



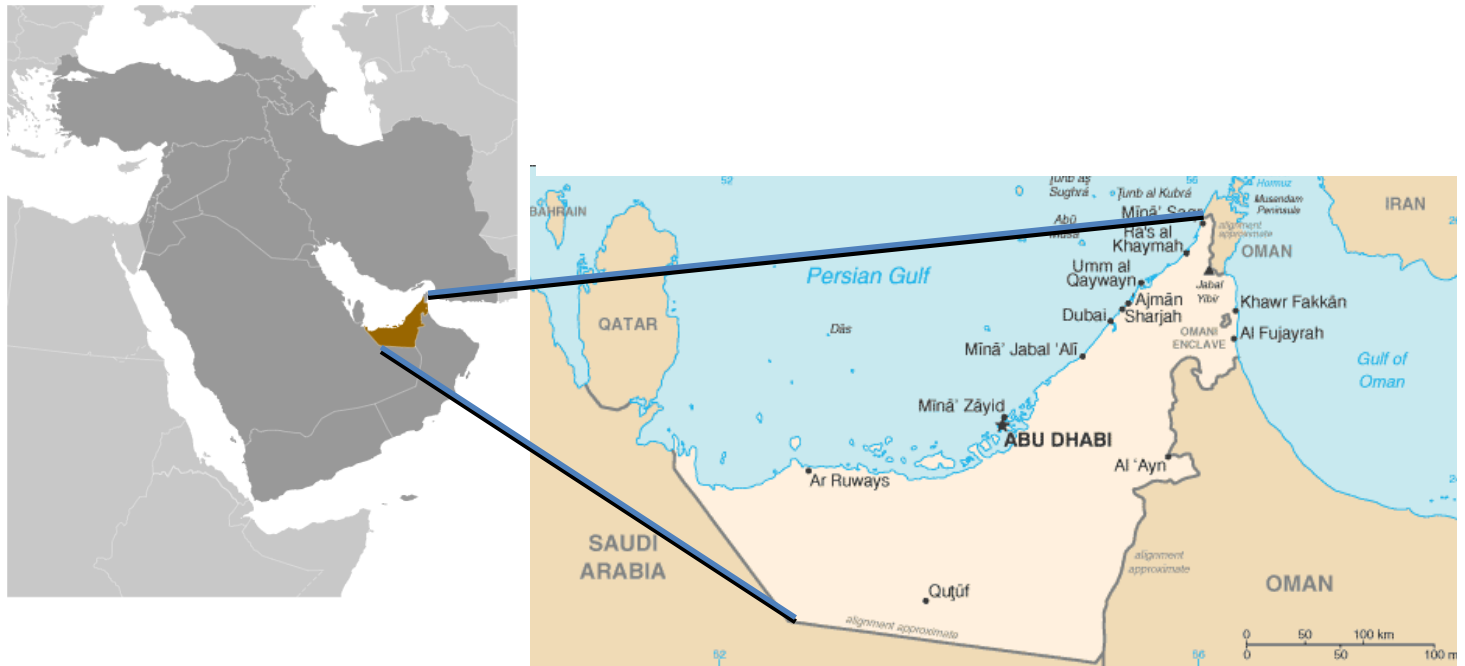
Establishing the Nuclear Safety Infrastructure in the United Arab Emirates

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Presentation Outline

- Introduction
- UAE Policy on Peaceful Uses of Nuclear Energy
- UAE Legislative and Regulatory Framework
- International Cooperation
- Federal Authority for Nuclear Regulation
- ENEC Nuclear Power Programme
- Current Status of NPP Licensing

United Arab Emirates امارات متحده عربي

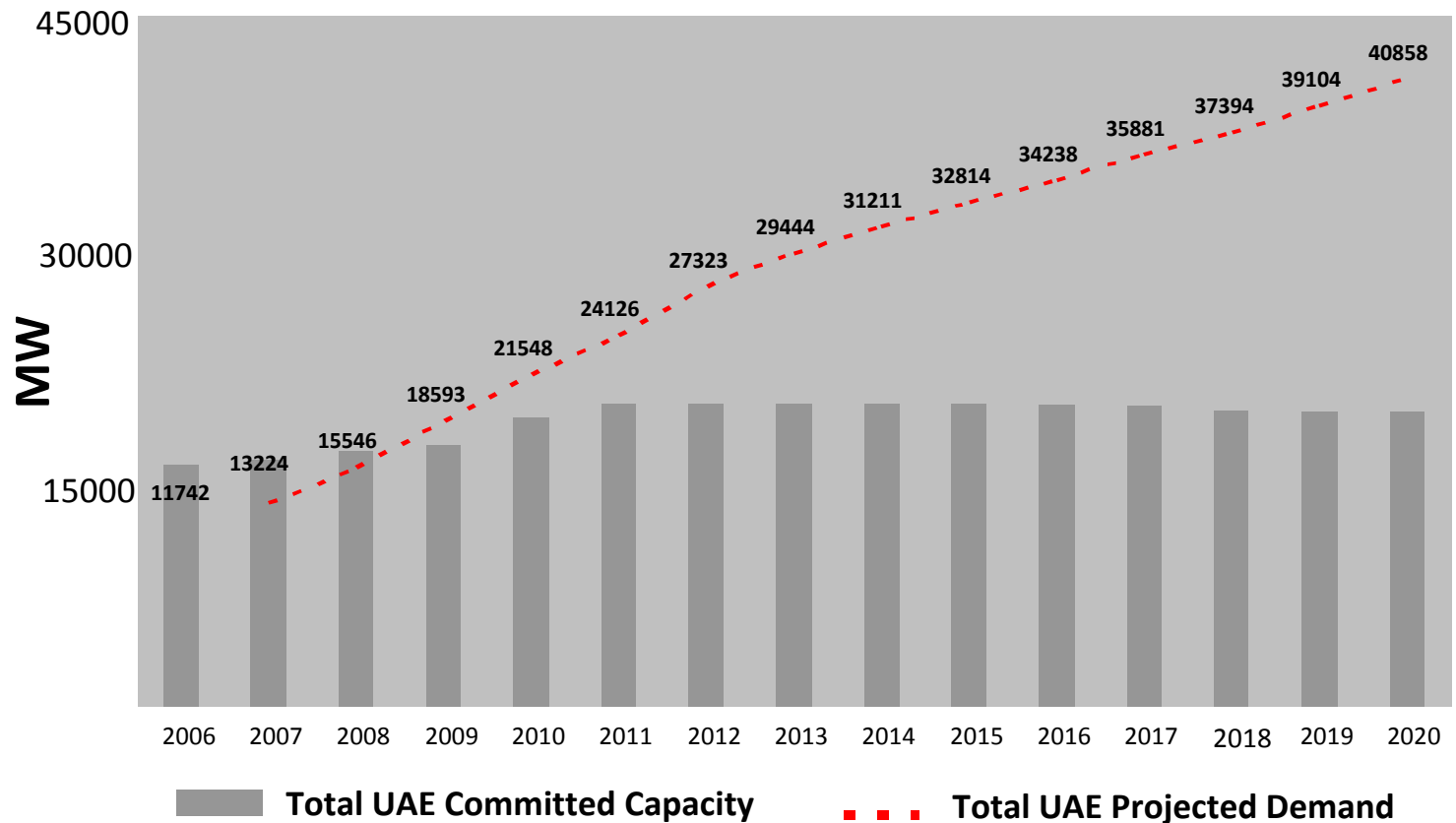


Abu Dhabi Development



Rationale for Nuclear Energy in the UAE

Tremendous projected demand growth by 2020



UAE Policy on *the Evaluation and Potential Development of Peaceful Nuclear Energy*

- Complete operational transparency
- Highest standards of non-proliferation
- Highest standards of safety and security
- Close cooperation with the IAEA
- Partnership with governments and firms of responsible nations
- Long-term sustainability



International Cooperation

- UAE Policy puts great emphasis on working directly with IAEA and responsible nations to develop the nuclear energy program
- Government-to-Government
 - Bilateral agreement with the France, Republic of Korea, US concluded, others are in progress
 - Regional cooperation
- Appropriate arrangements with international expert organizations on-going (discussions with NSG, etc.)

International Commitments

To meet the Policy commitments on transparency and international cooperation the UAE has added to its existing international agreements by:

- Signing an Additional Protocol to the safeguards agreement with the IAEA;
- Becoming a party to:
 - ✓ Convention on the Physical Protection of Nuclear Material;
 - ✓ Convention on Nuclear Safety;
 - ✓ Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management



Cooperation with IAEA

- IAEA documents used in programme development
 - Milestones in the Development of a National Nuclear Infrastructure
 - Safety Fundamentals
 - Safety Standards
 - INSAG reports



UAE Nuclear Law

- Federal Law by Decree No. 6 on Peaceful Uses of Nuclear Energy issued in September 2009 by HH Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE

UAE Nuclear Law :

Three Fundamental Principles

1. The responsibility of the licensee:
“Each Licensee shall be responsible for taking all steps necessary to reduce the risk of an accident to a level that is as low as reasonably achievable.” (Article 43)
2. The Federal Authority for Nuclear Regulation established as the independent regulatory body
3. Regulated activities prohibited except in accordance with a licence issued by FANR

Regulated Activities (Article 25 UAE Nuclear Law)

- Selection of a site for the Construction of a Nuclear Facility
- Preparation of a site for the Construction of a Nuclear Facility
- Construction of a Nuclear Facility
- Commissioning of a Nuclear Facility
- Operation of a Nuclear Facility
- Closure or a change in the Closure date of any Nuclear Facility
- Decommissioning of a Nuclear Facility
- Modifications having significance on Safety to the Management System and organizational arrangements of the structure, systems and equipment of or contained in any Nuclear Facility

Regulated Activities (Article 25 UAE Nuclear Law)

- Possession, use, manufacture or handling of any Regulated Material or part of any Regulated Material in the State
- Import or export of any Regulated Material into or from the State, subject to any consents required pursuant to the provisions of Law No 13 of 2007
- Transportation of any Regulated Material within the State
- Introduction or removal of any Regulated Material to or from any Nuclear Facility
- Storage of any Regulated Material within the State
- Disposal of any Regulated Material within the State

Emirates Nuclear Energy Corporation

- ENEC is the organization charged with implementing the UAE's peaceful nuclear energy program
- Producing electricity, supporting economic development and providing opportunity for the people of the nation
- ENEC was established December 23, 2009 pursuant to Abu Dhabi Law No. 21 of 2009



FANR Functions and Responsibilities

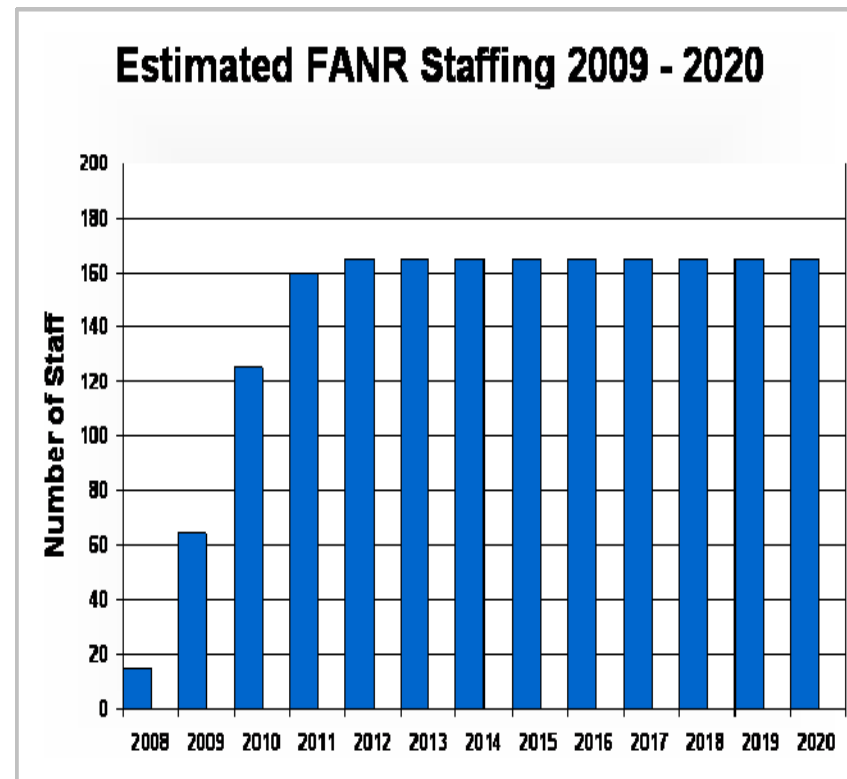
- The UAE Nuclear Law establishes FANR as the independent regulator with respect to nuclear safety, security, radiation protection and safeguards in the UAE
- FANR authorities include:
 - Issue regulations
 - Issue licenses to conduct regulated activities
 - Carry out safety assessments
 - Implement an inspection and control regime
 - Establish and maintain a state system of accounting for and control of nuclear material
 - Establish frameworks for physical protection and emergency preparedness and response for nuclear facilities and activities
 - Determine civil and criminal penalties

FANR Organisation



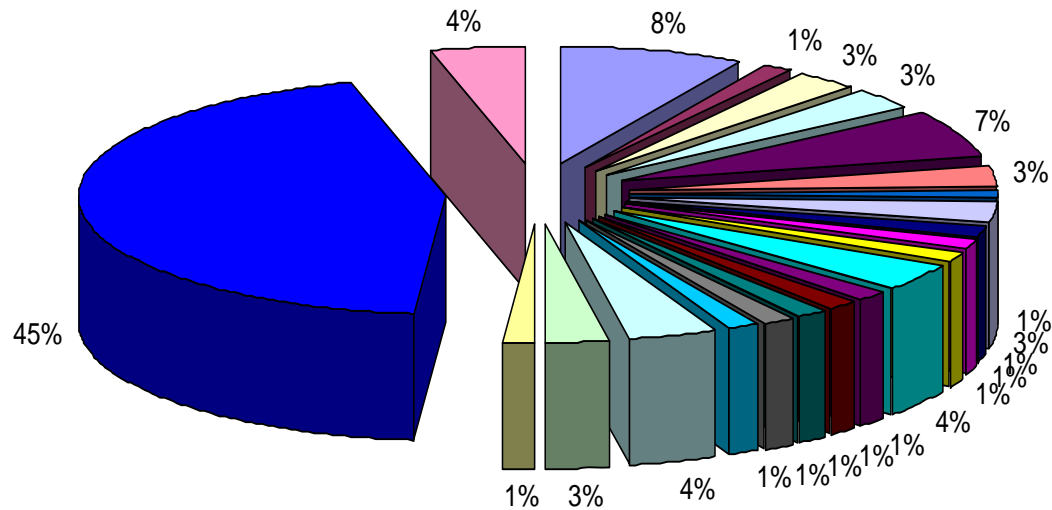
FANR Human Resources Development Goals

- Current: core team of experienced international personnel in nuclear regulation who have a strong training and mentoring background
- Mid-term: maintain experienced international personnel and develop a skilled cadre of UAE Nationals in key areas of responsibility
- Long-term: maintain skills within country while ensuring appropriate support from international experts and organizations



FANR Human Resources

FANR – percentage of Nationalities in 2010



USA	Argentina	Australia	Austria	Canada	Egypt	Finland	France
India	Italy	Japan	Jordan	Lebanon	Pakistan	Somalia	South Africa
Sudan	Sweden	Syria	Palestine	UAE	UK		

National Capacity Building

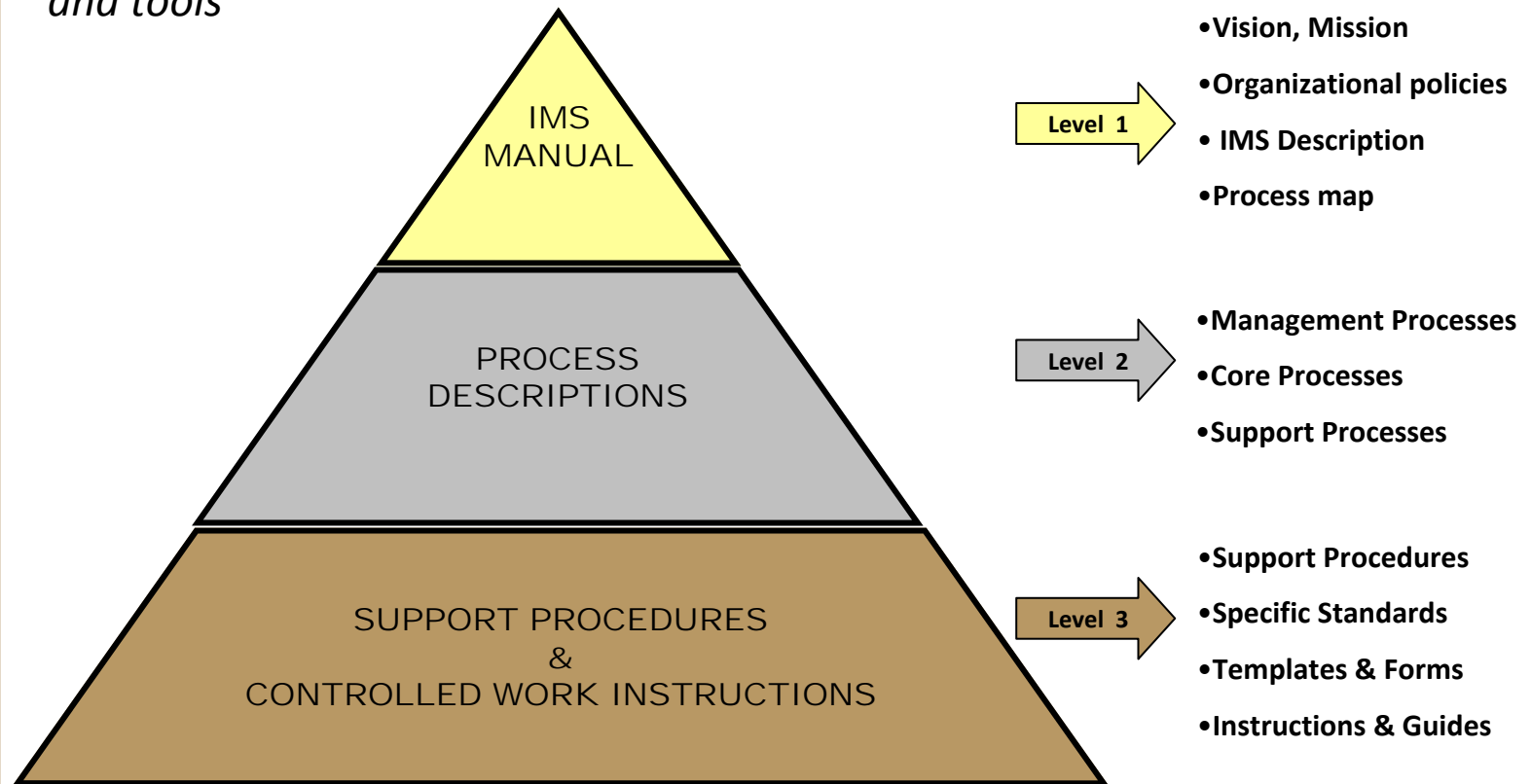
- Two-pronged effort to develop UAE nationals
- New institutions and programmes in UAE
- Study-abroad programs to send students overseas for first-hand exposure to nuclear expertise

The UAE Nuclear Energy Scholarships



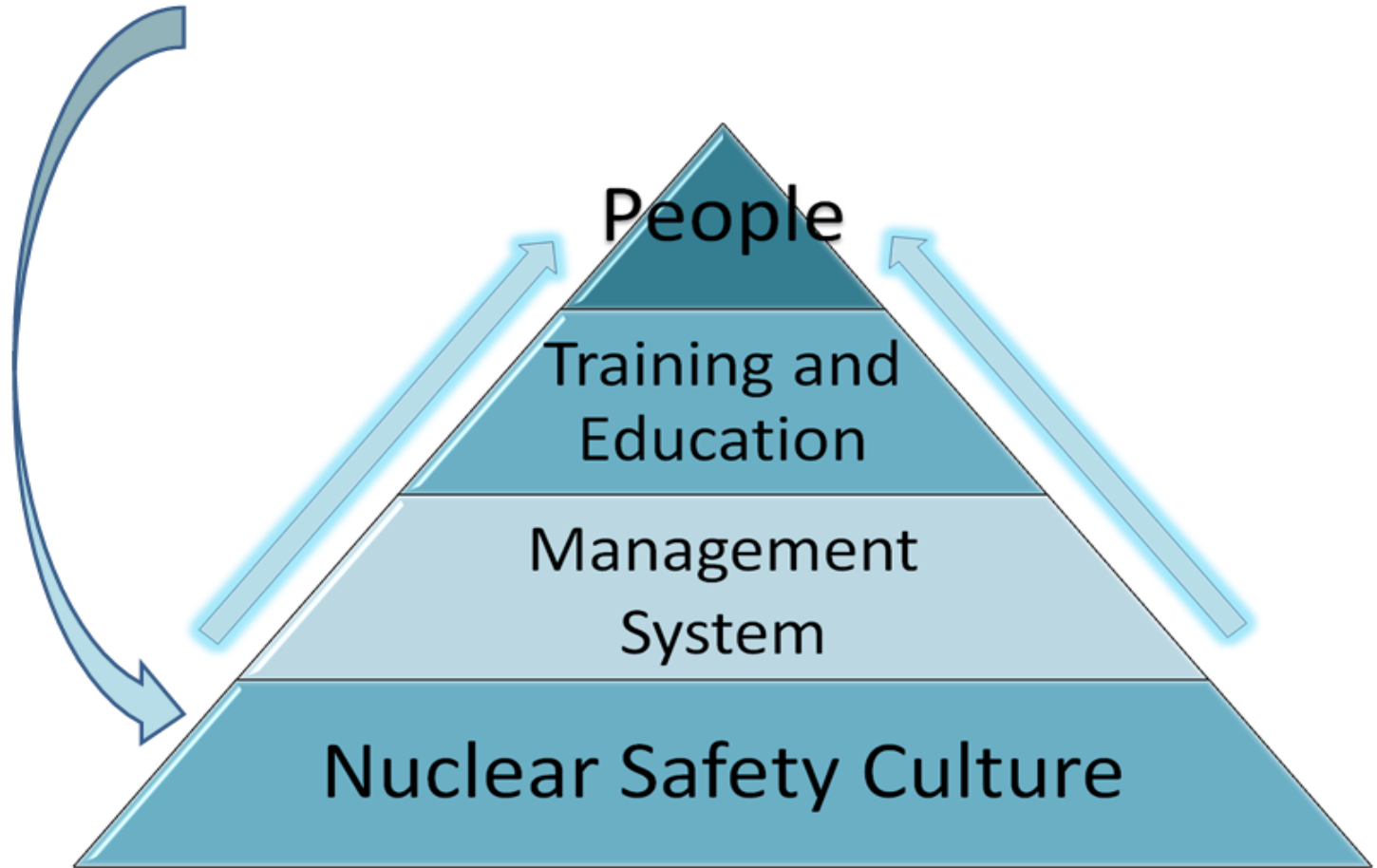
Integrated Management System

Establishment of an IAEA GS-R-3 compliant IMS for the achievement of organizational goals using a variety of programs, processes, and tools



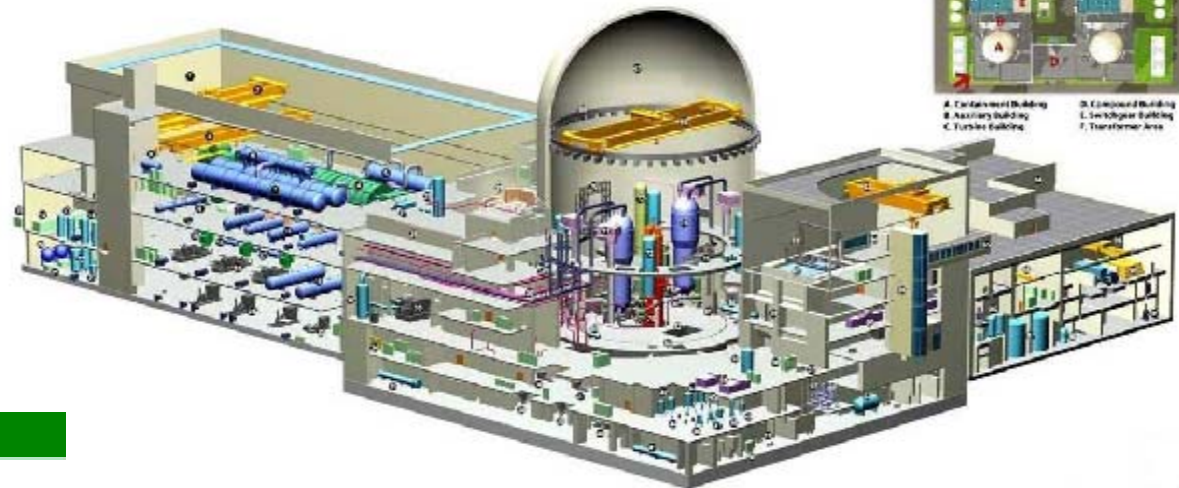
Documentation structure of the Authority Integrated Management System

Establishing The Right Foundation



UAE Nuclear Power Plant

- Korean Advanced Power Reactor 1400
- Evolutionary advanced LWR
- Based on Combustion Engineering System 80+ certified by US NRC
- APR1400 standard design approval in Korea
- Reference plant licensed and in construction

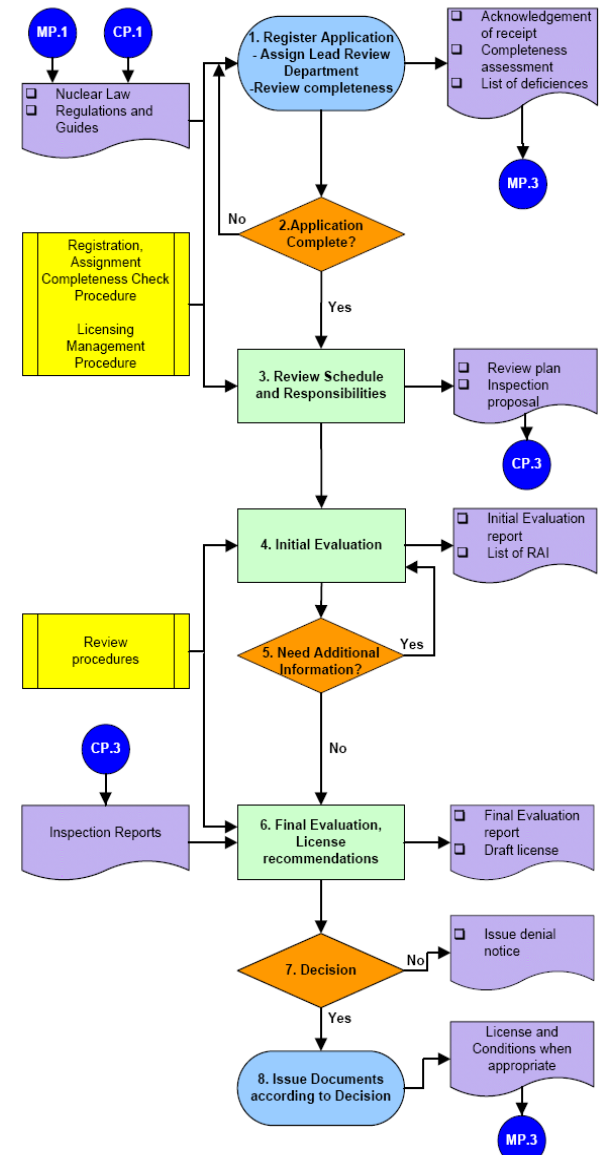


Regulations and Guides

- FANR's approach in developing national regulations under Article 38:
 - conforms with IAEA Safety Standards and other internationally recognized practices,
 - combines risk informed, performance-based and deterministic requirements
- The intent is to produce high level regulations, which are non-prescriptive, focusing on the essential aspects of safety.
- Guides will be provided to assist the licensee in complying with the regulations.

FANR Licensing Process

- Part of FANR Integrated Management System
- Governs process:
 - Receipt of application
 - Technical review
 - Preparation of Safety Evaluation Report
 - Licensing recommendations to FANR Board of Management
- Licensing Management Procedure describes steps and topical review instructions



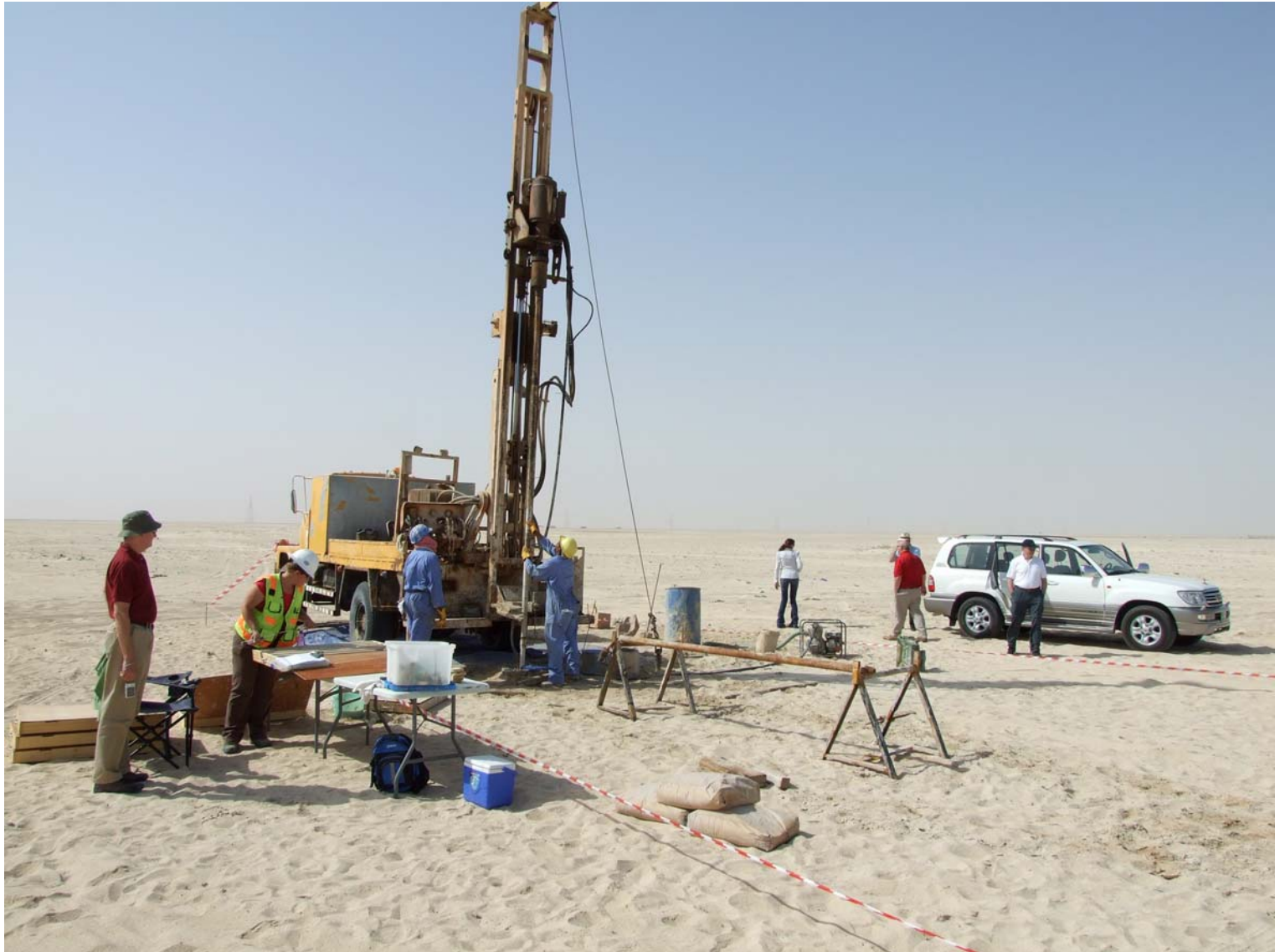
Utilizing Licensing Information from the Regulatory Body in the Country of Origin

- FANR will use the safety evaluations performed by the regulatory authority in the country of origin to support its review of any licence application submitted in the UAE.
- FANR will conduct independent review where:
 - it can not be demonstrated that FANR requirements have been met based on another regulatory body's assessments
 - The proposed UAE design differs from that approved by other regulatory authorities
 - site characteristics are unique to the UAE
 - new technology is implemented
 - operating experience since other regulatory authority's approval
 - areas of specific policy interest

Current Status of Licensing

- To date three Licenses issued related to the NPP:
 - Site Selection License.
 - Site Preparation License.
 - Limited Construction License.

Site Selection License



Site Preparation License

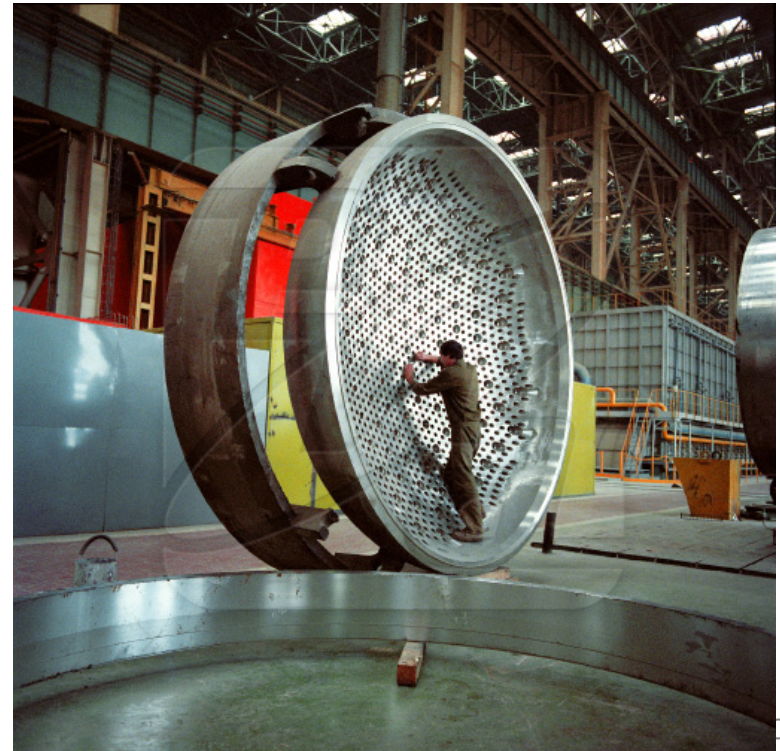
- Allows activities such as:
 - Erection of site security features,
 - Establishment of roads and electrical and water distribution systems,
 - Erection of Admin building,
 - Dredging of a shipping channel,
 - Construction of shipping wharf,
 - Excavations, etc.

Limited Construction License

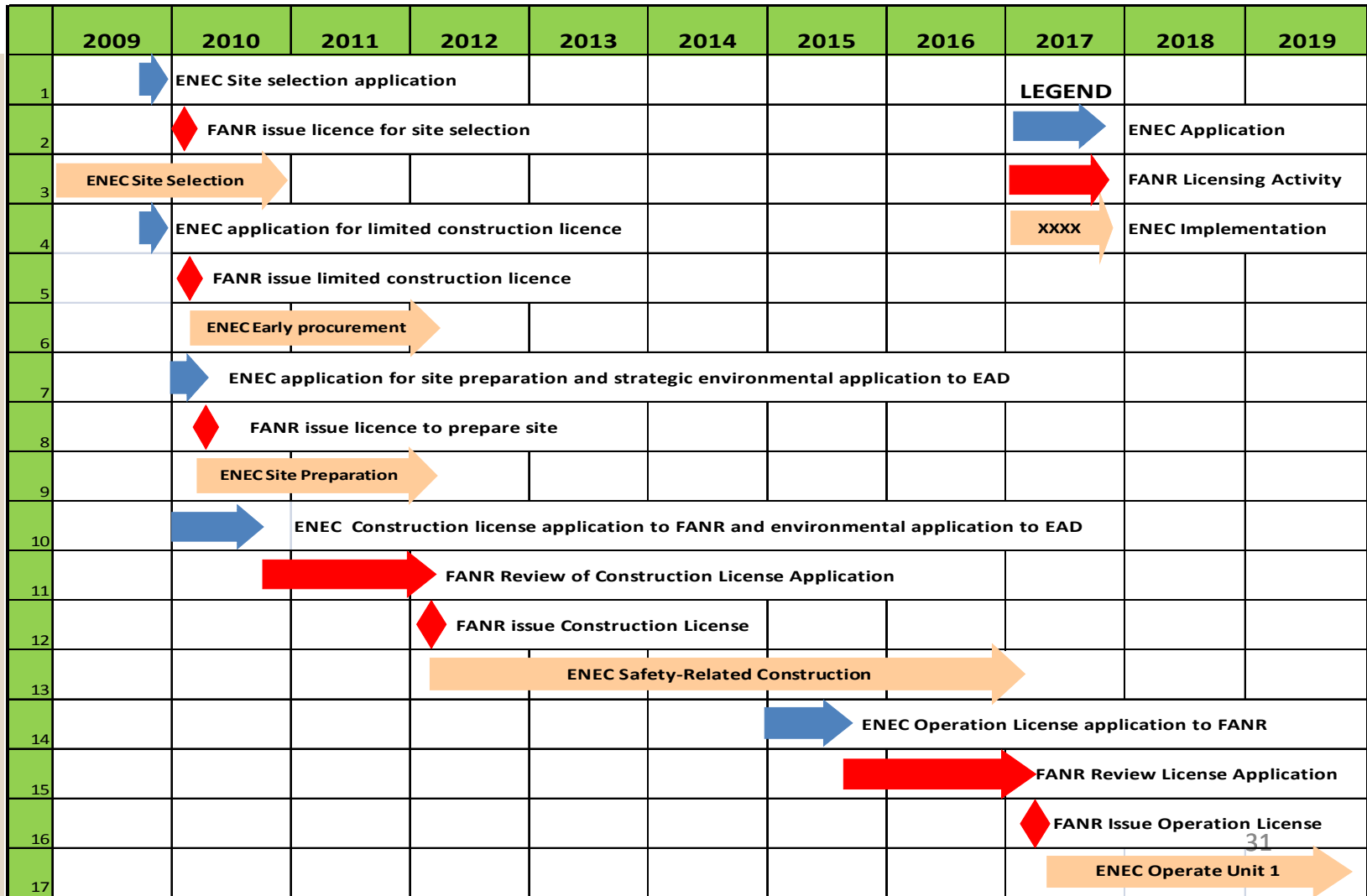


Inspection Planning for Nuclear Facility

- Site Selection Licence
- Site Preparation
- Manufacture



Future Activities



Conclusions

- UAE Policy on the Evaluation and Potential Development of Peaceful Nuclear Energy sets the goals of:
 - Complete operational transparency
 - Highest standards of non-proliferation
 - Highest standards of safety and security
 - Close cooperation with the IAEA
 - Partnership with governments and firms of responsible nations
 - Long-term sustainability
- A suitable legislative framework and international commitments are in place
- FANR is established as the independent regulator
- ENEC has selected an NPP technology and prime contractor
- The first steps have been taken in licensing the facility

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Thank You!

<http://fanr.gov.ae/en>