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:

NILS J. DIAZ

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DIRECT TESTIMONY OF NILS J. DIAZ

DOCKET NO. 07______-EI

OCTOBER 16, 2007

Q. Please state your name and business address.

A. My name is Nils J. Diaz. My business address is 2508 Sunset Way, St. Petersburg Beach, Florida, 33706.

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

A. I am the Managing Director of The ND2 Group (ND2). ND2 is a policy and expert advice consulting group with a strong focus on nuclear matters. ND2 presently provides advice for clients in the areas of nuclear power deployment and licensing, high level radioactive waste issues, and advanced security systems development.

Q. Please describe your professional experience.

A. I have more than 40 years of experience in the design, construction, operation, and regulation of nuclear power plants. My educational background is set forth in further detail in my resume, which is attached as Exhibit NJD-1.

I served as the Chairman of the United States Nuclear Regulatory Commission (NRC) from 2003 to 2006. In this position, I served as the principal executive officer of, and the official spokesman for, the NRC, which is the federal agency with primary responsibility for protecting the public health and safety, the common defense and security, and the environment with respect to the use of radioactive materials. As Chairman of the NRC, I had ultimate authority for all NRC functions pertaining to emergencies involving NRC licensees. I was also directly responsible for all high level NRC interactions with the Executive Branch of the Federal Government and Congress, as well as international relationships and policy development under the NRC's charter. Prior to my appointment as Chairman, I served as a Commissioner of the NRC from 1996 to 2003.

Prior to my appointment to the NRC, I was the Director of the Innovative Nuclear Space Power and Propulsion Institute (INSPI) for the Ballistic Missile Defense Organization of the U.S. Department of Defense, and Professor of Nuclear Engineering Sciences at the University of Florida. As the Director of INSPI, I exercised prime contractor responsibilities for a diverse group of industries, national laboratories, and universities, under contracts with the Air Force, Defense Nuclear Agency, National Aeronautics and Space Agency, and the Department of Energy (DOE).

From 1969 to 1996, I held positions as Professor of Nuclear Engineering Sciences at the University of Florida, and as Dean for Research at the California State University, Long Beach. I have also consulted on nuclear energy and energy policy development for private industries, as well as the

U.S. Government and other governments. I have testified as an expert witness, and recently as the NRC Chairman, to the U.S. Senate and House of Representatives on many occasions for the last 25 years.

I also co-owned and managed six small corporations serving the nuclear industry and government, and conducted research and development on leading edge technology issues. I have also consulted for nuclear utilities, energy and high technology corporations, and financial institutions. I served full-time as the Principal Adviser to Spain's nuclear regulatory agency from 1981 to 1982.

Q. Please describe your educational background.

A. I hold a Ph.D. and M.S. degrees in Nuclear Engineering Sciences from the University of Florida, and I have a B.S. Degree in Mechanical Engineering from the University of Villanova, Havana.

Q. Please describe your other industry experience and affiliations.

A. I was licensed as a Senior Reactor Operator by the NRC, trained on reactor systems and operations at reactor vendors' installations, and received formal training and practice in health physics, radiological sciences, and nuclear medicine. I have worked at several nuclear reactor installations during both construction and operation phases.

I am a fellow of the American Nuclear Society, the American Society of Mechanical Engineers, and the American Association for the Advancement of Science. I have participated, or chaired, national and international committees and task forces dealing with issues of reactor safety, reactor deployment, nuclear regulation, high level waste disposition and nuclear non-proliferation efforts.

Q. Are you sponsoring any exhibits in this case?

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

Exhibit NJD-1	Summary Resume of Dr. Nils J. Diaz
Exhibit NJD-2	Collective Radiation Exposure of Nuclear Power Plant Personnel (NRC data)
Exhibit NJD-3	10 Years of NRC's Safety Indicators
Exhibit NJD-4	World Association of Nuclear Operators (WANO) Index
Exhibit NJD-5	U.S. Nuclear Industry Capacity Factors
Exhibit NJD-6	Nuclear Plant License Renewal and Power Uprates and U.S. Base Load Electrical Capacity
Exhibit NJD-7	NRC's Expected New Nuclear Power Plant Applications
Exhibit NJD-8	NRC's Design-Centered Review Approach

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to address:

- The status of the U.S. nuclear power industry and its role as a major baseload electrical generator; the performance of the current fleet of plants; improvements to operational safety and on-line generating performance; and the successful development of the license renewal and power uprate programs;

- Next generation nuclear power plant technology, focusing on enhancements to operational safety and reliability from advanced reactors with NRC certified designs, and on state-of–the-art advances in materials, technology and construction techniques available for the deployment of new nuclear reactors;
- Nuclear power safety regulation and licensing in the U.S., with emphasis on the revisions to the previous two-step NRC reactor licensing process and the corresponding improvements to the efficiency of new plant licensing, including the role of Design Certification, Combined Operating Licenses (COLs) and Early Site Permits (ESPs) for the deployment of new standardized nuclear power plants in the U.S., in the context of more effective and efficient licensing procedures and reduction of financial risk;
- The present status of potential Combined Operating License Applications (COLAs) to be filed with the NRC, and the applicability of new licensing processes to a Turkey Point application;
- The suitability of the Turkey Point site for new nuclear generation, and the key factors to be considered by the NRC in the acceptability of the site;
- The status of present and expected physical security requirements, and their potential impact on the deployment of new nuclear power plants;

- The suitability of spent fuel storage for new nuclear plants and issues related to the disposition of spent fuel produced by nuclear plants;
- Issues related to reactor decommissioning, in the context of another key issue favorably resolved for considering new nuclear power plant deployment.

Q. Please summarize your direct testimony.

A. My testimony addresses the need for additional deployment of nuclear power generating units in the State of Florida, based on its strategic importance for electrical generation, and the favorable status of the key factors for new nuclear construction. The sustained safety and reliability performance of the current U.S. fleet of nuclear power plants and the enhancements made to licensing and regulation are enabling factors for the construction of new nuclear generation. The enhancements to the NRC licensing framework will improve the effectiveness and efficiency of new plant licensing and adjudication processes. These processes are based on standardization of reactor designs and the capability to apply for a combined construction and operating license for new advanced, certified nuclear power plants, limiting financial risks and enabling informed decision making by electric utilities. New reactors are safe, simpler, easier to operate and maintain; new modular construction techniques, coupled with the Combined Operating License framework, should help control uncertainties about construction schedule and cost.

The status of physical security protection for existing and new nuclear power plants, plant decommissioning efforts, and of the spent fuel storage and disposition programs, are adequate to support new reactor development.

It is my conclusion that the deployment of two new nuclear electrical generating units at the Turkey Point site will meet safety, reliability, environmental and fuel diversification goals at both the State and federal levels.

STATUS OF U.S. NUCLEAR POWER INDUSTRY

Q. What is the role of nuclear power in meeting U.S. electric power needs?

A. The importance of abundant, clean, electric generation to our country cannot be overstated. The benefits of clean, user-friendly electrical energy can be found in every aspect of modern life and as a cornerstone of our economy. A reliable and economical supply of electricity is the backbone for our commercial, industrial and everyday energy needs. Nuclear powered electrical generation is a major baseload electrical producer that fits the economical, environmental and national security needs of our nation, and can meet the timetable for additional electricity demand. Nuclear power has unique strategic advantages for the U.S. and for Florida in particular, including fuel diversity, independence of the fossil fuel marketplace, and the capability to operate for long periods of time with stable electricity costs, even in the event of a fuel supply disruption

Q. Does nuclear power have any particular advantages in meeting peninsular Florida's electric power needs?

A. Yes. Nuclear power has the advantage of safely, reliably, and economically providing large amounts of electric capacity and energy, as part of a diversified generating portfolio and without material emissions of air pollutants or carbon dioxide. These are valuable benefits for any location suitable for a nuclear generation site, but they are particularly important for Florida, with its rapidly growing population, scarce fuel energy resources, and need to import nearly all of the fuel used to meet its electric energy requirements.

Q. What is the nuclear industry's role in U.S. electric generation and how has it performed?

A. The 104 nuclear units licensed to operate in 30 States generate approximately one-fifth of the nation's electricity and have a combined record of more than 2,615 reactor years of safe operation, providing reliable capacity and energy for electricity consumers around the country. These plants have in total provided about 15,570 billion kilowatt-hours of electrical energy to the nation since 1980. Notably, nuclear electrical generation has increased by 20% since 1994. The increase, which matches the increase of coal-fired generation during that period, is the result of improved operating performance and enhancements of the new nuclear fleet, and the addition of only one new nuclear unit since 1996. Electricity generated by all other sources has increased about 30% during the same period. The nuclear power fleet has an established management and technical infrastructure to operate safely and reliably with short scheduled shutdowns for refueling and maintenance, and unscheduled shutdown periods have been significantly reduced. This industry's improved operational record is a major contributing factor to the resumption of new nuclear deployment plans in many countries, and specifically in the U.S.

These achievements have been accomplished with an exceptional record of protection of the public health and safety and plant personnel. Workers at U.S. nuclear stations have among the best occupational safety records in the U.S., highlighting the care and attention spent by plant management on maintaining a safe work environment. One component of this record is reflected in the nationwide reduction of nuclear workers' radiation exposure. As shown on Exhibit NJD-2, the personnel exposure nationwide has been further reduced by improving operating and maintenance practices, and it is maintained at a fraction of the personnel dose allowed by NRC regulations.

Q. Please describe the regulatory framework for nuclear generating units.

A. The use of nuclear materials for electricity generation is regulated by the NRC, pursuant to the Atomic Energy Act of 1954, as amended (AEA), which was enacted to ensure adequate protection of the public health and safety and the environment. With respect to the operation of commercial nuclear power reactors, nuclear safety is the nation's highest priority. Radiological safety oversight is the responsibility of the NRC.

Q. Please describe the public health, safety and reliability performance of U.S. nuclear operations.

A. Public health and safety, the environment and national security have been protected during the entire operating lifetime of the U.S. nuclear fleet. Moreover, an in-depth review of the operating performance data from the nuclear fleet shows almost two decades of consistent improvements in the two most important performance indicators: safety and reliability. The NRC records show that, during the last 10 years, the safety-related performance indicators have sustained levels of performance well above requirements. Exhibit NJD-3, pages 1 through 5, displays the 10 year U.S. NRC data for Safety Systems Failures, Safety Systems Actuations, Forced Outage Rate (%), Equipment Forced Outages/1000 Commercial Critical Hours, and the Automatic Scrams While Critical. Furthermore, and based on the industry-wide gains in safety and reliability, the NRC was able to revise the reactor inspection program, with industry and other stakeholders support, and to develop the Reactor Oversight Program (ROP). The ROP is a comprehensive and objective nuclear power plant inspection program that is safety-focused and risk-informed. The concurrent Industry Trend Program supports the ROP by monitoring trends in indicators of industry performance as a means to confirm that the safety of operating power plants is being maintained. No statistically significant adverse trends have been identified by the Program to date, based on level or declining long term trends developed by the NRC, including those from the Accident Sequence Precursor Program. The Accident Sequence Precursor Program (ASPP) systematically evaluates U.S. nuclear power plant operating experience to identify, document, and rank the operating events that were most likely to lead to inadequate core cooling and nuclear core damage, if additional failures had occurred. Each one of these factors represents the sustained safety improvement of the U.S. operating nuclear fleet; considered together, they represent the maturity of a safety-focused industry.

The nuclear industry has also established rigorous, industry-wide, peer-performance reviews, conducted by the Institute of Nuclear Power Operations (INPO) and the World Association of Nuclear Operators (WANO). The WANO index is an internationally recognized and comprehensive measure of nuclear plant safety and reliability. It is calculated by summing weighted values of key indicators, input on which is provided by all nuclear plants on a quarterly basis. The WANO indicators and their weighting factors are listed on Exhibit NJD-4, page 1, and the corresponding composite index for the operating U.S. nuclear fleet as a function of time are shown on page 2. The WANO safety and reliability indicators also show the improved operational safety performance for the U.S. fleet during the last decade.

One factor that provides a clear overview perspective of the performance improvement of the U.S. fleet is the plant capacity factor. The capacity factor is the ratio of the actual electricity generated over a period of time, to the amount of energy that could have been generated if the units ran at full capacity throughout that period. The U.S. Nuclear Industry Capacity Factors for the years 1980-2006 are shown on Exhibit NJD-5, page 1. The U.S. nuclear fleet capacity factors have shown consistent improvement over the last 20 years. As stated before, there is a strong correlation in the U.S. fleet between high reliability and safety; the capacity factor is a leading indicator of reliability. The corresponding performance indicators for FPL's reactors are discussed in the testimony of FPL witness Stall, displaying the same improved performance as the leading performers in the country. The safety and reliability performance of the U.S. operating fleet is the direct result of a mature nuclear industry, placing safety first in their priorities and reliability as a companion, and of a mature regulator that was willing and able to focus its resources on the issues important to safety and reduce unnecessary regulatory burden.

Among the most recent safety and security improvements for the existing fleet of operating reactors has been the integration of safety, security, and emergency preparedness features and requirements following the 9/11 terrorist attacks. The demands for enhanced security led the NRC and the industry to consider better ways and means to enhance the safety of nuclear plants. With safety as the primary objective, corresponding improvements in security and emergency preparedness were made in an integrated manner. The results were enhanced plant control for the dominant series of potential severe accident scenarios and improved protection of the public health and safety. Major improvements in plant security have been achieved and tested during force-on-force exercises conducted by licensees under NRC supervision, at all nuclear power plants in the nation. The new safety, security and emergency preparedness framework constitute a well-developed and functional infrastructure for use in the deployment of new nuclear plants.

Q. How has the track record of successful operation affected the regulation of nuclear power in the United States?

A. The operations track record has had a beneficial impact on the regulation of nuclear power in the U.S. As the industry's performance improved, the NRC has been able to place most of its attention on matters important to safety, and to devote more time and resources to its core mission of protection of the public health and safety and the environment. Two key examples of the favorable impact of improvements in plant safety and reliability, and of the maturity of the nuclear industry and the NRC in exercising their independent but connected roles in assuring safety, are the successful license renewal and power uprate programs. These programs extend a plant's licensed life and increase the power output of nuclear power stations, both by a well established and documented regulatory process, and at favorable cost to the utilities.

Q. Please describe the NRC's experience with the renewal of operating licenses for commercial nuclear power reactors.

A. In 1997, the nuclear industry began the process of applying for 20 year license renewals, potentially increasing the life span of a nuclear power plant from the originally license term of 40 years to 60 years. The rigorous application and review process set forth in NRC regulations at 10 CFR Parts 51 and 54, focused on an assessment demonstrating that nuclear power plant structures, systems and components, requiring aging management review, have been identified and that the effects of aging on their functionality will maintain an acceptable level of safety during the period of extended operation. The review places special attention to structures and components that are not subjected to frequent maintenance and surveillance, like structural supports or covered piping and electrical conduit, and emphasizes aging management programs.

To date, 48 nuclear units (including all four of FPL's existing nuclear units) have had their licenses renewed, authorizing operation for an additional 20 years beyond the expiration of their original licenses. In addition, 10 power plants have license renewal applications under review, and 24 more units have submitted letters to the NRC indicating their intent to pursue license renewal. The impact on the national baseload electrical supply from nuclear plant license renewal is shown on Exhibit NJD-6, page 1. The license renewal process, as defined and implemented by the NRC with the plants improvements executed by the industry, has proven to be predictable and stable. Its successful implementation has had a favorable impact on the base load capacity of the country, where the relatively small investments in plant upgrades (when compared to new base load power) further improved safety and reliability, while maintaining low production cost electricity available without additional carbon impacts. As an added benefit, this process has maintained the technical and supply nuclear infrastructure at levels needed for reliable operation and growth. License renewals have the additional and well-tested benefit of having demonstrated the effectiveness of well-documented technical and legal procedures for major licensing actions. They serve as a recent and successful precedent for stable and predictable processing of COLAs for new plants.

Q. Please describe the NRC's experience with power uprates.

A. The power uprates program is a close companion of license renewal, and has served to increase the electrical generating capacity of existing nuclear power plants by over 4,900 megawatts (MW) over a 20-year period. In a manner similar to license renewal, the NRC has implemented a rigorous, controlled, and open process for licensing power uprates, with significant experience gains that are applicable to the COL process. Exhibit NJD-6, page 2 shows U.S. Nuclear Capacity Additions at Existing Facilities for the period 1977-2007 from power uprates and the projected additions through 2011. Again, additional power capacity has been achieved at modest cost and is favorable to consumers.

Q. How has the management of operating reactors impacted the safety and reliability of the plants?

A. The existing fleet of operating nuclear reactors has achieved a high level of operational safety and reliability through a management commitment to excellence that runs from executive levels deep into most utility organizations. I view FPL as an example of this organizational commitment to excellence. The safety, reliability, and efficiency gains are apparent in practically every major activity of nuclear operations, with well-managed planned outages, minimization of unplanned outages, and coordination between the engineering, maintenance, and operations functions to achieve high capacity factors, low production costs, and improved safety. U.S. nuclear power plants' management activities have benefited from the use of operational risk insights to enhance safety and reliability. Risk insights are products of the risk-informed and performance-based framework established by the NRC to increase the agency's and industry's focus on safety. For example, NRC's ROP is a risk-informed program that utilizes deterministic, experiential and probabilistic assessments to improve safety decision-making at operating reactors. The use of risk-informed and performance-based tools by operating reactors management has improved both safety and reliability; their use for pursuing license amendments has also improved the safety focus of the applications and the regulatory processes.

NEXT-GENERATION NUCLEAR TECHNOLOGY

Q. How has nuclear power plant licensing and technology evolved from the experience of the existing fleet of commercial nuclear power reactors?

A. The NRC, in its role of enabling the safe, secure, and beneficial uses of nuclear power, and being responsive to mandates from the U.S. Congress, began in the late 1980s to establish the basis and the roadmap for a potential new generation of nuclear power plants. The present generation of nuclear power plants eventually proved that they consistently satisfy the statutory criteria in the AEA of reasonable assurance that they can be constructed and operated without undue risk to the health and safety of the public. Although this fact has been recognized over the past few decades, a few key salient features for new designs were considered necessary enhancements in the post-Three Mile Island accident "lessons learned" environment, and became the focal point for technological improvements of new reactors.

The design enhancements for new reactors were focused on increased plant safety, ensuring improvements to core cooling, containment integrity, and the capability to prevent or mitigate the consequences of accidents which could result in potentially hazardous offsite radiation doses. There was a definite emphasis in simplification, standardization and the use of inherent safety features to carry out the intended safety functions. The bottom line was clear: new reactors were to be measurably safer, simpler, more independent of operator actions, and easier to operate and maintain. A new measuring stick employing probabilistic risk assessments was to be used to establish the safety case, supported by better documented operational experience and models.

What was sought, and eventually built into advanced designs, was an order of magnitude improvement in the key risk factors, relative to present reactors. Furthermore, these gains were to be quantified using probabilistic risk assessments, based on utilizing state-of-the-art technology and materials, and the designs were to be standardized to secure the safety gains and the reliability and economic advantages.

NUCLEAR POWER REGULATION IN THE U.S.

Q. Please describe the current NRC licensing structure.

A. In order to understand the NRC licensing structure, it is important to review the prior legal and regulatory framework under which the current fleet of reactors was licensed. The original NRC licensing process for nuclear reactors, dictated by Section 189 of the AEA and set forth in more specificity in 10 CFR Part 50, imposed a two-step process on an applicant for an operating license for a nuclear plant.

First, the applicant was required to obtain a construction permit. The construction permit application was a significant undertaking, requiring the preparation of a Preliminary Safety Analysis Report, demonstrating the reactor technology and site suitability, and preparation of an Environmental Impact Statement to satisfy the requirements of the National Environmental Policy Act (NEPA). Section 189 of the AEA required the NRC to hold a mandatory hearing for all construction permit applications, regardless of whether any interested party sought to contest the application. Several construction permit applications were contested.

In the second step of the process, after securing the construction permit, the applicant was required to obtain an operating license to authorize plant operations, after construction was completed. The operating license application was also a significant undertaking, the goal of which was to enable the NRC to make the findings required by the AEA and NEPA. The applicant was required to submit a Final Safety Analysis Report and an Environmental Report. Section 189 of the AEA requires the NRC to provide an additional hearing opportunity at the operating license stage. Numerous operating license proceedings were challenged at this stage, after significant investments were made and plant construction was substantially completed.

The practical effect of the two-step licensing process was to have multiple, duplicative, simultaneous or consecutive reviews, including safety and NEPA reviews, and contested hearings. To complicate matters, plant construction was started before the design was substantially completed and regulatory reviews of technical issues continued during construction.

In 1974, the promotion and regulatory functions of the Atomic Energy Commission (AEC) were separated and the NRC was chartered anew as an independent regulatory agency. At this time, potential unresolved safety issues were being debated as more information on plant operations was made known. Under the previous licensing process, these unresolved issues were often injected into licensing proceedings, after plant construction had begun.

Furthermore, high inflation and interest rates made financial matters worse, and contributed to delays that were then compounded by the multilayer licensing and adjudication processes. In fact, in several cases, contested adjudicatory hearings were ongoing with plants fully constructed and ready to operate, as in the cases of the Seabrook, Comanche Peak, and Shoreham nuclear plants. Issues that should have been fully settled early in the process, such as emergency preparedness, were left unresolved to the end of the licensing process. The delays in bringing these plants on line, including those caused by protracted proceedings, dramatically increased the costs of these plants.

For example, of the 104 presently operating plants, 54 were placed in operation prior to the Three Mile Island (TMI) accident in 1979 and 50 entered service following the TMI accident. Plants built and commencing operations prior to TMI took an average of about 5.6 years from Construction Permit (CP) to Operating License (OL), and cost approximately $2,100/KW installed in 1992 dollars. The plants commencing operation after TMI took about 11.2 years from CP to OL, and many cost over $5,200/KW installed in 1992 dollars, including the three plants mentioned above. The Shoreham plant also has the dubious distinction of having never operated at full power despite these massive expenditures. These experiences, when taken all together, effectively damaged the confidence of utilities and investors in building new nuclear power plants. The two-step licensing process proved to be onerous and was replaced by a more predictable and equitable licensing structure, and enacted into law by the U.S. Congress in 1992.

Q. What significant alternatives have been made available to the licensing process?

A. The U.S. Congress, with significant input from the NRC and the nuclear industry, has markedly improved the licensing process for new nuclear plants. As codified in Section 185(b) of the AEA and in NRC regulations at 10 CFR Part 52, this revised process is structured to achieve straightforward objectives, with well-defined safety and environmental reviews as a backbone. In essence, the new NRC licensing process still contains the elements needed to make the necessary reviews and safety determinations, including public involvement, safety review, independent review by the Advisory Committee on Reactor Safeguards (ACRS), environmental review, public hearing and continued NRC oversight. The differences are found in the manner, sequencing and required efficiencies of each and every element of the licensing review and adjudicatory processes.

The new Part 52 licensing process seeks the standardization of nuclear power plants, wherein the applicant seeks a combined construction and operating license (COL) of a standard plant that should be obtained prior to the beginning of major construction, and specifically before construction of safety-related structures. In the COL application, the applicant must submit the same level of information that is required under both the construction permit and operating license process, as set forth in the previous two-step licensing process at 10 CFR Part 50. The NRC will then review the COL and conduct the safety and environmental review, and forward the necessary documentation for the independent ACRS review. The NRC is then required to conduct a mandatory hearing on the COL application prior to granting the license.

If the COL is granted, the licensee then will be given the authority both to build and operate the plant. This authority is contingent on plant construction conforming to the license, and a finding by the NRC of reasonable assurance that the plant will operate according to the COL. In order to arrive at this finding, the licensee must demonstrate satisfactory performance of inspections, tests, and analyses, and satisfaction of defined acceptance criteria (ITAAC) that are set forth in the COL.

The COL process also has another feature not present in the previous licensing process, which could, at the option of the applicant, further streamline the process. The applicant can reference a reactor design in its COL application that has previously been certified by the NRC in rulemaking pursuant to 10 CFR Part 52. The benefits of referencing a certified standard design in the COL application is that plant design issues that were resolved by NRC in the design certification process are entitled to finality in the COL process. It is within the COL applicant's discretion whether to reference a certified design in its COL application. I understand that FPL intends to take advantage of the benefits of referencing a certified design when applying for its COL.

One of the key improvements made to the previous two-step licensing process was aimed at efficient adjudication. In 1998, the NRC promulgated a policy statement to promote efficient adjudicatory proceedings on license renewals and license transfers, followed by a 2004 revision of NRC's rules of practice in 10 CFR Part 2, which resulted in model schedules to implement effective and efficient adjudication. The NRC Commissioners continue to seek efficiency and other improvements to the agency's review of license applications for new reactors. In July 2007, the NRC approved several recommendations from the Combined License Review Task Force that could lead to a reduction of the COL review schedule timeline. These include having the Commission conduct the mandatory hearings on uncontested matters, expanding the initial COL acceptance review to 60 days to ensure adequacy of the submittal, using environmental statements conducted by other government agencies, as applicable, seeking legislative authority to eliminate the mandatory hearing if one is not requested, and pursuing rulemaking to resolve generic issues of COL applications rather than through individual contested proceedings.

Presently, the NRC schedule estimates 30 months for technical and environmental reviews and 12 months for adjudicatory proceedings; this schedule appears to be more applicable to a first-of-a-kind application or "reference" application. The NRC's intention is to shorten the review schedule, while maintaining the safety focus, by six to fifteen months. The present review procedures should shorten the review schedule for applicants, such as FPL, that use the same technical content in their applications as the "reference" application, besides site specific issues.

Q. What are the advantages of the revised licensing process when compared to the previous two-step process?

A. This process will remove significant uncertainties and potential for delays attendant with the previous two-step licensing process. The revised licensing process shifts the burden of proof for COL applicants to the front end, deferring and therefore reducing financial and construction risks until the licensing review is favorably advanced. The predictability of the licensing process is placed at the COL stage, before major financial capital and construction expenditures are made. The hearing opportunity at the fuel loading stage is more strictly limited than a hearing at the operating license stage under 10 CFR Part 50. The scope of this hearing opportunity is limited to the licensee's compliance with the ITAAC, with the burden of proof of non-compliance on the intervenor.

The law also allows the NRC to authorize plant operation, prior to the potential ITAAC hearing, if it has made a determination that there is reasonable assurance that a nuclear power plant will be operated without undue risk to the health and safety of the public.

Q. What benefits do you see from the amendments to 10 CFR Part 52?

A. The amended Part 52 is now structured to achieve the objectives of the AEA more effectively and more efficiently. As originally contemplated, the selection of an NRC certified reactor standard design, which is codified by rulemaking, resolves most of the technical safety issues, and is not subject to a formal adjudicatory hearing. If FPL chooses a certified standard design, it will have the finality of the safety reviews conducted for the certified reactor.

The NRC and the industry have extensive experience with all the specific reviews and adjudication conducted under Part 52. There are now over 14 years of reactor vendor and NRC experience with design certifications.

Environmental impact statements, emergency preparedness, and physical security reviews have been part of the NRC everyday work for about 30 years. Moreover, three applications for Early Site Permits (ESP) have been processed by the NRC, with the corresponding mandatory hearings completed, and many lessons have been learned by the NRC through the ESP process that should lead to more stable and predictable environmental reviews and COL processes. However, the COLA process itself is untested and the timing and coordination of its components will require much attention by both the applicants and the NRC. The capability of the Atomic Safety and Licensing Board (ASLB) and the Advisory Committee on Reactor Safeguards to discharge their licensing reviews and disposition of hearings, in conformity with the established licensing schedule, is of particular concern, and would undoubtedly attract concerted opposition and require focused efforts to resolve contested issues.

Q. Have any new nuclear power plant designs been certified under the NRC's design certification rules?

A. Yes, four advanced Light Water Reactor (LWR) plant designs have been certified and two more designs are undergoing review. The certified standard designs, as specified in 10 CFR Part 52, are divided into two types of light water reactors: advanced evolutionary designs, and advanced reactors that incorporate simplified, inherent, or passive means to accomplish the safety functions. Applicable safety criteria are imposed on both systems, with different burden-of-proof requirements; reactors that are not considered evolutionary are required to demonstrate the performance of each safety system that incorporates new means to accomplish the safety functions. The fundamental difference between the evolutionary designs and those designs that rely on inherent or passive systems to accomplish the safety functions lie mostly in the treatment and resolution of challenges to core cooling for significant transients and/or emergencies. The evolutionary designs rely on the actuation of redundant active safety systems, dependent on multiple pumps and valves. The passive reactor designs rely on redundant safety systems using inherent or passive means to maintain core cooling and integrity, without active injection of coolant by pumps, for the dominant spectrum of postulated accident conditions.

I have been advised that FPL is considering two designs for its COL effort. The first is the Westinghouse AP1000 design, a 1,100 MW advanced standard reactor plant, using inherent, passive features to accomplish its safety functions. The AP1000 was granted Design Certification by the NRC in 2006 and has now essentially completed additions and submitted amendments to the original design certification, incorporating analysis supporting technical improvements and final design features. The AP1000 is a larger counterpart of the AP600, a 600 MW advanced reactor that previously earned certification, after a comprehensive set of tests were conducted to demonstrate the safety performance of the reactor passive safety features.

FPL is also considering another advanced reactor design, the General Electric (GE) Economic Simplified Boiling Water Reactor (ESBWR) 1,520 MW reactor plants. The ESBWR also has simplified and passive safety features and is presently undergoing design certification review by the NRC. The AP1000 and ESBWR are the only two advanced standard designs in the US market incorporating passive safety features, with simplified designs enabling streamlined operation and maintenance, and significant safety margins

Q. What advantages do you see in new nuclear power plant designs and construction?

A. Major advantages are found in the predicted increased safety and reliability of new nuclear plants, arising from the vast operational experience, and advances in nuclear and materials technology. Technological, construction, and supply chain advances are available today, and are supported by materials advances that should contribute much to the sustained and enhanced operability, reliability and maintainability of plant systems and structures. Nuclear power plants should be built more rapidly than their predecessors due to the use of standard certified designs, to detailed engineering that will be substantially completed prior to start of construction, and by the use of modular construction techniques. Site preparation would be performed ahead of time, and management teams assembled with the expertise, resources and tools to execute the project.

CURRENT STATUS OF COL PROCESS

Q. Please provide the current status of COLAs expected by the NRC.

A. As of September 11, 2007, the NRC is expecting a total of 7 COLAs (for 12 nuclear units) to be filed in 2007, with 12 additional COLAs (for 17 nuclear units) expected in 2008. Shown in Exhibit NJD-7 is a summary of expected applications by 18 different companies for 2007-2009, their reactor design type (if chosen), the site and the state, including FPL's expected COLA for 2 units in 2009, subject to review.

Q. How would FPL and the Turkey Point site benefit from implementation of the new NRC application review procedures?

A. FPL and the Turkey Point site should be able to utilize the new NRC staff review procedures for gains in predictability, submittal clarity and completeness, and to shorten the COLA review schedule. There are several new procedures and processes established to increase the quality and the efficiency of the COLAs review. The first important change will be encountered at the application acceptance process, which is to be extended from 30 to 60 days, but is expected to save months during the actual review. The acceptance review includes new stringent requirements for technical sufficiency, in addition to completeness; informing the application-specific review plan and schedule; and providing for early interactions with the applicant to request additional information.

The second important change will be encountered at the actual application review. FPL is intending to reference a standard certified design in its application, and if the application is submitted in 2009, FPL will be able to use the Design-Centered Review Approach to expedite review and approval of already reviewed identical parts of the application.

The Design-Centered Review Approach is a natural regulatory product for effective and efficient review of standard reactors and standardized applications. A graphical representation of this review approach is shown on Exhibit NJD-8, page 1, for the case of COLAs referencing a design undergoing certification. The approach is simple and effective: instead of every application undergoing a custom, separate review by an assigned team, the first application is selected as a Reference COL (R-COL) and subsequent "identical" applications as surrogates. All issues reviewed and resolved for the R-COL are considered resolved for all subsequent applications that conform to the same requirements; one expert NRC staff team is formed to review each R-COLA and the subsequent "identical" COLAs. Only the site specific information, including environmental features, water usage, electrical grid requirements, and others, are reviewed individually. A graphical representation of how the Design Certification, ESP, R-COLA and subsequent COLAs are related is shown on Exhibit NJD-8, page 2. There is an apparent advantage to referencing a certified reactor and using the review from an R-COLA.

SUITABILITY OF THE TURKEY POINT SITE FOR NEW REACTORS

Q. In the context of the new NRC reactor licensing process, please comment on the selection of the Turkey Point site as a location for new nuclear plants.

A. The Turkey Point site stands out as a preferred location for the addition of two nuclear generation units to the FPL grid. The Turkey Point site is well known and it has been proven to be suitable for existing generation needs. The sum of its existing assets is large and would contribute to lower and more predictable costs, including access to cooling water supply, existing and expandable roads, access for heavy components, experienced personnel and management on-site, well established security and emergency preparedness infrastructure, electrical transmission and distribution infrastructure, and lesser environmental impacts that would result from the development of a comparable and acceptable greenfield location. The selection of a certified standard design is especially appropriate for the Turkey Point site, since the existing infrastructure will be conducive to the efficient utilization of the associated licensing and construction advantages.

Q. What are the main site safety criteria that the NRC will use for the evaluation of the acceptability of the Turkey Point site?

A. The main siting factors and criteria that the NRC will use in its evaluation are those important in assuring that radiological doses from normal operation and postulated accidents will be acceptably low; they are mostly found in 10 CFR

Part 100 and applicable components of 10 CFR Parts 50, 51 and 73. Among the significant factors that will be taken into consideration in determining the acceptability of the Turkey Point site are its physical characteristics, including seismology, meteorology, geology and hydrology. These will be fully reviewed in accordance with the new Subpart B of Part 100, which incorporates the evaluation and seismic criteria in effect for new nuclear power plants. Of particular interest to Florida are the evaluations of factors and criteria pertaining to hurricanes (such as maximum probable wind speed, precipitation and maximum probable flood) and, although less frequent and severe, to earthquakes (such as magnitude and intensity). Protection criteria for both hurricanes and earthquakes are fully developed from the regulatory viewpoint, and have or will be incorporated into every design certification and the final reactor design, construction and operation of the facility. The area of physical characterization of sites and acceptability criteria has reached a high level of maturity and should be efficiently utilized by COL applicants.

NUCLEAR PLANT PHYSICAL SECURITY

Q. Please discuss security issues as they apply to new nuclear power plants.

A. Since its inception in 1954, the AEC, now the NRC, has considered, developed, and enforced physical security requirements. Originally, the main reason was safeguarding weapons grade materials and all information pertaining to nuclear weapons programs. Sabotage was also a consideration, although taking second place early to the pressing need of nuclear weapons-related national security. Because U.S. commercial nuclear power developed from naval applications to land deployment, a culture and practice of physical security was incorporated into nuclear plants; however, it was not a prominent feature due to the benign perception of the nature of nuclear power. This perception was due to the fact that nuclear power plants, by their intrinsic physical nature, cannot be made into an explosive device nor can its fuel be made into a nuclear weapon.

As the number of nuclear power plants grew, their importance to the nation's electrical generation and the importance of minimizing the possibility of radiological sabotage became apparent. The separation in 1974 of the AEC into two distinct bodies, the promotional Energy Research and Development Administration (ERDA) and the NRC, brought a more definitive separation between the nuclear weapons production capability and civilian power use, with sabotage becoming a more significant consideration at commercial nuclear generating facilities. In 1978, the NRC issued physical security regulations at 10 CFR Part 73. These regulations established requirements for the protection of plants and materials, using the framework of a Design Basis Threat (DBT), the baseline threat that nuclear plants must be able to repel. The history of the implementation of Part 73 at nuclear power plants was relatively uneventful. Still, its importance was clear and vigilance was maintained.

Q. Please describe how the events of September 11, 2001 affected security requirements at nuclear power plants.

A. The events of 9/11 were a wake-up call to the nation, including the civilian nuclear industry. In many ways, nuclear power plants were better prepared than any other component of U.S. critical infrastructure to respond. Already robust defenses were rapidly brought to a maximum level of preparedness and were maintained until resolution of a more permanent path forward. The NRC responded with a new organizational focus on physical security and emergency preparedness. Starting in February 2002, changes were made by issuance of immediately effective orders, to effect improvements without waiting for the normal rulemaking process. These changes covered every significant aspect of physical security and emergency preparedness, enhanced the capability of the nuclear power industry to face potential new threats, while still remaining within the civilian defensive capabilities that can be demanded of non-military installations.

The series of orders issued by the NRC to the nuclear power industry, in a very short period of time, covered the dominant security issues analyzed by expert teams, which included consultation with cognizant U.S. Government agencies and stakeholders. The main issues covered first were: 1) access authorization controls, requiring full background checks for persons entitled to unescorted access to protected areas at nuclear plants, and overall improvements in personnel checks, identification of areas and pertinent protective measures; 2) Changes to the DBT against which nuclear power plants must be able to defend with high assurance using their own capabilities, including requiring defenses against threats from both land and water; 3) requiring well established strategies to mitigate the consequences of large fires and explosions, regardless of their origin, including airplane attacks; 4) security personnel training and qualification requirements, ensuring the capability of each to respond to new threat requirements, the capability of the organization to respond to multiple threats, and to coordinate responses with local, state and federal law enforcement agencies, in a manner commensurate with the threat; 5) spent fuel pool and/or dry cask storage safety and security enhancements, establishing additional capabilities to maintain the integrity of used fuel for different threat scenarios, including large fires and explosions from a terrorist or an accidental or deliberate aircraft crash; and 6) new and enhanced requirements for force-on-force (simulated terrorist attack) exercises, upgrading the previously established mock-up terrorist attacks to meet the new DBT with new organizational focus. A series of additional compensatory measures, as needed to enhance security and protective capabilities were also added.

The result of this series of orders was a massive, multi-year undertaking by the nuclear power industry and the NRC, with significant improvements to the already robust defenses installed for the primary purpose of protecting public health and safety. The modification to plant perimeters, entrances, structures, monitoring and defensive systems, security personnel and personnel-related measures, and management have established superior defensive strategies and capabilities at all nuclear power facilities in the U.S. The codification of these changes is continuing for more predictable use by licensees; the NRC approved in January, 2007, a final rule approving the DBT. The directive to mitigate the impact of large fires and explosions is now on preparation for a final rule.

Q. What will be the impact of the post 9/11 security enhancements on new nuclear plant designs and costs?

A. The arena of physical security for existing nuclear facilities has endured revisions to ensure that the public is protected from events challenging the plant, including terrorist's events. Enhancements are always possible; however, significant, necessary and sufficient improvements have already been required and implemented, and "tune-ups" should take the place of further significant revisions to NRC security requirements. These improvements and the cumulative security experiences of the industry and NRC are being incorporated into new reactor designs, construction and operation.

Although the issue of preventing and mitigating potential substantial damages from a large aircraft impact has been well addressed and the results are applicable to new reactors, the NRC proposed recently to analyze further enhancements. In April of 2007, the NRC proposed to require each applicant for a new reactor design to assess how the design, to the extent practicable, can have greater built-in protections to avoid or mitigate the effects of a large commercial aircraft impact, making them even more resistant to an attack. The assessments should focus on areas such as core cooling capability, containment integrity and spent fuel pool integrity. The proposed rule will be published to seek public and industry comments, and if adopted, will affect new applicants for reactor design certifications and applicants for a combined license that does not reference a certified design. I believe much has been done already in this respect that would be incorporated into new designs and new plant construction and operation without major revisions. The reactor vendors are fully cognizant of the safety and security improvements made to improve safety for existing plants and their applicability to new plants, as well as the need to provide closure to the issue by assessing additional built-in protection, as practicable.

A concern of the NRC and stakeholders alike is the predictability of physical protection costs for new plants. These costs, however, are a minor component of the construction costs of a new plant and they are well known from current experience at the existing reactor fleet. Therefore, potential changes at the design and construction stage for physical security should not be a major consideration for the economics or the construction schedule for new nuclear plants. An important production cost consideration will be security personnel costs; in here, like in other areas, new technologies are emerging that should mitigate such recurring costs, while maintaining or improving plant protective capabilities.

SPENT NUCLEAR FUEL AND LOW-LEVEL RADIOACTIVE WASTE

Q. Please discuss issues concerning the storage and disposal of spent nuclear fuel and low-level radioactive waste that will be generated by new nuclear plants.

A. There are two basic types of radioactive waste produced by the operation of nuclear power reactors: high-level radioactive waste in spent nuclear fuel and low-level radioactive waste (LLW) produced as the by-product of nuclear power operations, such as contaminated tools, clothing, resins, and other trash. The high-level radioactive waste contained in the spent or used fuel from nuclear power plants can be safely and securely stored on site or off-site in spent fuel pools (which are large pools with borated water) or in concrete and stainless-steel sealed dry containers. All reactors first discharge spent or used fuel into spent fuel pools, where it cools as the radioactive content diminishes with time. Spent fuel pools have been the subject of a comprehensive analysis by the NRC to ensure their integrity under multiple challenging scenarios, including terrorist attacks and the effects of an air crash. While the results of the analysis were not indicative of a lack of public protection, the NRC believed there was need for a few additional improvements to spent fuel pools that would be appropriate for new threats, and ordered licensees to take additional preventive measures to ensure the capability to maintain the spent fuel cooled under severe circumstances, and to add measures that would prevent or minimize radiological consequences.

The results of the improvements to spent fuel safety and security, in most cases using simple or readily available strategies and modifications, were an enhancement of spent fuel safety. These improvements are being codified for use in new nuclear power plants, and are independent of the proposed rulemaking discussed above for new reactor design certifications.

Q. Given the delays in licensing the Yucca Mountain spent fuel disposal facility, what spent fuel storage capability is necessary for new nuclear plants?

A. In my experience, spent nuclear fuel should be cooled for about ten years before removal from a spent fuel pool. Ten years is now the reactor vendor recommended and NRC accepted base storage capacity. Presently, it is a safe and common practice to do full-core offloads to spent fuel pools during refueling, and to have additional space for maneuvering. These two considerations are more important presently than the delay of the opening of Yucca Mountain because additional on-site spent fuel storage using dry casks is a well proven technology raising no limiting safety or environmental concerns. Furthermore, independent spent fuel storage installations are certainly feasible and under consideration by the DOE and Congress. Both wet and dry storage provide safe and secure storage of spent fuel.

Pending Congressional resolution of the disposition of used fuel, the NRC, which will review the Yucca Mountain application to be submitted by DOE, has maintained its position, set forth in its Waste Confidence Decision at 10 CFR 51.23, that there is reasonable assurance that there will be a geological repository for spent nuclear fuel within the first quarter of the 21st century.

Q. Please discuss whether low-level radioactive waste (LLW) can be stored safely at new nuclear plants, and the safety of transporting radioactive wastes and materials.

A. The operation of nuclear power plants also generates LLW, which is safely stored on site, and frequently disposed at the Barnwell, South Carolina licensed LLW disposal facility, or occasionally, for very low level radioactive wastes, at the licensed Energy Solutions LLW disposal facility at Clive, Utah. Effective June 30, 2008, the Barnwell facility will no longer be available to LLW generators in states other than South Carolina, New Jersey, or Connecticut, for the disposal of Class B and C LLW.

The present capability of facilities to sort, compress, and store LLW at reactor sites for very long periods of time is proven, and is used safely all over the world. As the Barnwell site becomes more uncertain, it is appropriate to establish self-contained LLW compacting and storage facilities at reactor sites.

The transportation of spent fuel, LLW, and all types of radioactive materials for medical and industrial purposes is a state-of-the-art, proven technology, with an outstanding safety and security record of performance. The transportation of high-level waste has been the subject of rigorous research and testing, and has been proven safe here and abroad for millions of miles on the road.

DECOMMISSIONING

Q. Please comment on the process for decommissioning nuclear power plants and the impacts of that process on new nuclear reactors.

A. The decommissioning of nuclear reactors and nuclear facilities is now a mature and tested industrial and regulatory process, with reasonably known costs, with some variation due to state-related requirements. Major reactor sites have been fully decommissioned, with costs covered by decommissioning trust funds. The former commercial reactors at the Trojan, Big Rock Point, and Maine Yankee sites have been restored to unrestricted use, in accordance with NRC's License Termination Rule (10 CFR 50.82), and in compliance with applicable financial assurance regulations.

Decommissioning activities at the former commercial reactors at Millstone 1, Connecticut Yankee, and Yankee Rowe are also proceeding well, as are other facilities that have de-fueled into dry storage casks and have had the pressure vessel removed, like San Onofre 1 in California.

Essential regulatory components of the decommissioning of reactor sites have been proven successful, including the assurance of funding, as determined by the NRC's periodic review of licensee funding, in accordance with 10 CFR 50.75. An important factor in the cost of decommissioning is the impact of License Renewal in delaying plant shutdown and decommissioning. With the additional term to collect the necessary funds, and the favorable impact of established fund growth, nuclear power plant decommissioning activities are being adequately funded.

Q. Does this conclude your direct testimony?

A. Yes.

Summary Resume Of Nils J. Diaz, PhD

Dr. Nils J. Diaz is the Managing Director of The ND2 Group, an expert and policy advise group with a strong focus on the nuclear power development arena, including new and existing plant licensing, regulatory, financial, policy and communications issues.

Nils Diaz is the former Chairman of the U.S. Nuclear Regulatory Commission (NRC). Dr. Diaz was designated Chairman of the NRC by President Bush on April 1, 2003 and he served as such until his retirement from government service on June 30, 2006. As Chairman of the NRC, Dr. Diaz served as the principal executive officer of and the official spokesman for the NRC, and had ultimate authority for all NRC functions pertaining to an emergency involving an NRC license; he was directly responsible for all high level interactions with the US Executive Branch and the Congress, as well as the international relationships and the policy development under NRC's charter.

Dr. Diaz was a Commissioner with the NRC from August 1996 until he assumed the Chairmanship of the Commission. During his ten year tenure with the NRC, he championed regulatory reforms to streamline licensing and regulatory processes, to improve the focus on matters important to safety, to increase risk-informed and performance-base regulation throughout the regulatory structure, and to enhance management's functions, accountability, and communications with the Congress, the public and stakeholders. As Chairman, he led the review and improvement of security and emergency response of nuclear facilities and materials, in a manner commensurate with the new threat environment facing the nation. Dr. Diaz re-structured the organization of the NRC to more effectively conduct the agency's licensing and oversight operations, with a strong emphasis in the areas of new reactor licensing and fuel cycle and waste disposal.

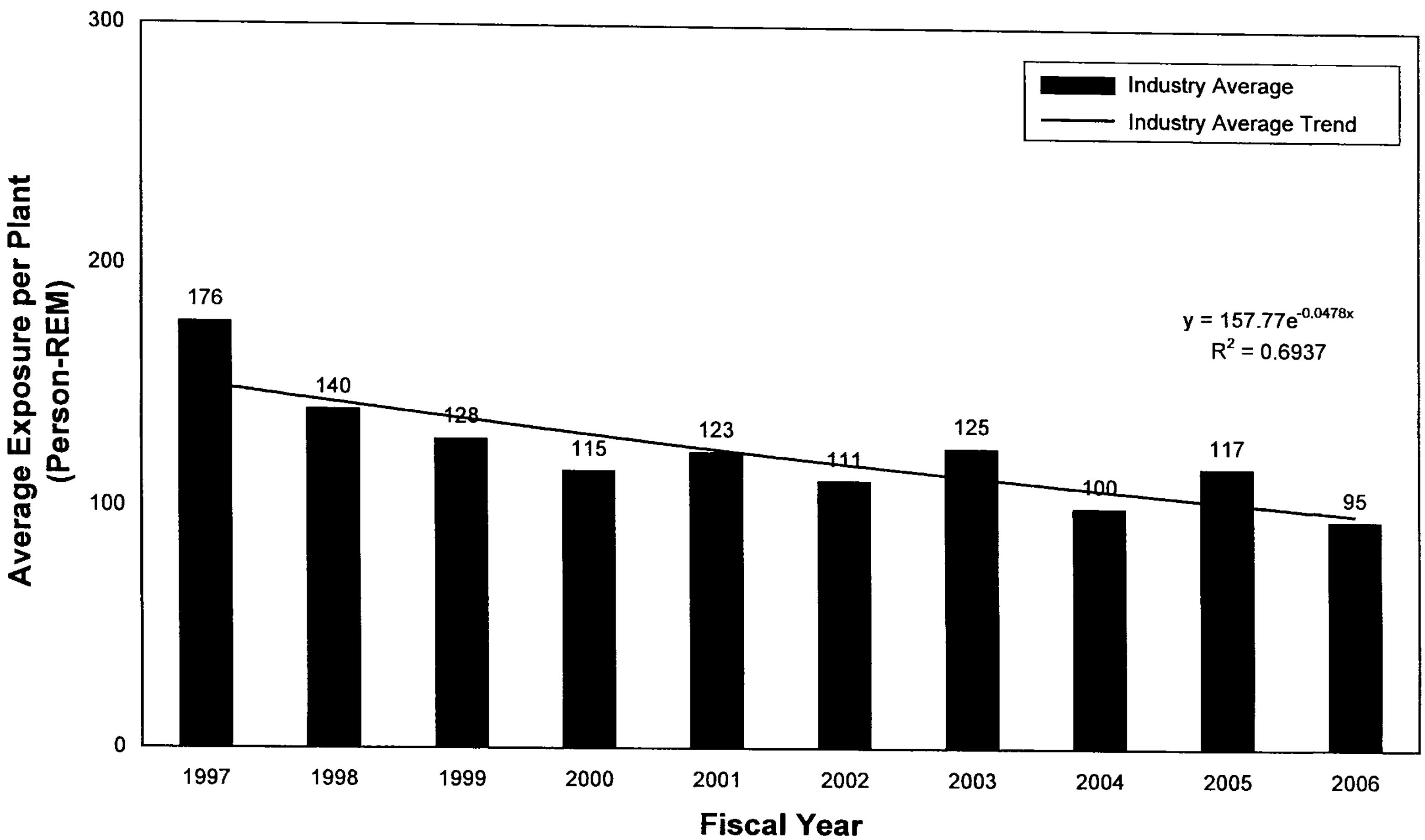
Prior to his appointment to the NRC, Dr. Diaz was the Director (1985-1996) of a national consortium for advanced nuclear power and propulsion (INSPI) for the Ballistic Missile Defense Organization, Department of Defense, and Professor of Nuclear Engineering Sciences at the University of Florida. As Director of INSPI, he exercised prime contractor management responsibilities for a diverse group of industries (including Aerojet, Pratt & Whitney, Hughes Electronics, and SRI), national laboratories (including LANL, SNL, and LLNL) and seven universities, under contracts with the Air Force, DNA, NASA, and DOE.

From 1969 to 1996, Dr. Diaz held positions as Professor at the University of Florida and as Dean for Research at CSULB, consulted on nuclear energy and energetics to private industry, the U.S. Government and other Governments. He also co-owned and managed six small corporations serving the nuclear industry and government, and conducting high technology development. He spent six years at nuclear utilities and corporations, often troubleshooting major performance issues using novel approaches to improving organizational effectiveness and accountability. He lived in Europe in 1981-1982, while serving as the Principal Advisor to Spain's Consejo de Seguridad Nuclear, and consulting for other entities. From 1971 to 1984, at the University of Florida, he managed the reactor, the accelerator facilities, the fuels and SNMs, as well as several multi-disciplinary programs.

Dr. Diaz is internationally recognized for his broad expertise and contributions to nuclear sciences, reactor systems and fuels, to the regulation of nuclear facilities and radioactive materials, and to nuclear policy analysis and development. He has worked extensively in the international arena, including interacting and contributing to major policy, fora and decision-making efforts. He has published extensively, and is recognized worldwide for his statesmanship on nuclear affairs.

Dr. Diaz holds a Ph.D. and M.S. in Nuclear Engineering Sciences from the University of Florida, and a B.S. Degree in Mechanical Engineering from the University of Villanova, Havana. He was licensed as a Senior Reactor Operator by the NRC and has formal training and practice in health physics, radiological sciences and nuclear medicine. He is a Fellow of the American Nuclear Society, the American Society of Mechanical Engineers, and the American Association for the Advancement of Science.

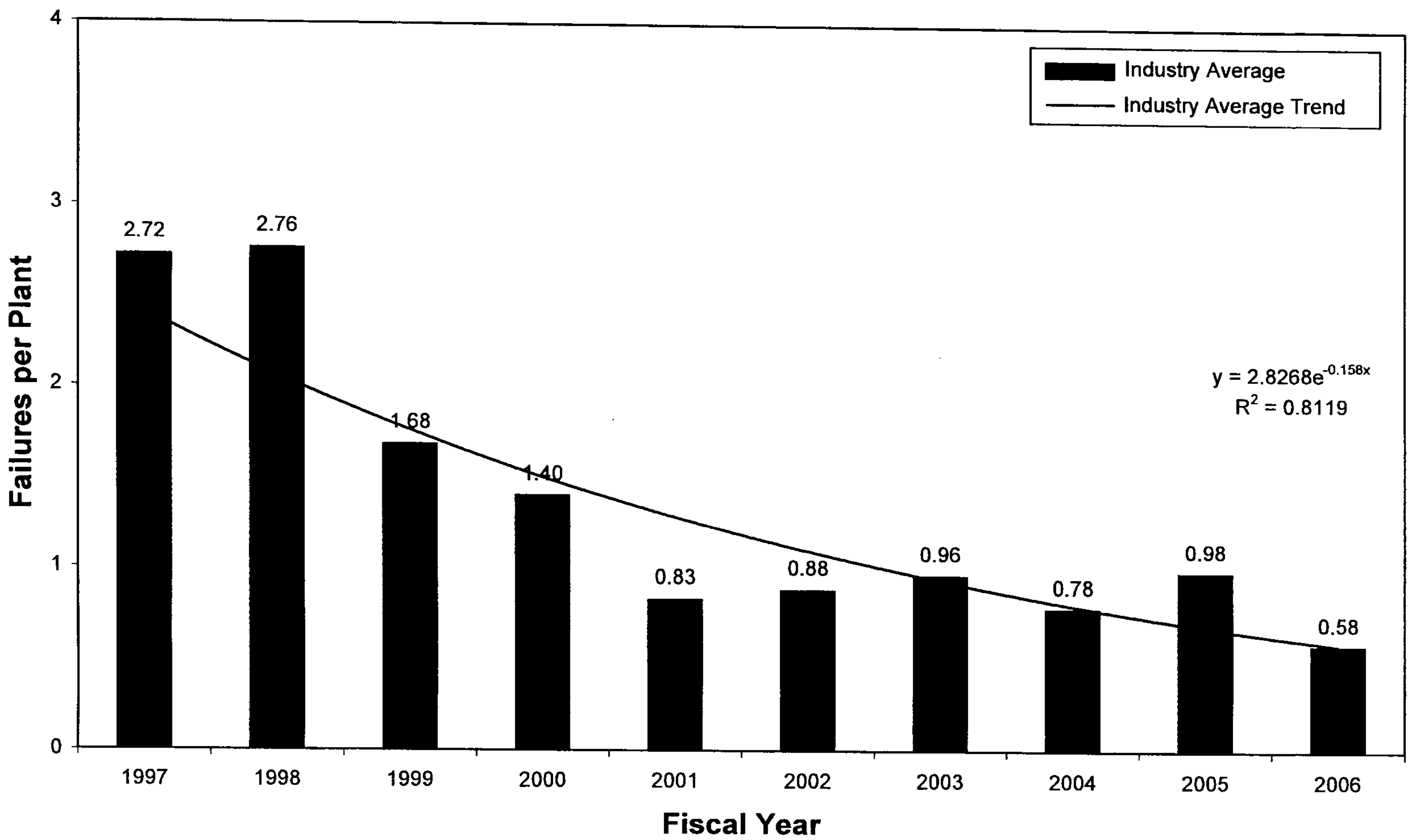
Collective Radiation Exposure



Docket No. 07____ - EI
Collective Radiation Exposure of Nuclear Power Plant Personnel
Exhibit NJD-2, Page 1 of 1

Source: United States Nuclear Regulatory Commission (NRC)

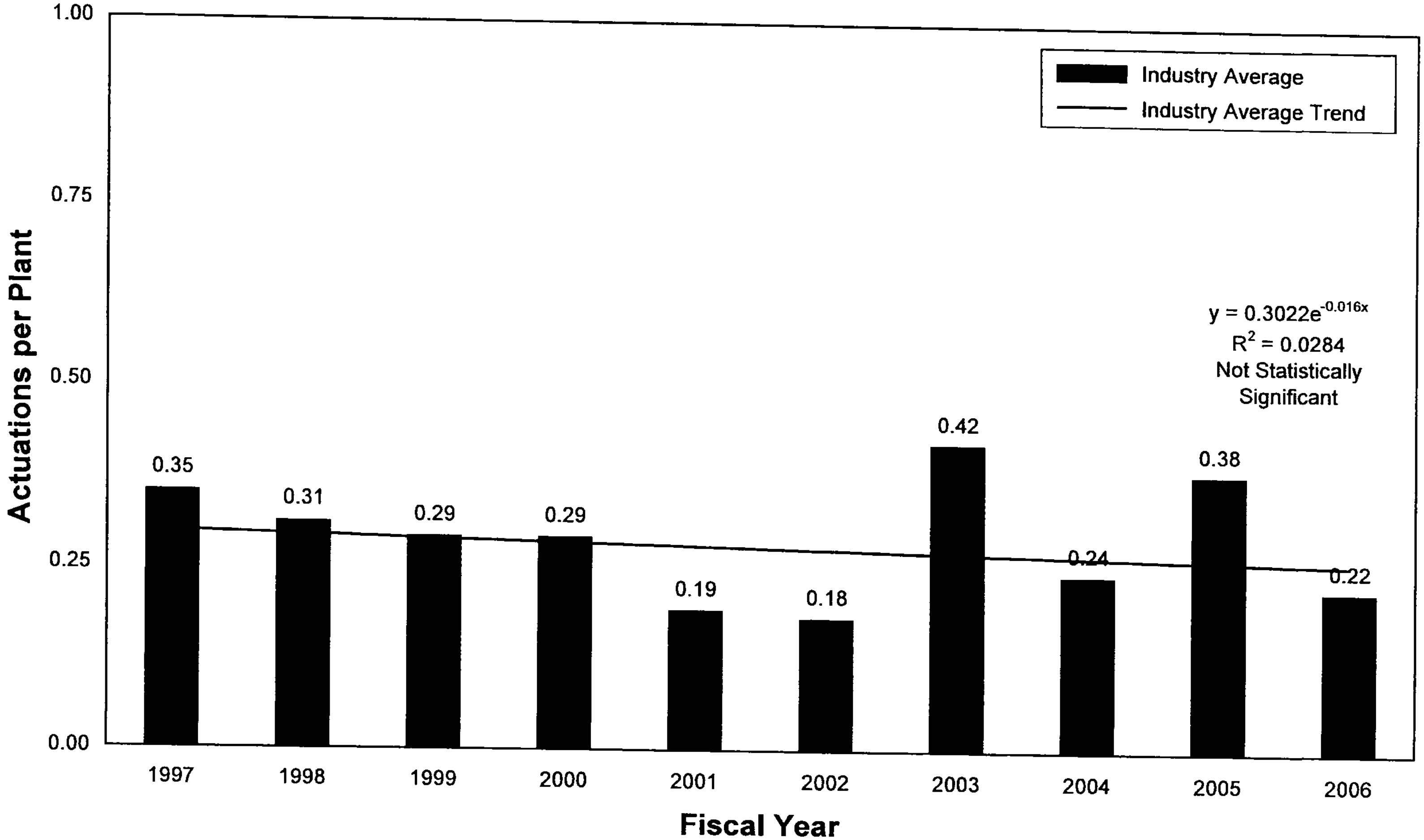
Safety System Failures



Docket No. 07____ - EI
10 Years of NRC's Safety Indicators
Exhibit NJD-3, Page 1 of 5

Source: United States Nuclear Regulatory Commission (NRC)

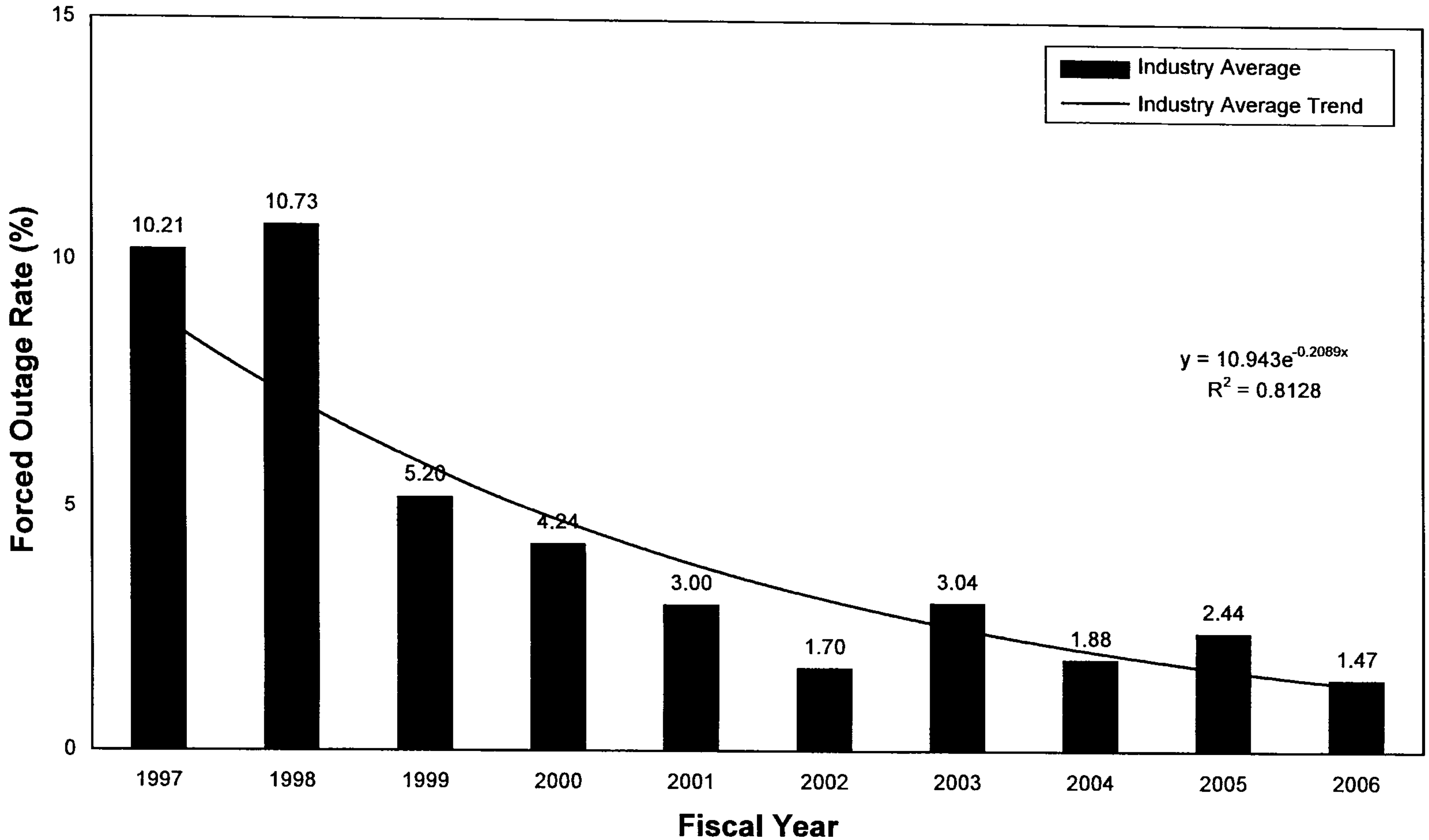
Safety System Actuations



Docket No. 07____ - EI
10 Years of NRC's Safety Indicators
Exhibit NJD-3, Page 2 of 5

Source: United States Nuclear Regulatory Commission (NRC)

Forced Outage Rate (%)



Source: United States Nuclear Regulatory Commission (NRC)

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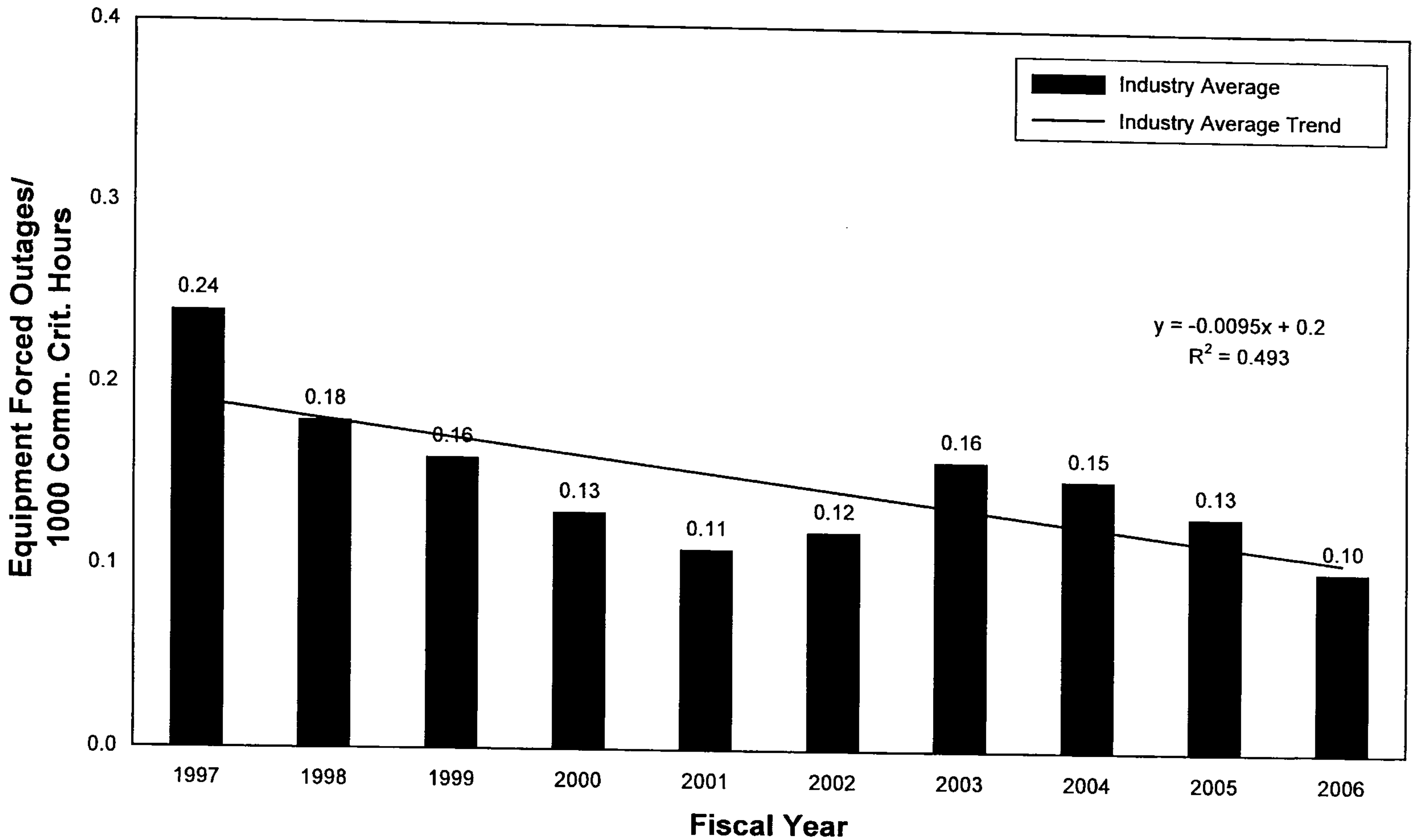
10 Years of NRC's Safety Indicators
Exhibit NJD-3, Page 3 of 5

Equipment Forced Outages/1000 Commercial Critical Hours



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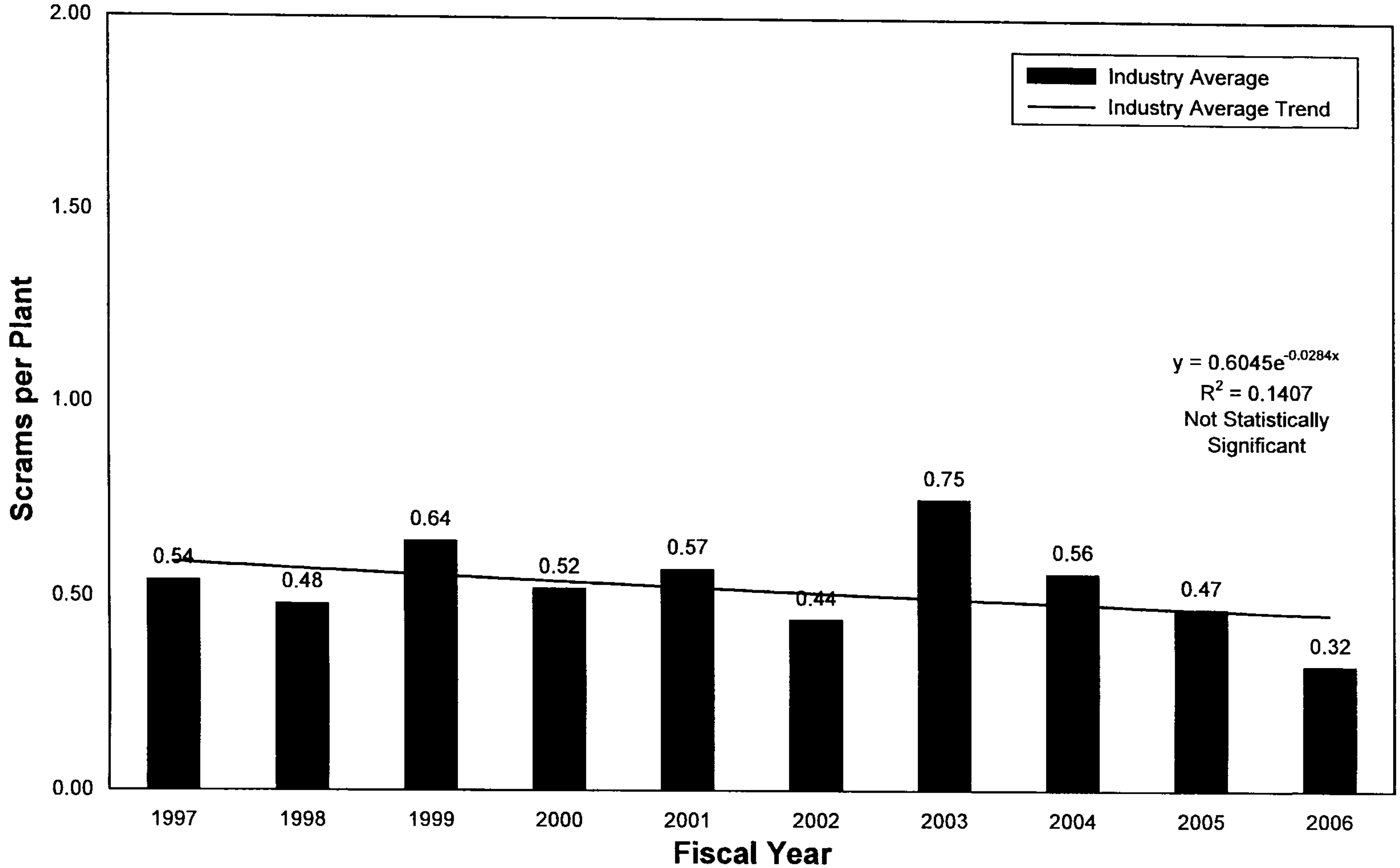
10 Years of NRC's Safety Indicators
Exhibit NJD-3, Page 4 of 5

Source: United States Nuclear Regulatory Commission (NRC)

Automatic Scrams While Critical



Docket No. 07____ - EI
10 Years of NRC's Safety Indicators
Exhibit NJD-3, Page 5 of 5

Source: United States Nuclear Regulatory Commission (NRC)

WANO Indicators & Weighting Factors

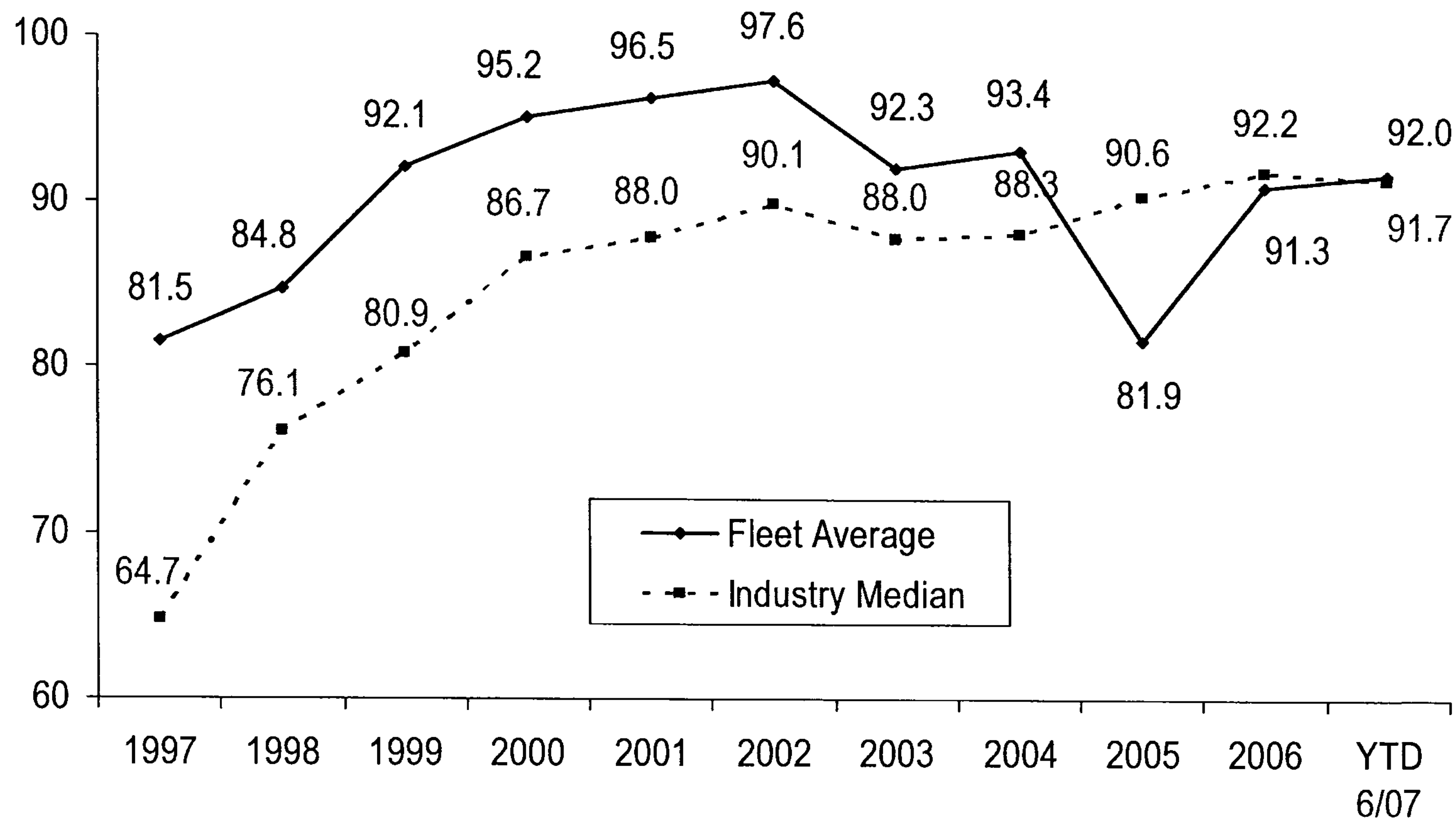
WANO Indicator	Weighting Factor (%)
Unit Capability Factor	15%
Forced Loss Rate	15%
Unavailability of High Pressure Safety Injection Systems	10%
Unavailability of Auxiliary Feedwater System	10%
Unavailability of Emergency AC Power Systems (Site Average)	10%
Unplanned Automatic Reactor Trips	10%
Collective Radiation Exposure	10%
Fuel Reliability Index	8%
Fuel Rod Defects	2%
Chemistry Performance Index	5%
Industrial Safety rate	5%

Source: World Association of Nuclear Operators (WANO)

WANO Index – Fleet Performance

1997 – Year-to-Date 6/30/07

(Average of 4 sites)



Seabrook added to fleet in 2003; Duane Arnold added to fleet in 2006

Source: World Association of Nuclear Operators (WANO)

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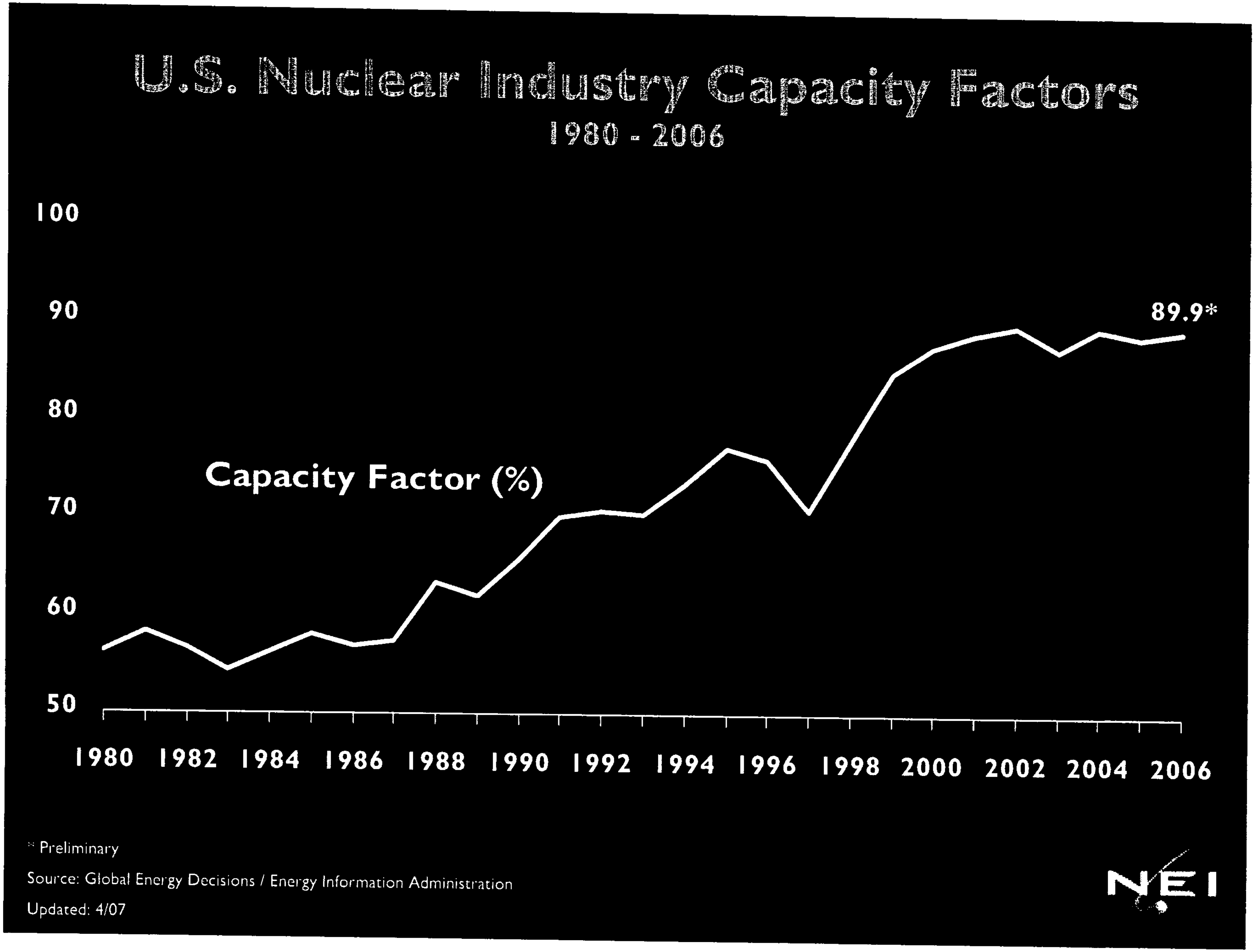
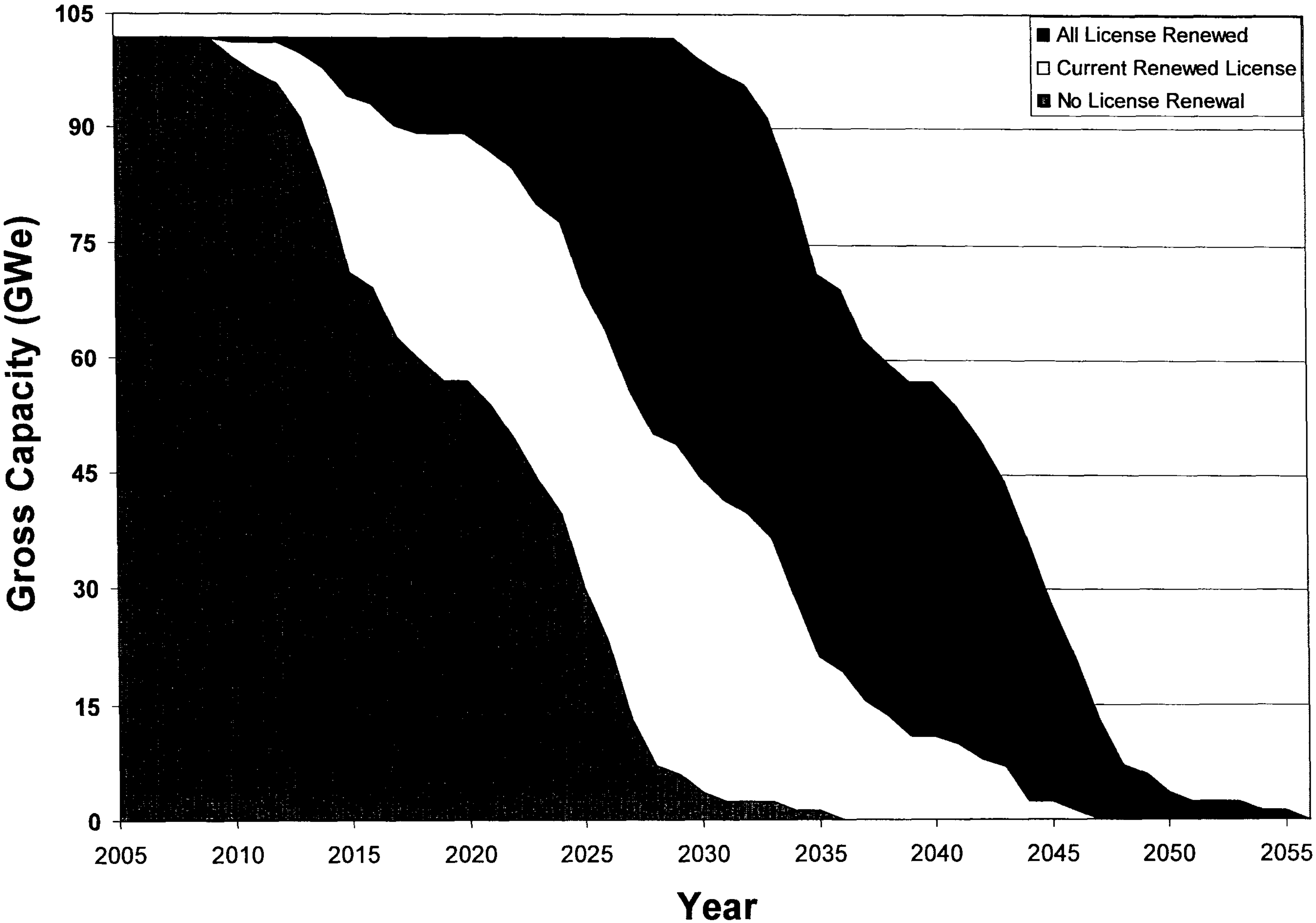
WANO Indices
Exhibit NJD-4, Page 2 of 2



Source: Nuclear Energy Institute (NEI)

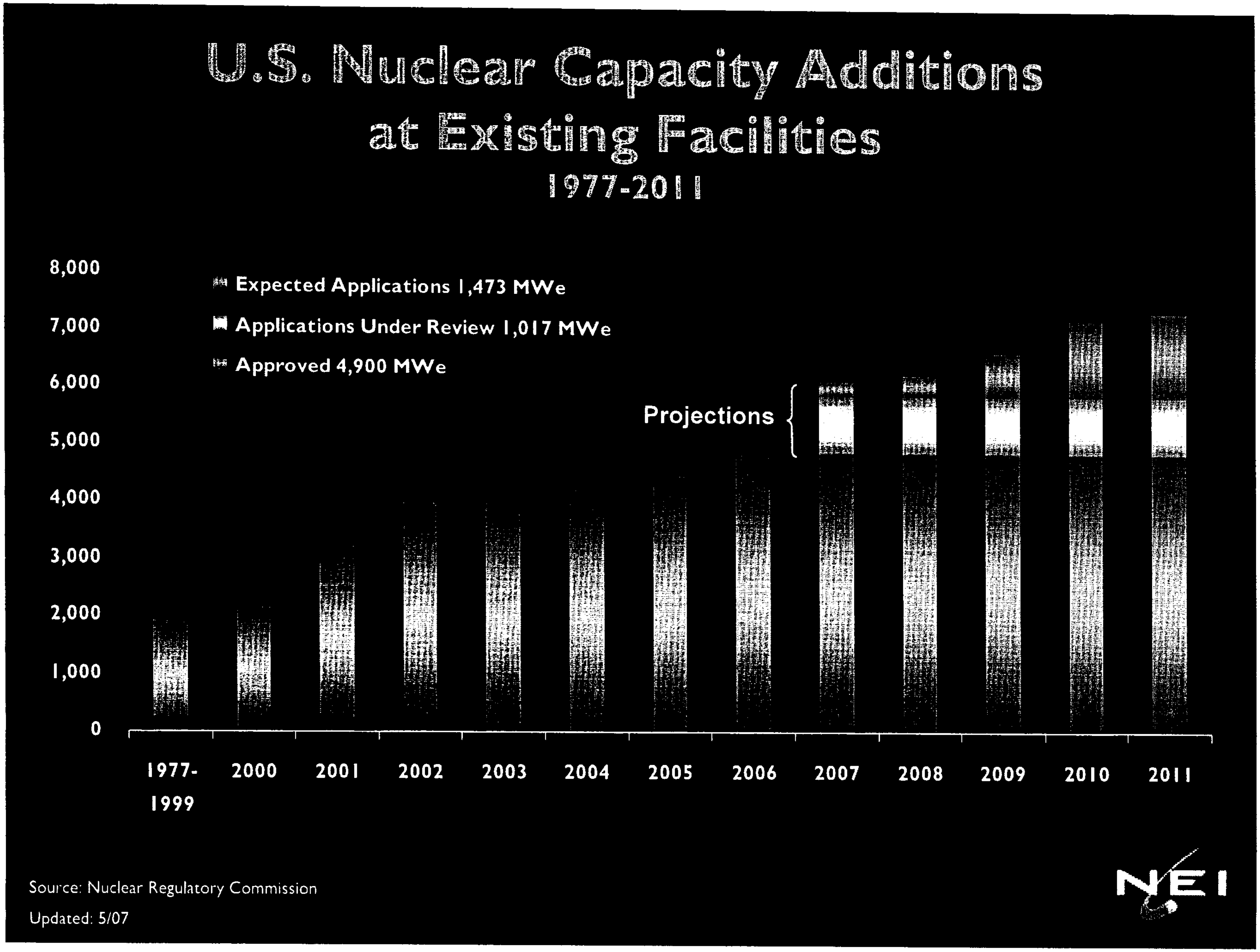
License Renewal Impact on Nuclear Power



Last Updated January 17, 2007

Source: United States Nuclear Regulatory Commission (NRC)

Docket No. 07_____ - EI
License Renewal Impact on
Nuclear Power
Exhibit NJD-6, Page 1 of 2



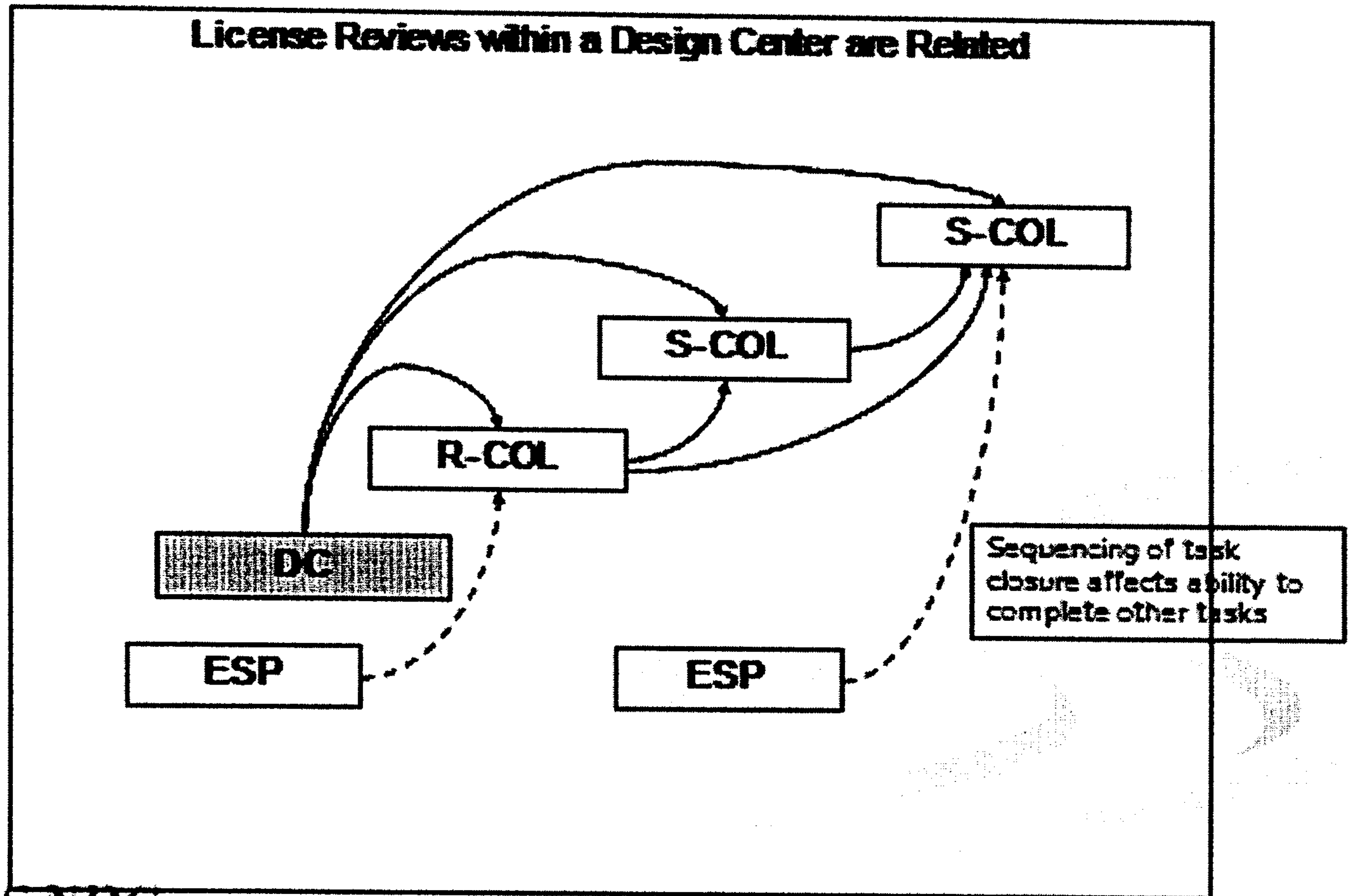
Source: Nuclear Energy Institute (NEI)

Docket No. 07___ - EI
U.S. Nuclear Capacity Additions at Existing Facilities (1977-2001)
Exhibit NJD-6, Page 2 of 2

Expected New Nuclear Power Plant Applications Updated September 11, 2007				
Company	**Design Type**	**Site Under Consideration**	**State**	**Existing Operating Plants**
Duke	AP1000	William Lee Nuclear Station (2 units)	SC	N
NuStart Energy	AP1000	Bellefonte (2 units)	AL	N
Progress Energy	AP1000	Harris (2 units)	NC	Y
Dominion	ESBWR	North Anna (1 unit)	VA	Y
NuStart Energy	ESBWR	Grand Gulf (1 unit)	MS	Y
South Carolina Electric & Gas	AP1000	Summer (2 units)	SC	Y
NRG Energy	ABWR	South Texas Project (2 units)	TX	Y
2007 TOTAL NUMBER OF APPLICATIONS =7 TOTAL NUMBER OF UNITS = 12				
Progress Energy	AP1000	Levy County (2 units)	FL	N
Southern Nuclear Operating Co.	AP-1000	Vogtle (2 units)	GA	Y
Entergy	ESBWR	River Bend (1 unit)	LA	Y
UNISTAR	EPR	Calvert Cliffs (1 unit)	MD	Y
PPL Generation	EPR	Susquehanna (1 unit)	PA	Y
AmerenUE	EPR	Callaway (1 unit)	MO	Y
UNISTAR	EPR	Nine Mile Point (1 unit)	NY	Y
TXU Power	US APWR	Comanche Peak (2 units)	TX	Y
Exelon	TBD	TBD (2 units)	TX	UNK
Detroit Edison	TBD	Fermi (1 unit)	MI	Y
Amarillo Power	EPR	Vicinity of Amarillo (2 units)	TX	UNK
Alternate Energy Holdings	EPR	Bruneau (1 unit)	ID	N
2008 TOTAL NUMBER OF APPLICATIONS = 12 TOTAL NUMBER OF UNITS = 17				
Florida Power & Light	TBD	TBD (2 units)	UNK	UNK
Unannounced	TBD	TBD (1 unit)	UNK	UNK
2009 TOTAL NUMBER OF APPLICATIONS = 2 TOTAL NUMBER OF UNITS = 3				
2007 – 2009 Total Number of Applications = 21 Total Number of Units = 32				

Source: United States Nuclear Regulatory Commission (NRC)

How the DC–RCOL–SCOL Concept Works

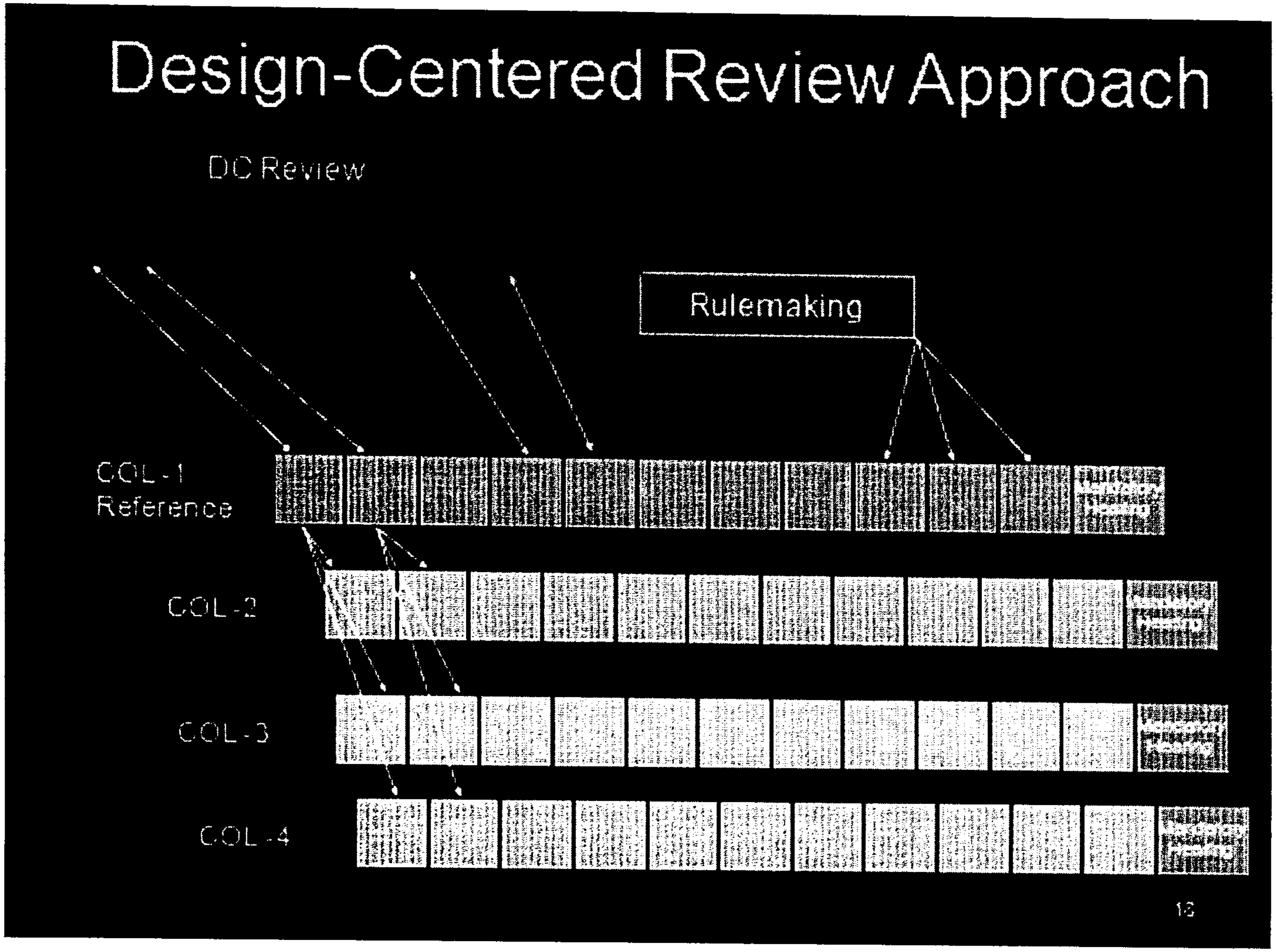


U.S.NRC

6

Docket No.07____ - EI
Design Centered Review Approach
Exhibit NJD-8, Page 1 of 2

Source: United States Nuclear Regulatory Commission (NRC)



Source: United States Nuclear Regulatory Commission (NRC)