Licensing Framework: Objective and Scope

- Establish regulatory control over all activities and facilities where safety is concerned
  - A licence or other prior authorization shall be in force covering, as appropriate, safety related aspects.
  - The licensing process shall ensure the stability and consistency of regulatory control and prevent subjectivity in decision making by the individual staff members of the regulatory body.

- Ensure adequate demonstration of safety and compliance with legal and regulatory requirements
  - Authorization is issued when the Regulatory Body is satisfied there is adequate protection of the people and the environment.
  - At any stage of the lifetime of a nuclear installations from siting to decommissioning and release from Regulatory Control.
Licensing Framework: IAEA Safety Standards
IAEA Safety Standards: Safety Fundamentals

Principle 1: Responsibility for safety

The prime responsibility for safety must rest with the person or organization responsible for facilities and activities that give rise to radiation risks

- Authorization to operate a facility or conduct an activity may be granted to an operating organization or to an individual, known as the licensee

Principle 6: Optimization of protection

Protection must be optimized to provide the highest level of safety that can reasonably be achieved

- The licensee shall demonstrate that the safety measures are optimized to provide the highest level of safety that can reasonably be achieved throughout the lifetime of the facility or activity
**Requirement 5: Prime responsibility for safety**

The government shall:

– expressly assign the prime responsibility for safety to the person or organization responsible for a facility or an activity; and

– confer on the Regulatory Body the authority to require such persons or organizations to comply with stipulated regulatory requirements, as well as to demonstrate such compliance.

**Requirement 22: Stability and consistency of regulatory control**

The Regulatory Body shall ensure the regulatory control is stable and consistent.

**Requirement 24: Demonstration of safety for authorization**

The applicant shall be required to submit an adequate demonstration of safety in support of an application for authorization.
IAEA Safety Standards: Licensing Process

- **General recommendations**
  - Basic Licensing Principles
  - Obligations, Roles and Responsibilities of the Regulatory Body
  - Obligations, Roles and Responsibilities of the Applicant or Licensee
  - Main contents of a license
  - Public Participation
  - Graded approach

- **Steps of the Licensing Process**
  - Siting and site evaluation
  - Design
  - Construction
  - Commissioning
  - Operation
  - Decommissioning
  - Release from Regulatory Control
Basic Licensing Principles: Applicant

• **Apply for a license**
  ✓ Prepare and submit the required documentation
  ✓ Respond to the requests of the Regulatory Body
  ✓ **Comply with license conditions and regulations throughout the life of the facility**

• **Maintain safety**
  ✓ As high as reasonably achievable

• **Be an intelligent customer**
  ✓ **Technically knowledgeable** about design, process, contractors, assistance and technical coordination

• **Develop and implement**
  ✓ Modification processes, management systems, and procedures for controlling NPP to remain within limits of anticipated operational occurrences and for emergency response, etc.
Basic Licensing Principles: Licensing Process

• Be well-defined, clear, transparent, comprise logically ordered processes, have consistent and coherent authorization procedures
  ✓ Authorization procedures should include review and assessment aspects, public consultations, how to appeal decisions, etc.
  ✓ Submitted documents should be upgraded during the lifetime of the nuclear installation

• Apply a graded approach in a manner commensurate with the magnitude of the radiation risks
  ✓ Factors to be considered include magnitude of risks; occupational doses; radioactive discharges and generation of radioactive waste; potential consequences of accidents; licensee maturity; operating experience; ageing issues; complexity of the systems and components, etc.

• Provide for public participation
  ✓ Factors to be considered include higher quality and independence of regulatory decisions; regulatory control stability; and regulatory credibility
Objective is to determine whether the selected site is suitable to host a nuclear installation

• Selection of one or more candidate sites
  ✓ For sites close to borders, neighbouring countries need to be consulted

• Site evaluation steps
  ✓ Verify the acceptability of the site
    ➢ Conditions dealing with the use of the site and which could affect safety
    ➢ Safety impact (range of natural hazards, man-made hazards, emergency situation, site security, control over new building/construction, etc.)
    ➢ Environmental impact (flora, fauna, air, soil, discharges, heat dissipation, health, socio-economics, etc.)
    ➢ Impact to be reviewed on a periodic basis
  ✓ Determine site characteristics necessary for analysis to ensure safety of the final design
Licensing Stages: Design

Objective is to ensure the selected design of the proposed nuclear installation is acceptable considering the site evaluation results

- **Design principles**
  - implement the *defence in depth* approach with consideration of risk insights
  - establish the *design basis* (events ‘manageable’ by the installation) and the *design extension condition*
  - compliant with relevant *standards, codes and regulatory requirements*
  - consider the *replacement of heavy and large components* during its life (steam generator, reactor pressure vessel heads, etc.)
  - consider the *access to components important to safety* during commissioning
  - consider *transport* of radioactive materials
  - be based on *site characteristics*
  - consider *provisions for maintenance, inspection and testing*, replacement and occupational exposure
Objective is to ensure

- Appropriate organization and resources for construction
  ✓ Control mechanisms of vendor, cascades of contractors and suppliers
  ✓ Manufacturing of safety related structures, systems and components important to safety (SSCs) under control of the licensee

- Appropriate organizational and financial arrangements for mid/long-term issues
  ✓ Decommissioning, radioactive waste and spent fuel management

- Management system of licensee and vendors covers all aspect of construction

• Before granting an authorization for construction
  - The Regulatory Body should review, assess and inspect
    ✓ Site evaluation
    ✓ Demonstration of the selected design meets safety objectives and criteria
Objective is to ensure that the Commissioning Plan is properly designed and will be implemented safely

- **Main stages of Commissioning**
  - **Non-nuclear testing** before introducing nuclear/radioactive material
    - Ensure, to the extent possible, **the installation has been constructed and equipment manufactured and installed properly**
    - Prove the design performance
  - **Nuclear testing** after introducing nuclear or radioactive material
    - Confirm the nuclear installation is safe before proceeding to routine operation (may require an authorization from the Regulatory Body)

- **The results of commissioning tests should be subject to**
  - Self-assessment and internal audits of the licensee (appropriate actions and measures should be taken whenever deviations from design parameters are identified).
  - Review, assessment and inspection by the Regulatory Body to determine whether the test results are acceptable for confirming the adequacy of all safety related features of the nuclear installation.
Objective is to ensure safe operation of the nuclear facility

• Commencement of operation should be authorized only when regulatory requirements are met
  ✓ Completion of commissioning tests, recording of the results and their submission to the regulatory body for approval

• Before and/or during operation, the licensee should demonstrate
  ✓ Safety expectations and performance programme
  ✓ Management system compliant with international standards
  ✓ Competence guidelines and programmes
  ✓ Operating experience programme
  ✓ Operational programmes such as
    ➢ Training and qualification of licensed personnel;
    ➢ Radiation protection
    ➢ Emergency management
    ➢ Management of spent fuel and radioactive waste
Summary: Licensing Framework

Authorization

- Granting of an authorization establishes **regulatory control** over all activities and facilities where safety is concerned
  - Several steps can be merged or combined under only one authorisation

Licensing Principles

- **The primary responsibility for safety** rests with the holder of the relevant license
- The Regulatory Body shall take the appropriate steps to ensure that each such licence holder meets its responsibility
  - Assure high-level of compliance with regulatory framework

Licensing Process

- Ensure **the stability and consistency** of regulatory control
  - Well-defined, clear and transparent (comprise logically ordered processes and have consistent and coherent authorization procedures)
- Apply a **graded approach** in a manner commensurate with the magnitude of the radiation risks
- Provide for public participation
Thank you!