

**BEFORE THE FLORIDA
PUBLIC SERVICE COMMISSION**

**DOCKET NO. 110309-EI
FLORIDA POWER & LIGHT COMPANY**

**IN RE: FLORIDA POWER & LIGHT COMPANY'S
PETITION TO DETERMINE NEED FOR
MODERNIZATION OF PORT EVERGLADES PLANT**

DIRECT TESTIMONY & EXHIBITS OF:

KENNARD F. KOSKY

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FPSC-COMMISSION CLERK

1 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

2 **FLORIDA POWER & LIGHT COMPANY**

3 **DIRECT TESTIMONY OF KENNARD F. KOSKY**

4 **DOCKET NO. 11_____ -EI**

5 **November 21, 2011**

6

7 **Q. Please state your name and business address.**

8 A. My name is Kennard F. Kosky, and my business address is 6026 NW 1st Place,
9 Gainesville, Florida 32607.

10 **Q. By whom are you employed and what is your position?**

11 A. I am employed by Golder Associates Inc., an engineering consulting firm
12 specializing in ground engineering and environmental services as a Principal in
13 the firm's Gainesville office. I am involved primarily in the environmental
14 aspects of electric power plants, including managing and directing
15 multidisciplinary environmental licensing projects and air pollution and noise
16 studies.

17 **Q. Please describe your educational background and professional experience.**

18 A. I received a Bachelor of Science degree in Engineering from Florida Atlantic
19 University, and a Master of Science degree in environmental engineering from the
20 University of Central Florida. I also completed one and half years of doctoral-
21 level course work in the engineering Ph.D. program at the University of Florida.

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1 Over the last 35 years, my primary activities have involved the siting and
2 licensing of electric power plants. I have worked on over 50,000 megawatts
3 (MWs) of new and existing generation, including nuclear generating units,
4 conventional coal, oil, and gas-fired steam generating units, combined cycle units,
5 integrated coal gasification combined cycle (IGCC) units, simple cycle units,
6 municipal solid waste (MSW) fired units, biomass-fired steam generating units,
7 and diesel units. My experience also includes five FPL modernizations or
8 repowering projects where combined cycle units replaced older steam generating
9 units. These projects were the FPL Lauderdale, Fort Myers, and Sanford
10 Repowering Projects, the Cape Canaveral Energy Center modernization project,
11 and the Riviera Beach Energy Center modernization project. My primary
12 technical activities have involved developing air emission inventories, evaluating
13 air pollution control technologies, and performing air quality impact evaluations
14 of these facilities. I also served as either the project director or project manager
15 for environmental licensing of those modernizations and repowering projects. A
16 copy of my curriculum vitae is attached as Exhibit KFK-1 to my testimony.

17 **Q. Please describe any professional registrations or certifications that you hold**
18 **in your field of expertise.**

19 A. I am a registered Professional Engineer in mechanical engineering in the State of
20 Florida. I have been practicing as a registered Professional Engineer since 1976.

21 **Q. Could you please describe your responsibilities for the proposed**
22 **modernization of FPL's existing Port Everglades Plant to combined cycle**

1 **technology, to be renamed the Port Everglades Next Generation Clean**
2 **Energy Center (PEEC)?**

3 A. I have the responsibility for directing the preparation of the Site Certification
4 Application that will be submitted for the project to the Florida Department of
5 Environmental Protection (FDEP). This application addresses local and state
6 environmental requirements and includes copies of separately filed applications
7 for federally approved programs, such as the Prevention of Significant
8 Deterioration (PSD)/Air Construction Permit application and Industrial
9 Wastewater Facility Permit application.

10 **Q. Are you sponsoring any exhibits in this case?**

11 A. Yes, I am sponsoring the following exhibits, which are attached to my direct
12 testimony.

13 Exhibits KFK-1 Curriculum vitae of Kennard F. Kosky

14 Exhibit KFK-2 Sulfur dioxide (SO₂), nitrogen oxides (NO_x), and
15 Particulate Matter (PM) emissions (tons/year) –
16 Existing and Port Everglades Next Generation Clean
17 Energy Center (PEEC)

18 Exhibit KFK-3 SO₂, NO_x, and Particulate Matter emission rate
19 (lb/MWh) – Existing and PEEC

20 Exhibit KFK-4 Carbon dioxide (CO₂) emission rate (lb/MWh) -
21 Existing and PEEC

22 Exhibit KFK-5 Cumulative CO₂ reductions in FPL's system with
23 PEEC

1 **Q. What is the purpose of your testimony?**

2 A. The purpose of my testimony is to provide the Commission an overview of the
3 key environmental aspects of PEEC. Because electric power plants constructed in
4 Florida must comply with environmental regulations, the costs of compliance are
5 part of the overall project costs that the Commission considers in its need
6 determination.

7
8 Based upon my training, experience, and analysis conducted in relation to this
9 project, I reach the following key conclusions in my testimony: (i) the selection of
10 advanced combined cycle technology and environmental controls for PEEC not
11 only meets, but is better than the existing environmental regulatory requirements;
12 (ii) the technology selected for PEEC is the best available alternative from an
13 environmental perspective; and (iii) the project includes design features that can
14 meet anticipated future environmental requirements and the environmental
15 compliance costs evaluated by FPL to meet future environmental requirements
16 reflect an appropriate estimate of possible future costs.

17 **Q. Please summarize your testimony.**

18 A. My testimony provides an overview of the key environmental aspects of
19 modernizing the Port Everglades Plant. My testimony demonstrates that the use
20 of natural gas, the cleanest fossil fuel, together with advanced combined cycle
21 technology and state-of-the-art air pollution control equipment for PEEC, will
22 meet or be better than the environmental regulatory requirements. Modernizing
23 this plant with advanced combined cycle technology will reduce overall emissions

1 of particulate matter (PM), sulfur dioxide (SO₂), and nitrogen oxides (NO_x), as
2 well as carbon dioxide (CO₂) emissions in FPL's system. CO₂ constitutes the vast
3 majority (99%) of greenhouse gases (GHG) that are emitted when combusting
4 natural gas and oil. GHGs are gases in the atmosphere that trap heat. GHGs in
5 the atmosphere are both naturally occurring and emitted by man-made activities,
6 and include CO₂, methane, nitrous oxide (N₂O), and man-made fluorinated gases.
7 PEEC together with other system improvements will reduce FPL's overall system
8 CO₂ emissions by millions of tons over its future operation.

9
10 Regulation of GHG/CO₂ emissions has just begun to be implemented by the
11 United States Environmental Protection Agency (EPA) through the Prevention of
12 Significant Deterioration (PSD) program of the Clean Air Act and GHG
13 regulation is likely to continue into the future as will be addressed later in my
14 testimony. Implementation of some form of new GHG/CO₂ regulations favors
15 modernization of the Port Everglades Plant, since there is a significant reduction
16 in CO₂ emission rates with PEEC. This reduction in the CO₂ emission rate
17 coupled with the benefits resulting in FPL system wide CO₂ reductions, are
18 advantageous with regard to possible future GHG/CO₂ regulations.

19
20 Together, the implementation of future regulation of hazardous air pollutants,
21 NO_x and SO₂, and the possible GHG/CO₂ legislation favors PEEC because of its
22 contribution to FPL system wide emission reductions. The future environmental

1 compliance costs considered by FPL in its analyses are reasonable and
2 appropriate.

3
4 FPL expects to use the existing cooling water source and infrastructure, which
5 will allow FPL to add up to 1,277 MW of capacity but with reduced water
6 impacts. The cooling water requirements for the proposed combined cycle units
7 are less than one-half that of the existing facility. This amount is still more than
8 sufficient to provide a warm water refuge for manatees during the winter months.
9 The modernized plant will have a much lower profile with three stacks no higher
10 than 150 feet and low profile heat recovery steam generators, while the existing
11 Port Everglades Plant has four approximately 340 foot-high stacks and
12 accompanying large boilers.

13 **Q. How is your testimony organized?**

14 A. My testimony is divided into three sections. Section I provides an overview of
15 the major environmental requirements for modernizing the Port Everglades Plant.
16 Section II presents information on how PEEC will not only meet, but be better
17 than these requirements. Section III describes existing and possible future
18 environmental requirements and their potential impact on future environmental
19 compliance requirements and costs. In this section, I describe how these existing
20 and possible future environmental costs were included in FPL's analysis.

21

1 **SECTION I: ENVIRONMENTAL APPROVALS AND REQUIREMENTS**

2

3 **Q. What environmental approvals are required for the PEEC?**

4 A. FPL is required to obtain local, state, and federal environmental approvals for
5 PEEC. The key FDEP environmental approvals will include the site certification
6 under the Florida Electrical Power Plant Siting Act and approvals for issuance of
7 Air Construction Permit and modification to the Industrial Wastewater Facility
8 Permit, which are part of federally delegated programs. Another key approval
9 will be from the EPA for the PSD review of the emissions of GHGs. The project
10 will also have to demonstrate conformance with local environmental land use and
11 zoning requirements.

12 **Q. Please summarize the major requirements for the environmental approvals**
13 **for PEEC.**

14 A. Environmental approvals for PEEC require the assembly of technical information
15 on the environmental aspects of the project along with historical data on the
16 existing Port Everglades Plant. This assembled information is included in the Site
17 Certification Application submitted to FDEP and other federal environmental
18 applications needing approval. PEEC will result in significant improvements in
19 environmental performance when compared to returning less efficient and higher
20 emitting existing steam units to service. The environmental regulatory agencies
21 will evaluate these environmental improvements for the project against the
22 historical operation of the plant and make a determination regarding the

1 construction and operation of the new combined cycle unit at the Port Everglades
2 Plant.

3 **Q. What are the general timeframes for approvals?**

4 A. The environmental approvals will likely take about 12 months after applications
5 are submitted. Approvals can be challenged and may cause project delays. The
6 amount of additional time required to address any challenges that might arise is
7 uncertain, but challenges historically have extended decisions on regulatory
8 approvals by months.

9

10 **SECTION II: ENVIRONMENTAL COMPLIANCE AND BENEFITS**

11

12 **Q. What general features of PEEC serve to meet environmental requirements?**

13 A. The proposed modernization of the existing Port Everglades Plant with advanced
14 natural gas fired combined cycle units is an ideal opportunity to use an existing
15 power plant site and infrastructure to achieve site-specific and overall system
16 environmental improvements. The Port Everglades Plant provides the
17 infrastructure for a new combined cycle unit that includes an existing developed
18 site dedicated to generation of electricity, existing cooling water systems, existing
19 gas delivery infrastructure, and access to the FPL transmission system. This
20 infrastructure will minimize the environmental impacts of adding new generation.
21 Air emissions will be minimized by the use of the cleanest fuels (natural gas and
22 ultra-low sulfur distillate oil), advanced combined cycle technology, and
23 installation of state-of-the-art air pollution control equipment for emissions of

1 NO_x. In contrast, the existing Port Everglades Plant's use of older technology and
2 heavy fuel oil contributes to significantly higher air emissions than a new
3 combined cycle unit.

4
5 Combined cycle technology also minimizes the use of cooling water relative to
6 the existing steam cycle units. The existing steam generating units at the Port
7 Everglades Plant require cooling water flow for all the electric generation
8 produced because all of the generation is by steam turbine-generator requiring
9 cooling water. In contrast, the new combined cycle unit requires cooling water
10 for less than half of the electric generation produced because most of the electric
11 generation is by combustion turbines that do not require cooling water. After the
12 modernization of the Port Everglades Plant is complete, the total generation will
13 have a small increase in output but significant improvements in environmental
14 performance and decreased fuel use when compared to returning the old steam
15 units to service.

16 **Q. Will FPL's environmental compliance plan for PEEC meet the applicable**
17 **environmental requirements?**

18 A. Yes. PEEC will meet all applicable local, state, and federal environmental
19 requirements and standards. Indeed, many of the environmental controls will be
20 better than the requirements and standards because they are based on clean fuels
21 and low-emission technologies.

1 **Q. What environmental benefits will result when PEEC is operational?**

2 A. There will be considerable reductions in the air emissions of PM, NO_x, and SO₂.
3 PM in this context includes particulate matter with an aerodynamic diameter of 10
4 microns (PM₁₀) and particulate matter with an aerodynamic diameter of 2.5
5 microns (PM_{2.5}). Exhibit KFK-2 shows the reduction from actual air emissions for
6 PEEC. As shown, the air emissions of PM, NO_x, and SO₂ before the
7 modernization are about 600 tons/year, 4,300 tons/year, and 9,500 tons/year,
8 respectively. In contrast, the air emissions of PM, NO_x, and SO₂ after the
9 modernization are 221 tons/year, 344 tons/year, and 190 tons/year, respectively or
10 about a 95 percent reduction in the emissions of these pollutants. More
11 importantly, the amount of generation associated with the new combined cycle
12 unit reflected in Exhibit KFK-2 is more than 3 times higher than that associated
13 with the existing Port Everglades Plant due to an assumed capacity factor of 90
14 percent for PEEC, while the existing capacity factor is less than 30 percent. The
15 reductions directly attributable to PEEC will provide a significant environmental
16 benefit for FPL's customers and Florida's future.

17 **Q. How will PEEC affect FPL's overall emission rates before and after the**
18 **modernization?**

19 A. PEEC will further reduce FPL's already low emission profile compared to all
20 other utilities in the United States. The use of highly efficient combined cycle
21 units results in emission rates in pounds per megawatt hour (lb/MWh) that are
22 significantly lower than the existing emission rates for PM, SO₂, and NO_x. Exhibit

1 KFK-3 shows the lb/MWh emission rates of the Port Everglades Plant before and
2 after the modernization is complete.

3 **Q. How will PEEC affect FPL's SO₂ and NO_x emission rates as they compare to**
4 **other utilities?**

5 A. Of the 119 utilities in power control areas in the U.S., FPL in 2007 ranked 77th
6 and 87th lowest in average lb/MWh emissions of SO₂ and NO_x. FPL's average
7 lb/MWh emission rates for SO₂ and NO_x were 53% and 64% lower than the
8 national utility average. As shown in Exhibit KFK-3, the lb/MWh emission rates
9 significantly decrease with PEEC. This will further reduce FPL's system
10 emission profile for all of these air emissions by displacing emissions from less
11 efficient units.

12 **Q. What effect will PEEC have on FPL's CO₂ emission rates?**

13 A. The lb/MWh CO₂ emission rate after the modernization of the Port Everglades
14 Plant is complete will be less than one-half of the existing CO₂ emission rate.
15 This reduction in CO₂ emission rate is a result of the efficiency of advanced
16 combined cycle technology and the use of natural gas. PEEC will be among the
17 most efficient natural gas fired generating units in Florida and the country, which
18 will displace generation produced by less efficient units in FPL's system and
19 concomitantly reduce the amount of CO₂ emissions. The increased efficiency can
20 be shown by a comparison of lb/MWh CO₂ emission rates. Exhibit KFK-4 shows
21 the lb/MWh emission rates before and after the modernization of the Port
22 Everglades Plant to combined cycle technology. As shown in this exhibit, the
23 CO₂ emission rate for the new combined cycle unit will be less than 800 lb/MWh,

1 while the actual CO₂ emission rate for the existing FPL Port Everglades Plant is
2 about 1,740 lb/MWh, or more than twice as high. PEEC, among other measures,
3 will continue FPL's major efforts to reduce CO₂ emissions in its system.

4 **Q. What effect would PEEC have on FPL's system emissions of CO₂?**

5 A. PEEC will reduce FPL's system emissions of CO₂ by about 22 million tons from
6 2016 through 2047 as shown in Exhibit KFK-5 compared with returning to
7 service Port Everglades Units 1 through 4. The exhibit shows that there will be
8 significant long-term reduction in CO₂ emissions in FPL's system as a direct
9 result of PEEC.

10 **Q. How will PEEC affect FPL's CO₂ emission rates as they compare to other
11 utilities?**

12 A. FPL has one of the lowest CO₂ emission rates in the country. Of the 119 utilities
13 in power control areas, FPL ranks 98th lowest in CO₂ emissions with an average
14 lb/MWh CO₂ emission rate 45% lower than the national average. PEEC will
15 continue the reduction in GHG/CO₂ emissions. This represents top quartile
16 performance.

17 **Q. Are there any laws regulating GHG/CO₂ that are applicable to PEEC?**

18 A. Yes. The EPA adopted a regulation on June 10, 2010 that requires PSD review of
19 greenhouse gases emitted from the project, which are primarily CO₂. The PSD
20 review involves the establishment of an emission limit determined to be Best
21 Available Control Technology (BACT). The new PEEC 3-on-1 combined cycle
22 unit will have to undergo this BACT determination since the criteria for review is
23 based on a comparison of past actual emissions of the existing Port Everglades

1 Plant that operated at less than 30 percent capacity factor to future potential
2 emissions of the modernized plant operating at 100 percent capacity. While there
3 is a significant reduction in the emission rate of CO₂, as demonstrated in Exhibit
4 KFK-4, the net CO₂ emissions increase is higher than the EPA PSD review
5 threshold solely due to the capacity factor difference between the existing plant
6 and PEEC.

7 **Q. In your opinion, does PEEC meet the requirements for BACT under the**
8 **EPA's CO₂ regulations?**

9 A. Yes. The EPA has provided guidance for determining BACT. In its guidance,
10 the EPA emphasized efficiency in minimizing emissions of CO₂. PEEC will use
11 highly efficient combined cycle units resulting in much lower lb/MWh CO₂
12 emission rates as demonstrated in Exhibit KFK-4. In addition, as demonstrated in
13 Exhibit KFK-5, there will be a significant reduction of total CO₂ emissions in
14 FPL's system resulting from the project.

15
16 **SECTION III: FUTURE ENVIRONMENTAL CONSIDERATIONS**

17
18 **Q. What future environmental requirements will potentially be applicable to**
19 **PEEC?**

20 A. The EPA promulgated several regulations that have implications for PEEC.
21 These include the Cross-State Air Pollution Rule (CSAPR), the proposed
22 Maximum Achievable Control Technology (MACT) standards for electric

1 generating units, the Clean Water Act Section 316(b) regulations, and possible
2 further GHG regulations.

3 **Q. What is the EPA's CSAPR regulation and how will this regulation influence**
4 **the proposed PEEC?**

5 A. The EPA finalized CSAPR on July 6, 2011, to replace its Clean Air Interstate
6 Rule (CAIR). CSAPR requires 27 states to adopt regulation to reduce emissions
7 of NO_x and SO₂. The CSAPR, as it applies to Florida, only requires reductions in
8 NO_x emissions associated with ozone formation during the late spring and
9 summertime. There will be a significant decrease in the emissions of NO_x in
10 FPL's system as a result of PEEC. This reduction in NO_x emissions will result in
11 compliance with CSAPR requirements for the modernized Port Everglades Plant.

12 **Q. What are the MACT standards for Electric Generating Units and how will**
13 **they influence or impact PEEC?**

14 A. The MACT standards imposed limits on the emissions of hazardous air pollutants
15 for a particular industry that EPA determines is appropriate for that industry. The
16 MACT standards for particular industries are promulgated as part of National
17 Emission Standards for Hazardous Air Pollutants (NESHAPs). On May 3, 2011,
18 the EPA proposed MACT emission limits for coal and oil-fired electric generating
19 units. The proposed EPA MACT emission limits would apply to the existing Port
20 Everglades Plant when the rule is finalized if the existing steam units were to be
21 returned to active service. However, this regulation does not apply to the
22 modernized Port Everglades Plant due to the use of combined cycle technology
23 and natural gas as the primary fuel source.

1 **Q. Please describe the EPA’s proposed regulation under Section 316(b) of the**
2 **Clean Water Act and how this proposed regulation may influence or impact**
3 **PEEC.**

4 A. The EPA has proposed a regulation under Section 316(b) of the Clean Water Act
5 that would limit the impingement and entrainment of aquatic organisms, such as
6 fish and fish larvae, from facilities that use large volumes of cooling water. When
7 finalized, these regulations would likely apply to the PEEC because cooling water
8 will still be necessary for the steam-electric portion of the 3-on-1 combined cycle
9 unit. However, as I previously noted, the PEEC will require much less cooling
10 water than the existing Port Everglades Plant. FPL is evaluating several design
11 options in order to meet the 316(b) requirements once finalized. The reduced
12 cooling water requirement of a modernized Port Everglades Plant will provide
13 more flexibility to meet the proposed EPA 316(b) regulation.

14 **Q. Please explain the potential compliance considerations for PEEC of future**
15 **GHG/CO₂ regulations.**

16 A. In early 2011, the EPA initiated a process that could regulate greenhouse gases
17 from power plants under Section 111(b) of the Clean Air Act. While regulations
18 have not yet been proposed, such regulation could potentially regulate GHG/CO₂
19 emissions from new, modified, and existing power plants.

20
21 Future regulation under Section 111(b) of the Clean Air Act would not likely
22 affect the PEEC for two reasons. First, the PEEC 3-on-1 natural gas combined
23 cycle unit will be one of the most efficient in the country as demonstrated by CO₂

1 emission rate in lb/MWh. As such, the CO₂ emission rate from the modernized
2 plant would likely meet any requirement that the EPA would likely adopt for this
3 type of facility under Section 111(b).

4
5 Second, the EPA will establish BACT CO₂ emission limits for the modernized
6 Port Everglades Plant. By definition, BACT is more stringent than the standards
7 adopted under Section 111(b) of the Clean Air Act. Therefore, the GHG emission
8 limit established as BACT for PEEC will likely be much lower than any GHG
9 emission limit established by EPA under Section 111(b), such that future
10 regulation of PEEC under Section 111(b) is unlikely to impose any additional
11 regulatory requirements.

12 **Q. What would be the impact of PEEC under any future CO₂ regulation that**
13 **involved a cap-and-trade system?**

14 A. As shown in Exhibits KFK-4 and KFK-5, there is a considerable reduction in the
15 CO₂ emission rate and CO₂ emissions in FPL's system as a result of the project.
16 If any cap-and-trade system were established, the reduction of CO₂ emissions
17 resulting from PEEC would be advantageous to FPL's system by either reducing
18 the number of allowances that FPL would have to buy or increasing the
19 allowances available for FPL to sell.

20 **Q. In your opinion, does the PEEC Project have design features and equipment**
21 **that can meet future environmental requirements?**

22 A. Yes. The use of natural gas, the cleanest fossil fuel, together with advanced
23 combined cycle technology and state-of-the-art air pollution control equipment,

1 will result in air emissions that can meet the future regulatory requirements
2 related to air emissions and GHGs. Similarly, the availability of existing Port
3 Everglades infrastructure and the reduced cooling water flow of PEEC provides
4 flexibility for meeting the 316(b) requirements.

5 **Q. In your opinion, is the PEEC Project reasonable and appropriate based on**
6 **future environmental requirements?**

7 A. Yes. The improved environmental performance as outlined in my testimony and
8 exhibits demonstrates that PEEC is reasonable and appropriate based on future
9 environmental requirements.

10 **Q. In FPL's economic analysis of PEEC were CSAPR and possible GHG/CO₂**
11 **regulations considered? If so, how?**

12 A. Yes. FPL's economic analysis considered CSAPR and the potential future
13 regulation of GHG/CO₂ using projections developed by considering possible
14 future federal legislation using the basic framework of the cap-and-trade system.
15 Historically, there have been federal legislative initiatives that have proposed
16 different forms of GHG/CO₂ regulation based on the cap-and-trade system. These
17 initiatives have included both multi-sector and electric sector regulation with
18 variable reductions of GHG/CO₂ emissions. While GHG/CO₂ legislation is
19 unlikely in the near-term, cap-and-trade legislation has been used historically to
20 reduce multi-state air emissions such as the Acid Rain Program. Cap-and-trade
21 legislation coupled with future EPA regulations on the electric utility sector and
22 evaluation of energy/fuel markets formed the basis for the compliance costs that
23 may occur in the future.

1 **Q. Please explain the compliance costs for the future EPA regulations and**
2 **potential GHG/CO₂ legislation that were included in the FPL economic**
3 **analysis of PEEC.**

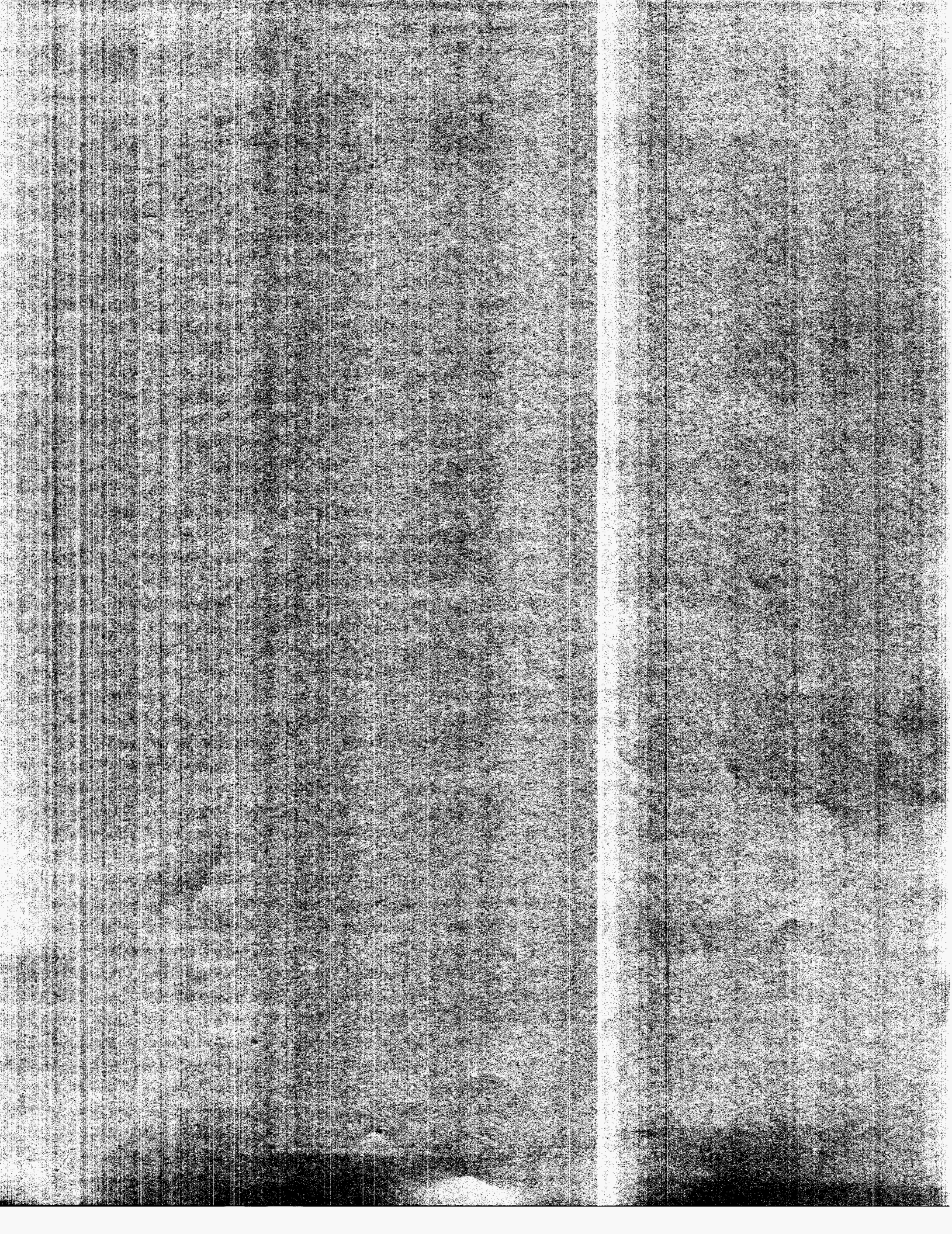
4 A. Compliance costs under a cap-and-trade system are based on the cost of
5 allowances, which are multiplied by the amount of allowances required for the
6 specific pollutant. The allowance costs used by FPL were based on the
7 information from ICF International (ICF) in a confidential report titled “2011
8 Emission Price Projections Revision from 2010 - based on ICF 2010 Fourth
9 quarter upgrade.” ICF is a recognized leader in providing modeling and
10 simulations of emission and energy markets for private and public entities. The
11 ICF report provides compliance cost forecasts that are based on integrated
12 modeling of the electric, fuel, and environmental markets in the U.S. The
13 compliance costs used were the ICF forecasted 4th quarter forecast for GHG/CO₂
14 legislation and CSAPR rule.

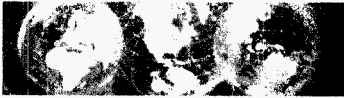
15 **Q. In your opinion, are the allowance costs used in FPL’s economic evaluation**
16 **of PEEC reasonable and appropriate projections of future environmental**
17 **compliance costs?**

18 A. Yes. I conclude that FPL considered reasonable and appropriate environmental
19 costs that are predicted to occur in the future.

20 **Q. Does this conclude your direct testimony?**

21 A. Yes.





Resumé

KENNARD F. KOSKY

Education

Completed coursework (1.5 years) for Ph.D. in Environmental Engineering, University of Florida, Gainesville, FL, 1982

M.S. Environmental Engineering, University of Central Florida, Orlando, FL, 1976

B.S.E., Ocean Engineering, Florida Atlantic University, 1970

Languages

English – Fluent

Golder Associates Inc. – Gainesville

Employment History

Golder Associates – Gainesville, FL

Principal (1996 to Present)

Principal Engineer, Project Director, and Project Manager for Permitting and Environmental Impact Assessments. Specializes in power plants, industrial facilities, and agricultural activities involving air quality. Provides oversight on permitting and licensing activities including emissions estimates and impact analyses. Provides expert testimony on pollution control quality issues and noise for a variety of electrical power, industrial, and mining activities. Note: KBN merged with Golder Associates in 1996.

KBN Engineering and Applied Sciences (KBN) – Gainesville, FL

President and Principal Engineer (1985 to 1996)

Responsible for administration of a 100-person environmental consulting firm generating about \$8 million per year in revenues. Principal Engineer, Project Director, and Project Manager for Permitting and Environmental Impact Assessments for electric power and industrial facilities. Provided expert testimony on pollution control and quality issues for a variety of industrial activities.

Environmental Science and Engineering, Inc. (ESE), Energy and Power Programs, Project Operations Department – Gainesville, FL

Vice President/Director (1980 to 1985)

Directed Power Programs group that included a wide diversity of services to the power industry. Project Manager of the \$3 million Florida Acid Deposition Study. Project Director and Manager for a variety of permitting and licensing projects. Provided expert testimony on a variety of projects.

ESE – Gainesville, FL

Director, Air Science Division (1978 to 1980)

Responsible for all corporate air resource activities including stack testing, permitting dispersion modeling, ambient monitoring, noise monitoring, and industrial hygiene. Staff consisted of 25 professionals in three groups: Source Testing, Ambient Monitoring, and Permitting. Project Manager for multidisciplinary power projects.

ESE – Gainesville, FL

Group Leader, Air Quality Management, Air Sciences Division (1974 to 1978)

Responsible for staff involved with ambient air monitoring, dispersion modeling, and air permitting. Project Manager for multidisciplinary power projects.

Florida Dept. of Pollution Control – Tallahassee/Orlando, FL

Air Pollutant Engineer (1970 to 1974)



Resumé

KENNARD F. KOSKY

Lead engineer in air operations involved in implementing State Implementation Plan (SIP) and air pollution regulations. Performed air permitting for over 200 facilities. Coauthor of the first Florida SIP including conducting emission inventory, ambient monitoring analysis, regulatory analysis, and regulation development.

Schlumberger Well Services – Morgan City, LA
Well Logging Engineer (1970 to 1970)

Performed geological logging of exploratory wells for oil and/or gas production in the Gulf of Mexico.



Resumé

KENNARD F. KOSKY

PROJECT EXPERIENCE – ENVIRONMENTAL ENGINEERING

Environmental Engineering

Mr. Kosky has performed over 200 projects focusing on a variety of industrial activities. These projects have involved control technology evaluations, regulatory interpretation, monitoring, permitting, impact analyses, and expert testimony. The following overview and project descriptions are examples of Mr. Kosky's experience.

Major Project Experience
Multiple Sites

Type of Industrial Activities
Power Plants – 71
Landfills – 4
Chemical Plants – 7
Rubber Manufacturing – 2
Metal Coil Coating – 3
Mining – 4
Pulp & Paper – 7
Resource Recovery/Incinerator – 9
Steel Mills – 4
Printing/Coating – 4
Food/Agricultural Facilities – 15
Petroleum Exploration and Refining – 9
Aerospace – 2
Fiberglass Boat Manufacturing – 4
Superfund – 5

Type of Projects
Permitting and Licensing – 92
Air Pollution Emission Estimates – 67
Air Impact Analyses – 63
Air Pollution Control – 75
Policy and Regulations – 6
Air Monitoring – 26

Domestic Experience
Multiple Sites

Mr. Kosky has directed and performed projects related to his expertise in the following states:

Southeastern US: Florida, Georgia, South Carolina, North Carolina, Alabama, Mississippi, Tennessee, Kentucky, Louisiana, and Arkansas
Mid-Atlantic: Maryland, Virginia, West Virginia, District of Columbia, and New Jersey
Northeast: Connecticut and New York
Mid-West: Illinois, Indiana, Missouri, and Iowa
West: Texas, Nevada, California, Montana, Arizona, Alaska, and Hawaii.



Resumé

KENNARD F. KOSKY

International Project Experience

Mr. Kosky has performed a wide variety of international projects—many associated with the Multi-Lateral (e.g., World Bank) and Bi-Lateral (e.g., USAID) organizations. Projects located in the following continents and countries:
Asia: China, Pakistan, India, Russia, Taiwan, Thailand, and Indonesia
Africa: Egypt and Mauritius
Latin America and Caribbean: Guatemala, Honduras, Jamaica, Dominican Republic, Mexico, and Panama
South America: Brazil and Argentina
Europe: Italy, Poland, Hungary and Bulgaria, and the Czech Republic
Middle East: Saudi Arabia.

Expert Testimony

Mr. Kosky has provided expert testimony in over 50 Cases. The following provides representative information of the type of proceedings and the nature of the expert/expert witness assistance. He has testified in the following types of proceedings:

- Hearing Officers and Administrative Law Judges (ALJs);
- Public Service Commissions;
- Circuit Court;
- Federal District Court;
- Governor of Florida;
- State and County Environmental Commissions;
- Environmental review Boards;
- County Commissions;
- Land Use Commissions; and
- EPA.

Mr. Kosky has been accepted as an expert in the following areas:

- Power Plant Siting and Licensing
- Air Quality Impact Analyses;
- Air Pollution Control Technology (Design and Engineering);
- Best Available Control Technology;
- Air Pollution Emission Estimates;
- Air Regulation and Compliance; and
- Noise Evaluation and Impact Analyses

Mr. Kosky has testified and been accepted as an expert in Florida, Maryland, Georgia, Louisiana, California and Hawaii.



Resumé

KENNARD F. KOSKY

REPRESENTATIVE PROJECT EXPERIENCE – DOMESTIC

- Turkey Point Nuclear Units 6 & 7, FPL**
Miami-Dade County, FL
- Project Manager for the preparation of licensing documents for the two nominal 1,100-megawatt (MW) nuclear units and associated facilities located at the existing Turkey Point Plant site in Miami-Dade County, Florida. These units are being licensed under Florida's Power Plant Siting Act. Environmental documents prepared include the Site Certification Application (SCA), Federal Aviation Administration (FAA) obstruction to navigation application, U.S. Army Corps of Engineers (USACE) dredge and fill permit application, and air permit application [including prevention of significant deterioration (PSD) application]. The SCA was submitted in July 2009.
- Martin Solar Energy Center, Florida Power & Light Company (FPL)**
Martin County, FL
- Project Manager for the preparation of the environmental licensing of a thermal solar facility located at the FPL Martin Plant. The project involves the installation of 180,000 mirror over 500 acres to generate steam that will be used in a combined cycle plant. The solar generation facility will generate 100,000 MW-hrs per year. The licensing was through Florida's Power Plant Site Certification process as a modification.
- Applications for CPCN, Chalk Point, Dickerson, and Morgantown Generating Stations, Constellation Power Source**
Prince Georges, Montgomery and Charles Counties , MD
- Project Director of the preparation of the environmental analysis for the Certificate of Public Convenience and Necessity (CPCN) Application for the installation of flue gas desulfurization (FGD) systems on seven existing coal-fired units. The projects were designed to meet the requirements of Maryland's Healthy Air Act by reducing emissions of sulfur dioxide and mercury. Projects involved assessment of New Source Review (NSR) for each plant and an analysis of emissions from material handling. An evaluation of air quality impacts performed for new stacks at each plant site. Expert testimony provided before a Public Service Commission (PSC) Hearing Examiner at public hearings.
- Applications for Certificate of Public Convenience and Necessity (CPCN), Gould Street and Riverside Generating Stations, Constellation Power Source**
Baltimore, MD
- Project Manager for the preparation of the CPCN Applications for the reactivation of the Gould Street Generating Station Unit 3 and Riverside Generating Station Unit 5. The Gould Street project involved the refurbishment of an existing 100 MW gas fired steam generating unit. The Riverside project involved the refurbishment of an existing 80 MW oil fired steam generating unit to gas firing. These units are licensed under Maryland's PSC. Environmental documents prepared include the CPCN and air permit application.
- Site Certification Applications for St. Lucie and Turkey Point Nuclear Uprate Projects**
- Project Manager for the preparation of the Site Certification Applications (SCA) for two nuclear uprate projects. Projects involved increasing the nuclear generating capacity at Units 1 and 2 at the FPL St. Lucie Plant and Units 3 and 4 at the Turkey Point Plant. Each uprate project involved an increase of about 200 MW per plant. Applications included environmental evaluations of thermal discharges.



Resumé

KENNARD F. KOSKY

**FPL Glades Power
Park**
Palm Beach County, FL

Project Manager for the preparation of licensing documents for the two nominal 980-megawatt (MW) ultra supercritical pulverized coal fired units and associated facilities located on a 4,900 acre site in Glades County, Florida. These units are being licensed under Florida's Power Plant Siting Act. Environmental documents prepared include the Site Certification Application (SCA), Federal Aviation Administration (FAA) obstruction to navigation application, U.S. Army Corps of Engineers (USACE) dredge and fill permit application, and air permit application [including prevention of significant deterioration (PSD) application]. The SCA was submitted in December 2006.

**Petroleum Coke Co-
Firing St. Johns River
Power Park**
Jacksonville, FL

Project Manager and engineer-of-record for the FDEP authorization allowing up to 30 percent petroleum coke to be co-fired with coal. The authorization allowed co-firing with petroleum coke from 20 percent to 30 percent.

**West County Energy
Center Florida Power &
Light Company (FPL)**
Palm Beach County, FL

Project Manager for the preparation of licensing documents for the 2,450-megawatt (MW) West County Energy Center, Palm Beach County, Florida. This project involved the licensing of two 3-on-1 combined-cycle units using three MHI 501G 250-MW combustion turbines (CTs) with associated heat recovery steam generators (HRSGs), and a 440 MW steam turbine. These units are licensed under Florida's Power Plant Siting Act. Environmental documents prepared include the Site Certification Application (SCA), Federal Aviation Administration (FAA) obstruction to navigation application, U.S. Army Corps of Engineers (USACE) dredge and fill permit application, and air permit application [including prevention of significant deterioration (PSD) application]. Full Governor/Cabinet approval was obtained in December 2006.

**Application for CPCN,
Brandon Shores Units
4 and 5, Constellation
Power Source**
Ann Arundel County, MD

Project Manager for the preparation of the Certificate of Public Convenience and Necessity (CPCN) Application for installation of air pollution control systems and associated facilities on the two nominal 670 MW Brandon Shores Units 1 and 2. This project involves the installation of fuel gas desulfurization (FGD) systems, fabric filters, new dual flue stack, and material handling facilities for coal, limestone and FGD byproducts. These units are licensed under Maryland's Public Service Commission (PSC). Environmental documents prepared include the CPCN and air permit application (including PSD application).

**Site Certification
Application and
Licensing For
Seminole Generating
Station Unit 3
Seminole Electric
Cooperative**
Putnam County, FL

Technical direction and review for the Site Certification Application and Air Construction/PSD Permit Application for SGS Unit 3, a nominal 750 MW (net) supercritical pulverized coal-fired unit. Provided expert testimony for the local land use hearing and prepared expert testimony for the Site Certification Hearing.



Resumé

KENNARD F. KOSKY

Kenai Blue Sky Coal Gasification Project, Environmental Permitting Feasibility Analysis for Coal-Gasification and Pulverized Coal-Fired Power Plant Agrium U.S., Inc.
Kenai, AK

Project Manager for the preparation of environmental permitting feasibility of coal-gasification and 400-200 MW pulverized coal fired power plant to be located at an existing ammonia/urea production facility. The project would involve the installation of coal gasification to product hydrogen and carbon dioxide as feedstock for the ammonia/urea production facilities. The coal-fired power plant would supply steam and energy for the gasification process and ammonia/urea production facilities, as well as supplying some power to the local grid. The coal gasification process and power plant would utilize Alaskan sub-bituminous coal.

Southwest St. Lucie Power Project Florida Power & Light Company (FPL)
St. Lucie County, FL

Project Manager for the preparation of licensing documents for the 1,700-megawatt (MW) Southwest St. Lucie Power Project to be located in St. Lucie County, Florida. The project involved two nominal 850 MW supercritical pulverized coal fired units and associated facilities. Portions of the SCA was completed but not submitted.

Application for Certificate of Public Convenience and Necessity, Crane Generating Station, Constellation Power Source
Baltimore County, MD

Project Manager for the preparation of the Certificate of Public Convenience and Necessity (CPCN) Application for installation of coal barge unloading facility for the Crane Generating Station. This project involved the refurbishment of an existing oil unloading dock and coal handling equipment. These units are licensed under Maryland's Public Service Commission (PSC). Environmental documents prepared include the CPCN and air permit application.

Site Certification Application and Licensing of the Turkey Point Expansion Project for Florida Power & Light Company (FPL)
Miami-Dade County, FL

Project Manager for the preparation of licensing documents for the 1,150-megawatt (MW) Turkey Point Expansion Project, Miami-Dade County, Florida. This project involved the licensing of 4-on-1 combined-cycle units using four GE Frame 7FA 170-MW combustion turbines (CTs) with associated heat recovery steam generators (HRSGs), and a 440 MW steam turbine. These units are licensed under Florida's Power Plant Siting Act. Environmental documents prepared include the Site Certification Application (SCA), Federal Aviation Administration (FAA) obstruction to navigation application, U.S. Army Corps of Engineers (USACE) dredge and fill permit application, and air permit application [including prevention of significant deterioration (PSD) application]. Full Governor/Cabinet approval was obtained in February 2005.

Burner Replacement for Gerdau-Ameristeel
Baldwin, FL

Obtained a non-PSD determination from the Florida Department of Environmental Protection (FDEP) for a burner replacement project associated with an electric arc furnace. Project involved site visit, technical support, and discussions with FDEP.

Petroleum Coke Co-Firing at the Cedar Bay Cogeneration Project
Jacksonville, FL

Project Manager and engineer-of-record for the FDEP authorization allowing up to 35 percent petroleum coke to be co-fired with coal. The Cedar Bay facility consists of three 75-MW circulating fluidized bed (CFB) boilers fired with coal and located in Jacksonville, Florida. The authorization allowed co-firing with petroleum coke.



Resumé

KENNARD F. KOSKY

**Hines Energy Center
Power Block 3 for
Progress Energy
(formerly Florida
Power Corporation)**
Polk County, FL

Project Manager and engineer-of-record for the air construction and PSD permit application for a 530-MW combined-cycle power project located in Polk County, Florida. Directed preparation of SCA sections related to air emission, best available control technology (BACT), air impacts, and noise impacts. Testified on all air quality and noise aspects at the SCA Hearing.

**Air Construction
Permits for Tropicana
Products, Inc.**
Bradenton, FL

Project Manager and engineer-of-record for various projects at Tropicana's Bradenton Citrus Processing Plant. The projects involved replacing the GE LM5000 aero-derivative gas turbine with the larger GE LM6000 turbine, like-kind replacement of the duct burner system on the cogeneration facility, and the installation of a stand-by boiler.

**Air Construction
Permit for Hydro
Aluminum of North
America**
St. Augustine, FL

Project Manager for the preparation of two air construction permits for secondary aluminum foundry. Project involved physical changes to the melting furnace and increasing production limits. Project was able to net out of PSD review.

**Site Certification
Application and
Licensing of
Expansion Projects for
Florida Power & Light
Company**
Martin and Manatee
Counties, FL

Project Manager of the preparation of licensing documents for two 1,150-MW Expansion Projects. These projects involved the licensing of 4-on-1 combined-cycle units using four GE Frame 7FA 170-MW CTs with associated HRSGs, and a 440-MW steam turbine. These units were licensed under Florida's Power Plant Siting Act. Environmental documents prepared include the SCA, FAA obstruction to navigation application, and air permit application (including PSD application).

**Application for
Certificate of Public
Convenience and
Necessity, Dickerson
Units 4 and 5, Mirant
Corporation**
Montgomery County, MD

Project Manager for the preparation of the Certificate of Public Convenience and Necessity (CPCN) Application for the 1,100-MW Units 4 and 5 Project. This project involved the licensing of two 2-on-1 combined-cycle units using two existing GE Frame 7F 160-MW CTs and adding two GE Frame 7FA 170 MW CTs, four associated HRSGs, and two 220-MW steam turbines. These units are licensed under Maryland's Public Service Commission (PSC). Environmental documents prepared include the CPCN, FAA obstruction to navigation application, USACE dredge and fill permit application, and air permit application (including PSD application).

**Application for
Certificate of Public
Convenience and
Necessity, Chalk Point
Units CT7 through
CT10, Mirant
Corporation**
Charles County, MD

Project Manager of the preparation of the CPCN Application for the 320-MW CT Project. This project involved the licensing of four GE Frame 7EA 80-MW simple-cycle units. These units are licensed under Maryland's PSC. Environmental documents prepared include the CPCN, FAA obstruction to navigation application, and air permit application (including PSD application).

**Greenhouse Gas Life-
Cycle Analysis for
Bitor America
Corporation**
Boca Raton, FL

Project Manager for the preparation of a life-cycle analysis of greenhouse gas (GHG) emissions from various fossil fuels and technologies. The life-cycle analysis compared GHG emissions from the use of coal, natural gas, LNG, oil, and Orimulsion. The technologies evaluated included conventional steam generation, Integrated Gasification Combined-Cycle (IGCC), and combined-cycle.



Resumé

KENNARD F. KOSKY

**Odor Evaluations for
Sea Ray Boats, Inc.**
Palm Coast, FL

Project Manager for the evaluation of odor impacts from styrene emissions associated with an existing fiberglass boat manufacturing facility in Flagler County, Florida. Project involved meteorological monitoring, styrene monitoring using SUMA canisters, air dispersion modeling and conceptual design of exhaust stack. Involved in negotiations with regulatory agency on consent order requirements and made public presentations to citizens group.

**Odor Evaluations for
Sea Ray Boats, Inc.**
Merritt Island, FL

Project Manager for the evaluation of odor impacts from styrene emissions associated with three co-located fiberglass boat manufacturing plants located in Brevard County, Florida. Project involved air dispersion modeling and conceptual design of exhaust stacks for two facilities. Involved in negotiations with regulatory agency and made public presentations to citizens group.

**Lone Oak Energy
Center for Calpine
Eastern Corporation**
Lowndes County, MS

Project engineer for the air construction and PSD permit application for an 800-MW combined-cycle power project.

**Calhoun County
Peaker Project for FPL
Energy**
Calhoun County, AL

Project Manager for the air construction and PSD permit applications and environmental permits for a 680-MW simple-cycle power project.

**Hillabee Energy Center
for Calpine Eastern
Corporation**
Tallapoosa County, AL

Project engineer for the air construction and PSD permit applications for a 700-MW combined-cycle power project.

**Auburndale Peaker
Project for Calpine
Eastern Corporation**
Polk County, FL

Project Manager and engineer-of-record for the air construction and PSD permit applications for a 130-MW simple-cycle power project.

**Hines Energy Center
Power Block 2 for
Florida Power
Corporation**
Polk County, FL

Project Manager and engineer-of-record for the air construction and PSD permit applications for a 530-MW combined-cycle power project.

**Osprey Energy Center
for Calpine Eastern
Corporation**
Polk County, FL

Project Manager and engineer-of-record for the air construction and PSD permit applications for a 530-MW combined-cycle power project. Provided technical oversight for the preparation of the SCA.

**Simple-Cycle Power
Projects for Florida
Power & Light
Company**
Martin and Ft. Myers, FL

Project Manager and engineer-of-record for the air construction and PSD permit applications for two 170 MW simple-cycle units located at the existing FPL Martin and Ft. Myers Power Plant sites. Each project also required an evaluation of the noise impacts. The project at the Martin Plant required a modification of the SCA.



Resumé

KENNARD F. KOSKY

Shady Hills Generating Station for IPS Avon Park Corporation and El Paso Energy
Hardee County, FL

Project Manager and engineer-of-record for the air construction and PSD permit applications for a 510-MW simple-cycle power project.

Odor and Air Quality Consulting for the Viera Company
Brevard County, FL

Lead technical consultant in providing oversight on the air permitting of a waste scrap shredder. Project involved specifying procedures and reviewing results of source tests and impact analyses.

Installation of Citrus Fruit Extractors for Tropicana Products, Inc.
Ft. Pierce, FL

Project manager and engineer-of-record for the air construction and PSD permit applications for the addition of fruit extractors at the Tropicana Plant. Detailed air dispersion modeling was required.

DeSoto Power Project for IPS Avon Park Corporation and Entergy Power Group
DeSoto County, FL

Project Manager and engineer-of-record for the air construction and PSD permit applications for a 680-MW simple-cycle power project.

Air Construction Permit Preparation and Review for Solutia, Inc.
Pensacola, FL

Preparation of air construction permits for various process additions to the Solutia nylon production plant. This included new adipic acid production intermediates. Assisted Solutia in the review and comments to FDEP on the Title V permit application. Prepared an air permit application for an inlet fogging system for Solutia's cogeneration facility.

Sea Ray Boats, Inc., Cape Canaveral Plant
Brevard County, FL

Project Manager for a BACT evaluation and air modeling impact analysis for a new fiberglass boat manufacturing facility. Project involved negotiations with regulatory agency on permit conditions.

Heard County Power Project for Dynegy, Inc.
Hardee County, FL

Project engineer for the air construction and PSD permit applications for a 510-MW simple-cycle power project.

Fogger Installation at Combustion Turbine Sites
Jacksonville, FL

Project Manager for the preparation of air permit applications for the installation of inlet cooling "foggers" on simple-cycle CTs at Jacksonville Electric Authority's (JEA) Northside and Kennedy Plant sites. Project involved developing strategy for "netting out" of PSD.

Palmetto Power Project for Dynegy, Inc.
Hardee County, FL

Project Director and engineer-of-record for the air construction and PSD permit applications for a 510-MW simple-cycle power project.

Vandolah Power Project for IPS Avon Park Corporation and El Paso Energy
Hardee County, FL

Project Manager and engineer-of-record for the air construction and PSD permit applications for a 680-MW simple-cycle power project.



Resumé

KENNARD F. KOSKY

**Fogger Installation at
Combustion Turbine
Sites for Florida Power
& Light Company**
Multiple Sites, FL

Project Manager for the preparation of air permit applications for the installation of inlet cooling "foggers" at the Ft. Myers, Putnam, and Martin Plant sites. Project involved developing strategy for "netting out" of PSD.

**Independent Power
Projects for Tenaska,
Inc.**
Multiple Sites

Project Director and engineer-of-record for the preparation of PSD and air permit applications the following projects: Heard County, Georgia – 850-MW simple-cycle; Autauga County, Alabama, Two Projects – an 800-MW combined-cycle and an 8870-MW combined-cycle project located on adjacent sites; Lakefield, Minnesota – 480-MW simple-cycle (BACT); Coosa County, Alabama Project – 540-MW simple-cycle project.

**Oleander Power
Project for
Constellation Energy**
Brevard County, FL

Project Manager for the preparation of PSD and Air Permit Applications for the Oleander Power Project. Project consisted of 5 General Electric Frame 7FA simple-cycle CTs (nominal 850 MW). Project involved providing expert testimony.

**Repowering Project for
Florida Power & Light
Company**
Sanford, FL

Project Manager for the preparation of air permit applications for conversion of two existing steam electric units (Units 4 and 5) at the FPL Sanford Plant to combined cycle using 8 General Electric Frame 7FA CTs. The repowering would produce a nominal 2,200 MW of gas-fired combined-cycle generation. The project involved the preparation of the PSD and Air Permit Applications, noise evaluation, and FAA Notifications.

**Generation Project for
Thermal EcoTek,
Corporation**
Lake Worth, FL

Project Manager for the preparation of the PSD and Air Permit Applications for the Lake Worth Generation Project. Project consisted of the repowering of 2 existing steam units with a nominal capacity of 74 MW using a General Electric Frame 7FA CT (170 MW).

**Repowering Project
Licensing for Florida
Power & Light
Company**
Ft. Myers, FL

Project Manager for environmental licensing documents for the conversion of the existing steam electric units (Units 1 and 2) at the FPL Ft. Myers Plant to combined cycle using 6 General Electric Frame 7FA CTs. The repowering would produce a nominal 1,500 MW of gas-fired combined-cycle generation. The project involved the preparation of the PSD and Air Permit Applications, Environmental Resource Permit (ERP) Application, Wastewater Discharge Permit Application (i.e., the SPDES), FAA Notifications, and county applications.

**Lakeland Electric (City
of Lakeland) McIntosh
Unit 5**
Lakeland, FL

Project Manager for the preparation of the PSD and air permit applications for the McIntosh Unit 5 simple-cycle project. Included preparation of the Modification Request to Site Certification for McIntosh Unit 3. Project consisted of the first Westinghouse 501G CT with a nominal capacity of 250 MW.

**Title V Permit
Applications for Eagle-
Picher Corporation**
Multiple Sites

Project Director for the preparation of Title V Permit applications or Federally Enforceable Synthetic Minor Operating Permit applications for 9 facilities in 6 states. The facilities include activities associated with metal coil coating, rubber part manufacturing, and printing. The states where the facilities are located include Connecticut, Florida, Michigan, New Jersey, Pennsylvania, and New York.



Resumé

KENNARD F. KOSKY

**Odor and Noise
Monitoring for North
and South Broward
Resource Recovery
Facilities**

Broward County, FL

Project director for noise and odor studies at two large municipal waste combustors. The studies were based on ASTM methods to demonstrate conformance with requirements of regulatory approvals.

**Destin Dome Natural
Gas Development
Project for Chevron
U.S.A. Production
Company**

Pensacola, FL

Project Manager for the OCS air permit application submitted to the U.S. Environmental Protection Agency (EPA) to develop the natural gas reserves in a 33-square-mile area offshore of Pensacola. The projects involved preparation of permit applications including emission estimates of well drilling and production facilities. Air emission sources included two drilling rigs, one central production facility, and 16 satellite production facilities. The project included PSD evaluations to determine BACT and air impact analysis using the OCD air dispersion model.

**Title V Permit
Applications for
Potomac Electric
Power Company**

Multiple Sites

Project Manager for the preparation of Title V Permit applications or Federally Enforceable Synthetic Minor Operating (FESOP) Permit applications for 7 facilities in 2 states and 1 jurisdiction. The Title V facilities consist of 6 power plants with coal and oil fossil fuel-fired steam generating units, CTs, and diesel units. The FESOP is for a service facility. The facilities are located in Maryland (3 plants and the service facility), Virginia (1 plant) and the District of Columbia (2 plants).

**Air Permitting for
Destin Dome Blocks 57
and 96, Chevron U.S.A.
Production Company
Outer Continental
Shelf**

Pensacola, FL

Project Manager for the Outer Continental Shelf (OCS) air permits issued by the EPA to conduct well drilling within the U.S. boundary, offshore of Florida. The projects involved preparation of permit applications including emission estimates of well drilling activities. The applications were the first in the Eastern U.S. under 40 Code of Federal Regulation (CFR), Part 55. These regulations were promulgated as a result of the 1990 Amendments of the Clean Air Act (CAA) Amendments. Presented information on the emissions and impacts of the activity at an EPA sponsored public hearing.

**Kaiser Aluminum-
Gramercy and Baton
Rouge Cogeneration
Plants**

Baton Rouge, LA

Project Manager for obtaining air permits on two cogeneration facilities. The facilities were required to obtain PSD approval and meet NSPS requirements.

**PSD Approval for
Cogeneration Facility
at Borden Chemical**

Baton Rouge, LA

Project Director for an 80-MW cogeneration facility constructed for Borden Chemical. The project involved obtaining PSD approval from the state agency.

**Site Certification
Application for
Orimulsion Conversion**

Manatee County, FL

Project Director for the licensing of Orimulsion firing at FPL's Manatee Power Plant. The plant consists of two nominal 800-MW units. Technical activities focused on the preparation of BACT evaluation and air pollution control aspects of the project.



Resumé

KENNARD F. KOSKY

**Petroleum Coke and
Title V Application for
City of Lakeland
Department of Electric
and Water Utilities**
Lakeland, FL

Project Manager and engineer-of-record for providing technical assistance to obtain approval for co-firing petroleum coke (20 percent) and coal (80 percent) at McIntosh Power Plant, Unit 3. McIntosh Unit 3 is a 364-MW coal-fired facility. Project Manager and engineer-of-record for preparation of Title V applications.

**Coal and Petroleum
Coke Co-firing Permit
for St. Johns River
Power Plant**
St. Johns County, FL

Project Manager and engineer-of-record for obtaining approval from the regulatory agencies to co-fire up to 20 percent of petroleum coke by weight with coal in two nominal 700-MW units. Permit application and supporting material prepared. Performed emissions estimates and impact analyses of potentially toxic air emissions (metals). Provided support and presentations to local chapter of Sierra Club who intervened in the permit proceeding. Performed post-test analyses to demonstrate compliance with settlement agreement.

**Title V Economic
Evaluation for Florida
Electric Power
Coordinating Group**
Tampa, FL

Performed an economic evaluation for Florida Electric Power Coordinating Group (FCG) on the cost to prepare Title V permits as initially proposed by FDEP and presented the results of the evaluation at the FDEP Title V Workshop. The presentation assisted in modifying the FDEP requirements to more closely follow EPA requirements.

**Electric Utility
Regulatory
Requirements for
Florida Electric Power
Coordinating Group**
Tampa, FL

Lead the effort to prepare a comprehensive list of regulatory requirements specific for the electric utility industry. The list, which includes all applicable and non-applicable requirements, forms the basis for compliance statements required of the responsible official.

**Title V Permit
Recommendations for
Florida Electric Power
Coordinating Group**
Tampa, FL

Providing recommendations for preparation of Title V permits for the FCG. This includes interfacing with FDEP and providing comments on insignificant activities and application form submittal. Also provided FDEP comments on data input requirements and suggestions that will make the application form easier to develop.

**Florida Power
Corporation Title V
Applications**
Multiple Sites

Project Director and engineer-of-record for Title V applications for 11 facilities. The facilities include coal-, oil-, and gas-fired fossil fuel steam generator units, simple-cycle CT units, combined-cycle unit, and diesel generators. Project involved regulatory requirements, emissions inventories, trivial activity lists and application preparation.

**Title V Permits for
Florida Power & Light
Company Facilities**
Multiple Sites

Assisting FPL in the preparation of Title V permit applications for all facilities. This includes 11 power plants and several minor facilities. Engineer-of-record for the applications, and responsible for overseeing the applications' preparation. Also providing input on regulatory requirements and emissions. Currently, one permit application has been completed in draft form.



Resumé

KENNARD F. KOSKY

**Title V Permit
Implementation Plan
for Tennessee Valley
Authority
Multiple Sites**

Assisted Tennessee Valley Authority (TVA) in developing a comprehensive list of applicable requirements in three states (Tennessee, Kentucky, and Alabama) for 10 facilities. Also performed site visits for four major plants (7,550 MW coal fired with CTs) to develop a list of major sources and insignificant activities. The result was a comprehensive Title V plan, which is currently being implemented by TVA. Performed reviews of Title V applications for three power facilities.

**Gulf Power Company
Title V Applications
Multiple Sites**

Project Manager and engineer-of-record for Title V applications for three coal-fired facilities. Performed site visits for each facility and developed listing of regulatory requirements.

**Title V Database for
Various Clients
Multiple Sites**

Developed a Title V database built around the FDEP Title V permit application form. The database is designed to manage the data and print out a form identical to the FDEP form. The database will provide a format suitable for electronic submittal to FDEP.

**Emissions Inventory
and Title V
Applications for
Potomac Electric
Power Company
(PEPCO)
Multiple Sites in
Maryland**

Project Manager for the development of a comprehensive emissions inventory and preparation of Title V applications for all of PEPCO facilities. This includes 6 power plants (4 coal-fired plants, 1 oil/gas plant, and 1 CT plant) located in three regulatory jurisdictions. The inventory will involve the development of an emission inventory management system that will manage the data.

**Site Certification
Application at Hardee
Power Station,
Seminole Electric
Cooperative
Incorporated
Hardee County, FL**

Project Director for SCA and environmental assessment (EA) for a 660-MW combined-cycle electric-generating plant. Responsible for the technical, budgetary, and scheduling aspects of the project. The permitting documents prepared were designed to fulfill requirements of the PSC and the U.S. Department of Agriculture (USDA) Rural Electrification Administration (REA). Provided expert testimony for the project.

**Transmission Line
Corridor Siting at
Hardee Power Station
for Seminole Electric
Cooperative
Incorporated
Hardee County, FL**

Project Director for siting and licensing of three 230-kilovolt (kV) transmission lines (total of 78 miles) to connect the Hardee Power Station to the Florida transmission grid. Siting of the transmission line corridors was accomplished using the PC ARC/INFO® geographic information system (GIS). Developed all required information and impact analyses for the Florida SCA to be presented to the Florida Department of Environmental Regulation (FDER) and PSC.

**Site Certification
Application and
Licensing of the
Lauderdale
Repowering Project for
Florida Power & Light
Company
Ft. Lauderdale, FL**

Project Manager for the preparation of licensing documents for the Lauderdale Repowering Project, Broward County, Florida. This project involved replacing two existing steam generators with advanced CTs and HRSGs. The repowered units were designed to have a capacity of approximately 960 MW, approximately 640 MW resulting from the addition of the advanced CTs. Environmental documents prepared include the SCA, National Pollutant Discharge Elimination System (NPDES) application, FAA obstruction to navigation application, USACE dredge and fill permit application, and air permit application (including PSD application).



Resumé

KENNARD F. KOSKY

- Test Burn of Orimulsion Fuel for Florida Power & Light Company**
Sanford, FL
- Project Manager for a test burn to discover if Orimulsion fuel had the potential to displace No. 6 fuel oil in steam electric power plants at Sanford Unit 4. Project provided the opportunity to evaluate the technical and operational features associated with burning Orimulsion fuel under utility operating conditions.
- Air Construction Permit Application for TransPac, Inc.**
Santa Rosa County, FL
- Project Manager for project requiring permit to construct an air pollutant source. Developed report supplementing the application to construct a minor-source waste storage and treatment facility. The objective of this report was to evaluate the impact of the facility based on a comparison of the proposed facility's impacts to the FDER's proposed toxic air pollutant guidelines.
- Air Quality Impacts of Siting 1,050-MW CTs for Florida Power Corporation**
Multiple Sites
- Project Manager of air quality impact analyses performed to evaluate locating CTs at six potential sites in Florida: Intercession City, DeBary, Avon Park, Turner, Bartow, and Anclote. The analyses were undertaken to determine compliance with ambient air quality standards (AAQS) and PSD increments for the maximum proposed plant size (i.e., 1,050 MW).
- Particulate Matter Air Quality Assessment of Helper Cooling Towers for Florida Power Corporation**
Citrus, FL
- Project Manager of project to determine the impacts of the proposed cooling towers on ambient particulate matter (PM) levels, considering all PM emissions associated with the CT units, cooling towers, helper cooling towers, and coal- and ash-handlers already existing onsite. Impacts were addressed in regard to allowable PSD increments for PM [as total suspended PM, i.e., PM(TSP)] and AAQS for PM [as particulate with an aerodynamic diameter less than 10 micrometers (μm), i.e., PM10].
- Site Evaluation of 1,000-MW CT Project for Florida Power Corporation**
Multiple Sites in FL
- Project Manager responsible for evaluating the availability of water-supply sources, raw water treatment requirements, and wastewater disposal options at six facilities for the 1,000-MW CT siting project. Water supply sources were evaluated to determine their feasibility for use and included existing permitted groundwater and surface water withdrawals, new groundwater sources, new surface water withdrawals, and secondary effluent from nearby municipal wastewater treatment facilities.
- CT Site Evaluation and Chalk Point Environmental Assessment for Potomac Electric Power Company**
Chalk Point, MD
- Project Manager of project to provide alternative site and environmental information required under the Maryland PSC rules for receiving a CPCN for a new generation facility. The two primary objectives of the report were to identify and evaluate suitable sites for accommodating approximately four CTs and to evaluate the environmental baseline information and potential impacts of locating the CTs at the preferred site.
- Gator Power Cogeneration Facility PSD Review for Florida Power Corporation**
Gainesville, FL
- Project Manager for PSD review for a cogeneration facility consisting of a CT and HRSG. The report addressed the new source review (NSR) requirements contained in air quality regulations on both the state and federal levels.



Resumé

KENNARD F. KOSKY

**Fog Visibility Study for
Parsons, Brinkerhoff,
Quade, and Douglas,
Inc.**
Charleston, SC

Project Manager responsible for study designed to obtain meteorological and fog/visibility data on the I-526 Cooper River Crossing in North Charleston. Objectives of the program were to document the frequency and duration of fog and the meteorological conditions during which it occurs; to identify and differentiate the fog plume created by the cooling towers from that of other sources; and to correlate the data collected with data observed at the National Weather Service (NWS) station in Charleston.

**Site-Specific
Environmental
Evaluation for
Potomac Electric
Power Company**
Multiple Sites in
Maryland

Project Manager responsible for presenting the methodology and results of a site-specific environmental evaluation. The objective of the site environmental evaluation was to determine the environmental suitability of CT units with projected early 1990s in-service dates. The candidate site environmental evaluation consisted of analyzing candidate sites based on six environmental factors.

**PSD Permit
Application for
Environmental
Incineration Systems,
Inc.**
Duval County, FL

Project Manager of permitting activities for proposed municipal solid waste recycling/volume reduction facility. The facility was designed to reduce the amount of solid waste input to landfills in Duval County by up to 175,200 tons per year (TPY). The proposed facility was classified as a "major" source under federal and state air pollution control regulations and was subject to the PSD provisions of the regulations.

**PSD Permit
Application for
Cogeneration Project
for Tropicana
Products, Inc.**
Bradenton, FL

Project Manager responsible for permitting a cogeneration facility consisting of a CT, a HRSG, and an associated auxiliary steam generator. The report addressed the NSR requirements contained in the state and federal regulations.

**Crystal River PSD
Analysis for Florida
Power Corporation**
Crystal River, FL

Project Manager of air dispersion modeling analyses performed to determine the TSP impacts of PM emissions from the cooling towers at FPC's Crystal River facility. A modeling protocol was prepared by KBN and reviewed and commented upon by the EPA.

**EMSoft II®, Permit
Manager for Manatee
County Public Health
Unit**
Manatee County, FL

Designed and developed the EMSOFT II®, a software package for micro-computers designed to assist end users in managing environmental permits and requirements through a relational database capable of generating a series of specific reports.

**Agrico Chemical
Company Mine**
Hillsborough County, FL

Project Manager for the EA for a phosphate mine located in eastern Hillsborough County, Florida. The project involved the development of baseline conditions including monitoring of air, water, and ecological conditions. Impact analyses involving various environmental disciplines were conducted using approved regulatory techniques.



Resumé

KENNARD F. KOSKY

REPRESENTATIVE PROJECT EXPERIENCE – INTERNATIONAL

**Best Available Control
Technology
Assessment and Toxic
Air Emission
Evaluation for Coleson
Cove Refurbishment
Project, New
Brunswick Power
Corporation**

New Brunswick, Canada

Senior consulting engineer for developing a best available control technology (BACT) assessment and toxic air emission inventory for the conversion of the 1,050-MW Coleson Cove plant from residual oil to Orimulsion. Project involved a detailed assessment of control equipment for sulfur dioxide (SO₂), PM, nitrogen oxides (NO_x) and sulfuric acid mist (SAM). Develop a toxic air emissions inventory. Provided presentations at multi agency meetings and public hearings.

**Combined-Cycle
Projects for Southern
Energy, Inc.**

Multiple Sites in Italy

Provided technical review and assistance for two 370-MW combined-cycle projects to be located in east central Italy. Reviewed the designs and impact methodologies to provide senior oversight of projects.

**Environmental Due
Diligence**

Campeche, Mexico

Project Director for the environmental due diligence for the Cantarell Nitrogen Project located near Campeche, Mexico. Project is the largest nitrogen plant in the world with an associated 400-MW power complex to provide power for the nitrogen plant. Review licensing reports and documents for conformance with Mexican regulations and "world norms". Review being conducted for international financial institutions.

**Environmental
Benchmarking of
Power Facilities,
Worldwide,
Confidential Client**

Multiple Sites

Project Manager assisting an international energy company in the evaluation of their environmental conformance with international accepted norms of all of their facilities worldwide. This involved evaluating over 10,000 MWs at approximately 12 different power facilities including hydro. These plants were located in Asia, South America, North America, and Europe. Evaluation was to assist with the development of an environmental management system for all of the company's facilities.

**Shanghai Municipal
Electric Power
Company Waigaoqiao
Environmental
Assessment**

Shanghai, China

Project Manager for World Bank EA of the addition of two 1,000-MW coal-fired super-critical units to the Waigaoqiao Power Plant site. This was referred to as Phase II, while Phase I, the existing plant, consists of four 300-MW units. The EA also considered the addition of a Phase III which would be identical to Phase II (i.e., another two 1,000-MW units). The EA was prepared to meet World Bank guidelines and involved developing information and performing analyses for Phases I, II, and III.

**Baley Gold Mine
Project**

Western Russia

Task Manager for the environmental assessments relating to the potential air and noise impacts from a gold mine project located in Eastern Russia. The task involved developing emissions and impact estimates for mining 25 million tonnes of material from an open pit mine. Impacts were determined using EPA dispersion models. Noise impacts from mine activities were determined using the NOISECALC model.



Resumé

KENNARD F. KOSKY

**Nickel and Cobalt Mine
Project**
Cupey, Cuba

Working through Golder's Mississauga Office provided air impact analyses for a nickel and cobalt mine located in Cupey, Cuba. The major emissions from the project were from the ore processing, which contained PM and SO₂. The EPA dispersion model ISC3ST was used to estimate impacts using a 1-year meteorological data base. Impacts were compared to the World Bank ambient guidelines.

**Ambient Air Monitoring
Laboratories and
Training Program for
the Electricity
Generating Authority
of Thailand**
Bangkok, Thailand

Project Director responsible for designing and constructing two mobile laboratories as well as providing air quality and meteorological equipment. Equipment will be installed in specialty designed cubicles, and mounted on a Nino truck chassis. The intensive training program will consist of 2 months training in the United States for three EGAT engineers.

**Air Resources Studies,
Mae Moh Power Plant
and Lignite Mine for
the Electric Generating
Authority of Thailand**
Mae Moh Valley,
Thailand

General Consultant for Air Quality/Project Manager managing activities within an environmental program for proposed plant and mine development in Mae Moh Valley, Northern Thailand.

**Environmental
Licensing Studies for
the Electricity
Generating Authority
of Thailand**
Bangkok, Thailand

Air Resources, Subproject Manager, responsible for studies of coal-fired power plant. Managed air resources investigations as part of overall environmental studies of proposed coal-fired power plant to be located on the Gulf of Thailand, 70 kilometers (km) southeast of Bangkok.

**Ambient Monitoring
Network for the
Electricity Generating
Authority of Thailand**
Gulf of Thailand

Project Director/Air Resources, Subproject Manager, performing environmental licensing studies for a 2400-MW, coal-fired plant.

**Environmental
Assessment of Gas
Turbine Electrical
Generating Facility,
World Bank**
Hunts Bay, Jamaica

Air Engineer responsible for developing mitigation and monitoring measures based on the results of air modeling to reduce the impacts from SO₂ and NO_x in the Hunts Bay area.

**Development of Air
Quality Standards for
the Government of
Mauritius for the World
Bank**
Mauritius

Project Manager tasked with assisting the government of Mauritius in developing air quality standards and designing appropriate monitoring programs required for regulatory enforcement.



Resumé

KENNARD F. KOSKY

**Environmental
Assessment for 60-MW
Diesel-Powered
Facility**

Rockfort, Jamaica

Air Engineer responsible for developing mitigation and monitoring measures based on the results of air modeling to reduce the impacts from sulfur dioxide and nitrogen oxides in the Rockfort project area.

**Environmental
Assessment of the
Gas/Coal Electrical
Generating Facility in
Mauritius for the World
Bank**

St. Aubin, Mauritius

Project Director responsible for conducting all field work for the environmental assessment of a coal- and gas-fired electrical generating facility at St. Aubin in air quality, water quality, and ecology.

PROFESSIONAL REGISTRATIONS

Registered Professional Engineer, State of Florida, No. 14996

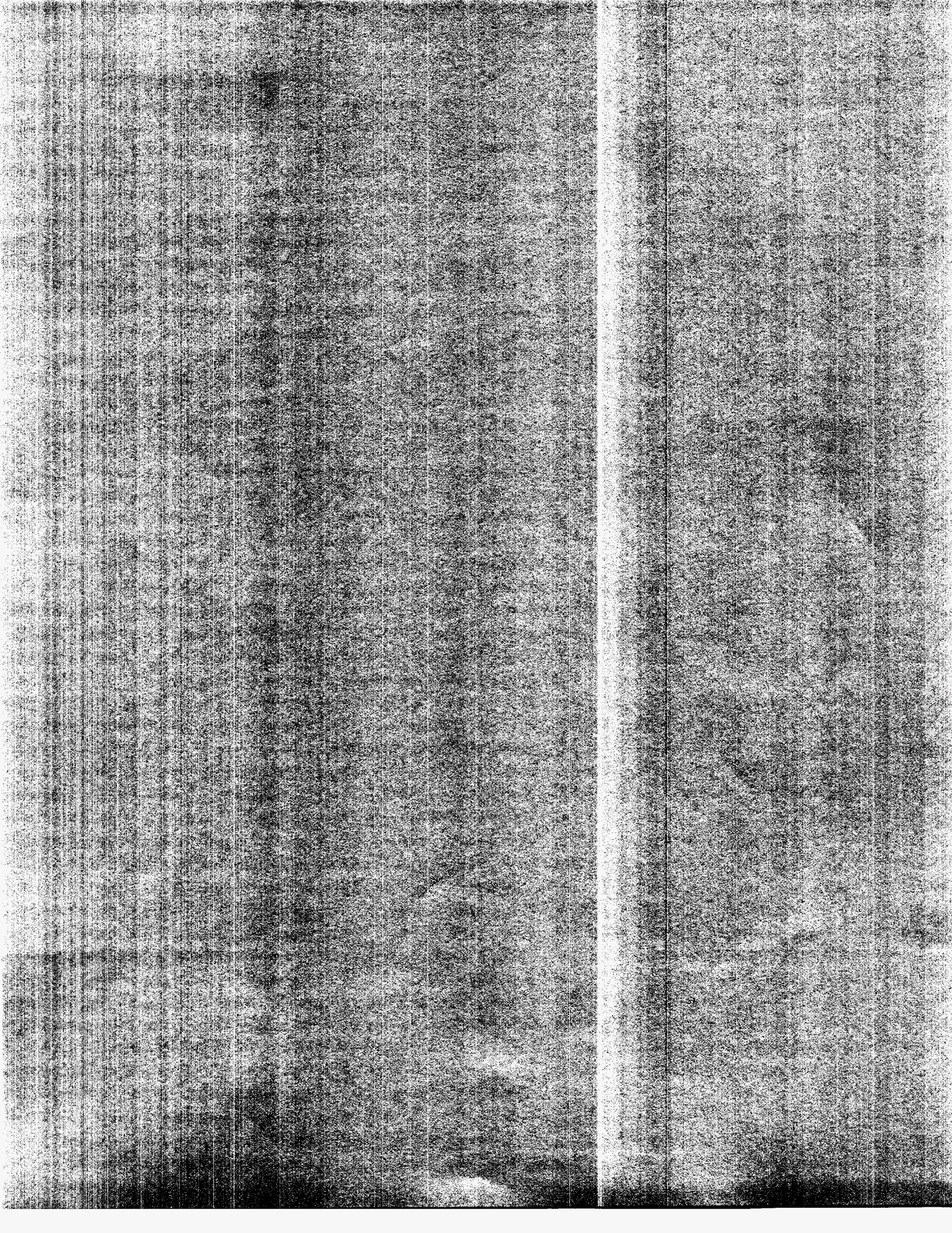
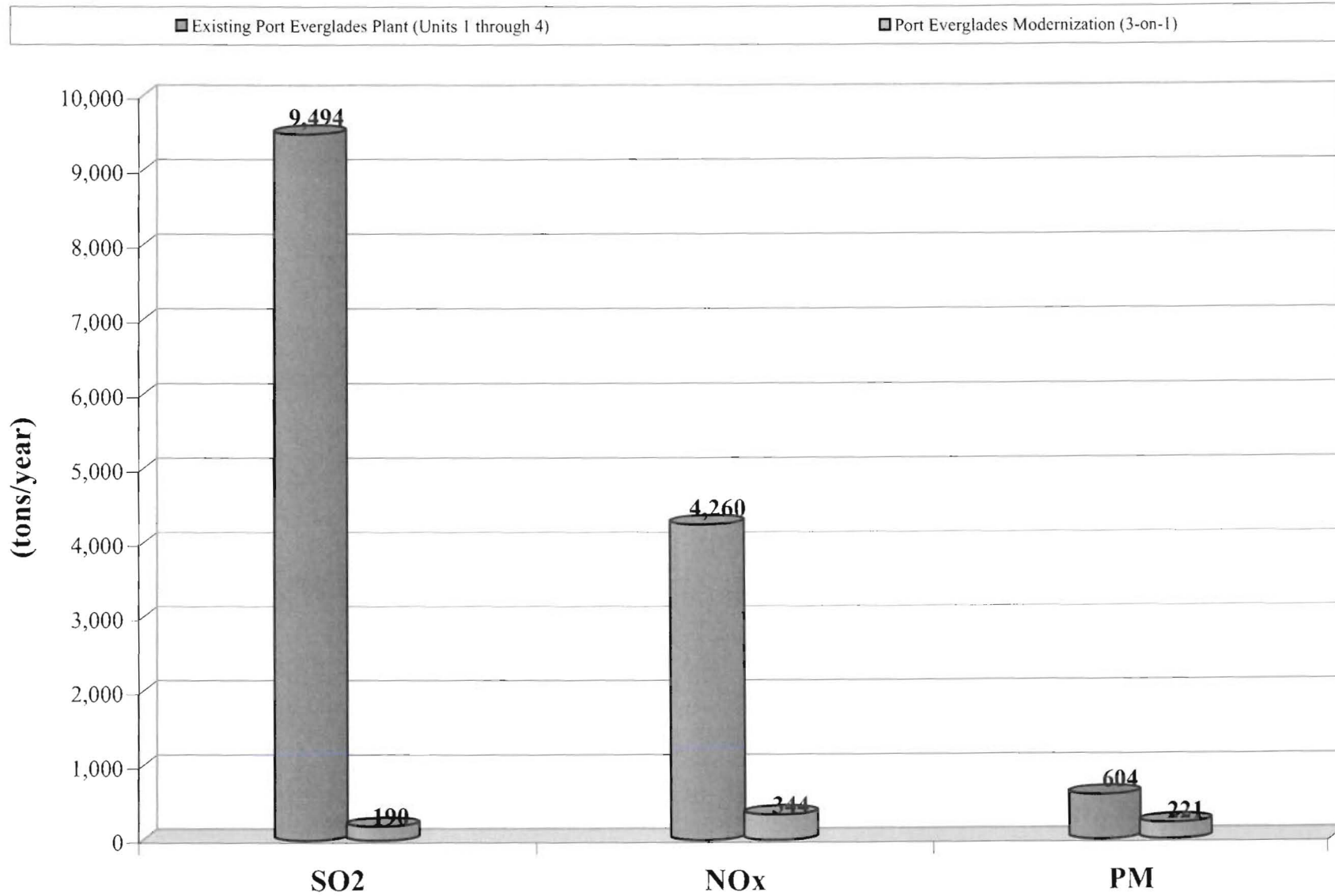


Exhibit KFK-2. SO₂, NO_x, and PM₁₀ Air Emissions (tons/year)



Notes :Existing Port Everglades based on 2006 and 2007 with an approximate capacity factor of 29%.

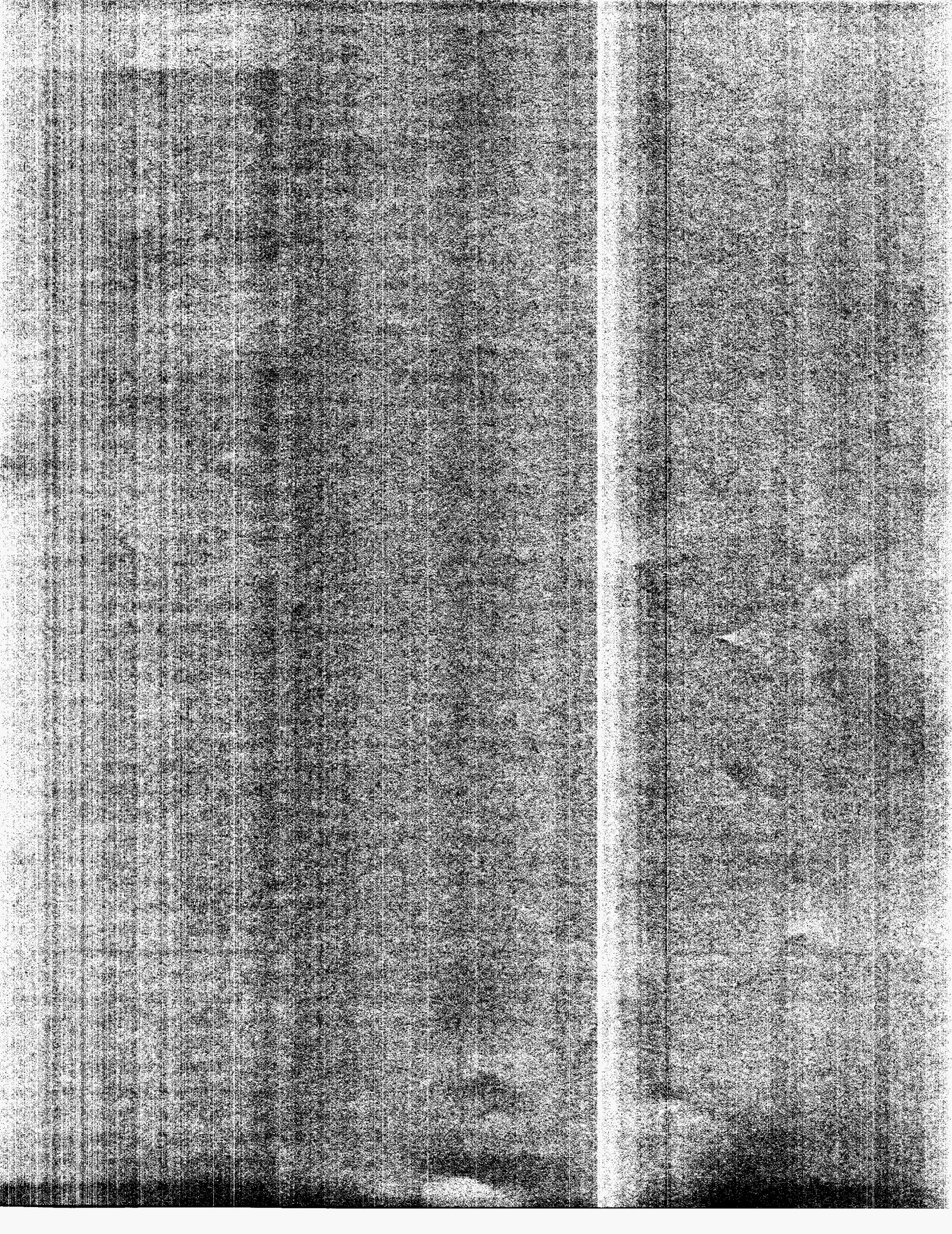
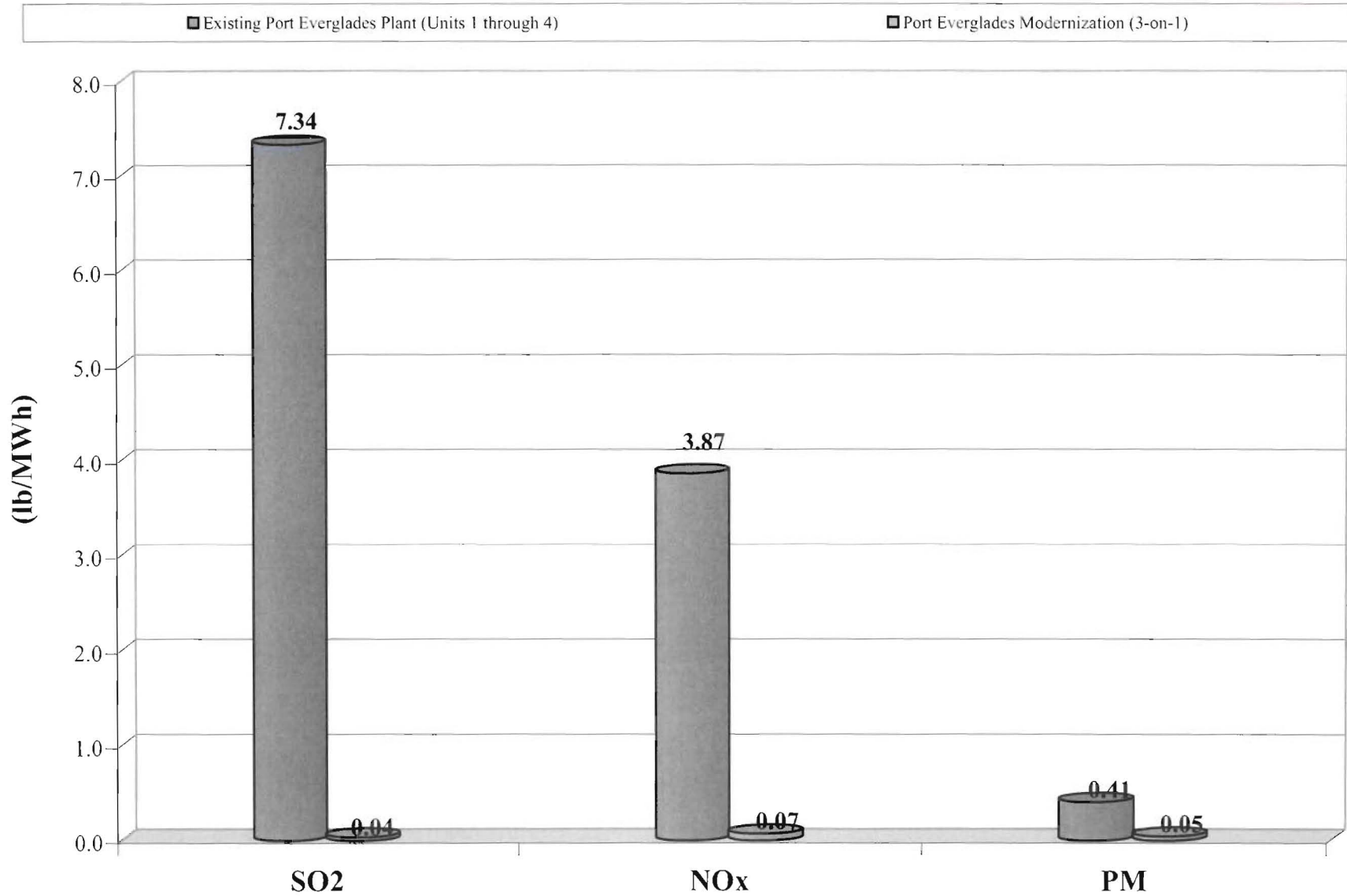


Exhibit KFK-3. SO₂, NO_x, and PM Air Emissions (lb/MWh)



Notes: Existing Port Everglades based on 2007 eGrid Data from EPA (2010).
 Modernization based on 90% capacity factor on natural gas and light oil;

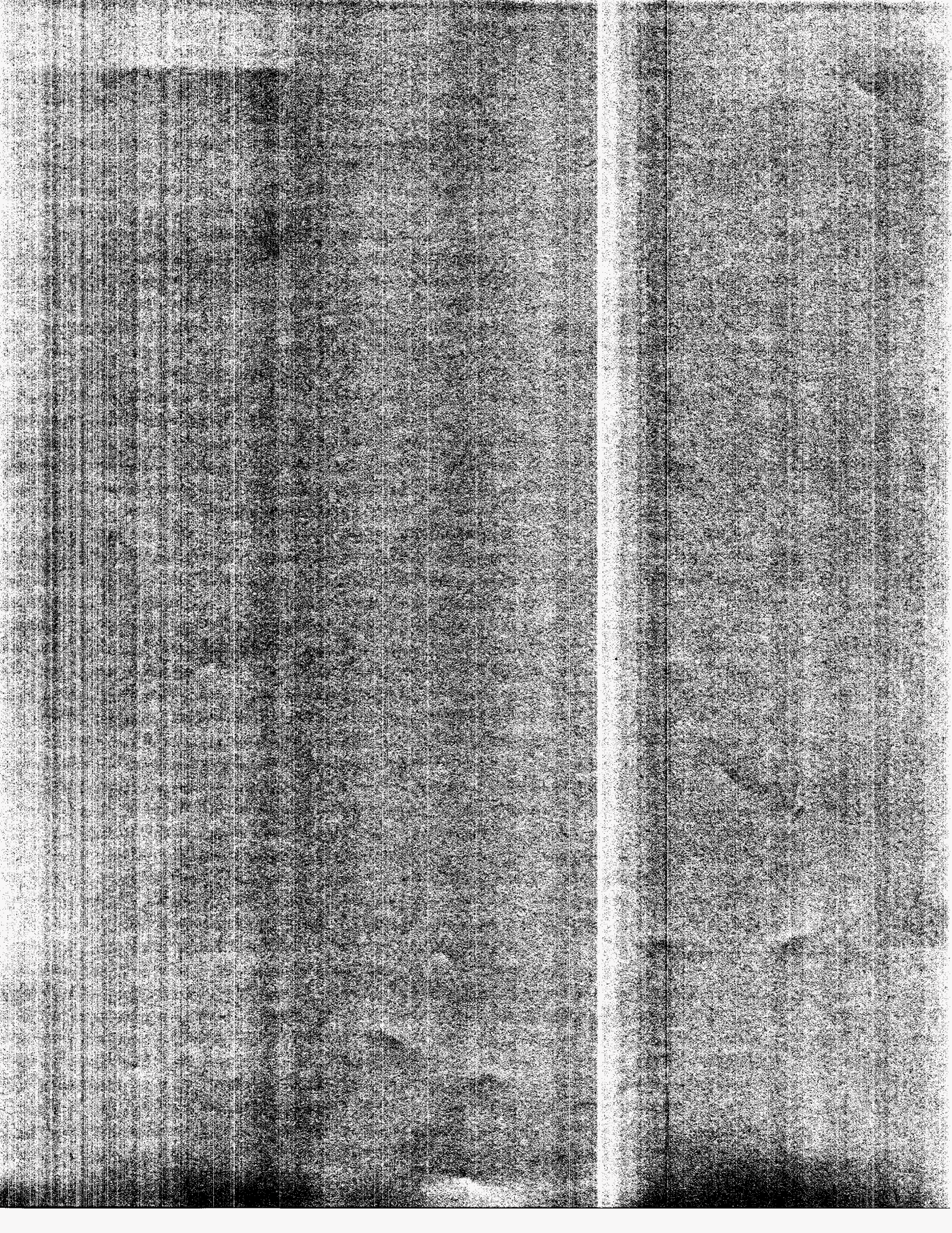
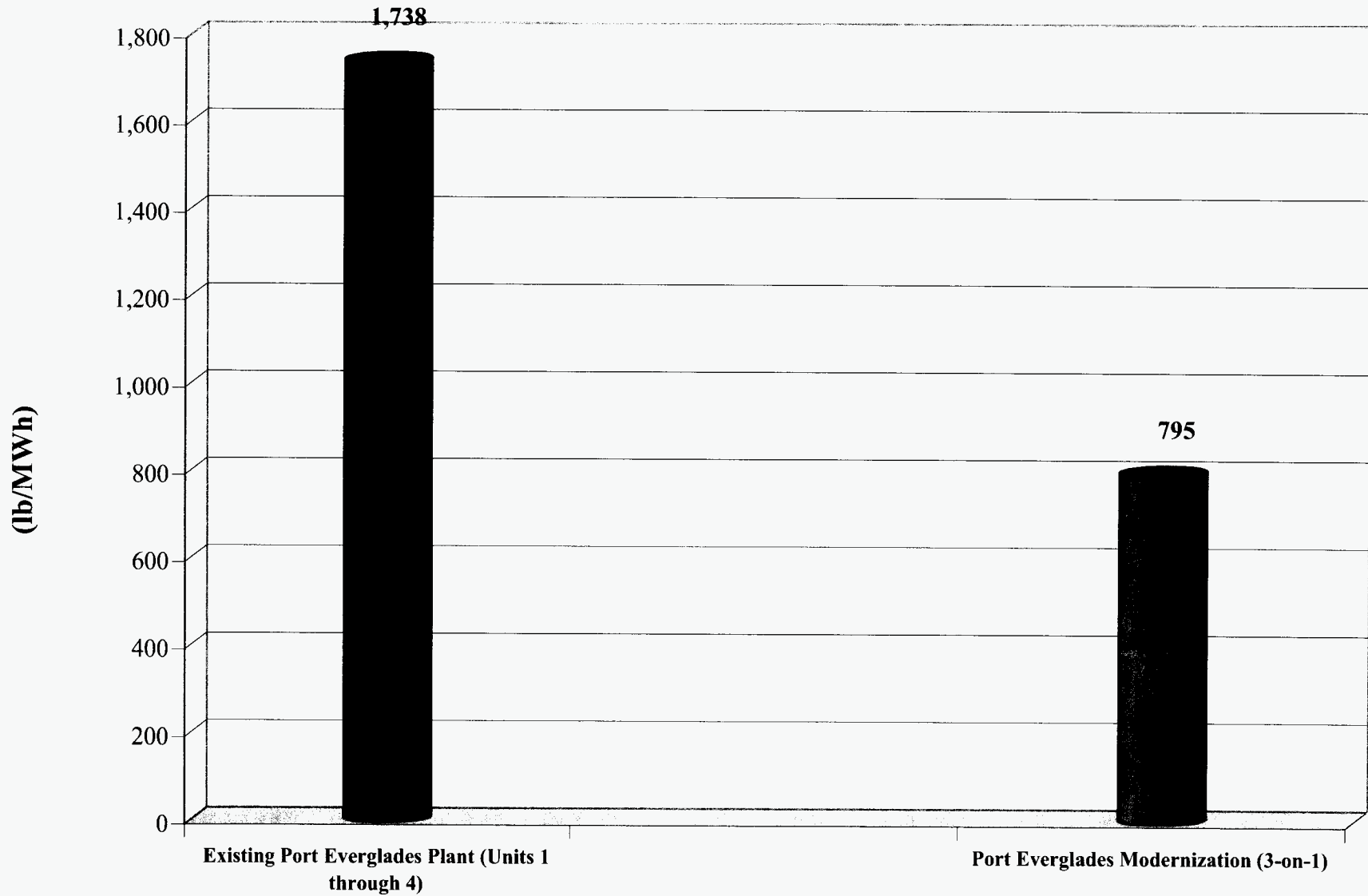


Exhibit KFK-4. CO₂ Air Emissions (lb/MWh)



Notes: Existing Port Everglades based on 2007 eGrid Data from EPA (2010).
Modernization based on 90% capacity factor on natural gas and light oil;

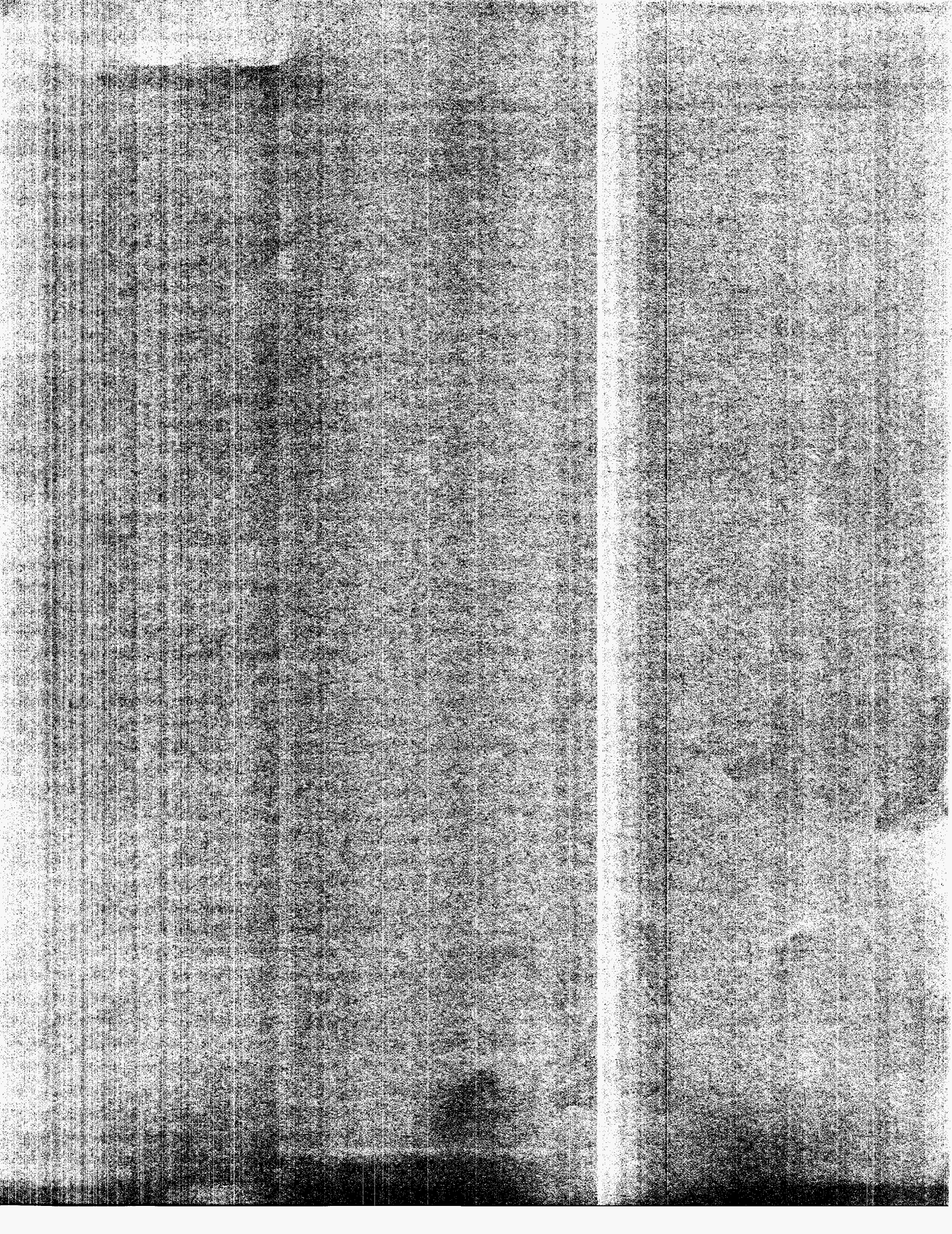


Exhibit KFK-5. Cumulative CO₂ Reductions* in FPL's System with Port Everglades Modernization

