2010 AEC-NRC Bilateral Technical Meeting

Overview of Recent Regulatory Activities in Taiwan

8th TAEC-USNRC Bilateral Technical Meeting

Taipei, R.O.C. May 03-06, 2010

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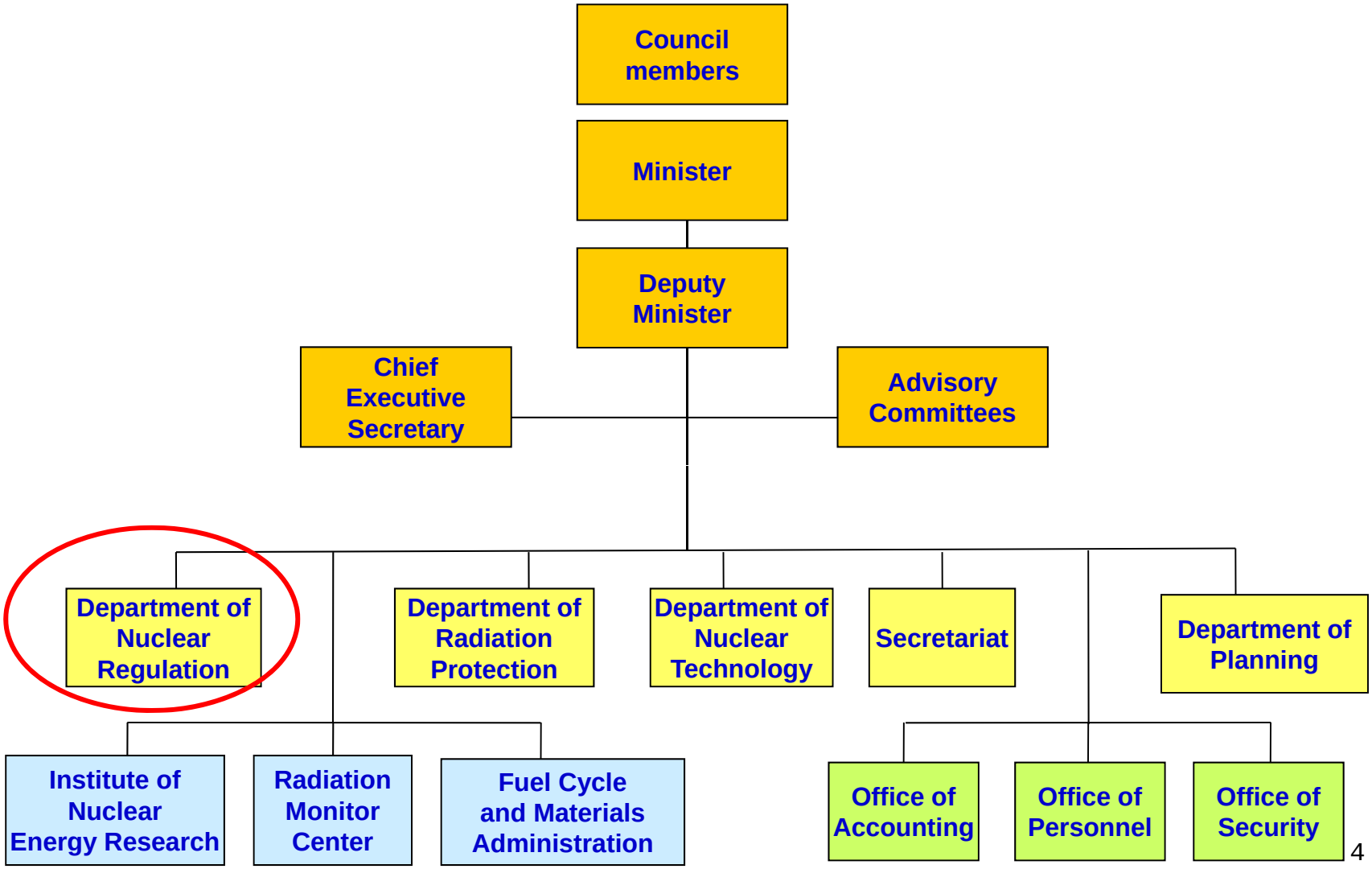
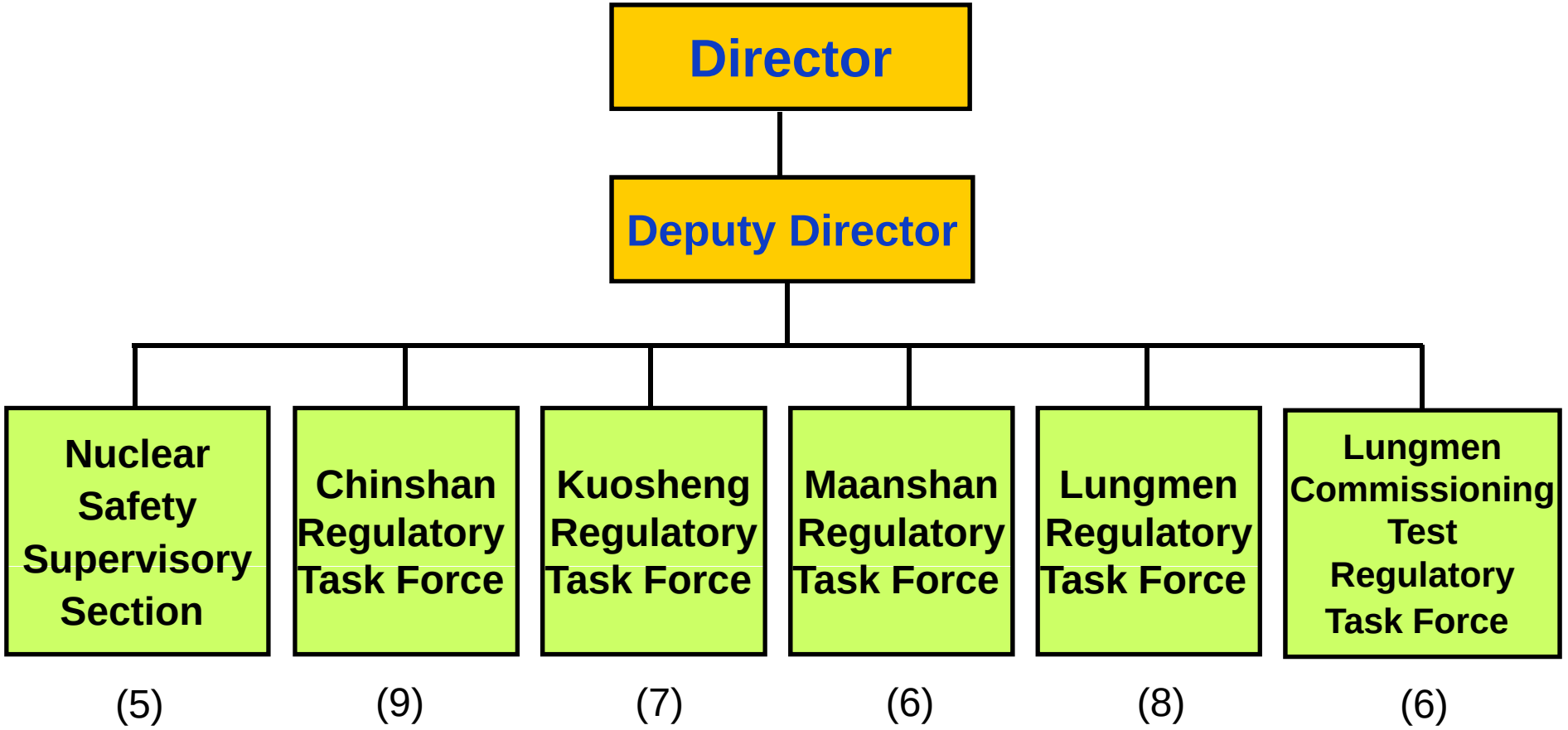
Organization of Nuclear Safety Regulation

Organization of Nuclear Safety Regulation



Organization of Nuclear Safety Regulation

Organization Chart of DNR



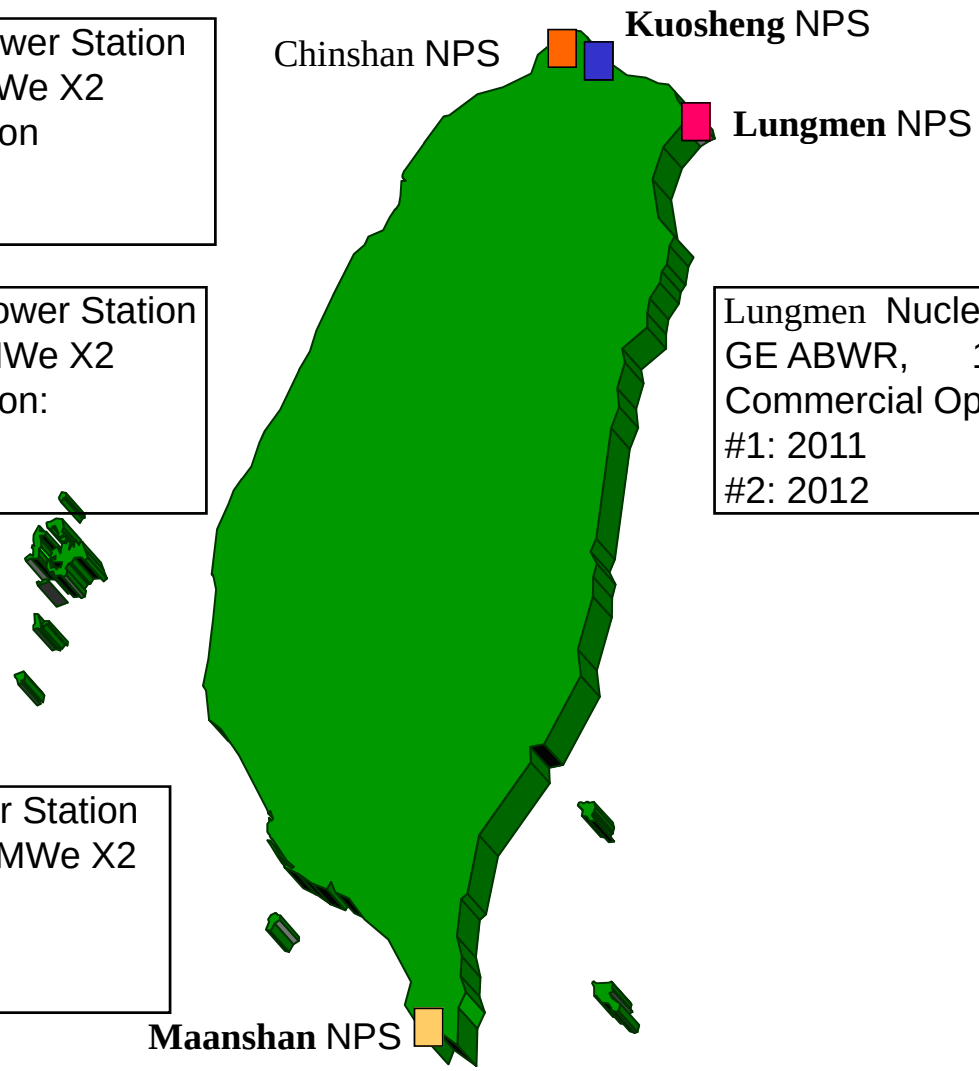
Operating Nuclear Power Plants Performance Record

Operating Nuclear Power Plants Performance Record

Chinshan Nuclear Power Station
GE BWR 4, 636 MWe X2
Commercial Operation
#1: Dec. 1978
#2: July 1979

Kuosheng Nuclear Power Station
GE BWR 6, 985 MWe X2
Commercial Operation:
#1: Dec. 1981
#2: Mar. 1983

Maanshan Nuclear Power Station
W PWR, 3 loop, 951 MWe X2
Commercial Operation
#1: July 1984
#2: May 1985



Lungmen Nuclear Power Station
GE ABWR, 1350 MWe X2
Commercial Operation **Expected**
#1: 2011
#2: 2012

Locations and Design Features of NPPs in Taiwan

Operating Nuclear Power Plants Performance Record

Real-Time Nuclear Power Plant Operational Status

2009/04/15 09:54:18

Plant & Units	Chinshan		Kuosheng		Maanshan	
	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2
Reactor Status	Operating	Operating	Operating	Operating	Operating	Operating
Reactor Power (%)	100	100	88	100	99	99
Generator Output (MWe)	645	654	915	973	941	958

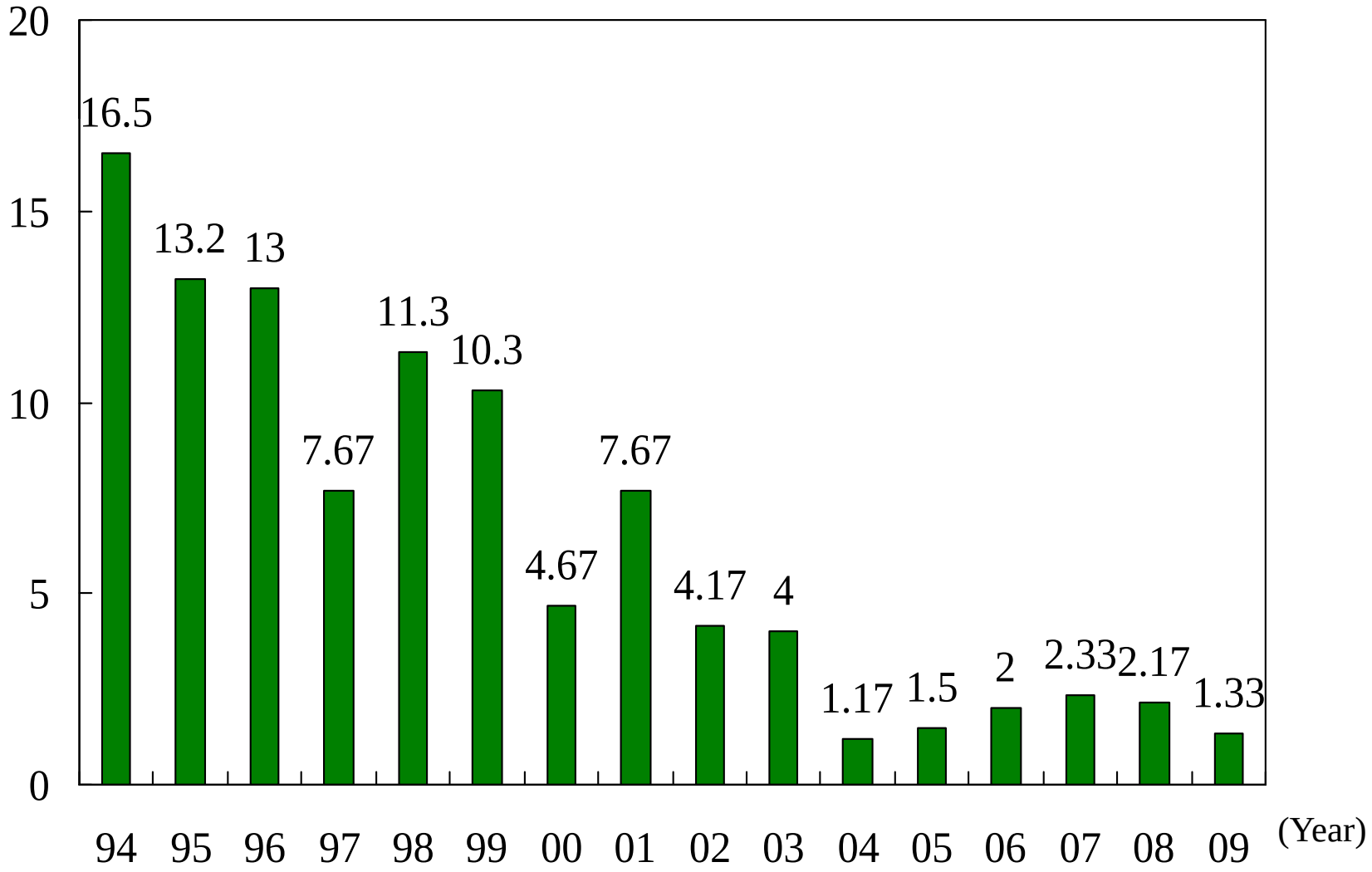
Reactor Status Display :
[Green] : Operating, [White] : Refueling Outage, shutdown, [Gray] : Computer Maintenance, Computer down, Communication Fault, and Connected to Simulator for drill.

Reactor Power and Generator Output Display :
[Green] : Reactor Power within 100%, [White] : Reactor Power between 101%~102%, [Yellow] : Reactor Power above 102%

Display is changing automatically every 5 seconds; decimals will round off for the numbers.

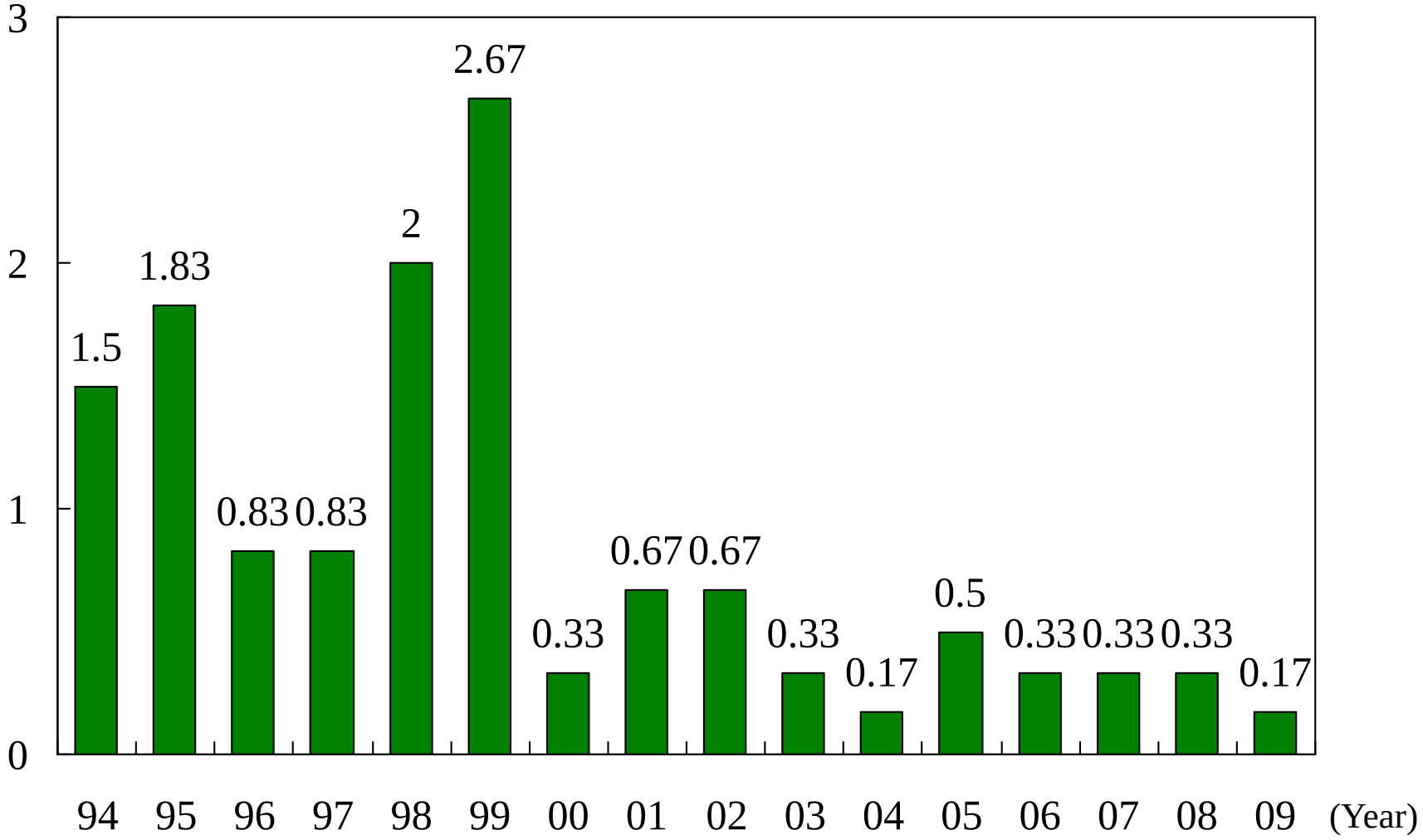
http://gamma.aec.gov.tw/spds/plantdata_e.asp

Operating Nuclear Power Plants Performance Record



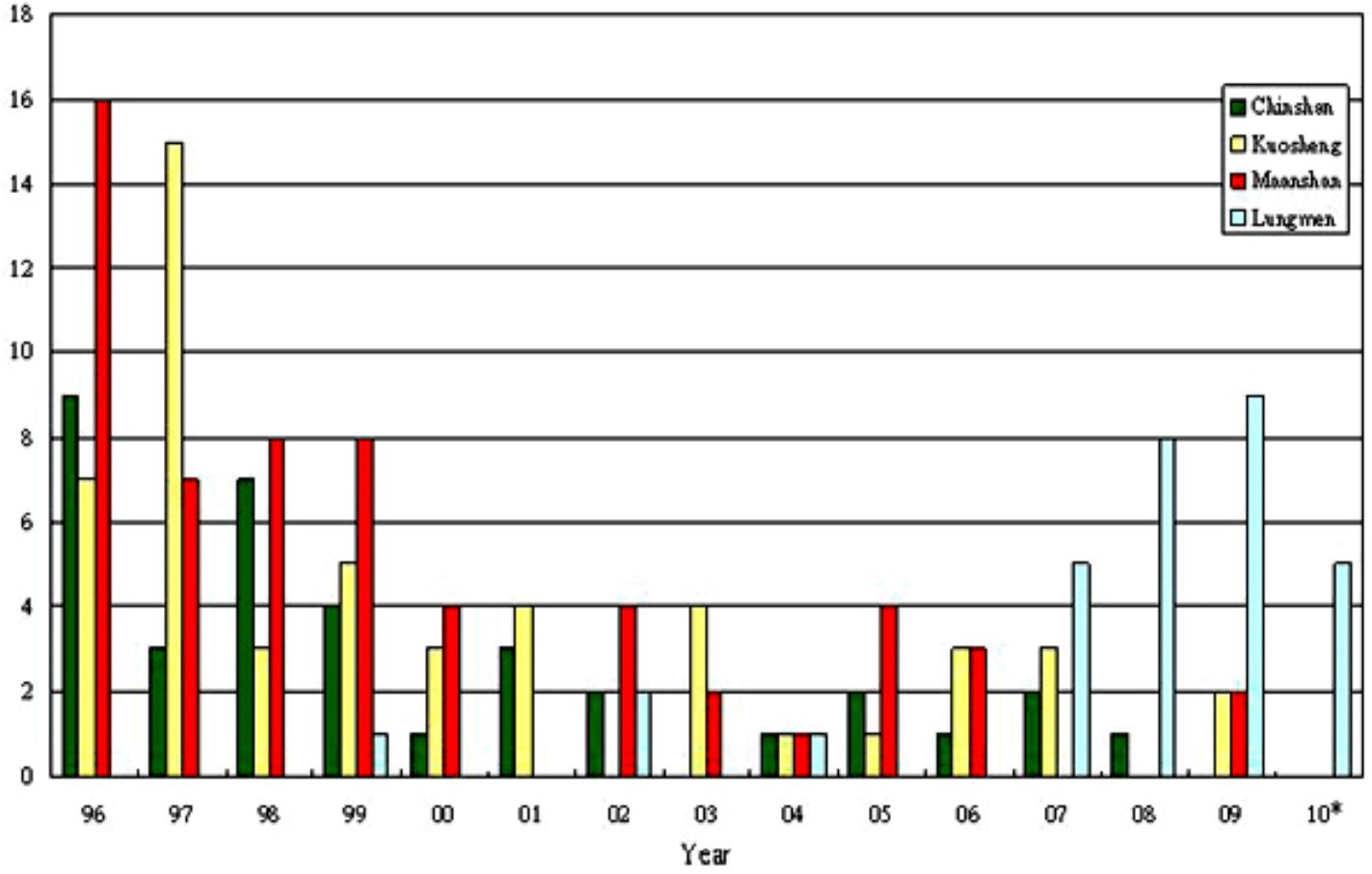
Average Number of RERs per Unit

Operating Nuclear Power Plants Performance Record



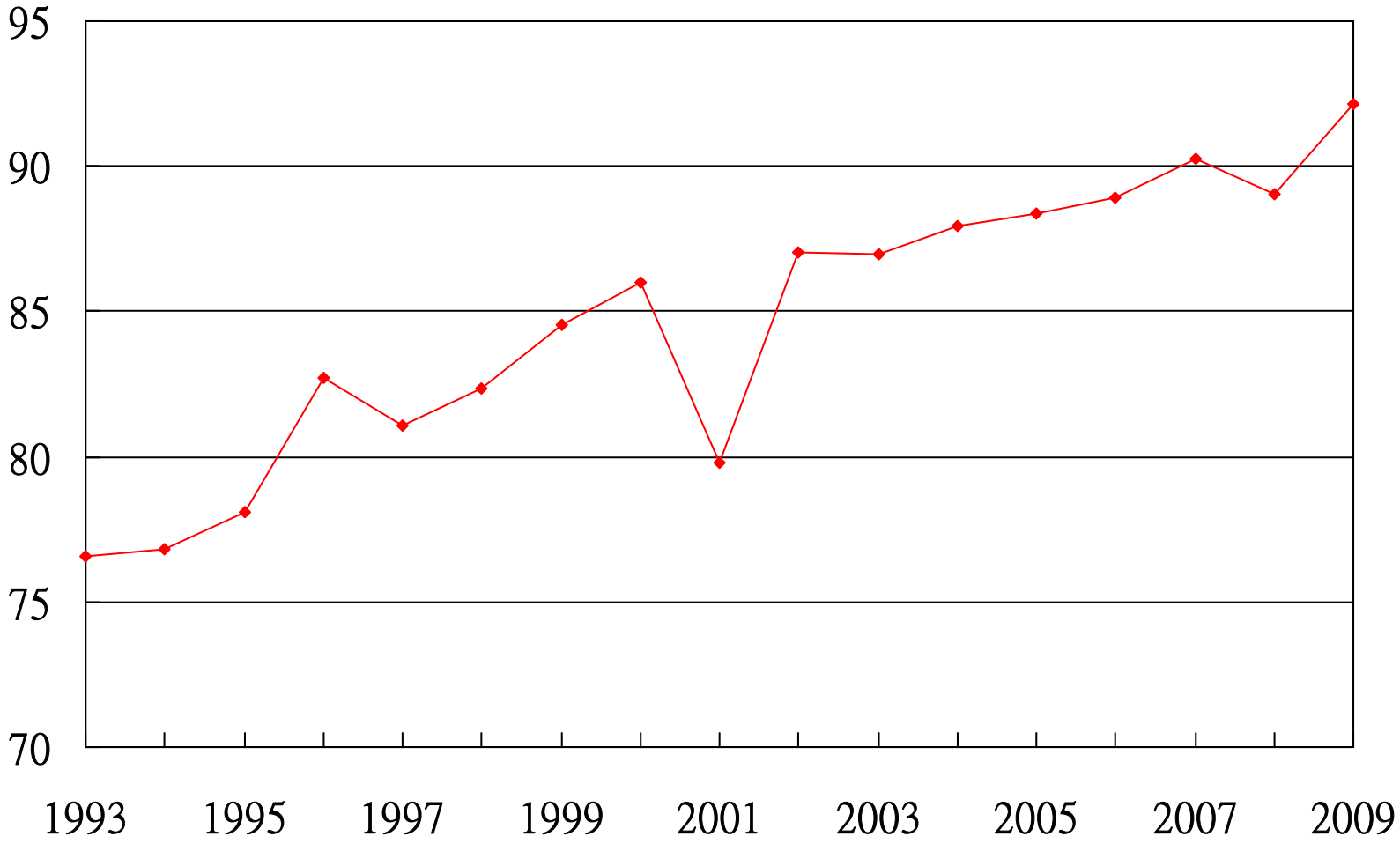
Average Number of Scram per Unit

Number of Violation for each plant



Number of Violation for Each Plant (* : Data up to the end of March 2010)

Capacity Factor of NPPs in Taiwan



Recent Regulatory Activities

- Power Uprate of Operating NPPs
- Transient Analysis Methodology Licensing Applications
- Review Chinshan NPP's License Renewal Application
- Safety Re-evaluation and Enhancement Plan for Seismic Resistance
- Lungmen ABWR Construction & Initial test Program Inspection

Power Uprate of Operating NPPs

- Taipower has launched a power uprate project for its three nuclear power plants. The power uprate considered is the Measurement Uncertainty Recapture (MUR) type.

NO.	PLANT	%UPRATE	MWt	DATE APPROVED	TYPE
1	Kuosheng 2	1.70**(0.30)*	49** (09)*	2007.06.28	MUR
2	Kuosheng 1	1.69**(1.50)*	49** (43)*	2007.11.23	MUR
3	Chinshan 2	1.66**(0.91)*	30** (16)*	2008.07.03	MUR
4	Maanshan 2	1.69**(1.15)*	47** (32)*	2008.11.28	MUR
5	Chinshan 1	1.66**(0.93)*	30** (17)*	2009.02.23	MUR
6	Maanshan 1	1.69**(1.08)*	47** (30)*	2009.07.02	MUR

* means actual uprate ; ** means tentative

Transient Analysis Methodology Licensing Applications

- Transient Analysis has always been performed for Taipower by the fuel vendors.
- In order to develop their own safety analysis capability, Taipower submits a series topical reports of TITRAM (TPC/INER Transient Analysis Methods) for licensing review.
- Totally 38 reports, 14 have been approved (2006-2009) and implemented in the MUR applications, others will be reviewed in the following years.(2012)

Review Chinshan NPP's License Renewal Application

- According to "Regulation on the Review and Approval of Applications for Operating License of Nuclear Reactor Facilities", timeliness of application is from 5 to 15 years before the expiration of the operating license.
- The operating license of the 1st (Chinshan) NPP in Taiwan has been issued for over 31 years. TPC raised Chinshan NPP's License Renewal Application on Sep. 2009.

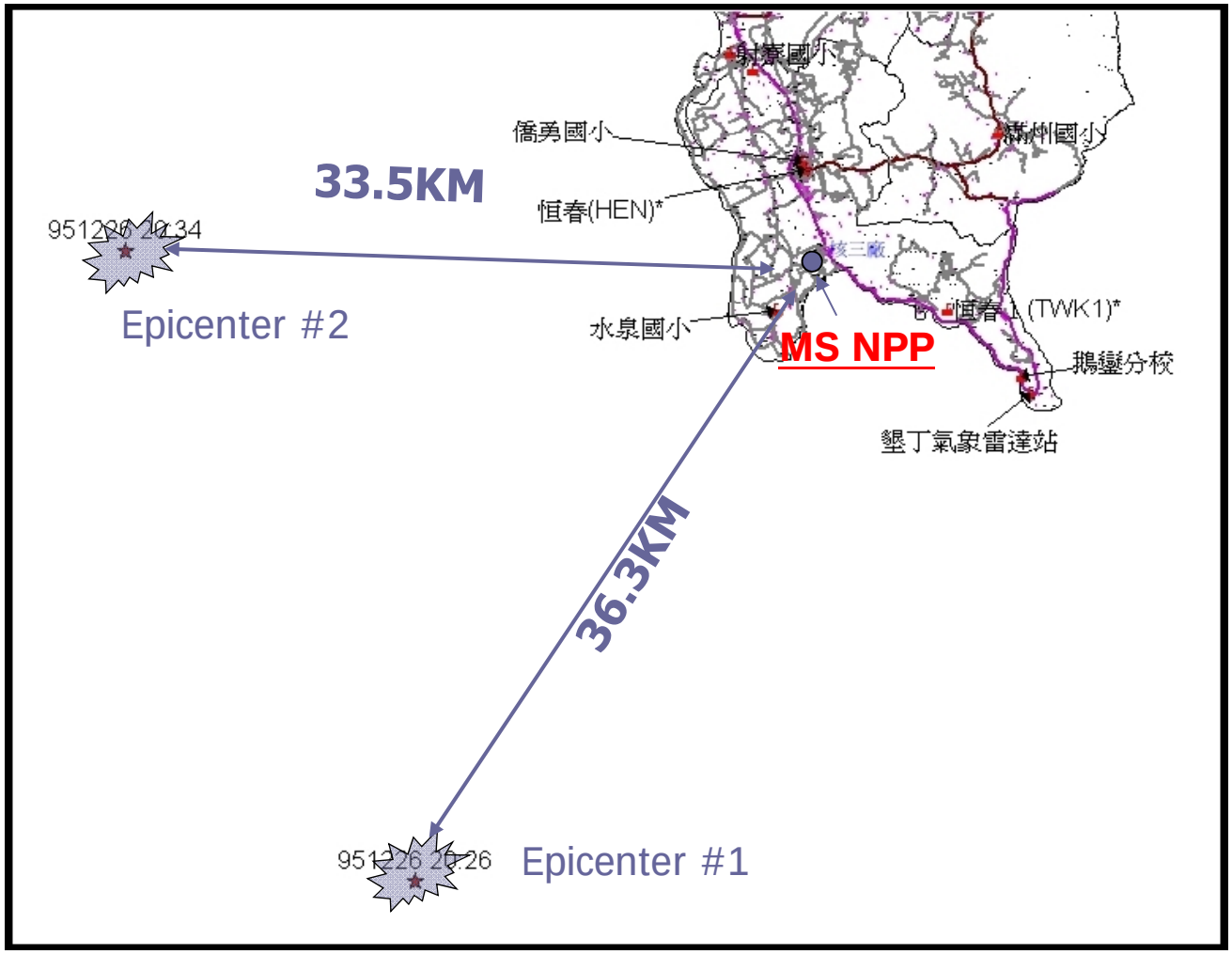
Review License Renewal Applications of Chinshan NPP (cont'd)

- The detailed LR guidance will generally reference related U.S. Regulatory Guidance.
- Taipower LR Planning
  - Apply sequentially to Chinshan, Kuosheng , and Maanshan
  - 3 Years for each NPP
    - completed in 2007 for Chinshan
    - To be completed in 2010 for Kuosheng
    - To be completed in 2013 for Maanshan
- AEC has organized a review task force, the review process will last for 2 years.

Safety Re-evaluation and Enhancement Plan for Seismic Resistance

- Background of Plan
  - Hengchun Earthquake(M_L=7.0) induced two major shocks to MS NPP on Dec. 26 2006
  - New active fault evidence indication
    - Sanchiao Fault (fault length 34 km or longer) of Northern Taiwan threaten to CS and KS NPP
    - Hengchun Fault (fault length 16 km or longer) of Southern Taiwan threaten to MS NPP
  - Experience of KK and Hamaoka NPS in Japan

Safety Re-evaluation and Enhancement Plan for Seismic Resistance (cont'd)



Safety Re-evaluation and Enhancement Plan for Seismic Resistance (cont'd)

- Scope of Plan
  - Geologic survey on land and marine region
    - Geologic characteristics of active fault
  - Seismic hazard re-analysis
    - Design earthquake re-evaluation
    - Site effect analysis of NPP
  - Re-evaluation of seismic resistance margin
  - Reinforcement of seismic resistance

Lungmen ABWR Construction & Initial test Program Inspection

- The total accumulated completion of Lungmen project approach 91.80 % by March 2010
- In addition to the routine inspection activities, AEC also conduct some task forces on special area for this year, including:
  - FSAR review
  - Initial test program & turnover process inspection
  - Pre-operation test inspection

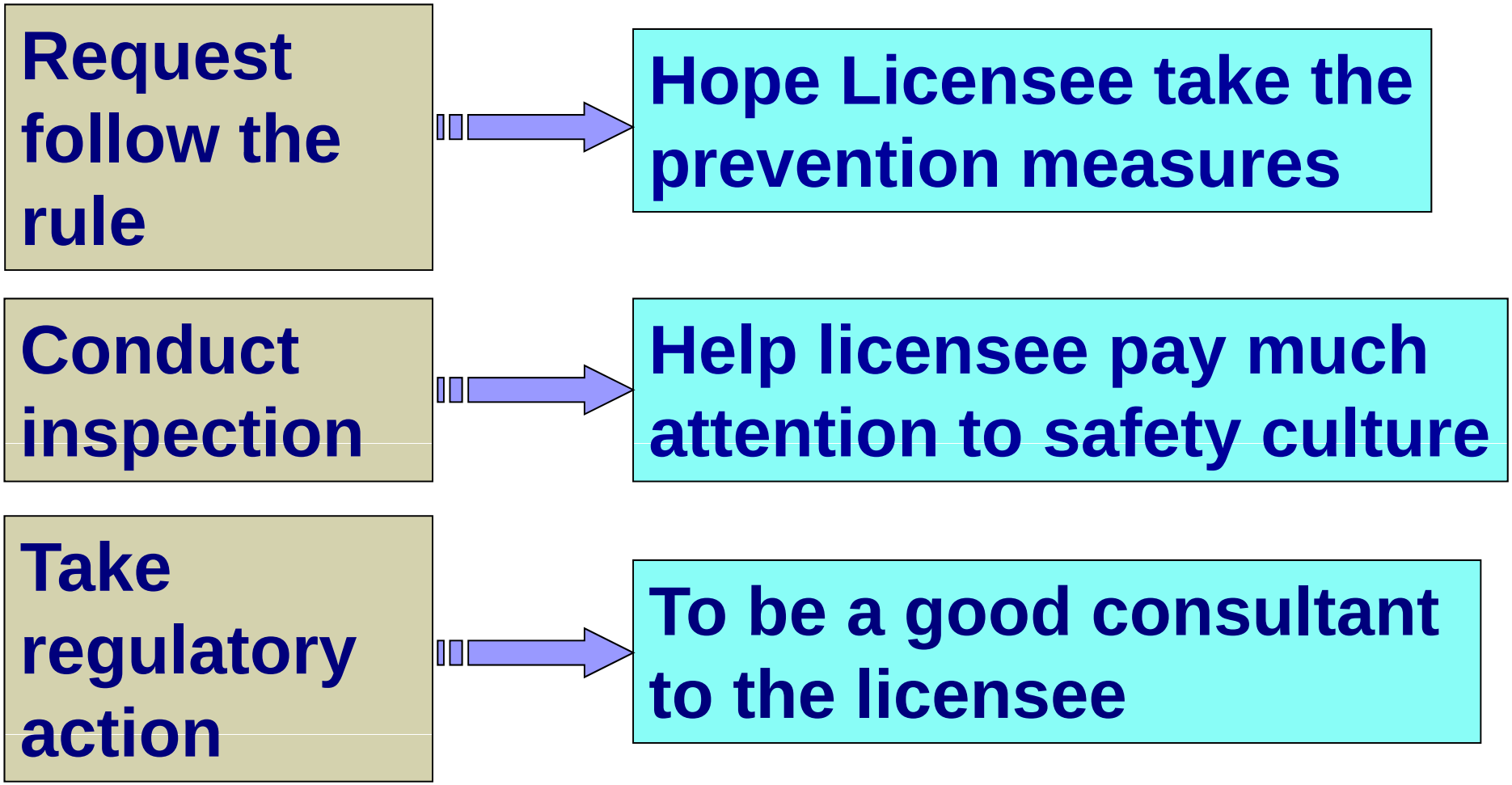
Important Upcoming Activities

- License renewal application Review
- Continue TITRAM licensing application for 3 plants
- Continue Improvement of our inspection procedures
- Prepare for the SPU application & Review
- Continue FSAR review and conduct taskforce inspections related to pre-op and Fuel loading for Lungmen NPS.

Concluding Remarks

- The overall safety performance of nuclear power plants in Taiwan is continuously maintained at a high level of standards
- The goal of the reactor regulation is not only to assure the safety of the NPPs in order to protect the public health and environment but also to maintain the stable/reliable operation.
- Continue our effort to be more effective, efficient, consistent, open and transparent in regulatory activities.

Regulatory Body Reposition



Thank You for Your Attention