design limits for each of the major components of the AQCS equipment and the emissions percent or rate of removal requirements for the testing described in Paragraph 9 and the Stipulation. A chart summarizing the testing requirements is contained in the attached Appendix A.

i. All major construction work is complete.

ii. All preoperational tests have been successfully completed.

iii. Equipment successfully meets the operational contract guarantees necessary to achieve the emission levels described in subparagraphs 10(b)(iv) and 10(b)(v) below.

iv. The equipment shall be operational and demonstrate its ability to operate at a SO_2 reduction efficiency equal to or greater than 91% over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (850 MWnet).

v. The equipment shall also demonstrate its ability to operate at a SO_2 reduction efficiency equal to or greater than 86% over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (850 MWnet).

c) Particulate and Opacity Control Equipment

i. All major construction work is complete.

ii. All preoperational tests have been successfully completed.

iii. Equipment successfully meets the operational contract guarantees necessary to achieve the emission levels described in subparagraphs 10(c)(iv) and 10(c)(v) below.

iv. The equipment shall be operational and demonstrate its ability to operate at a stack opacity (six minute average) less than or equal to 11% over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (850 MWnet).

v. The equipment shall also demonstrate its ability to operate at a stack opacity (six minute average) less than or equal to 11.5% over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (850 MWnet).

d) Mercury Removal Equipment

i. All major construction work is complete.

ii. All preoperational tests have been successfully completed.

iii. Equipment successfully meets the operational contract guarantees necessary to achieve the emission levels described in subparagraphs 10(d)(iv) and 10(d)(v) below.

iv. The equipment shall be operational and demonstrate its ability to operate at a mercury emission level of less than or equal to 1.61 lb/trillion Btu over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (850 MWnet).

v. The equipment shall also demonstrate its ability to operate at a mercury removal level of less than or equal to 1.70 lb/trillion Btu over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (850 MWnet).

e) Continuous Emissions Monitoring System

i. Continuous emission monitoring systems (CEMS) are operational and demonstrate the capability of monitoring the emissions to satisfy the parameters in Paragraph 10.

APPENDIX A
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Plum Point Unit 1 In-Service Test Criteria

1. Unit must demonstrate that it can operate at its design minimum load (266 MWnet) or above.

   Hours at or above design minimum load / 400 hours >= 0.80

2. Unit must be able to operate at or above its design capacity factor for a reasonable period of time. If the design capacity factor is not specified it will be assumed to be 0.60 unless the utility can offer evidence justifying a lower value.

   Design capacity factor <= energy generated for a continuous period of 168 hours/ (design full load [665 MWnet] x 168 hours)

3. Unit must operate at an average capacity equal to 98% of its design maximum continuous rating [665 MWnet] for four (4) hours.

4. Unit must be operated so as to show a clear and obvious trend toward the predominate use of coal as its primary fuel. Test period will be thirty (30) days. The following items will be used as an indication of the trend for coal operation:

   a) Boiler control tuning completed such that the unit can operate safely with all control systems in auto.

   b) Ash build up in the furnace and backpass areas shall be monitored and be within expected levels.

   c) All boiler/turbine interlocks shall be proven to work as designed.

   d) Sootblowing timing and sequences shall be set properly to clean the tube areas.

   e) All critical alarms brought into the control room shall be operational and functioning properly.

   f) At the end of the test period, oil burn levels, if applicable, will be at or near design levels while burning coal.

   g) Oil ignitors are functioning in accordance with specifications.

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h) Coal handling systems, from rail car unloading to pulverizers, are capable of supplying primary fuel for sustained operation during the testing period.

5. Unit must have successfully completed all major equipment startup test procedures. For purposes of this paragraph, major equipment includes: steam generator, turbine-generator, cooling tower/circulating water system, boiler feed pump(s), coal receiving/handling equipment, pulverizers, ash-handling equipment, condensate and feedwater systems, combustion air systems, flue gas systems, on-site electrical distribution system, instrumentation and controls systems (including distributed control system), and chemical storage/transfer systems.

6. All major equipment operates satisfactorily to support compliance with in-service criteria 1 through 4 (as listed above). For purposes of this paragraph, major equipment includes: steam generator, turbine-generator, cooling tower/circulating water system, boiler feed pump(s), coal receiving/handling equipment, pulverizers, ash-handling equipment, condensate and feedwater systems, combustion air systems, flue gas systems, on-site electrical distribution system, instrumentation and controls systems (including distributed control system), and chemical storage/transfer systems.

7. Sufficient transmission interconnection facilities shall exist for the total plant design net electrical capacity at the time the unit is declared fully operational and used for service.

8. Sufficient transmission facilities shall exist for EDE's share of the total plant design net electrical capacity from the generating station into the EDE service territory at the time the unit is declared fully operational and used for service.

9. Equipment installed to comply with emission requirements shall be operational and demonstrate the ability to remove 93% or more of the NO_X, SO_2, particulate, and mercury emissions they were installed to remove over a continuous four (4) hour period while operating at or above 95% of its design load. This equipment shall also be required to demonstrate that it is able to remove 88% or more of these same emissions it was

installed to remove over a continuous 120 hour period while operating at or above 80% of its design load.

10. Emissions Control Equipment. The utility and the commission Staff agree that the in-service testing requirements of this Paragraph are equivalent to the performance criteria stated in Paragraph 9 above. Each equipment system as set forth in Subparagraphs (a) – (d) below shall be evaluated for successful completion of in-service testing on an individual basis. The failure of the utility to achieve the emissions or removal limits specified in the in-service testing for a given system will not impact the utility's ability to include all systems demonstrated to meet the applicable emissions or removal limits in the utility's rate recovery regulatory proceeding for Plum Point Unit 1.

a) NO_X Control Equipment

i. All major construction work is complete.

ii. All preoperational tests have been successfully completed.

iii. Equipment successfully meets the operational contract guarantees necessary to achieve the emission levels described in subparagraphs 10(a)(iv) and10(a)(v) below.

iv. The equipment shall be operational and demonstrate its ability to operate at a NO_X emission level of less than or equal to 0.075 lb/MMBtu over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (665 MWnet).

v. The equipment shall also demonstrate its ability to operate at a NO_X emission level of less than or equal to 0.080 lb/MMBtu over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (665 MWnet).

b) SO_2 Control Equipment

i. All major construction work is complete.

ii. All preoperational tests have been successfully completed.

iii. Equipment successfully meets the operational contract guarantees necessary to achieve the emission levels described in subparagraphs 10(b)(iv) and 10(b)(v) below.

iv. The equipment shall be operational and demonstrate its ability to operate at a SO_2 emission level of less than or equal to 0.11 lb/MMBtu over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (665 MWnet).

v. The equipment shall also demonstrate its ability to operate at a SO_2 emission level of less than or equal to 0.115 lb/MMBtu over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (665 MWnet).

c) Particulate and Opacity Control Equipment

i. All major construction work is complete.

ii. All preoperational tests have been successfully completed.

iii. Equipment successfully meets the operational contract guarantees necessary to achieve the emission levels described in subparagraphs 10(c)(iv) and 10(c)(v) below.

iv. The equipment shall be operational and demonstrate its ability to operate at a stack opacity (one hour rolling average) less than or equal to 5.4% over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (665 MWnet).

v. The equipment shall also demonstrate its ability to operate at a stack opacity (one hour rolling average) less than or equal to 5.7% over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (665 MWnet).

d) Mercury Removal Equipment

i. All major construction work is complete.

ii. All preoperational tests have been successfully completed.

iii. Equipment successfully meets the operational contract guarantees necessary to achieve the emission levels described in subparagraphs 10(d)(iv) and 10(d)(v) below.

iv. The equipment shall be operational and demonstrate its ability to operate at a mercury emission level of less than or equal to 84 X 10^{-6} lb/MWhr(gross) over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (665 MWnet).

v. The equipment shall also demonstrate its ability to operate at a mercury emission level of less than or equal to 89 X 10^{-6} lb/MWhr(gross) over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load 665 MWnet).

e) Continuous Emissions Monitoring System

i. Continuous emission monitoring systems (CEMS) are operational and demonstrate the capability of monitoring the emissions to satisfy the parameters in paragraph 9 or subparagraphs 10 (a) through (d).

APPENDIX A

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SCHEDULE BAM-4

LARGE CAPITAL PROJECT EXPENDITURE AND BUDGET ANALYSIS

Iatan Unit 1, Iatan Common, Iatan Unit 2, and Plum Point

	Project Code	Parent Code	Expenditures thru Jun 30, 09 (Excl. AFUDC)	AFUDC Only thru Jun 30, 09	Project Total Incl. AFUDC thru Jun 30, 09	Projected 7/2009 Thru Completion (Excl. AFUDC)	Projected 7/2009 Thru Completion (AFUDC Only)	Final Projected Project Excluding AFUDC	Final Project Including AFUDC
Iatan 1 Environmental			**39,370,446.31**	**3,225,840.79**	**42,596,287.10**	**5,876,443.69**	**-**	**45,246,890.00**	**48,472,730.79**
	MI0029C	PI0002	48,216.01		48,216.01	-	-	48,216.01	48,216.01
	MI0101R	PI0002	23,705.64		23,705.64	-	-	23,705.64	23,705.64
	MI0123C	PI0002	3,396,372.70	177,734.04	3,574,106.74	-	-	3,396,372.70	3,574,106.74
	MI0124C	PI0002	33,204.38	4,381.53	37,585.91	-	-	33,204.38	37,585.91
	MI0137C	PI0002	62,799.89	1,556.88	64,356.77	-	-	62,799.89	64,356.77
	MI0146C	PI0002	1,141,655.76	122,264.26	1,263,920.02	-	-	1,141,655.76	1,263,920.02
	MI0150C	PI0002	1,132,065.14	140,024.01	1,272,089.15	-	-	1,132,065.14	1,272,089.15
	MI0151C	PI0002	715.63	2.00	717.63	-	-	715.63	717.63
	MI13038C	PI0002	187,676.51	17,604.25	205,280.76	-	-	187,676.51	205,280.76
	MI6531C	PI0002	297,333.45	6,260.31	303,593.76	-	-	297,333.45	303,593.76
	MI93100C	PI0002	48,980.00	977.04	49,957.04	-	-	48,980.00	49,957.04
	MI9893C	PI0002	32,997,721.20	2,755,036.47	35,752,757.67	5,876,443.69	-	38,874,164.89	41,629,201.36
Iatan Common Facilities			**32,328,710.00**	**274,119.73**	**32,602,829.73**	**13,627,090.00**	**-**	**45,955,800.00**	**46,229,919.73**
	MI10883C	NG0016	13,313,667.55	274,119.73	20,279,044.32	12,257,765.41	-	32,262,690.00	32,536,809.73
	MI13029C	PI0002	19,015,042.45	-	12,323,785.41	1,369,324.59	-	13,693,110.00	13,693,110.00
Iatan 2 Construction			**140,974,588.51**	**9,251,129.79**	**150,225,718.30**	**61,562,721.49**	**14,509,507.25**	**202,537,310.00**	**226,297,947.04**
	MI10008C	NG0016	314,371.72	-	314,371.72	7,766.40		322,138.12	322,138.12
	MI10480C	NG0016	140,347,472.06	9,224,196.14	149,571,668.20	60,367,927.33	14,469,500.41	200,715,399.39	224,409,095.94
	MI10481C	NG0016	312,744.73	26,933.65	339,678.38	1,187,027.76	40,006.84	1,499,772.49	1,566,712.98
Plum Point Energy Station			**79,342,791.95**	**9,887,570.85**	**89,230,362.80**	**8,657,208.05**	**6,345,416.76**	**88,000,000.00**	**104,232,987.61**
	AP3930C	NG0016	261,849.26	-	261,849.26	1,735.34		263,584.60	263,584.60
	AP3935C	NG0016	2,370,344.63	352,047.29	2,722,391.92	519,202.21	210,952.45	2,889,546.84	3,452,546.58
	AP3936C	NG0016	76,710,598.06	9,535,523.56	86,246,121.62	8,136,270.50	6,134,464.31	84,846,868.56	100,516,856.43
TOTAL			**292,016,536.77**	**22,638,661.16**	**314,655,197.93**	**89,723,463.23**	**20,854,924.01**	**381,740,000.00**	**425,233,585.17**

Note: The amounts shown for the Iatan 1 Environmental and Iatan Common Facilities projects in the "thru Jun 30, 09" columns are amounts that have been booked to plant in-service as of Jun 30, 2009.

Prepared by: Karen Heady, Strategic Projects

Iatan Unit 2 O&M Adjustment
Empire 12% Share

SCHEDULE BAM-5

		2011 Budget
500000 Total	500000:Prod-Steam Oper-Supv & Enginr	** **
501400 Total	501400:Fuel Exp-Residuals	** **
501500 Total	501500:Fuel Handling Costs	** **
501506 Total	501506:Fuel Hndlg-Receive Coal	** **
501508 Total	501508:Fuel Handling - Stacker	** **
501509 Total	501509:Fuel Handling - Coal Pile	** **
501510 Total	501510:Fuel Handling - Conveyor	** **
501511 Total	501511:Fuel Hndlg-fuel additives	** **
502001 Total	502001:Steam Oper-Boiler	** **
502002 Total	502002:Steam Oper-Fuel	** **
502004 Total	502004:Steam Oper-Water	** **
502010 Total	502010:Steam Oper-Solid By-Products	** **
502012 Total	502012:Steam Oper- Ash	** **
502013 Total	502013:Steam Oper- AQC	** **
502014 Total	502014:Steam Oper-Air Pollution Contr	** **
502015 Total	502015:Steam Oper-Water Pollution Con	** **
505007 Total	505007:Prod Elec Oper-Facilities	** **
505010 Total	505010:Prod Elec Oper-Turb/Gen	** **
506000 Total	506000:Misc Steam Power Operations	** **
509000 Total	509000:Prod Elec Oper-Allowances	** **
510000 Total	510000:Steam Power Maint-Supv & Engin	** **
511001 Total	511001:Steam Power Maint-Structure-Fa	** **
511002 Total	511002:Steam Power Maint-Struct-Fac-F	** **
512001 Total	512001:Boiler Plt Maint - FF Unload	** **
512002 Total	512002:Boiler Plt Maint - Stacker	** **
512003 Total	512003:Boiler Plt Maint - Coal Pile	** **
512004 Total	512004:Boiler Plt Maint - Ash	** **
512005 Total	512005:Boiler Plt Maint - Conveyor	** **
512006 Total	512006:Boiler Plt Maint - Fuel	** **
512007 Total	512007:Boiler Plt Maint - Air	** **
512008 Total	512008:Boiler Plt Maint - Water	** **
512010 Total	512010:Boiler Plt Maint - Cond Sys	** **
512011 Total	512011:Boiler Plt Maint - Furnace	** **
512012 Total	512012:Boiler Plt Maint - Aux Steam	** **
512013 Total	512013:Boiler Plt Maint - AQC	** **
512015 Total	512015:Boiler Plt Maint-Unclassifid E	** **
513001 Total	513001:Elec Plt Maint - FF Turb/Gen	** **
513002 Total	513002:Elec Plt Maint - Transfer FF	** **
513003 Total	513003:Elec Plt Maint - Aux Elec	** **
513006 Total	513006:Elec Plt Maint - Cooling	** **
514001 Total	514001:Misc Steam Plt - FF Comp Air	** **
557000 Total	557000:Prod-Other-Other Expenses	** **
708144 Total	708144:Payroll Taxes- Billed	** **
920000 Total	920000:A&G Labor Expense	** **
921000 Total	921000:A&G Exp-Oper-Office Exp	** **
926511 Total	926511:PR Tax, Pens & Bnfits on O&M	** **
AQCS		
501300 Total	501300:Fuel Exp-Additives - Limestone	** **
501301 Total	501301:Fuel Exp-Additives-Ammonia	** **
501302 Total	501302:Fuel Exp-Additives-PAC	** **
Total Adjustment		**3,858,276**

**Took out Capital dollars, fuel and fuel additives to derive annual OM adjustment
Data from 2010-2014 JO - EDE 091023.xls received from Roger Nickell

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Plum Point Energy Station
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Iatan Unit 1 AQCS Adjustment
Empire 12% Share

		2011 Budget
501300 Total	501300:Fuel Exp-Additives - Limestone	** **
501301 Total	501301:Fuel Exp-Additives-Ammonia	** **
501302 Total	501302:Fuel Exp-Additives-PAC	** **
Total Adjustment		**350,007**

Data from 2010-2014 JO - EDE 091023.xls received from Roger Nickell

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Iatan Common Properaty O&M Adjustment
Empire 12% Share

		2011 Budget
163200 Total	163200:Stores Exp Undis-Production	** **
501509 Total	501509:Fuel Handling - Coal Pile	** **
557000 Total	557000:Prod-Other-Other Expenses	** **
708144 Total	708144:Payroll Taxes- Billed	** **
926511 Total	926511:PR Tax, Pens & Bnfits on O&M	** **
Total Adjustment		**(216,136)**

Data from 2010-2014 JO - EDE 091023.xls received from Roger Nickell

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AQCS Consumables by Generating Unit

	Iatan Unit 1	Iatan Unit 2	Plum Point Unit 1	Asbury	SLCC	Total
Ammonia	** **	** **	** **	** **	** **	988,948
Limestone	** **	** **	** **	** **	** **	450,626
PAC	** **	** **	** **	** **	** **	725,609
Total	350,008	612,371	471,166	503,054	228,584	2,165,183

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