The 19th Pacific Basin Nuclear Conference (PBNC 2014)

Plenary IVA: Fulfilling the Promise – Regulatory Trends;
Trends in Regulatory Requirements to Ensure Safe Operation of NPPs

Regulatory Oversight on Nuclear Safety in Taiwan

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Overview of Safety Regulation in Taiwan

- Monitor safe operation of the existing plants
- Safety enhancement following the Fukushima accident — Back fitting for beyond-design-basis events
- Brace for license renewal
- Bolster regulatory legal framework
- Keep boosting safety culture
- Public outreach and communications

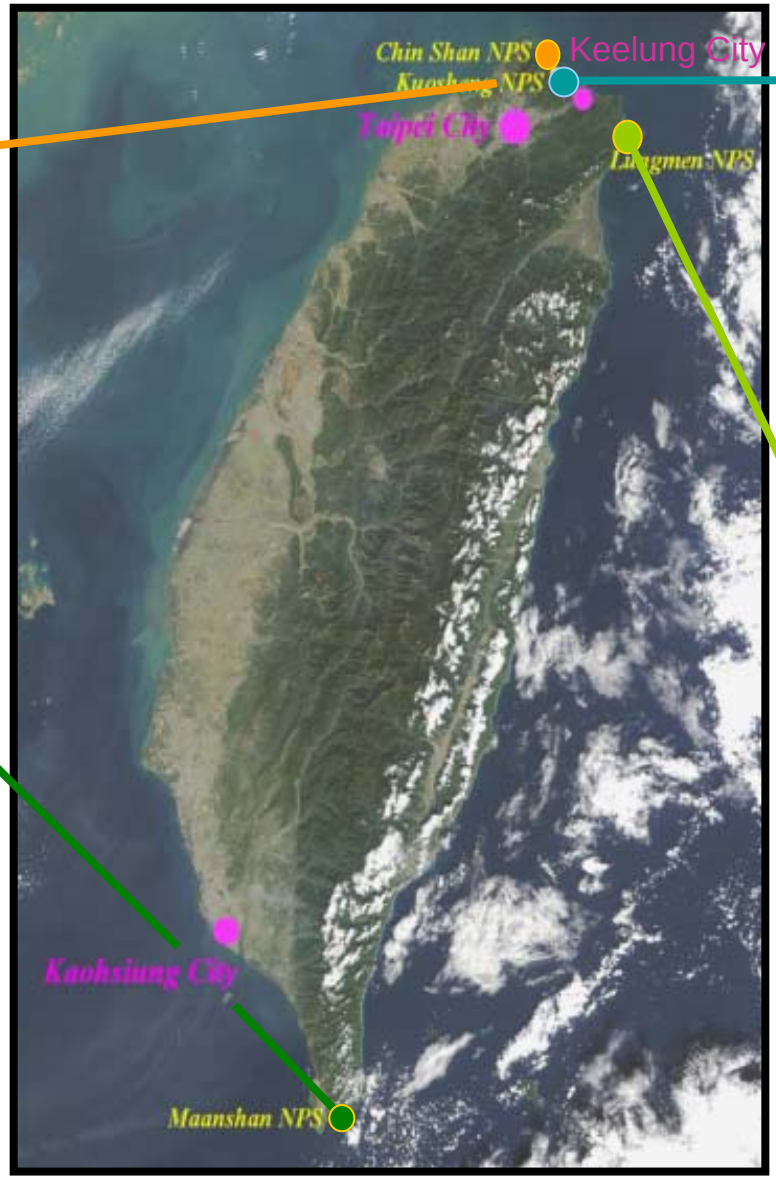
Taiwan Nuclear Power Installation

Chinshan NPS

GE BWR-4 1804 MWt × 2
Commercial
Dec-1978 Unit 1
Jul-1979 Unit 2

Maanshan NPS

WH 3-loop PWR
2822 MWt × 2
Commercial
Jul-1984 Unit 1
May-1985 Unit 2



Kuosheng NPS

GE BWR-6 2943 MWt × 2
Commercial
Dec-1981 Unit 1
Mar-1983 Unit 2

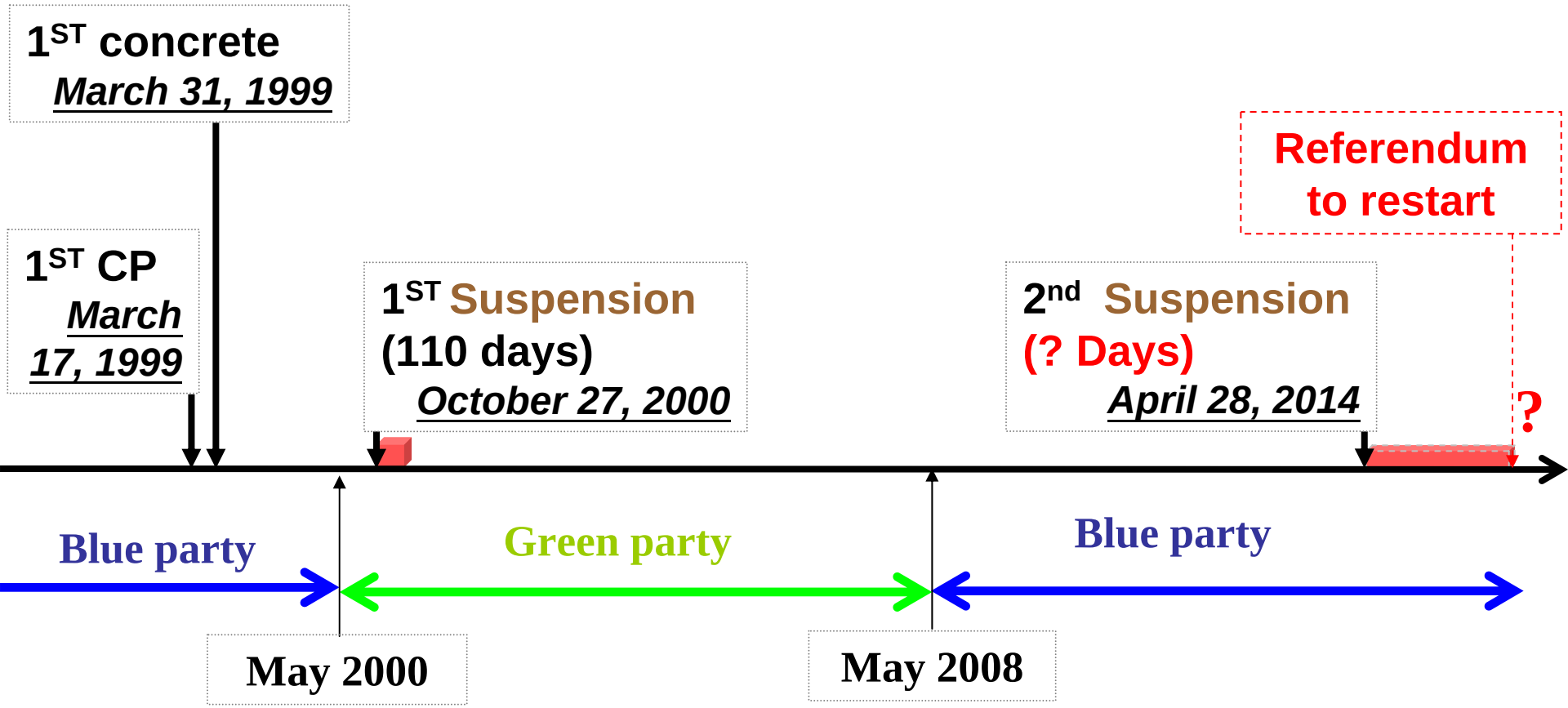
Lungmen NPS

GE ABWR 3926 MWt × 2
Under construction
Plan to suspension work

Taiwan Nuclear Power Installation (Cont.)

Reactor Name	Type	Capacity (MW, net)	Construction Start	Commercial Operation	OL Expiration
CS, Unit 1	BWR-4	604	1972-6	1978-12	2018-12
CS, Unit 2	BWR-4	604	1973-12	1979-7	2019-07
KS, Unit 1	BWR-6	985	1975-11	1981-12	2021-12
KS, Unit 2	BWR-6	985	1976-3	1983-3	2023-3
MS, Unit 1	WH 3Loop PWR	926	1978-8	1984-7	2024-7
MS, Unit 2	WH 3Loop PWR	928	1979-2	1985-5	2025-5
LM, Unit 1	GE ABWR	1300	1999-3	?	
LM, Unit 2	GE ABWR	1300	1999-8	?	

Timeline of Lungmen Plant

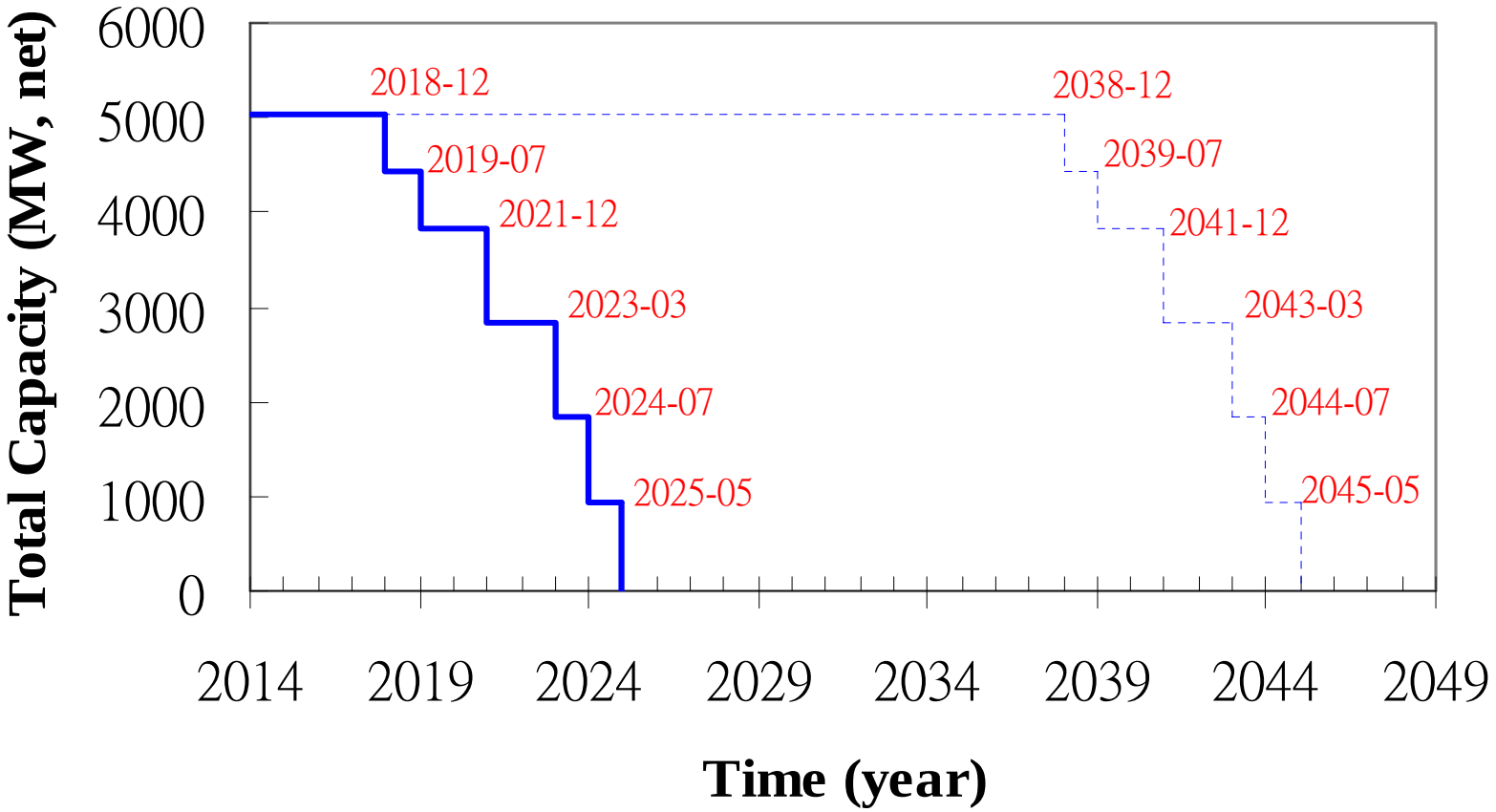


- **Unit 1：95.81% completion** (June 30, 2014)
- **Unit 2：91.51% completion** (June 30, 2014)

Post-Fukushima Safety Requirement

- Enhance the capability to cope with Beyond DBAs-highly unlikely with severe consequences, including the multi-unit effects of nuclear power plants
  - **Earthquake**: seismic isolation ERC, seismic enhancement
  - **External Flooding**: tsunami wall, watertight of essential buildings, openings and penetrations
  - **Electrical Power**: watertight of 5th EDG Building, movable DGs and installed connectors
  - **Cooling Water**: movable pumps and installed injection joints
  - **Containment Integrity**: filtered containment venting system (FCVS)

Safety Regulation of Life Extension (1/2)



Safety Regulation of Life Extension (2/2)

- Nuclear Reactor Facilities Regulation Act (*Article 6*)
  - An application for renewing the license shall be filed by the licensee
- Regulations on Applications for Operating License of Nuclear Reactor Facilities (*Article 16*)
  - Submission deadline : 5~15 years prior to the expiration of the existing license.
  - Contents of application
    - ✓Integrated Plant Assessment (IPA)
    - ✓Time-Limited Aging Analysis (TLAA)
    - ✓Updated Final Safety Analysis Report (UFSAR)
- Technical Review Reference
  - USNRC regulation 10 CFR 54, “Requirements for Renewal of Operating Licenses for Nuclear Power Plants”

Education/ Public Outreach/ Transparency

- Hold science camps for school teachers and students
- Deliver nuclear and radiation seminars to schools, communities , and mass media
- Establish government's e-learning website for civil servants
- Free access of regulatory information
- Encourage public involvement in the regulatory process.

Conclusions and Recommendations

- As a regulator, we have responsibility to remind people who may have doubts or apprehensions about nuclear power that plants can be built and operated safely.
- Complacency and hubris are the worst impediment to nuclear safety. Keep improving safety.
- Nuclear power plants should be ready to respond to a wide-spanning natural disaster. However, in responding to such a highly freakish event as Fukushima, one has to be realistic. Overregulation or underregulation clearly is not a good answer!