STATEMENT
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UNITED STATES NUCLEAR REGULATORY COMMISSION
TO THE
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR SAFETY

APRIL 25, 2007

INTRODUCTION

Mr. Chairman and members of the Subcommittee, it is a pleasure to appear before you today to discuss the Nuclear Regulatory Commission's budget and programs. On behalf of the Commission, I thank you for your continued support of the NRC's critical work to protect public health and safety.

We face many complex issues, some familiar and many new, involved in the resurgence of interest in nuclear energy in this country and around the globe. This renewal of interest in building new nuclear power plants means that my fellow Commissioners and I face a much different set of challenges than many of our predecessors.

For many past NRC Chairmen and Commissioners, efforts were exclusively focused on maintaining the safety and security of operating reactors and preparing for the decommissioning of those reactors as their licenses expired. While the safety and security of our existing licensees remains our highest priority, the Commission is now also facing new challenges. Growing electricity demands and environmental concerns have caused the U.S. electricity industry once more to include nuclear facilities in their plans for future generating capacity. The Congress, in the Energy Policy Act of 2005, acted to facilitate the necessary planning and financing process for new plants.

Our current and potential future workload is heavily weighted toward not only maintaining the safety and security of existing facilities and nuclear materials users, but also processing reactor license renewals, power uprate requests, early site permits, advanced reactor design certifications, and applications for combined licenses (COL). The first influx of COL applications is expected to arrive at the NRC later this year. The NRC has also been actively overseeing the addition of 1350 megawatts of nuclear generating capacity to the U.S. supply by this summer through reactivation of TVA's Browns Ferry Unit 1 plant and authorization of a number of power uprates for other operating reactors.

We face a daunting future workload if industry predictions for new plant applications hold true, but the Commission is confident that the NRC is up to the task. Our Strategic Plan includes the following objective:

> Enable the use and management of radioactive materials and nuclear fuels for beneficial civilian purposes in a manner that protects public health and safety and the environment, promotes the security of our nation, and provides for regulatory actions that are open, effective, efficient, realistic, and timely.

The NRC is committed to living up to every word of that objective. Our actions will be open and timely because this fosters public confidence, and we will value input from all stakeholders. The continued operation of existing plants and the development of new nuclear facilities in the U.S.

depends upon a safety record that merits public confidence in the NRC. We are making every effort to ensure that our actions are effective, efficient, and realistic. We are putting into place improved processes and clear guidance to our licensees that will enable us to move applications and other regulatory requests, rulemakings, and other activities forward with more dispatch.

I have frequently said since assuming the Chairmanship that my vision for the NRC is a simple one. We must be a strong regulator. We will hold our licensees accountable. We will articulate our requirements clearly. We will be demanding and we will be responsive to their legitimate needs and concerns. All stakeholders, the nuclear industry, the financial community, and especially the public, must be made aware of the status and progress of issues of interest to them.

Looking forward, there are two pinch-points for future growth in the nuclear sector – manufacturing capacity and human capital. Notably not on that list is licensing. If industry does its job and presents us with quality applications, the NRC will require less time to complete our review. Show us quality and clarity, we tell our applicants, and the NRC will show timeliness.

CURRENTLY LICENSED NUCLEAR REACTORS

My fellow Commissioners and I firmly believe that the continued safe and secure operation of currently licensed nuclear reactors is crucial to the future of nuclear energy in this country. Our most basic regulatory charge is protection of public health and safety, and we cannot and will not allow activities aimed at future reactor applications to dilute our focus on the oversight of operating reactors.

The creation of the Office of New Reactors, with its exclusive focus on reviewing new applications, ensures that the Office of Nuclear Reactor Regulation will maintain its focus solely on the safety of existing plants. We continually monitor performance at each plant and also monitor industry performance and events to identify any adverse trends. Our Regional office staff and the resident inspectors at every operating U.S. nuclear power plant are vital contributors to this process and reinforce our commitment to safety.

Our Reactor Oversight Process (ROP) is a flexible, risk-informed process that uses a variety of tools to evaluate individual plant performance. Performance is measured by a combination of objective performance indicators and the findings of the NRC inspection program. The process focuses on plant activities most important to safety and increases the level of oversight on any elements that appear to be declining. The ROP is assessed and improved every year as a result of our commitment to a continuous improvement program.

The 103 currently operating commercial nuclear power plants are placed into five performance categories, with category 1 being the best ranking and category 5 indicating unacceptable plant performance for which the NRC has ordered the plant to be shut down. The amount of oversight a plant receives increases as its performance ranking decreases. We recently completed our 2006 annual plant performance assessments, and the results are available on our website (www.nrc.gov). It is important to note that no plants are listed in category 5.

The NRC's activities to support existing licensees also include the review of significant licensing actions each year, such as improved standard technical specifications, power uprates, license transfers, and quality assurance. Our reactor license renewal process continues to work smoothly. Of 104 licensed reactors in the U.S., the NRC has authorized license extensions for 48, and applications for an additional eight reactors are under review. We expect to receive applications to renew the licenses of 10 more reactors between now and the end of FY 2008, and that almost all licensed reactors will eventually apply for renewal.

In addition, our review of power uprate requests remains timely. The NRC has been processing licensee power uprate requests since the 1970s as a way to safely increase the power output of their plants. The NRC staff has approved 113 such applications to date. As a result, approximately 4,900 megawatts-electric (MWe) in electric generating capacity have been added to the nation's electrical grid. This is equivalent to about 4.9 nuclear power plant units. The NRC currently has ten additional uprate applications under review, and an additional 10 applications are expected through Fiscal Year (FY) 2008. In April 2007, the NRC staff surveyed nuclear power plant licensees to determine whether they planned to submit additional power uprate applications over the next 5 years. Based on this survey, licensees plan to request power uprates for 28 nuclear power plants over the next 5 years. If approved, these power uprates will result in an increase of about 1,473 MWe in electrical generating capacity, or roughly 1.5 nuclear power plant units. Furthermore, on January 16, 2007, the Commission authorized the Regional Administrator, Region II, to permit the restart of Browns Ferry Unit 1 once the licensee has accomplished all items identified for completion prior to reactor start up and those items have been confirmed as satisfactory by the NRC staff. On March 6, 2007, the NRC staff completed its review of the Browns Ferry Unit 1 uprate application. This completes the major licensing activities required for the restart of Browns Ferry Unit 1, which has been shut down since 1985. This week, the NRC is conducting confirmatory inspections prior to restart. The planned restart of Browns Ferry Unit 1 will add an additional 1153 MWe of generating capacity to the nation's power grid in time for the peak summer load.

Our proposed FY 2008 budget includes resources to develop and maintain the technical tools and expertise needed to support regulatory decisions involving operating reactors, such as those governing power uprates, license renewals, analysis of aging and integrity of reactor systems, security assessment and mitigating strategies, radiation protection, effectiveness of inspections, evaluation of operation experience, and event readiness.

NEW REACTORS

The NRC's FY 2008 budget includes $217 million for new reactor activities resulting from the renewed interest in constructing nuclear power plants. Specifically, the NRC will conduct pre-licensing and licensing reviews consistent with projected industry schedules. The nuclear industry is projecting submittal of at least 18 COL applications to the NRC over the next 2 years for at least 27 new nuclear power reactors. Appendix 1 to this testimony provides a list of the expected new nuclear power plant applications. In FY 2008, the NRC expects to begin conducting the safety, security, and environmental reviews of COL applications. In FY 2008, NRC will continue to develop the construction inspection program. The NRC will conduct technical reviews and mandatory hearings associated with two early site permit (ESP) applications and review three standard design certification applications. We will continue to update the agency's regulatory infrastructure, and research activities will be conducted to support reviews of the COL applications and new reactor designs. Research will also focus on developing tools, data, and expertise applicable to a broader range of reactors, including those

under consideration for the Department of Energy's (DOE's) Next Generation Nuclear Plant Project.

We expect that the first COL application will come as early as late October of this year, although it is not certain from which utility, since the number of applications and expected submittal dates change frequently. However, I assure you we are not just passively waiting. We are actively preparing. One example of our efforts in this area is the review of early site permits. The staff has issued two ESP's and is actively reviewing two additional ESP applications. The staff is also engaged in pre-application coordination with utilities that have announced their commitment to apply for a COL. This coordination, in terms of the expected quality and content of the application, will result in a much higher level of quality of incoming applications, which will in turn result in a more efficient NRC review. NRC staff has been working to develop effective and efficient licensing review strategies and processes. We have made the necessary organizational changes and are in the process of hiring the staff and providing them the resources to review the applications thoroughly and expeditiously.

With the creation of the Office of New Reactors, we will provide dedicated technical and administrative resources for new reactor reviews. In addition, we have created a single, dedicated construction inspection organization located in the NRC's Region II office in Atlanta. A majority of the new reactors will be located for the Southeast.

The NRC also is updating the regulatory infrastructure needed to review and approve new applications, including issuance of extensive guidance for applicants. We completed updating the existing regulatory guides in March 2007, using an accelerated schedule to allow the industry to use the revised guides in preparing their applications and for other stakeholders to receive them in a timely fashion. We also developed a combined license application regulatory guide, which is currently available in draft form and will be finalized in coordination with the final rulemaking on Part 52.

On April 11, 2007, the Commission approved a final rule updating Part 52, subject to changes that the staff is now incorporating into the final rule language. The Commision's decision is available to the public. The Part 52 rule is expected to be issued in mid July 2007. Our new combined licensing procedure, along with limited work authorization rules, will make the new reactor licensing process more effective and efficient. The changes provide applicants greater flexibility by providing more licensing options, allowing them to submit license applications in phases. NRC's use of a design-centered review approach will use, as much as practicable, a "one issue-one review-one position" strategy that recognizes that the new reactor designs to be used are standardized and that issues common to multiple applications require less NRC review effort once they have been resolved for the initial application.

A new limited work authorization rule will remove the need for applicants to obtain NRC approval for pre-construction activities that do not have a nexus to radiological health and safety or the common defense of security. These estimates include site clearing, transmission line routing, road building, and construction of warehouse and shop facilities.

NRC also revised its standard review plan for the review of COLs, focusing primarily on capturing current accepted guidance and ensuring consistency with the Part 52 licensing processes. The revised standard review plan was issued and will allow prospective applicants to comply with the regulatory requirement that they perform an analysis using the guidance in effect six months prior to the docket date on an application.

The NRC also has been working with the Department of Homeland Security (DHS) to establish a framework for coordination between the two agencies concerning the security and emergency preparedness areas that must be addressed during the approval process for new reactors.

The Part 52 process evolved from 30 years of lessons learned in licensing today's operating reactors. However, there are still aspects of the COL process that cannot be known until it is tested through completion of an actual application. While the NRC acknowledges that we are entering new territory, we are nevertheless attempting to provide as much predictability as possible while ensuring maximum regulatory stability as this technologically complex industry begins to move to its next generation of reactors.

HIGH-LEVEL WASTE REPOSITORY

The DOE has stated that it expects to submit its high-level waste repository license application to the NRC in FY 2008. Based on this expected application date, the NRC's FY 2008 budget provides funds for pre-licensing activities, including emergent issues and inspection activities addressing repository design confirmation, pre-closure safety, performance confirmation, and the effectiveness of the DOE quality assurance program. Additionally, the NRC will review designs for transport and aging (storage) casks for use with the DOE transport, aging, and disposal canister-based system.

NUCLEAR MATERIALS

The NRC FY 2008 budget includes $160 million to conduct an effective regulatory program for 12 fuel cycle facilities, nine greater-than-critical-mass facilities, two proof-of-production operations for future enrichment facilities, and approximately 4,350 licenses for radioactive materials used for medical, industrial, and academic purposes, including oversight of 34 Agreement States that license an additional 17,600 materials users. This includes implementation of NRC's responsibility under the Energy Policy Act of 2005 to regulate additional byproduct materials users. The NRC will also continue to review an application for possession and use of licensed material at the mixed-oxide fuel fabrication facility and implement our inspection program for this facility in South Carolina. The NRC understands that it will likely have a role to ensure that commercial facilities proposed under the Global Nuclear Energy Partnership are both safe and secure. We are working with DOE on a Memorandum of Understanding that would allow NRC to understand better the technology that is intended to recycle spent fuel and significantly reduce the amount of waste that would have to be sent to a permanent repository.

FY 2008 resources support decommissioning licensing and inspection activities at approximately 14 power and early demonstration reactors, 11 research and test reactors, and approximately 18 complex materials and fuel facilities sites. The NRC will continue its oversight of the West Valley Demonstration Project, as necessary, to support the implementation of the West Valley Demonstration Project Act.

The NRC's FY 2008 budget includes $2 million to provide oversight of certain DOE waste determination activities and plans consistent with the NRC's responsibilities in the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005. This act requires

DOE to consult with the NRC on its waste determinations for facilities in South Carolina and Idaho, and directs NRC to monitor DOE disposal actions to assess compliance with the performance objectives outlined in regulations.

SECURITY

Since 1973, our agency has required licensed power reactors to have robust security programs and licensed nuclear material to be protected. Over the past five years, the NRC has required many security enhancements at licensed power reactors and Category I fuel cycle facilities. Our licensees now have increased patrols, stronger and more capable security forces, additional physical barriers, greater standoff distances for vehicle checks, more restrictive site access controls, enhanced emergency preparedness and response plans, enhanced coordination with law enforcement authorities, and many other heightened security measures. On a voluntary basis, licensees report suspicious activities occurring at or near their facilities. In addition, NRC intelligence analysts screen Intelligence Community threat reporting on a daily basis, looking for threats to NRC licensed facilities and materials as well as for changes in the general threat environment that could affect the security posture at the facilities we license. This information is analyzed within the context of other threat data and is shared with DHS and the Federal Bureau of Investigation (FBI). The Commission receives this information on a regular basis.

Nuclear power plants must, with high assurance, defend against the NRC's Design Basis Threat (DBT). The NRC supplemented its DBT rules by issuing orders in 2003 and 2006, and recently completed a public DBT rulemaking to codify and update enhancements implemented in recent years. The latest rule, among other features, meets the NRC's obligation under the Energy Policy Act to initiate and complete a rulemaking revising the DBT and to consider the 12 factors specified in the law. Another pending rulemaking would revise and update physical protection requirements.

The NRC also has significantly increased its ability to provide effective oversight of security at power reactor facilities. In 2000, NRC inspectors spent about 40 staff-weeks a year directly inspecting security. By 2003, the NRC was spending over 200 staff-weeks per year on security.

In addition, the NRC now conducts much more realistic force-on-force exercises as a part of its security inspection program, in which a highly trained mock adversary force simulates an attack on a facility. This program was officially implemented in November 2004. Since then, NRC has conducted more than 51 of these full-scale exercises and continues to work, using lessons learned, to make the exercises even more realistic. We also have required power plants to add more training and higher qualification standards for security personnel and to increase substantially the numbers of security personnel, among other measures.

In our security efforts, NRC coordinates extensively with the DHS, FBI, and other Federal entities in integrating nuclear security efforts into national security planning. That raises the subject of aircraft. For the current operating reactors, the NRC ordered nuclear power plant licensees to develop specific plans and strategies to respond to a wide range of events, including the impact of an aircraft. Licensees have taken actions as a result of the NRC Advisories and Orders to mitigate the effects of a September 11-type aircraft attack. Even

before these actions, nuclear power plants were designed to protect public health and safety. The plants achieved this through their robust containment buildings, redundant safety systems, highly trained operators and maintenance staff, stringent security plans, and armed security personnel. These plants are among the strongest and most difficult structures to break into in the country. They are designed to withstand extreme events, such as hurricanes, tornadoes, and earthquakes.

The NRC has used defense-in-depth to define its safety philosophy at nuclear power plants. Defense-in-depth means there are multiple measures that could prevent an accident or lessen the effects of damage if a malfunction or accident occurs at a nuclear facility. The NRC's safety philosophy ensures that the public is protected and that emergency plans for areas surrounding a nuclear facility are well thought out and workable. In that regard, NRC-licensed nuclear power plants and other facilities have detailed, well coordinated, and tested emergency response plans. These plans work to reduce the impact on the public in the event of a radiation release.

The NRC regularly communicates with other Federal agencies, including the DHS, the Federal Aviation Administration (FAA), and the Department of Defense (DOD), which have acted on specific occasions to protect airspace above nuclear power plants. The Aviation and Transportation Security Act of 2001 also provides additional protection against air attacks on all industrial facilities, both nuclear and non-nuclear, by strengthening aviation security.

The Commission has been engaged in discussions regarding the extent to which new plants should incorporate features against the impact of a commercial airliner. These new reactor designs will have improved safety features, such as spatially separated redundant safety systems, passive safety systems that do not require electrical power, and features to mitigate beyond design basis severe accidents. Such features will also clearly improve a plant's ability to resist and mitigate an aircraft crash. This matter is still under Commission review, and a decision is expected shortly.

A final note on the security of nuclear materials: NRC is developing a National Source Tracking System (NSTS) that will improve controls on risk-significant radioactive materials. We will continue to maintain an interim inventory of radioactive sources of concern throughout the U.S., updated annually, until the NSTS is fully implemented.

INTERNATIONAL ACTIVITIES

The NRC is ensuring that U.S. nuclear regulatory activities are consistent with, and reinforce, best international practices. The NRC is helping to ensure uninterrupted legitimate commerce by imposing enhanced controls over the export/import of nuclear facilities, components, and nuclear and byproduct material. The NRC supports the U.S. Government's broader policy and non-proliferation objectives through participation with the International Atomic Energy Agency and the Nuclear Energy Agency.

Fabrication of a significant percentage of the major components to be used in the construction of new reactors in the U.S. and internationally will be done by international manufacturers. NRC is actively engaged, on both a bilateral and multilateral basis, with its

counterpart regulatory authorities in these countries to enhance sharing of relevant information, experience, and expertise to help ensure the legitimacy and quality of those components.

AGENCY INFRASTRUCTURE

Before addressing our infrastructure and human capital needs, I want to comment on the quality of the NRC staff. I have been at the agency about ten months now, and I am extremely impressed. The agency is staffed with highly professional and dedicated workers who take very seriously the mission of protecting people and the environment. If it means long days, nights, weekends – they are willing to make that commitment to the American people because of the critical importance of the work done at the NRC.

That said, the volume of new work, coupled with our important ongoing responsibilities, presents an enormous challenge to the NRC. We are engaged in a vigorous effort to locate talented professionals to augment our workforce and to secure for them the additional workspace, information technology, and support services to allow them to do their jobs and allow the NRC to meet all of our commitments.

The NRC uses an automated strategic workforce planning tool to quantify staff capabilities and to identify critical skill and knowledge needs. We are then able to determine where gaps exist and recruit for those skills. The NRC is gaining staff at a pace allowing us to replace losses and hire additional staff to support new work. Our goal in FY 2006 was a net gain of around 150 personnel. We exceeded that goal and are well on our way to meeting our FY 2007 hiring goal of a net gain of around 200 personnel.

Hiring is only part of the process, however. Retention is another challenge. The NRC has been rated as the best place to work in the Federal government, and we intend to work hard to keep that first-place rating by providing a superior work environment for new hires. At our current staffing levels, NRC headquarters is filled to capacity, and we have a critical need for more space. Accommodating the growth of the NRC, and the associated requirement for additional space, is essential to meeting the country's growing energy needs while maintaining the NRC's superlative record of ensuring safety and reliability of nuclear power plant operation and the safe use of radioactive material. We have implemented a plan, with the support of the Office of Management and Budget (OMB) and the General Services Administration (GSA), to procure additional permanent space near our White Flint Complex and are hopeful that GSA will forward our space prospectus to Congress by the end of this month. While our long-term goal is a consolidated headquarters complex, we have procured interim space at two separate nearby locations through the GSA and are seeking a third to relieve our cramped quarters as we expand our workforce.

We are taking steps to ensure that the expected new and current NRC workforce has the tools to do its job. We are making a substantial investment to upgrade our Information Technology capabilities and provide the IT equipment necessary to support both new hires and the three additional locations we procured to meet our immediate space needs. For many years, the NRC has postponed improvements in the area of office automation and modernization of our legacy systems. We cannot afford to neglect this critical infrastructure component any longer, and this budget supports upgrades, such as the development of a

collaborative electronic workspace for the review of new reactor license applications and the ability to conduct hearings in an electronic environment.

We expect to have a critical hiring need for at least the next four years. Although we are positioned to meet our hiring challenges over the next couple of years, it will be a continuing challenge to maintain our recruitment momentum. In the 2008 - 2009 timeframe, we expect hiring competition from utilities and nuclear manufacturers to intensify as they begin to staff up for construction of new nuclear plants. In addition, we face competition from other government agencies, the national laboratories, and academia.

The Commission's opinion is that this sharp increase in the need for professional and skilled craft workers could have wide-ranging and possibly unforeseen effects. The Commission believes that the NRC is well positioned to meet its own needs, but we are concerned that nuclear industry leaders may not be taking the problem seriously enough. To obtain regulatory approval, industry leaders must remember that new plants must not only be technically viable and robustly constructed, but must also be staffed by individuals competent and knowledgeable enough to operate them in a manner that fully protects public health and safety.

The Commission is equally concerned about the adequacy of the nation's manufacturing capability as we approach the potential construction of 27 or more nuclear plants in the U.S. For example, there is only one U.S.-based manufacturer of some – not all – of the major components and systems needed to build a nuclear plant. No U.S. company builds commercial nuclear power plant reactor vessels.

The companies that will make the multi-billion-dollar orders for the next new plants must make critically important decisions as to where to buy their systems and components. Much of the technological and manufacturing capability to supply their needs now rests outside the United States. To compound the situation, many of the world's nuclear manufacturers are operating at capacity. Right now, the lead-time for delivery of reactor vessels is upwards of four years, and other key components have equally long backlogs. In the face of those long lead times, nuclear projects will need to get in line and scour the globe for available components and materials.

The NRC has rigorous inspection programs in place needed to ensure the quality and authenticity of the components that go into plants built in the United States. Since many of the components will be manufactured outside the United States and the implementation of the inspection programs will necessitate that our inspectors perform inspections in the manufacturing countries, greater international cooperation will be essential.

CONCLUSION

Mr. Chairman, there are many more topics we could address today, and if we have neglected any topics of the Subcommittee's interest, we would be pleased to respond to your questions.

Let me just say in closing that the Commission remains dedicated to protecting public

health and safety. Our conduct of all of our activities flows from that basic commitment. We understand the challenges we face in the licensing of new reactors while continuing our rigorous oversight of existing reactors and nuclear materials, and we are prepared to meet these challenges in an effective and timely manner. We ask for your continued support of the NRC budget to help us meet these challenges. My fellow Commissioners and I look forward to working with the Committee on these and other issues during this session and in years to come.

Expected New Nuclear Power Plant Applications Updated April 20, 2007				
Company	**Design Type**	**Site Under Consideration**	**State**	**Existing Plants**
2007 Applications				
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				
2008 Applications				
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
UNISTAR	EPR	Nine Mile Point (1 unit)	NY	Y
TXU Power	US APWR	Comanche Peak (2 units)	TX	Y
Ameren UE	EPR	Callaway (1 unit)	MO	Y
Exelon	TBD	TBD (1 unit)	TBD	UNK
Detroit Edison	TBD	Fermi (1 unit)	MI	Y
Amarillo Power	EPR	Vicinity of Amarillo (2 units)	TX	UNK
2008 TOTAL NUMBER OF APPLICATIONS = 10 TOTAL NUMBER OF UNITS = 14				
2009 Applications				
Florida Power & Light	TBD	TBD (1 unit)	UNK	UNK
2009 TOTAL NUMBER OF APPLICATIONS = 1 TOTAL NUMBER OF UNITS = 1				
2007 – 2009 Total Number of Applications = 18 Total Number of Units = 27				