

**BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION**

**DOCKET NO. 070650 -EI
FLORIDA POWER & LIGHT COMPANY**

**IN RE: FLORIDA POWER & LIGHT COMPANY'S
PETITION TO DETERMINE NEED FOR
TURKEY POINT NUCLEAR UNITS 6 AND 7
ELECTRICAL POWER PLANT**

DIRECT TESTIMONY & EXHIBITS OF:

KENNARD F. KOSKY

DOCUMENT NUMBER-DATE

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

DIRECT TESTIMONY OF KENNARD F. KOSKY

DOCKET NO. 07____-EI

OCTOBER 16, 2007

Q. Please state your name and business address.

A. My name is Kennard F. Kosky and my business address is 6241 NW 23rd Street, Suite 500, Gainesville, Florida 32653.

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

A. I am employed by Golder Associates Inc., an engineering consulting firm specializing in ground engineering and environmental services. I am a Principal with the firm in the Gainesville office involved primarily in the environmental aspects of electric power plants.

Q. Please describe your educational background and professional experience.

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

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1 Over the last 30 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 conventional coal, oil and
4 gas-fired steam generating units, combined cycle (CC) units, nuclear,
5 integrated coal gasification combined cycle (IGCC) units, simple cycle units,
6 municipal solid waste (MSW) fired units, biomass-fired steam generating
7 units, and diesel units. My primary technical activities have involved siting
8 and licensing of power facilities and managing the preparation of the overall
9 environmental permitting applications. A copy of my curriculum vitae is
10 attached as Exhibit KFK-1 to my testimony.

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

13 A. I am a registered Professional Engineer in mechanical engineering in the State
14 of Florida. I have been practicing as a registered Professional Engineer since
15 1976.

16 **Q. Could you please describe your responsibilities for FPL's proposed**
17 **Turkey Point Nuclear Units 6 and 7 (Turkey Point 6 & 7) and your**
18 **experience at the Turkey Point plant site and other nuclear plant sites?**

19 A. Golder Associates has been retained to evaluate certain environmental aspects
20 of Turkey Point 6 & 7 including preliminary evaluations of water resources
21 and air quality. I had overall responsibility for the preparation of the Site
22 Certification Application (SCA) for the FPL Turkey Point Unit 5 Project that
23 was granted approval in 2005 by the Governor and Cabinet as the Siting

1 Board. This project evaluated the environmental aspects of Unit 5 as well as
2 those of the Turkey Point plant site. I prepared, in my capacity as the
3 Professional Engineer, the initial Title V Air Operating Permit Application for
4 Turkey Point Nuclear Units 3 and 4. I prepared similar applications for FPL's
5 St. Lucie Nuclear Plant and Progress Energy's Crystal River Nuclear Unit 3.

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

7 A. Yes. I am sponsoring Exhibits KFK-1 through KFK-9, which are attached to
8 my direct testimony.

- | | | |
|----|---------------|---|
| 9 | Exhibit KFK-1 | Curriculum Vitae of Kennard F. Kosky |
| 10 | Exhibit KFK-2 | Graphical representation of the FPL Turkey |
| 11 | | Point Site showing areas for Turkey Point Units |
| 12 | | 6 & 7 |
| 13 | Exhibit KFK-3 | Table of avoided air emissions from the total |
| 14 | | amount of nuclear generation through 2006 as a |
| 15 | | function of possible generation alternatives |
| 16 | | when the nuclear units were constructed |
| 17 | Exhibit KFK-4 | Figure showing the avoided emissions of CO ₂ |
| 18 | | from 1987 through 2006 |
| 19 | Exhibit KFK-5 | Figure showing a comparison of the avoided air |
| 20 | | emissions in 2006 from FPL's existing nuclear |
| 21 | | generation |
| 22 | Exhibit KFK-6 | Figure showing Environmental Benefits of |
| 23 | | Nuclear Generation through a comparison of |

1 avoided CO₂ emissions by Turkey Point 6 & 7
2 with other generation alternatives

3 Exhibit KFK-7 Graphical comparison of FPL's future CO₂
4 projected emissions avoided by adding Turkey
5 Point 6 & 7

6 Exhibit KFK – 8 Figure showing the reduction in Annual CO₂
7 Emissions Achieved by Adding 1000 MW of
8 Non-Emitting Generation Alternatives in
9 Florida

10 Exhibit KFK-9 Choosing Nuclear Helps Reduce CO₂ Emissions
11 in the Year 2021 by 76% Toward the Year 2000
12 Level of 62.6 MM Tons

13 **Q. Are you sponsoring any sections in the Need Study?**

14 A. Yes. I am sponsoring Section V.A.3, titled Environmental Regulations, and
15 Appendix F of the Need Study.

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

17 A. My understanding is that the Florida Public Service Commission (the
18 Commission) will consider and determine the need for Turkey Point 6 & 7
19 pursuant to the utility laws and regulations that it is responsible for
20 administering. These laws and regulations that consider and determine need
21 do not include environmental regulation. However, because electric power
22 plants constructed in Florida must comply with environmental regulations, the
23 costs of compliance are part of Turkey Point 6 & 7. Accordingly, the purpose

1 of my testimony is to provide the Commission an overview of the key
2 environmental aspects of Turkey Point 6 & 7 and of the environmental
3 regulatory matters not related to the radiological aspects of nuclear generation.
4 FPL witness Diaz will address the radiological aspects related to Turkey Point
5 6 & 7.

6
7 Based upon my training, experience and review of the environmental controls
8 being contemplated for Turkey Point 6 & 7, my testimony reaches and
9 supports the following key conclusions: (i) the environmental methods and
10 controls being considered for Turkey Point 6 & 7 would not only meet, but be
11 better than the extensive environmental regulatory requirements; (ii) the
12 selection of nuclear technology is the best available alternative from an
13 environmental perspective consistent with maintaining fuel diversity in the
14 2018-2021 time frame; and (iii) the use of nuclear technology minimizes the
15 uncertainty of potential future environmental compliance costs associated with
16 CO₂ emissions.

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

18 **A.** My testimony provides an overview of the key environmental aspects of
19 Turkey Point 6 & 7. My testimony concludes that the nuclear power
20 generation being considered for Turkey Point 6 & 7 can meet or be better than
21 the environmental regulatory requirements. Turkey Point 6 & 7 can be
22 designed to have minimal environmental impacts using proven and tested
23 technologies. As a result, Turkey Point 6 & 7 are the preferred choices from

1 an environmental perspective and would contribute to the needed fuel
2 diversity for the FPL system in the 2018-2021 time frame. Future
3 environmental legislation is likely to regulate CO₂ emissions in the United
4 States. Although the type of CO₂ regulation is uncertain, the use of nuclear
5 power generation for Turkey Point 6 & 7 will have economic advantages over
6 fossil fuel-fired electric generation, regardless of the type of regulation
7 adopted.

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

9 A. My testimony is divided into four sections. Section I provides an overview of
10 the major environmental requirements for Turkey Point 6 & 7. Section II
11 presents information on how the design of Turkey Point 6 & 7 will not only
12 meet, but also be better than these requirements. In this section, I will also
13 provide information that demonstrates the favorable environmental
14 characteristics of Turkey Point 6 & 7, while contributing to fuel diversity for
15 customers in the time frame required. Section III describes how Turkey Point
16 6 & 7, from an environmental perspective, is the best alternative to meet the
17 fuel diversity need in FPL's system. Section IV describes the existing and
18 possible future environmental requirements and their potential influence on
19 future environmental compliance costs of Turkey Point 6 & 7. In this section,
20 I will describe how these existing and possible future environmental costs
21 were included in FPL's analysis.

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

2

3 **Q. What environmental approvals are required for Turkey Point 6 & 7?**

4 A. Turkey Point 6 & 7 will be required to obtain federal and state environmental
5 approvals and permits. The principal state environmental approval is the Site
6 Certification under Florida's Power Plant Siting Act. Site Certification is a
7 comprehensive review of all environmental aspects of Turkey Point 6 & 7
8 coordinated through the Florida Department of Environmental Protection
9 (FDEP) and involving all state and regional agencies with environmental
10 responsibility and those agencies potentially affected by the project. This
11 includes, but is not limited to, the FDEP, Florida Department of Community
12 Affairs, Florida Department of Transportation, Florida Fish and Wildlife
13 Conservation Commission, South Florida Water Management District and
14 Miami-Dade County. This comprehensive environmental review evaluates
15 the environmental controls for Turkey Point 6 & 7 and determines compliance
16 with applicable state, regional and local environmental standards, which
17 ultimately leads to a comprehensive analysis by agencies and Conditions of
18 Certification that set forth environmental requirements.

19

20 Turkey Point 6 & 7 will also require federal approval and federally delegated
21 permits. Under the requirements of the Nuclear Regulatory Commission
22 (NRC), an environmental review is conducted by the NRC staff in accordance
23 with the National Environmental Policy Act (NEPA). Draft and Final

1 Environmental Impact Statements will be prepared as part of the NRC
2 licensing process. Other possible approvals include an approval by the U.S.
3 Army Corp of Engineers for impacts to wetlands, a Prevention of Significant
4 Deterioration (PSD)/Air Construction Permit by the FDEP for support
5 facilities, and an Underground Injection Control (UIC) Permit from the FDEP.

6 **Q. Please summarize the major requirements for the environmental**
7 **approvals of Turkey Point 6 & 7.**

8 A. The major requirements include: (i) minimizing impacts to wetlands and
9 providing compensatory wetland mitigation; (ii) preventing adverse impacts to
10 fish and wildlife; (iii) using the lowest quality water and minimizing impacts
11 to surface and ground waters; and (iv) installing control technologies to
12 minimize air emissions.

13 **Q. What is the current status of obtaining environmental approvals for**
14 **Turkey Point 6&7?**

15 A. FPL is conducting feasibility studies related to certain environmental aspects
16 of design alternatives for Turkey Point 6 & 7. These feasibility studies
17 include investigating the environmental impacts of water use and discharge
18 alternatives to minimize environmental impacts. Environmental applications
19 such as the Site Certification Application (SCA), environmental portions of
20 the NRC licensing application, PSD/Air Construction Permit, UIC Permit, and
21 U.S. Army Corp of Engineers wetlands permit will be prepared after plant
22 designs are further developed.

1 **Q. What are the general time frames for approvals?**

2 A. While the specific time frames for approvals cannot be determined with
3 certainty, the general time frames are set by federal and state statutes and
4 regulations. For example, Florida's Site Certification process has time frames
5 established by statutes and rules providing for about 9 to 13 months from
6 submission of the application until decision by the Secretary of the FDEP or
7 the Siting Board. The Site Certification environmental review process also
8 has significant opportunities for public review and comment including
9 opportunities for public hearings. The actual time frame until decision often
10 varies from case to case, depending on environmental aspects being
11 considered by the various state agencies that review the SCA. On the federal
12 level, the NRC licensing process, which includes the NEPA environmental
13 review, also is governed by a standard schedule that can be varied depending
14 upon the case and also has significant opportunities for public review and
15 comment.

16
17 Providing information and participating in the state and federal approval
18 process will take considerable effort, and neither the schedule nor the specific
19 outcomes can be forecast with certainty. FPL is starting early to identify
20 environmental aspects, solicit input from affected agencies and performing
21 comprehensive environmental assessments in order to support its
22 environmental applications.

1 sufficient land area within the Turkey Point site and Everglades Mitigation
2 Bank to provide mitigation for wetland impacts. Water use effects can be
3 minimized by the potential availability of several water supply options that
4 include reuse water and lower-quality water from the Upper Floridan Aquifer.
5 Water would be recycled as much as possible and released to the existing
6 cooling canal system or to UIC wells. Turkey Point 6 & 7 will not have
7 industrial water discharges to surface waters or groundwater that can impact
8 the environment. Nuclear steam generation does not produce air emissions;
9 air emissions are only emitted from equipment supporting the nuclear units
10 such as the cooling towers and emergency diesel generators. Advantages of
11 the Turkey Point site include the existing transmission infrastructure and its
12 location relative to FPL's load center. While modest transmission upgrades
13 will be required, it is anticipated that an existing transmission right-of-way
14 can be used for the majority of the required upgrades and transmission
15 interconnections. The use of existing right-of-way will reduce environmental
16 impacts associated with Turkey Point 6 & 7.

17 **Q. Have all the environmental controls and associated costs been identified**
18 **for Turkey Point 6 & 7?**

19 A. The details have not been determined at this stage of the project's
20 development. FPL has identified a variety of environmental controls that
21 encompass the alternatives being considered for Turkey Point 6 & 7. These
22 alternatives form an environmental design envelope that can be evaluated for
23 environmental compliance. FPL expects to update the Commission in its

1 annual filings on specific environmental costs as designs are further developed
2 and finalized.

3 **Q. Based upon your training, experience and analysis, have you concluded**
4 **whether the environmental controls contemplated for Turkey Point 6 & 7**
5 **can meet environmental requirements?**

6 A. Yes. I conclude that the environmental controls being contemplated for
7 Turkey Point 6 & 7 that include proven technologies for water supply, water
8 treatment and support equipment can meet environmental requirements. The
9 technologies being considered have been proven to minimize impacts to the
10 environment. Many of these technologies have been used on recent FPL
11 projects approved by the FDEP and certified under the Site Certification
12 process.

13 **Q. Will FPL's environmental compliance strategy for Turkey Point 6 & 7**
14 **meet, or exceed, the applicable environmental requirements?**

15 A. Yes. FPL's environmental compliance strategy will meet all applicable
16 environmental requirements and standards. Indeed, many of the
17 environmental designs will be better than the requirements and standards since
18 they are based on proven technologies.

19 **Q. What are greenhouse gases?**

20 A. Greenhouse gases are gases in the atmosphere that trap heat. Greenhouse
21 gases are both naturally occurring and emitted by man-made activities.
22 Greenhouse gases in the atmosphere include CO₂, methane, nitrous oxide and
23 man-made fluorinated gases.

1 **Q. Is nuclear generation considered a “non-emitting” technology for**
2 **greenhouse gas emissions?**

3 A. Yes. Nuclear generation, as well as wind and solar generation, is generally
4 considered a “non-emitting” technology because nuclear units emit no
5 greenhouse gases as they operate to produce electricity.

6 **Q. Does this mean there are no greenhouse gas emissions associated with**
7 **these technologies? Please explain.**

8 A. No. There are greenhouse gas emissions associated with the resource
9 development, handling and processing, facility construction (including
10 equipment), transportation, maintenance and decommissioning of all electric
11 generation technologies. Greenhouse gas emissions associated with these
12 indirect activities and with operation are referred to as life-cycle emissions.
13 While it is extremely difficult to assign life-cycle emissions to a single
14 project, a range of life-cycle greenhouse gas emission estimates are available
15 for different types of generation such as nuclear, photovoltaic solar and wind.
16 Life-cycle greenhouse gas emission estimates are available from the Nuclear
17 Energy Institute, United Kingdom Parliamentary Office of Science and
18 Technology, Australian Uranium Association and the International Atomic
19 Energy Association, among other sources. Greenhouse gas emissions for
20 nuclear and wind generation have the lowest life-cycle emissions available for
21 Florida at about 30 pounds of CO₂ (equivalent) emitted for each mega-watt
22 hour generated [lb CO₂ (e)/MWH]. For photovoltaic solar generation, the
23 life-cycle greenhouse gas emissions are higher than nuclear and wind at about

1 100 lb CO₂(e)/MWH. In contrast, the operation of a natural gas combined
2 cycle power plant has direct operational CO₂ emissions of 750 lb CO₂/MWH
3 and indirect greenhouse gas emissions of about 110 lb CO₂ (e)/MWH.

4 **Q. How will Turkey Point 6 & 7 influence FPL's emission rates as they**
5 **compare to other utilities?**

6 A. Currently, FPL's overall emission profile is low compared to all other utilities
7 in the U.S. In a study conducted by the Natural Resources Defense Council
8 (NRDC), FPL emission rates in lb/MWH for sulfur dioxide (SO₂), nitrogen
9 oxides (NO_x) and CO₂ were found to be one of the lowest in the country. SO₂
10 and NO_x are the primary air emissions when burning fossil fuels while CO₂ is
11 the primary greenhouse gas emitted. The addition of nuclear generation will
12 further reduce FPL's emissions profile of these air emissions.

13 **Q. Have FPL's existing nuclear units reduced FPL's air emissions?**

14 A. Yes. The operation of FPL's nuclear units has resulted in a significant amount
15 of air emissions being avoided as compared to the same amount of electric
16 generation being produced using fossil fuels. I prepared two exhibits to
17 illustrate the effect that FPL's nuclear unit operations have had on decreasing
18 the amount of fossil fuels and air emissions. Exhibit KFK-3 shows the
19 amount of fossil fuel that would have been used and the quantity of air
20 emissions of SO₂, NO_x and CO₂ that would have been emitted if FPL's
21 nuclear units did not exist. During the time the nuclear units were
22 constructed, they would have been replaced with alternative fossil fuel-fired
23 units. The alternative fossil fuel-fired units would have been an 800 MW

1 class residual oil-fired unit, a mid-1970's vintage gas-fired combined cycle
2 unit or a late 1970's vintage pulverized coal-fired unit. As shown on this
3 exhibit, FPL's nuclear units have avoided millions of tons of SO₂ and NO_x,
4 and hundreds of millions of tons of CO₂ that would otherwise have been
5 emitted if these nuclear units did not exist.

6
7 Exhibit KFK-4 shows a graphical representation of the avoided emissions of
8 CO₂ from 1987 through 2006. This figure shows the CO₂ emissions that did
9 not occur due to the operation of FPL's nuclear units.

10
11 To place these avoided air emissions in perspective, it is important to consider
12 the magnitude of such emissions in Florida. The FDEP has stated that in 2003
13 the air emissions from all electric generating units in Florida were 475,000
14 tons of SO₂ and 253,000 tons of NO_x. For CO₂, the 2003 emissions from all
15 sources including electrical generation and transportation were estimated to be
16 about 250 million tons as presented by FDEP. Indeed, FPL's nuclear units in
17 2003 avoided at least 14 million tons and up to 26 million tons of CO₂
18 emissions, depending upon the alternative fossil fuel-fired generation that
19 would have operated to meet FPL's electric demand absent the nuclear units.
20 This amounts to an avoidance of about six to 10 percent of Florida's CO₂
21 emissions simply by the operation of FPL's existing nuclear units. The
22 avoided emissions from FPL's nuclear units are considerable by any measure.

1 **Q. What was FPL's air emissions profile for 2006?**

2 A. As previously mentioned, FPL's overall emissions profile is one of the lowest
3 in the country. Although FPL has one of the cleanest fossil fuel-fired fleets,
4 FPL's nuclear units have served to significantly decrease FPL's air emissions
5 profile when all sources of generation are considered. Exhibit KFK-5 shows
6 the quantity of air emissions of SO₂, NO_x and CO₂ that would have been
7 emitted in just one year (2006) if the same amount of generation from the
8 existing nuclear units were generated using fossil fuels based on FPL's clean
9 fossil fuel generation fleet. I used FPL's 2006 fossil fuel emissions from all
10 units and the total amount of generation for this example. The graph shows
11 that FPL's nuclear units in 2006 avoided 20,400 tons of NO_x, 20,100 tons of
12 SO₂ and 15,282,100 tons of CO₂ that would otherwise have been emitted
13 using fossil fuels. FPL's nuclear units have, in effect, reduced emissions
14 across FPL's system with an overall air emissions reduction of about 30
15 percent.

16 **Q. Will Turkey Point 6 & 7 have similar environmental benefits when**
17 **operational?**

18 A. Yes. Even though FPL's fossil fuel-fired generating units have low emission
19 rates and these emission rates will likely be lower in the future, additional
20 electric generation will be required to meet FPL's customer demand. Turkey
21 Point 6 & 7 will displace a considerable amount of NO_x, SO₂ and CO₂
22 emissions going forward with the amount varying depending upon the type of
23 alternative generation installed such as natural gas combined cycle or

1 integrated coal gasification combined cycle (IGCC). Exhibit KFK-6
2 illustrates the annual avoided CO₂ emissions depending upon the alternative
3 fossil fuel-fired generation for the same amount of generation. As shown on
4 this exhibit, from about 7 to 17.6 million tons of annual CO₂ emissions will be
5 avoided with Turkey Point 6 & 7 compared with fossil fuel-fired generation
6 options. Over a 40-year period of operation, Turkey Point 6 & 7 will displace
7 from about 21,300 to 49,200 tons of NO₂, from about 14,200 to 75,400 tons of
8 SO₂, and from about 266 million to 700 million tons of CO₂. The effect of
9 avoided CO₂ emissions from nuclear generation is illustrated in Exhibit KFK-
10 7. This figure shows FPL's projected future CO₂ emissions avoided with the
11 addition of Turkey Point 6 & 7. The large magnitude of the air emissions
12 avoided by Turkey Point 6 & 7 is clearly a significant environmental benefit
13 for Florida's future.

14
15 **SECTION III: ENVIRONMENTAL CONSIDERATIONS OF ALTERNATIVE**
16 **GENERATION**

17
18 **Q. Are you familiar with the environmental aspects of possible generation**
19 **alternatives that are potentially available to meet FPL's generation**
20 **requirements in the 2018-2021 time frame?**

21 **A.** Yes. Over the last several years I have been involved in the environmental
22 licensing of over 5,000 MW of natural gas-fired combined cycle plants. I

1 have been involved in the environmental feasibility and licensing of solid
2 fuel-fired generation technologies as well.

3

4 **SECTION IV: FUTURE ENVIRONMENTAL CONSIDERATIONS**

5

6 **Q. What future environmental requirements will potentially be developed**
7 **that will likely influence Turkey Point 6 & 7?**

8 A. Although there are no current laws regulating emissions of CO₂, the future
9 regulation of CO₂ is likely. Over the last several years, including this year,
10 there have been federal legislative initiatives that have proposed different
11 forms of CO₂ regulation. These initiatives have included both multi-sector
12 and electric sector regulation with variable reductions of CO₂ emissions and
13 some with cap-and-trade systems. Since electrical generation from nuclear
14 technology does not generate CO₂ emissions, nuclear technology may be
15 given preferential economic consideration over fossil fuel-fired generation.
16 For example, the CO₂ emissions from a natural gas-fired combined cycle plant
17 are about 750 pounds per megawatt-hour (lb/MW-hr) while the CO₂ emissions
18 from an IGCC unit are about 1,970 lb/MW-hr. For a 1,000 MW combined
19 cycle plant, about 3 million tons per year of CO₂ will be emitted assuming a
20 90 percent capacity factor. A 1,000 MW IGCC unit would emit about 8.7
21 million tons per year of CO₂ at a 90 percent capacity factor. In contrast,
22 nuclear power generation has no associated CO₂ emissions, which could result

1 in even lower relative operational costs than natural gas combined cycle if
2 CO₂ emissions are regulated for this type of fossil fuel plant.

3 **Q. Has FPL considered the relative contribution of nuclear energy and other**
4 **choices towards reducing FPL's carbon emissions?**

5 A. Yes. For purposes of comparing the relative contribution of nuclear energy
6 and other choices towards reducing FPL's carbon emissions, FPL has
7 calculated the CO₂ reductions that would be achieved by adding 1,000 MW of
8 non-emitting nuclear generation in Florida compared with other choices, such
9 as adding 1,000 megawatts of wind or solar generation. The results of that
10 comparison are summarized on Exhibit KFK-8. As shown in this exhibit for
11 the same installed generation capacity, solar and wind have at least six times
12 lower avoided CO₂ emission than nuclear generation. This is based on the
13 fact that these technologies have inherently low capacity factors. Electric
14 energy from solar can only be produced during the daytime and is greatest
15 during certain times of the day. Wind generation in Florida is quite variable
16 with the lowest possibility during the nighttime and morning hours. While
17 solar and wind generation are possible in Florida, their capacity factors will be
18 much lower than nuclear generation.

19 **Q. What conclusions can one draw from Exhibit KFK-8?**

20 A. This exhibit clearly shows that adding 1,000 MW of nuclear generation will
21 have a far more significant effect in avoiding and reducing CO₂ emissions
22 than installing the same MW of solar or wind.

1 **Q. Will adding nuclear generation reduce the total CO₂ emissions from**
2 **FPL's system and help move toward the goal of achieving the same level**
3 **of total CO₂ emissions from FPL's system in 2000 as stated in Governor**
4 **Crist's Executive Orders?**

5 A. Yes. This is illustrated in Exhibit KFK-9, which shows that adding non-
6 emitting nuclear generation to FPL's resource portfolio by 2021 (the first year
7 of expected dual-unit operations) can reduce FPL's 2021 CO₂ emissions 76
8 percent of the way toward the year 2000 level. The year 2000 level of CO₂
9 emissions is one of the target levels cited in various Greenhouse gas reduction
10 proposals. In contrast, while other electric generation choices can reduce CO₂
11 emissions somewhat, their capacity factors are far less. Therefore, none of the
12 other choices shown either individually or combined together can result in
13 such a significant reduction as does nuclear generation. This underscores the
14 powerful beneficial effect that new nuclear baseload generation has, due to its
15 high capacity factor and non-emitting technology, towards achieving CO₂
16 reduction goals.

17 **Q. Does this mean that the potential economic impacts of future CO₂**
18 **regulation may be favorable for Turkey Point 6 & 7 compared to fossil**
19 **fuel-fired generation?**

20 A. Yes. In the United States to date, while CO₂ is widely recognized as giving
21 rise to detrimental environmental impacts, there has not yet been a cost
22 formally assigned in the market or through regulation for emission of CO₂.
23 FPL's parent company, FPL Group, is advocating that an effective GHG

1 policy will price carbon emissions throughout the economy and do so in a
2 predictable fashion. Various forms of legislation have been proposed before
3 Congress, which would have the effect of pricing carbon emissions for at least
4 portions of the economy, among them power generation. While it is uncertain
5 what type of legislation will ultimately be adopted, at the very least there
6 would be no direct economic impact on nuclear technology compared to other
7 generation options. However, costs for fossil fuel generation options,
8 especially operational costs, will increase. Nuclear generation technology
9 would not only have economic benefits if potential future CO₂ regulation were
10 enacted but would have the significant environmental advantage of providing
11 electric generation with no CO₂ emissions. For example, if a \$10 per ton of
12 CO₂ cost were placed on fossil fuel-fired generation, a 1,000 MW natural gas-
13 fired combined cycle plant would have an additional operational cost of about
14 \$30 million per year while an IGCC facility would have an additional
15 operational cost of about \$87 million. The same amount of generation from
16 nuclear units would not incur this cost. In addition, since natural gas has the
17 lowest amount of CO₂ emissions of all fossil fuel-fired generation, the
18 regulation of CO₂ emissions would increase the pressure on the supply and
19 cost of natural gas. While the extent of CO₂ costs and the influence on natural
20 gas price is unknown, it is certain that the costs associated with any regulation
21 of CO₂ emissions and the resulting increase in natural gas costs would
22 improve the relative economics of Turkey Point 6 & 7.

1 **Q. Please explain the potential magnitude of compliance costs for CO₂**
2 **regulations that could be avoided by operation of Turkey Point 6 & 7.**

3 A. CO₂ compliance costs may be required under a tax, fee or cap-and-trade
4 system. Appendix F to the Need Study was developed to reflect potential
5 future costs of CO₂ as well as the potential future costs for other air emissions
6 currently regulated under the Clean Air Act (i.e., SO₂, NO_x and mercury).
7 The costs in Appendix F were developed using as the starting point the
8 projected costs from ICF International's report titled "U.S. Emission & Fuel
9 Markets Outlook, 2006 edition". The ICF report provides projected air
10 emissions compliance costs through 2030. Beyond 2030, the ICF compliance
11 costs for all air emissions were projected forward based on a review of recent
12 assessments related to the growing interest in CO₂ regulation and expected
13 compliance costs. Using these estimated compliance costs the cumulative 40-
14 year cost for alternative generation could range from \$6 billion to \$28 billion
15 or more for combined cycle generation, and \$17 billion to \$73 billion or more
16 for IGCC generation. Turkey Point 6 & 7 would avoid these potential costs.

17 **Q. Would there be compliance costs for emissions of SO₂, NO_x and Mercury**
18 **as a result of regulations that would be avoided by operation of Turkey**
19 **Point 6 & 7?**

20 A. Yes. The Environmental Protection Agency passed two regulations referred
21 to as the Clean Air Interstate Rule (CAIR) and the Clean Air Mercury Rule
22 (CAMR), which FDEP has adopted for Florida. CAIR regulates the emissions
23 of SO₂ and NO_x, while CAMR regulates emissions of mercury. Allowances

1 are required for these pollutants under the cap-and-trade system. The 40-year
2 compliance costs for these air emissions would be much less than the
3 compliance costs for CO₂ and would likely be on the order of \$120 to \$150
4 million for a natural gas combined cycle generation and on the order of \$0.8
5 to \$1.2 billion for IGCC.

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

7 **A. Yes.**



Kennard F. Kosky, M.S., P.E.

Education M.S., Environmental Engineering, University of Central Florida, 1976
B.S.E., Ocean Engineering, Florida Atlantic University, 1970
Completed coursework (1.5 years) for Ph.D. in Environmental Engineering,
University of Florida, 1982

Affiliations Registered Professional Engineer, State of Florida, No. 14996
Air and Waste Management Association, National and Florida

Experience

- 1996 to Date **Golder Associates** **Gainesville, FL**
Principal
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.
- 1985 - 1996 **KBN Engineering and Applied Sciences (KBN)** **Gainesville, FL**
President and Principal Engineer
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.
- 1980 - 1985 **Environmental Science and Engineering, Inc. (ESE),
Energy and Power Programs,
Project Operations Department** **Gainesville, FL**
Vice President/Director
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.
- 1978 - 1980 **ESE** **Gainesville, FL**
Director, Air Science Division
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.
- 1974 - 1978 **ESE** **Gainesville, FL**
Group Leader, Air Quality Management, Air Sciences Division
Responsible for staff involved with ambient air monitoring, dispersion modeling, and air permitting. Project Manager for multidisciplinary power projects.

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- 1970 - 1974 **Florida Dept. of Pollution Control** **Tallahassee/Orlando, FL**
Air Pollutant Engineer
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.
- 1970 **Schlumberger Well Services** **Morgan City, LA**
Well Logging Engineer
Performed geological logging of exploratory wells for oil and/or gas production in the Gulf of Mexico.

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PROJECT RELATED EXPERIENCE

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

Type of Industrial Activities

Power Plants – 68
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

Multiple Sites

Type of Projects

Permitting – 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

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

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PROJECT RELATED EXPERIENCE – DOMESTIC

Dickerson, Chalk Point, and Morgantown Generating Plants Mirant Corporation

Montgomery, Prince Georges, 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. Project 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.

McIntosh Power Plant Lakeland Electric

Lakeland, FL

Project Manager and engineer-of-record for preparing an air permit application to obtain approval from the regulatory agencies to install low-nitrogen oxides (NO_x) burners and selective catalytic reduction (SCR) for existing 360-megawatt (MW) Unit 3. Co-lateral increase in sulfuric acid mist required the installation of sorbent injection to limit emission below prevention of significant deterioration (PSD) thresholds. Permit application and supporting material prepared. Permit issued for Low-NO_x Burners.

St. Johns River Power Park Jacksonville Electric Authority

Jacksonville, FL

Project Manager and engineer-of-record for preparing air permit application to obtain approval from the regulatory agencies to install SCR for two nominal 700-MW units. Co-lateral increase in sulfuric acid mist required the installation of ammonia injection to limit emission below PSD thresholds. Permit application and supporting material prepared. Permit issued.

FPL Glades Power Park Florida Power & Light Company (FPL)

Glades County, FL

Project Manager for the preparation of licensing documents for the two nominal 980-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 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

Palm Beach County, FL

Project Manager for the preparation of licensing documents for the 2,450-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

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(HRSGs), and a 440-MW steam turbine. These units are licensed under Florida's Power Plant Siting Act. Environmental documents prepared include the SCA, FAA obstruction to navigation application, USACE dredge and fill permit application, and air permit application (including PSD application). Full Governor/Cabinet approval was obtained in December 2006.

Application for Certificate of Public Convenience and Necessity, Brandon Shores Units 4 and 5, Constellation Power Source

Ann Arundel County, MD

Project Manager for the preparation of the 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 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 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.

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

St. Lucie County, FL

Project Manager for the preparation of licensing documents for the 1,700-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 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 PSC. Environmental documents prepared include the CPCN and air permit application.

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Site Certification Application and Licensing of the Turkey Point Expansion Project for Florida Power & Light Company

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 CTs with associated HRSGs, and a 440-MW steam turbine. These units are licensed under Florida's Power Plant Siting Act. Environmental documents prepared include the SCA, FAA obstruction to navigation application, USACE dredge and fill permit application, and air permit application (including 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.

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

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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.

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

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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.

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.

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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.

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).

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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 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.

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.

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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.

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.

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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).

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).

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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.

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.

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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.

Kennard F. Kosky, M.S., P.E.

PROJECT RELATED 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.

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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.

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.

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Environmental Screening of Four Proposed Power Plant Sites for the World Bank

Kingston, Jamaica

Air Engineer responsible for conducting the air quality components of an environmental screening of four potential sites for a 60-MW diesel electrical generating facility.

Technical Cooperation Mission for the World Bank Multiple Sites in Bulgaria

Team Member on the World Bank Mission to determine the major environmental problems in Bulgaria and to identify potential areas for World Bank funding. Responsible for portions of the mission involving toxic/hazardous waste and air pollution. Contributed to the mission's Aide Memoire and directed the preparation of an overall report summarizing the state of the environment in Bulgaria.

Environmental Strategy Study of Air Quality, World Bank Multiple Sites in Hungary

Team Member on mission providing an overview of key air quality problems in Hungary; a description and assessment of regulatory institutions, regulations, and policy; and identification of initial approaches and investment opportunities for improving air quality. During the mission, discussions were held with relevant governmental organizations, various industries, and environmental interest groups (non-governmental organizations) throughout Hungary. Project focused on preparation of an Aide Memoire and summary report dealing with industrial pollution.

Environmental Project for World Bank

Katewice/Krakov, Poland

Team Member of the World Bank Mission that recommended and defined an environmental project for the Katewice/Krakov area. Interviewed various governmental personnel to determine needs and developed a comprehensive program for a \$7-million loan. Developed request for quotations for various components of the recommended study. The focus of the study was air quality.

Multidisciplinary Electric Power Plant Projects for the U.S. Agency for International Development(USAID)

Multiple Sites, Pakistan

Project Manager for several multidisciplinary projects involving the development of electrical power plants in Pakistan. The projects included the Lakhra Mine and Power Plant EA, the Jamshoro Oil-Fired Power Plant EA, the Guddu Combined-Cycle Expansion Project, the Kalifia Point Private Sector Power Project, and the Environmental Guidelines for Electric Power Development in Pakistan.

Private Sector Power Project for USAID

Multiple Sites, Pakistan

Project Manager responsible for performance of an air quality impact evaluation to investigate a large coal-fired power plant planned by the Government of Pakistan and a 1,200-MW oil-fired power plant proposed by a group of private firms. Determined the air quality effects of each plant, as well as the cumulative effects of both plants, on the area's ambient air quality. Prepared guidelines providing the private sector proposer a framework for preparing an EA from which significant environmental impacts and alternative designs to mitigate them can be determined. Project also included the establishment of a framework for future assessments of the respective plants, a preliminary evaluation of cooling water requirements, and a determination of potential water quality and ecological impacts.

Guddu Environmental and Social Soundness Assessment for Gibbs & Hill, Inc.

Guddu, Pakistan

Project Manager of an Environmental and Social Soundness Assessment (ESSA) associated with the construction and operation of a proposed 300-MW addition to a 600-MW combined-cycle power plant in Guddu, Pakistan. The ESSA, designed to provide decision makers with a full discussion of significant

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environmental effects associated with the power plant expansion, included an evaluation of alternatives or mitigating measures.

Duri Field EA for Caltex Pacific

Duri Field, Indonesia

Project Manager of the air quality assessment of the Duri Field steam-flood project. This project was the largest steam-flood project in the world and involved an assessment of over 300 steam generators using Duri Crude. Directed all activities and presented the results of the study to the newly formed Ministry of Environment.

EAs of Electrical Generating Facilities for

Electricity Generating Authority of Thailand (EGAT)

Multiple Sites, Thailand

Project Manager for 8 years of numerous multidisciplinary projects involving EAs of electrical generating facilities in Thailand. The projects included an assessment of a 600-MW coal-fired power plant in Ao Pai; an assessment of constructing 600 MW of additional generation at the Mae Moh site; an assessment of a combined-cycle power plant at Khanom; and a mine and power plant mitigation assessment for the Mae Moh facility.

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EXPERT/EXPERT WITNESS TESTIMONY EXPERIENCE

Mr. Kosky has provided expert testimony in over 50 Cases. 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:

- 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 been accepted as an expert in proceeding held in the following states:

- Florida,
- Maryland,
- Georgia,
- South Carolina,
- Hawaii,
- California, and
- Louisiana.

Agrico Chemical Company

Bartow, FL

Florida Department of Environmental Regulation Administrative Hearing. Provided assistance to attorneys at hearing for cross examination of opposing witnesses. Case involved permits for prilled sulfur terminal. 1979.

Fugitive Emissions Expertise

Alachua County, Florida

Circuit Court. Provided expert testimony on the impacts of fugitive dust related to highway construction.

AstraZeneca

Tarpon Springs, FL

EPA ASTDR. Provided technical support for Stauffer Chemical Company Superfund Site. Technical expertise provided in air monitoring and air impact analyses. 2001 to present.

Baltimore Gas and Electric Company

Baltimore, MD

Provided expert testimony for the following:

- Presentation for Maryland PSC staff and hearing examiners on the technical issues related to BACT. 1992.

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- Hearing Examiner. Provided direct and supplemental written expert testimony for 800-MW combined-cycle Perryman Project. Testimony required for the PSC CPNC. Testimony focused on air emissions and BACT for the project. 1990 to 1991.

Broward County Resource Recovery Office

Broward County, FL

Hearing Examiner. Preparation and presentation of testimony for the North and South Broward County Resource Recovery projects on BACT. Testimony was part of a power plant site certification project. 1985 to 1986.

Calpine Eastern Corporation

Auburndale, FL

Administrative Law Judge. Provided expert testimony on a 500-MW combined-cycle unit located at the Osprey Energy Center in Auburndale, Polk County, Florida. Testimony focused on air emissions, BACT, and noise. 2001.

Chevron, Inc.

Pensacola, FL

Presentation before an EPA Region IV panel regarding the air emissions and impacts of drilling rig as part of Outer Continental Shelf Air Permit (40 CFR 55). The project was located in Destin Dome, which is located about 30 miles offshore from Pensacola. Permit was granted.

City of Jacksonville

Jacksonville, FL

Circuit Court. Provided technical support for a class certification involving the air quality impacts of incinerators operating from about 1950 to 1970. Provided technical analysis and presented opinions at a deposition. 2004.

City of Lakeland Utilities

Lakeland, FL

Provided expertise for the following:

- Administrative Law Judge. Presented expert testimony on the addition of the steam cycle for McIntosh Unit 5. As Project Manager for the project, the testimony covered all environmental disciplines including air emissions, BACT, and general environmental impacts.
- Hearing Examiner. Presented technical information and the results of modeling during hearings on site certification for a new electrical generating plant.

Constellation Energy

Ann Arundel County, MD

Public Service Commission Hearing Officer. Provided expert testimony for an application for a Certificate of Public Necessity and Convenience (CPCN) for the installation of air pollution control systems and boiler/turbine upgrades for the Brandon Shores Generating Station. Testified on air quality including BACT, noise and visual aspect of the application.

Constellation Energy

Brevard County, FL

Administrative Law Judge. Provided expert testimony for the air pollution controls and BACT for an 850-MW simple-cycle power plant to be located in Brevard County.

Confidential Clients

Provided expertise for the following (only partially listed):

- Provided technical expertise in anticipation of litigation for dioxin contamination from a refinery. Performed air impact analysis and assessment.
- Provided expert technical expertise for cases filed against facilities by Justice Department related to EPA's New Source Review regulations. 1998 to present.

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Del Monte Fresh Produce, Inc. Power & Light Company **Oahu, HI**
Jury Trial. Provided testimony in the United States District Court, District of Hawaii, related to air emission and impacts from pesticides. 2004.

Delmarva Power & Light Company **Dorchester, MD**
Hearing Examiner. Provided direct and supplemental written and oral testimony for nominal 300-MW coal-fired power plant located in Dorchester, Maryland. Case was part of the CPCN before the Maryland PSC. Testimony was related to the air pollution control technology, Lowest Achievable Emission Rate (LAER) and BACT. 1994.

Florida Department of Environmental Regulation **Multiple Sites, FL**
Provided expertise for the following:

- Hearing Examiner. FDER. Provided expert testimony regarding NO_x emission limits for fossil fuel steam generators. Three hearings involved and ultimately lead to the NO_x task force. 1973.
- Hearing Examiner. Florida Environmental Regulation Commission (FERC). Administrative Hearing. Testified on impacts of rule change on phosphate rock dryers. Testimony related to air quality impacts and control technology. 1973.
- Hearing Examiner. FDER Administrative Hearing. Prepared testimony on air quality impacts of control strategy for pulp mill. Testimony involved dispersion modeling and control techniques. 1973.
- FERC. Testimony on emergency action plans and compliance schedules for the State Implementation Plan. Testimony given at six locations throughout Florida. 1973.

Florida Electric Power Coordinating Group **Multiple Site, FL**
Provided expertise for the following:

- FERC and Honorable Bob Graham, Governor of Florida. Two Hearings. Prepared technical information that allowed suspension of emissions for 120 days due to energy emergency. Approval given by all parties. 1979.
- FERC. Prepared report and testimony and presented support of a rule change for three southeast Florida counties. Rule change involved elevating ambient air quality standards. The rules were changed to be consistent with the rest of the state. 1975.
- FERC. Prepared report and testimony presented in support of a rule change that would allow the use of fuel with a higher sulfur content. Project involved approximately 10,000 MW of fossil-fueled steam generators. The rule was changed. 1975.

Florida Power Corporation (Progress Energy) **Multiple Sites, FL**
Provided expertise for the following:

- Administrative Law Judge. Provided expert testimony on a gas and distillate oil-fired 500-MW combined-cycle unit located at the Hines Energy Center in Polk County, Florida. Testimony focused on air emissions, BACT, air impacts, and noise. Certification issued by Governor and Cabinet. 2001.
- Administrative Law Judge. Provided expert testimony for the use of petroleum coke with coal in two units at the Crystal River Power Plant. Focus of testimony was regulatory applicability of PSD rules to the use of petroleum coke. 1997.
- Hearing Examiner. FDER Administrative Hearing. Presented testimony on environmental impacts of Crystal River Units 4 and 5 (1,400-MW, coal-fired power plant). Permit approved. 1978.

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Florida Power & Light Company

Multiple Sites, FL

Expert testimony provided for the following:

- Florida Public Service Commission. Provided expert testimony on the environmental impacts and future environmental costs (CAIR, CAMR, and potential greenhouse gas legislation) in the need case for the FPL Glades Power Project. 2007.
- Administrative Law Judge. Provided expert testimony for the West County Energy Center, a 2,450-MW Power Plant located in Palm Beach County, Florida. Testimony included air emissions (toxics), air quality impacts, and noise. 2006.
- St. Lucie County Board of County Commissioners. Provided expert testimony at the land use hearing before the St. Lucie County Commission of the emissions and air quality impacts of the 1,700 MW Southwest St. Lucie Power Project.
- Administrative Law Judge. Provided expert testimony for Turkey Point Expansion Project, an 1,100-MW Power Plant located in Miami-Dade County, Florida. Testimony included air emissions (toxics), air quality impacts, and noise. 2004.
- Administrative Law Judge. Provided expert testimony for Manatee Expansion Project, an 1,100-MW Power Plant located in Manatee County, Florida. Testimony included air emissions (toxics), air quality impacts, and noise. 2003.
- Administrative Law Judge. Provided expert testimony for Martin Expansion Project a 1,100-MW Power Plant located in Martin County, Florida. Testimony included air emissions (toxics), air quality impacts, and noise. 2003.
- Manatee County Planning Commission and Manatee County Board of County Commission. Provided testimony on environmental issues related to land use for the Manatee Combined-Cycle Project. 2002.
- PSC for South Carolina. Provided expert testimony for the Cherokee Falls simple-cycle power project. Testimony covered all environmental matters related to the project. 2002.
- Administrative Law Judge. Provided expert testimony for Manatee Orimulsion Conversion Project. Focus of testimony was BACT and air emissions (including toxics). 1998.
- Administrative Law Judge. Provided expert testimony for Manatee Orimulsion Conversion Project. Focus of testimony was BACT and air emissions (including toxics). 1995.
- Hearing Examiner. Provided expert testimony for the Martin combined-cycle project (1,600-MW combined-cycle coal gasification facility). Provided testimony on air emissions and BACT for Site Certification issued by Governor and Cabinet. 1990.
- Hearing Examiner. Expert testimony provided for the Lauderdale Repowering Project (800-MW combined-cycle facility). Testimony provided on air emissions, BACT, and noise. 1990.
- FDER Official. Expert testimony provided for SIP revision, various PSD aspects of test firing Orimulsion in a 400-MW gas-/oil-fired power plant. Air emissions and impacts presented. 1990.
- Hearing Examiner. Presented expert testimony for FPL to assess impacts from atmospheric downwash at 225-MW oil/natural gas-fired power plant. 1984.
- Broward County Commission. Prepared and presented testimony concerning the air quality impacts of using 2.5-percent sulfur fuel in FPL's 1,200-MW Port Everglades Plant. 1982.
- Dade County Environmental Resource Management Board. Prepared and presented testimony concerning the air quality impact of using 2.5-percent sulfur fuel in FPL's 800-MW Turkey Point Plant. Two hearings were held. The impacts to a PSD Class I area were at issue. 1982.
- Manatee County Commission. Prepared and presented testimony on the air quality impact of using 2.5-percent sulfur fuel in FPL's 1,600-MW Manatee Plant. Two hearings were involved. 1981.
- FDER. Presented testimony related to air quality impacts for particulate variance for FPL's Sanford, Ft. Myers, and Canaveral power plants. Variance extended. 1981.

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- FERC. Testified before the FERC concerning the impacts of Sanford Unit 4 firing with coal-oil mixture (COM). FPL's request was for a temporary variance in particulate emissions so that full scale testing of COM could be performed. 1980.
- Dade County Commission. Prepared testimony and presented the results of modeling and technical information in support of a rule change on ambient air quality standards. 1977.
- FERC. Prepared testimony and presented the results of atmospheric dispersion modeling and other technical data at two separate hearings before the FERC in support of the contention that FPL's Manatee Plant was an existing source and thus could burn higher sulfur fuel. Approval given by both state and EPA. 1976.

Florida Sugar Cane League

Multiple Sites, FL

Expertise provided for the following:

- Palm Beach County Commission. Testified in opposition to proposed special emission limits on the sugar cane industry in Palm Beach County. 1976.
- Florida Congressional Representative Paul Rogers. Presented technical information pertaining to CAA Amendments. Presentation in support of the League's position with respect to a proposed rule governing the significant deterioration of air quality. 1976.
- FERC. Presented testimony on the results of modeling and other technical information in support of the SO₂ rule change for three Florida counties. 1975.

Gold Kist

Live Oak, FL

Local district court. Prepared reports, testimony, and interrogatories on case involving air pollution impacts on local car dealer. 1975 to 1979.

Lake Worth Utilities

Lake Worth, FL

Hearing Examiner. Presented technical information and the results of modeling during hearings on site certification for a new electrical generating plant. 1977.

Maxwell House Division, General Foods Corporation

Jacksonville, FL

District Administrator of the Occupational Safety and Health Administration (OSHA). Testified in support of the noise reduction program at the Maxwell House can plant. 1975.

McGowan Working Partners

Jefferson Parrish, LA

Judge for the Second Parish Court. Provided expert testimony related to the air emissions and dispersion of a short-term spill of 31% hydrochloric acid from a tank.

Metropolitan Dade County

Dade County, FL

Provided expert testimony in the following:

- PSC. Provided direct written and oral testimony for an addition to the Metropolitan Dade County Resource Recovery Facility, Florida. Case was part of the Site Certification under Florida's Power Plant Siting Act and ruled before the Governor and Cabinet acting as the Siting Board. In these proceedings, the PSC certifies the need for the project. Testimony was related to the purpose and need for the addition to the facility. This included compliance with state rules and legislative intent related to the project. 1993.
- Hearing Examiner. Presented expert testimony on the environmental impacts of Dade County Resource Recovery Facility consisting of four steam generators and associated turbines generating 77 MW by firing refuse-derived fuel. Permit granted. 1977.

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Mirant Corporation

Multiple Sites, MD

Provided expert testimony for the following:

- PSC Hearing Officer. Provided testimony on air quality aspects of the installation of FGD systems for the Morgantown Generating Plant Units 1 and 2. 2007
- PSC Hearing Officer. Provided testimony on air quality aspects of the installation of FGD systems for the Chalk Point Generating Plant Units 1 and 2. 2007.
- PSC Hearing Officer. Provided testimony on all air-related analyses for the installation of FGD systems on Dickerson Generating Station Units 1 through 3. 2007.
- PSC Hearing Officer. Provided testimony on all air-related analyses for the Chalk Point Simple-Cycle Project.
- PSC Hearing Officer. Provided testimony on all air related analyses for the Dickerson Combined-Cycle Project. 2001 and 2002.

Montenay Power Corporation

Miami-Dade County, FL

Miami-Dade County Community Zoning Appeals Board. Provided expert testimony on the potential impacts of an existing resource recovery facility on a parcel of land being re-zoned from industrial to residential. Testimony included air quality impacts from fugitive dusts and odors as well as noise.

O.K.C. Cement

Sumter County, FL

FDER Administrative Hearing. Testified about the results of atmospheric dispersion modeling and air quality analysis during hearings about significant deterioration. 1977.

Potomac Electric Power Company — Provided expert testimony for the following:

- Hearing Examiner. Provided expert testimony for Chalk Point CTs (two 100-MW and two 80-MW). Testimony focused on siting and overall environmental impacts. 1988 to 1989.
- Hearing Examiner. Preparation and presentation of direct and rebuttal testimony on the environmental aspects of siting a coal gasification combined-cycle power plant. Case involved the Maryland Public Service Commission. 1987 to 1988.

Seminole Electric Cooperative Incorporated

Provided expert testimony for the following:

- Hearing Examiner. Provided direct written and oral testimony for 440-MW combined-cycle power plant located in Hardee County, Florida. Case was part of the Site Certification under Florida's Power Plant Siting Act and ruled before the Governor and Cabinet acting as the Siting Board. Testimony was related to the air pollution control technology, BACT, and noise impacts. 1995.
- Hearing Examiner. Provided expert testimony on air emissions, noise, and BACT for the Hardee Power Station, a 600-MW combined-cycle facility in central Florida. 1990.

Tampa Electric Company (TECO)

Tampa, FL

Provided expertise for the following:

- FERC. Prepared testimony based on the results of modeling and other technical data in support of the contention that TECO's Big Bend Unit 3 was an existing source and thus could burn higher sulfur fuel. 1976.
- Fifth Circuit Court of Appeals. Assisted in the preparation of legal briefs for litigation of the EPA's ruling concerning SIP revision. Case involved atmospheric dispersion modeling. 1976.
- Hillsborough County Environmental Regulatory Commission. Prepared reports and testimony on air quality standards and significant deterioration. 1976.

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- FDER Administrative Hearing. Prepared testimony in support of TECO's proposed use of high sulfur fuel. Technical information and the results of atmospheric dispersion modeling were presented during hearings on significant deterioration of air quality. 1976.
- EPA Region IV Administrator. Testified in opposition to the Administrator's ruling regarding TECO's proposed use of high sulfur fuel. 1975.

TexasGulf, Inc.

NC

Assisted senior counsel in responding to a Notice of Violation from the State of North Carolina. Provided technical expertise and reports for submittal to court. 1981.

The Viera Company

Brevard County, FL

Assisted senior counsel in the mediation involving odors and air quality impacts of a revised air pollution permit. Provided technical expertise and review of reports. 1999.

Woodward Hall & Primm

Houston, TX

Assisted senior counsel in the toxic tort suit involving the Motco Superfund Site. Technical expert for air monitoring and air quality impacts. Provided technical expertise, review of plaintiff's reports, and provided independent reports.

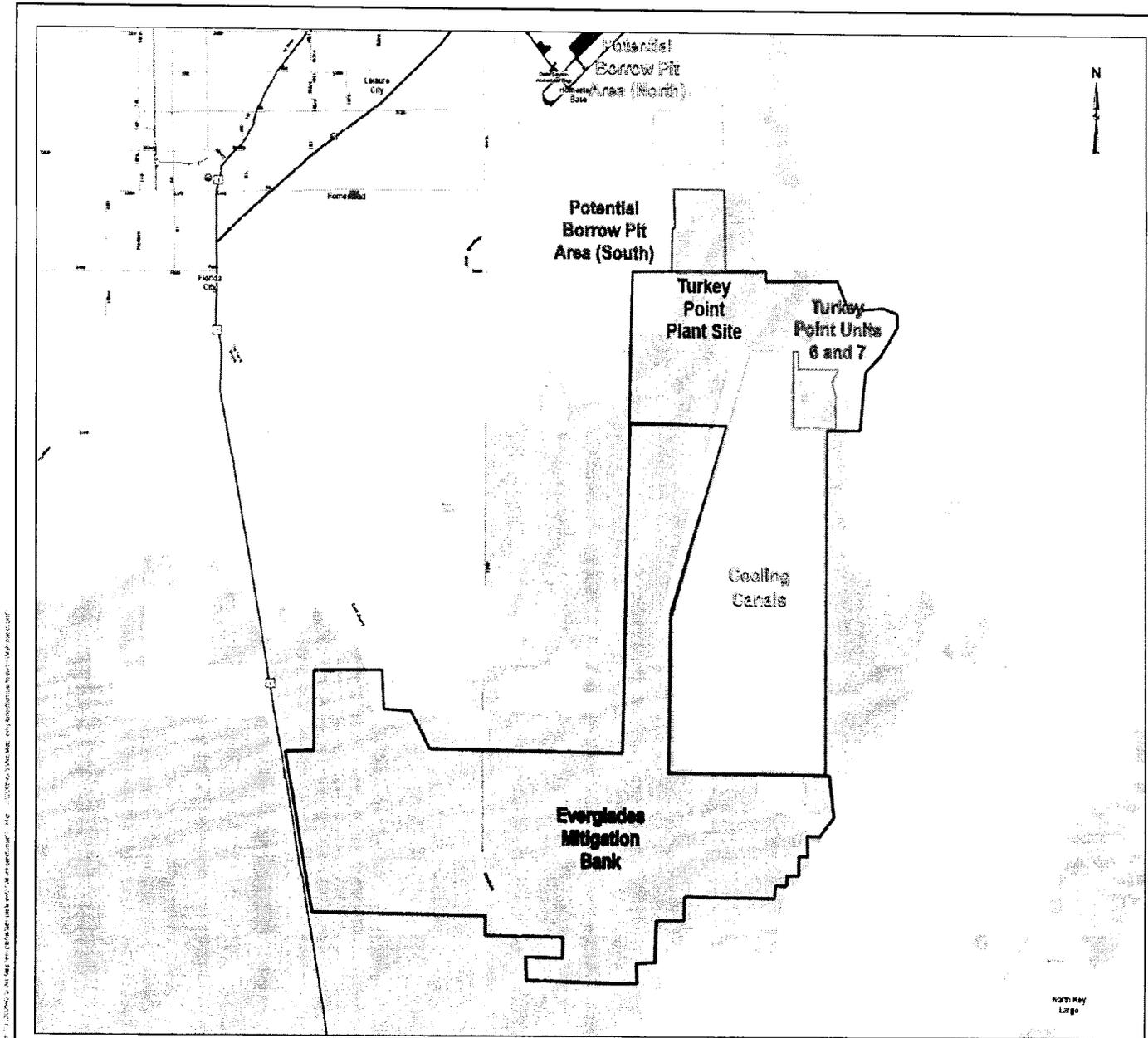
Kennard F. Kosky, M.S., P.E.

PUBLICATIONS

Mr. Kosky has authored and coauthored hundreds of reports and permits submitted to regulatory agencies. He has authored and coauthored over a dozen articles related to air pollution topics (i.e., emission estimates, air impacts, and permitting) and licensing power generation facilities.

LANGUAGES

English (Native Speaker)
Spanish (Read)



LEGEND

	Turkey Point Plant Site
	Turkey Point Cooling Canals
	Proposed Plant Site
	Potential Borrow Pit Area (North)
	Potential Borrow Pit Area (South)
	Everglades Mitigation Bank

REFERENCE
 Projection: Transverse Mercator Datum: NAD 87 Coordinate System: UTM Zone 17



PROJECT
 FPL TURKEY POINT

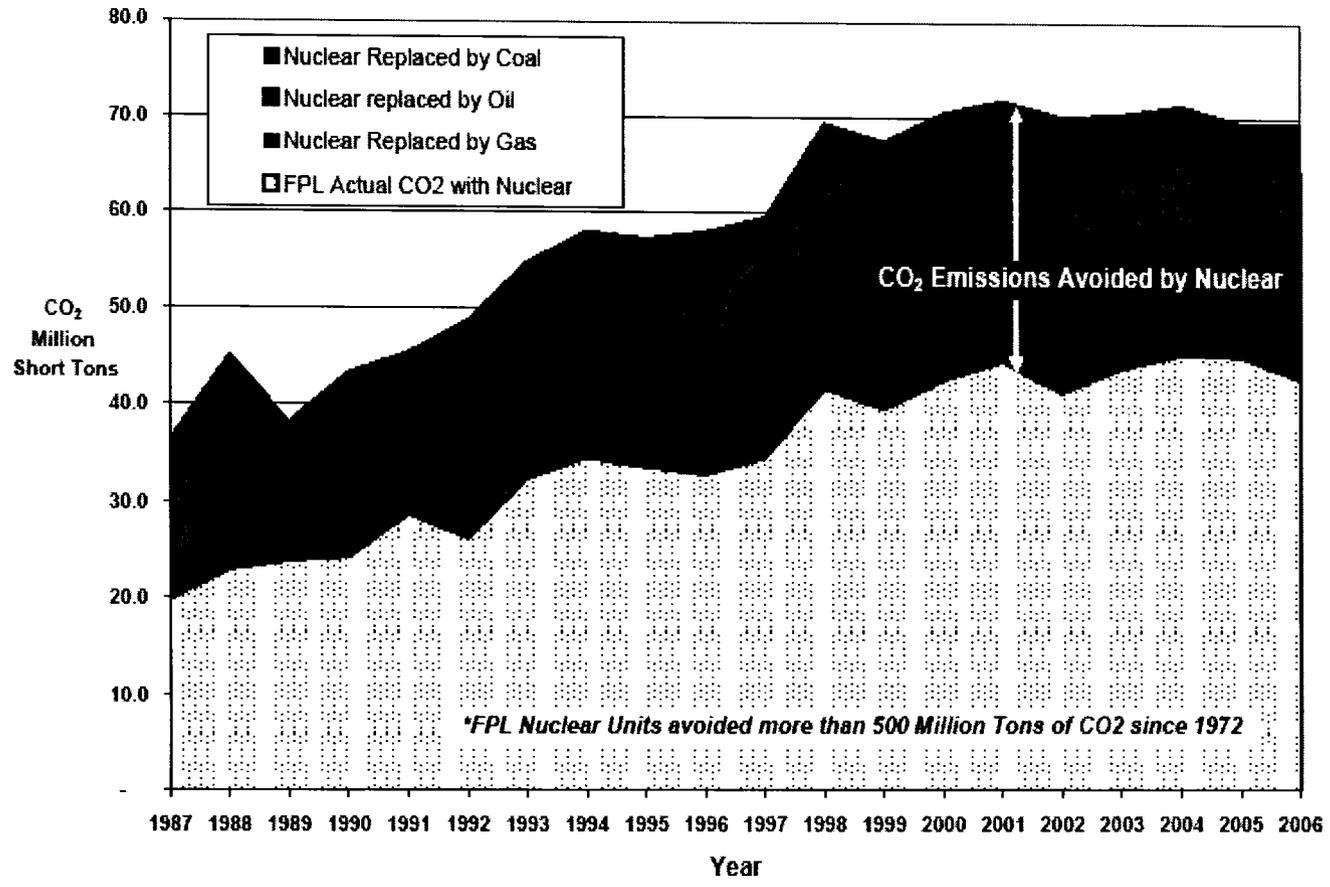
TITLE
 AREA MAP

	PROJECT No.	SCALE AS SHOWN	REV. 1
	DATE	12.14.2007	Exhibit
	BY	12.14.2007	
	CHKD	12.14.2007	
	REVISION	12.14.2007	KFK-2

Fossil-Fuel and Air Emissions Displaced by FPL's Nuclear Units Since Initial Operation as of 2006

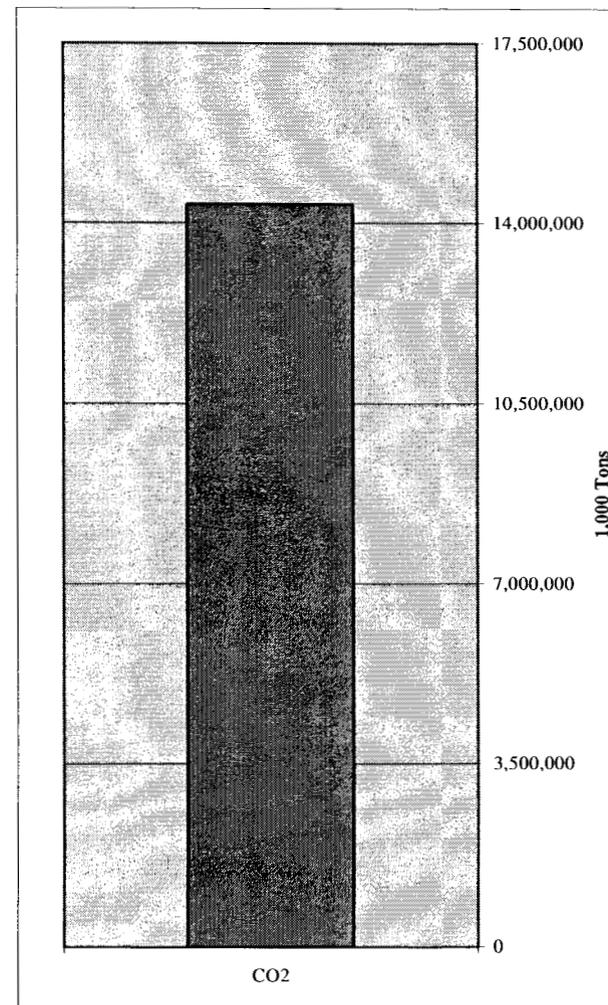
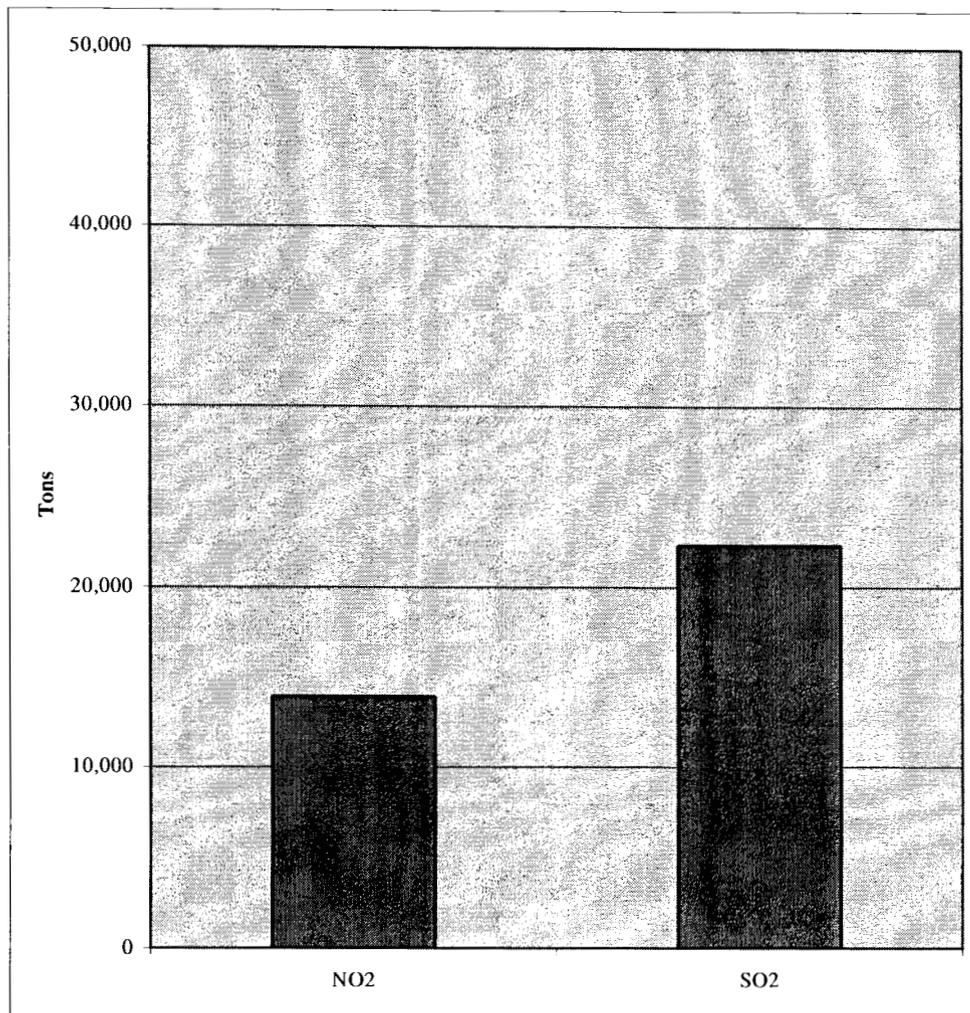
Type of Generation	Displaced Fossil Fuel	Air Emission (tons)		
		SO₂	NO_x	CO₂
800 MW Class Oil-Fired Unit	1,059,866,309 barrels	2,591,098	817,341	542,692,203
Mid-1970's Vintage Gas-Fired Combined Cycle Unit	6,472,387 million cubic feet	3,964	1,100,218	356,821,733
Late-1970's Vintage Coal-Fired Unit	279,052,285 tons of coal	1,382,132	1,554,697	666,471,118

Florida CO₂ Emissions Avoided By FPL Nuclear Units

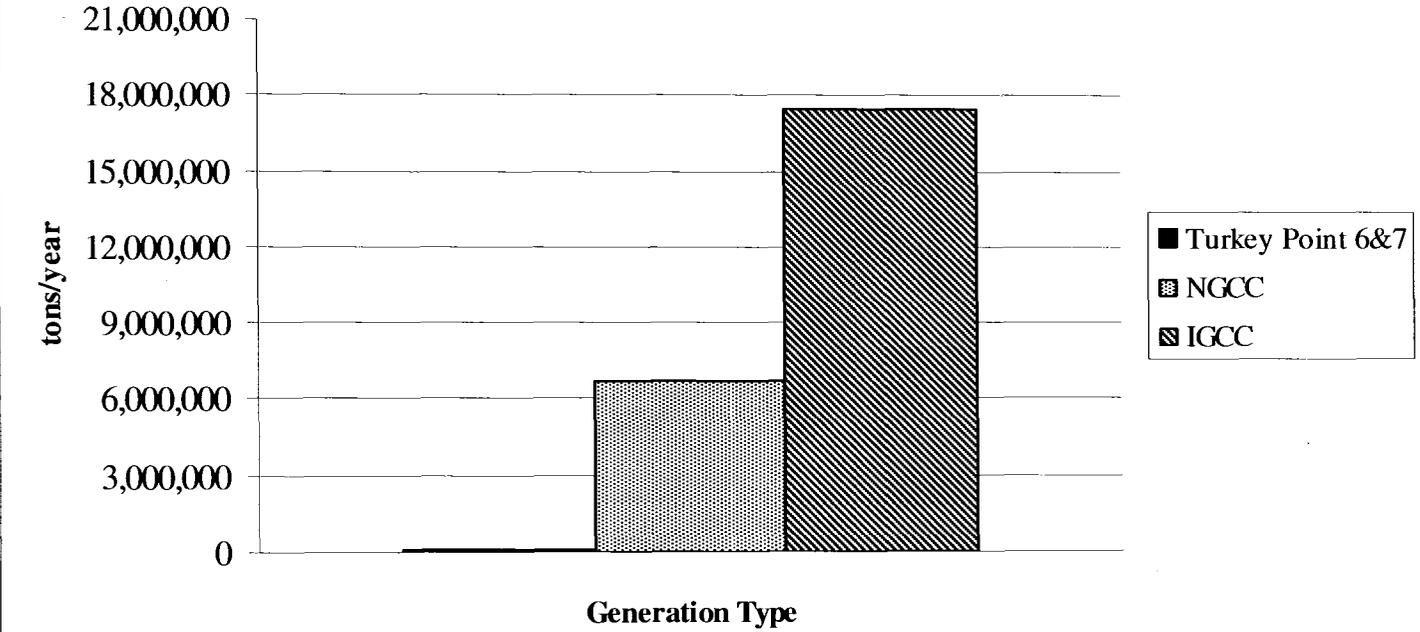


AVOIDED AIR EMISSIONS FROM FPL'S NUCLEAR GENERATION IN 2006

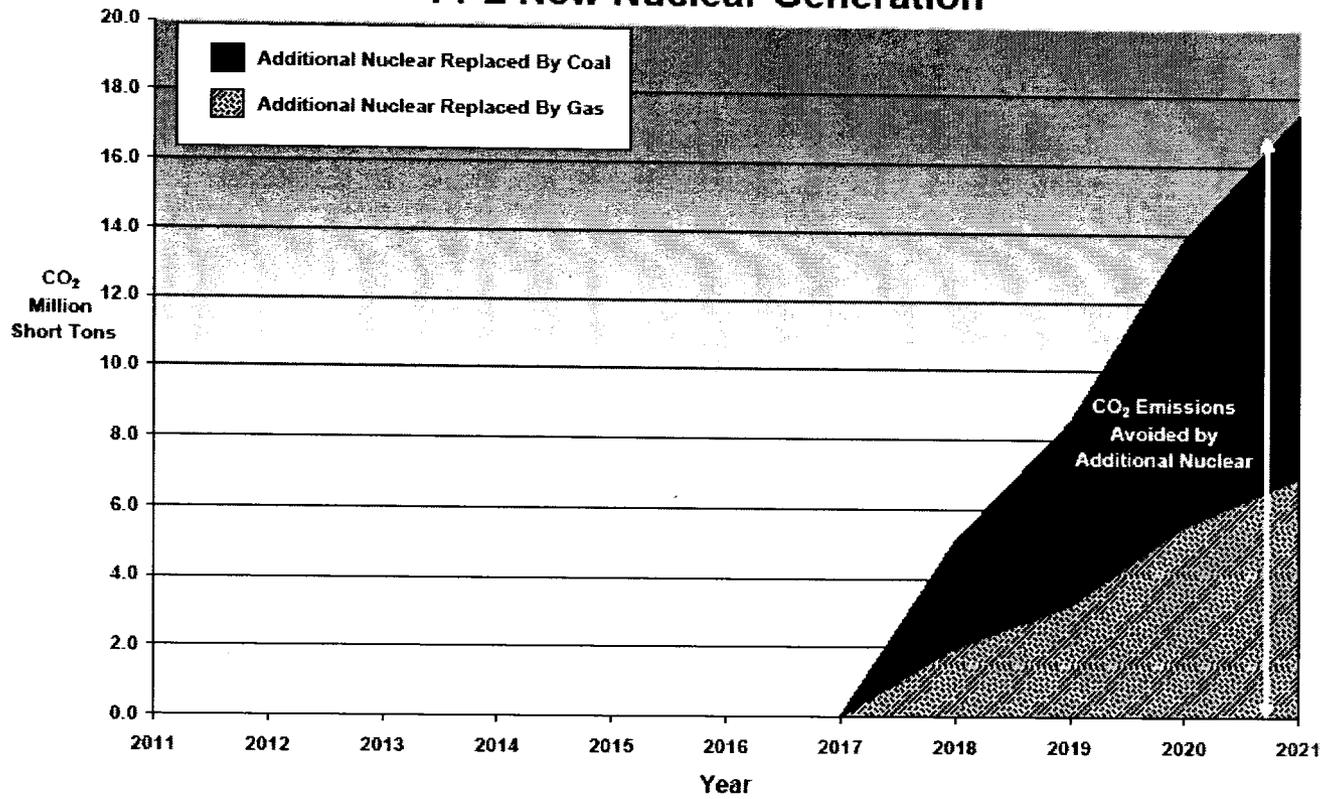
ENVIRONMENTAL BENEFITS



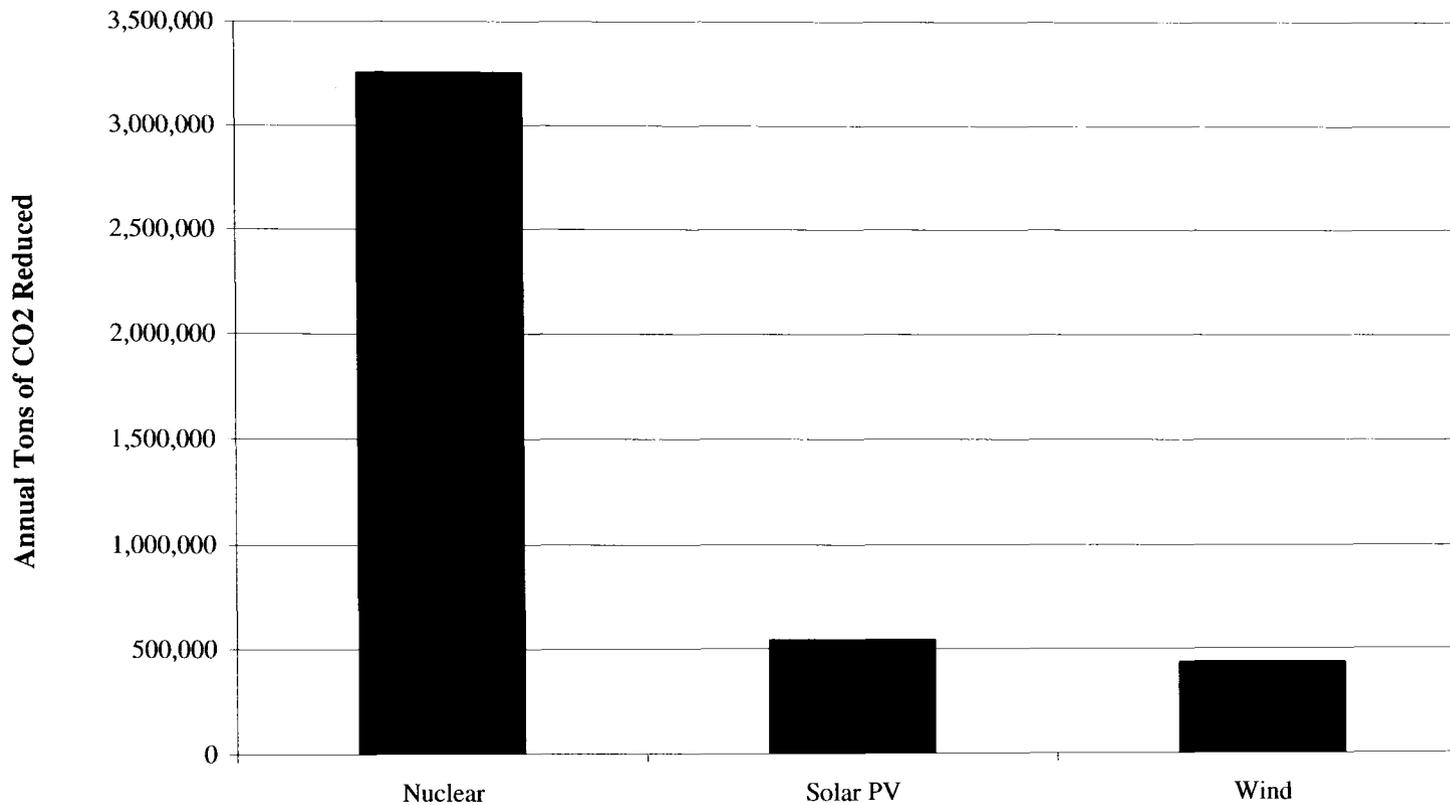
ENVIRONMENTAL BENEFITS OF NUCLEAR GENERATION
Annual CO₂ Emissions Comparison for Generation Alternatives



Future Annual CO₂ Emissions Avoided By FPL New Nuclear Generation



Reduction in Annual CO₂ Emissions Achieved by Adding 1000 MW of Non-Emitting CO₂ Generation Alternatives in Florida



Notes:

1. Annual CO₂ reduction value for Solar PV does not account for the annual degradation of Solar PV (typically, 1% per year).
2. Assumes all options reduce operation of gas-fired capacity with an average heat rate of 7,500 BTU/kwh and a CO₂ emission rate of 110 lbs/mmBTU and that annual capacity factors are 90% for nuclear, 15% for Solar PV and 12% for wind.

