Nuclear LMI Highlights

(Draft until full Nuclear LMI report published)

15 June 2009

Prepared by Cogent SSC

Introduction

Cogent has carried out in-depth research on the current civil nuclear workforce with an outlook to the future taking into account the new-build nuclear programme and the decommissioning commitment to the AGR fleet of reactors. This report is a distillation of key points to inform the five-year strategic plan of NSAN. This report draws from the forthcoming Nuclear LMI publications from Cogent, these are:

1. *Nuclear Skills – A Review,* Cogent Report to Nuclear Development Forum, DECC (June 2009)
2. *The Civil Nuclear Workforce (due Q3 2009)*
3. *New-Build Nuclear Skills Capacity & Capability (due Q4 2009))*
4. *Nuclear Skills Futures (due Q1 2010)*

The findings released here are preliminary and remain subject to change until the full nuclear LMI report (item 2 above) is published.

The research findings highlighted that:

- The combined civil nuclear workforce is estimated to be of the order of 44,000. Those directly employed by the operators make up over half of this at 24,000. (See Table 1.a)
- Over 10,000 people are directly employed in core nuclear job roles (such as Energy Production Operations, Decommissioning Operations, Process Operations and Maintenance Operations) by civil nuclear operators. The ratio of maintenance operations to the other operations is approximately 40:60 (See Table 2). The proportion of the workforce employed at levels 3 (technical) and level 4/5 (professional/senior managerial) is high at a combined 73%. (See Table 3)
- A considerable decline in nuclear energy production will take place in the medium term given the age of the existing fleet of nuclear reactors. (See Table 4)
- Without a new-build programme, the nuclear industry would experience major divestment of labour and expert skills(See Table 4)
- In general, the civil nuclear operating workforce is significantly older than the UK workforce. Divergence sets in during the period 2015-2020, just when new build would begin to have an expansion demand on the workforce. (See Table 6)
- Retirement is the main driver of workforce demand even in the case of modest new build. (See Table 8)
- It is estimated that there will be a cumulative shortfall of 14,000 (including contractors) across all skilled labour in the workforce out to 2025. This equates to general requirement of 1000 new-blood recruits to the industry every year to 2025. Mostly this labour is required at apprentice and graduate level.
- Using a “Replacement Capacity” scenario for new-build (8 new PWR’s), together with lifetime extensions for the AGR fleet, a modest and slow decline in the operating workforce is predicted out to 2025. Within the ‘skin’ of this decline there are areas of expansion, most notably AGR decommissioning and the less well defined new build capacity. (See Table 11)
- The new-build construction and operator workforce has been modeled per PWR unit. It is estimated that to require up to 5,000 jobs per PWR at peak across civil, mechanical, electrical, operator and operator contractor workforces. This could translate to 40,000 jobs in total for new-build programme that replaces current electricity generating capacity. Many of these jobs will be in construction and will be required intensely for the defined new build programme. (See Table 10)

- Estimates of the manufacturer workforce demand for new-build are around 500 FTE per PWR unit. But in this area global capability (*e.g.* large forgings) will be a determinant.
- The labour force challenge will be in planning of the workforce between expansion in decommissioning, medium-term contraction in energy production and long term expansion in new-build commissioning and operation.

The research findings support Cogent and NSAN products:

- Nuclear Skills Passport, for phasing between energy and decommissioning operations
- The Energy Foresight programme to attract new interest from young people.
- The Working Higher Foundation Degree programme for upskilling of the nuclear workforce.
- Continued development of NOS and vocational qualification in nuclear industry
- The roll out of NITF.

Chart 1.a Current Civil Nuclear Workforce - Job Context

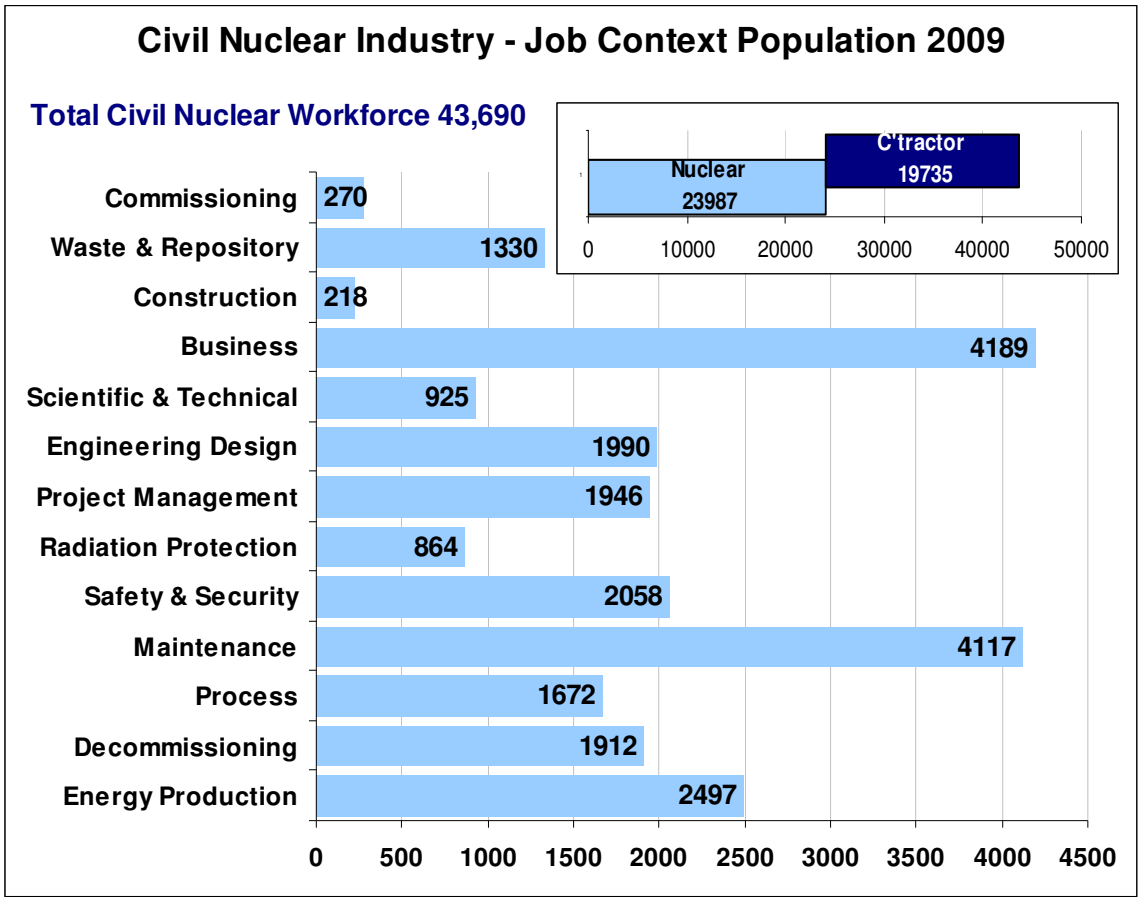


Chart 2 Current Job Context Population

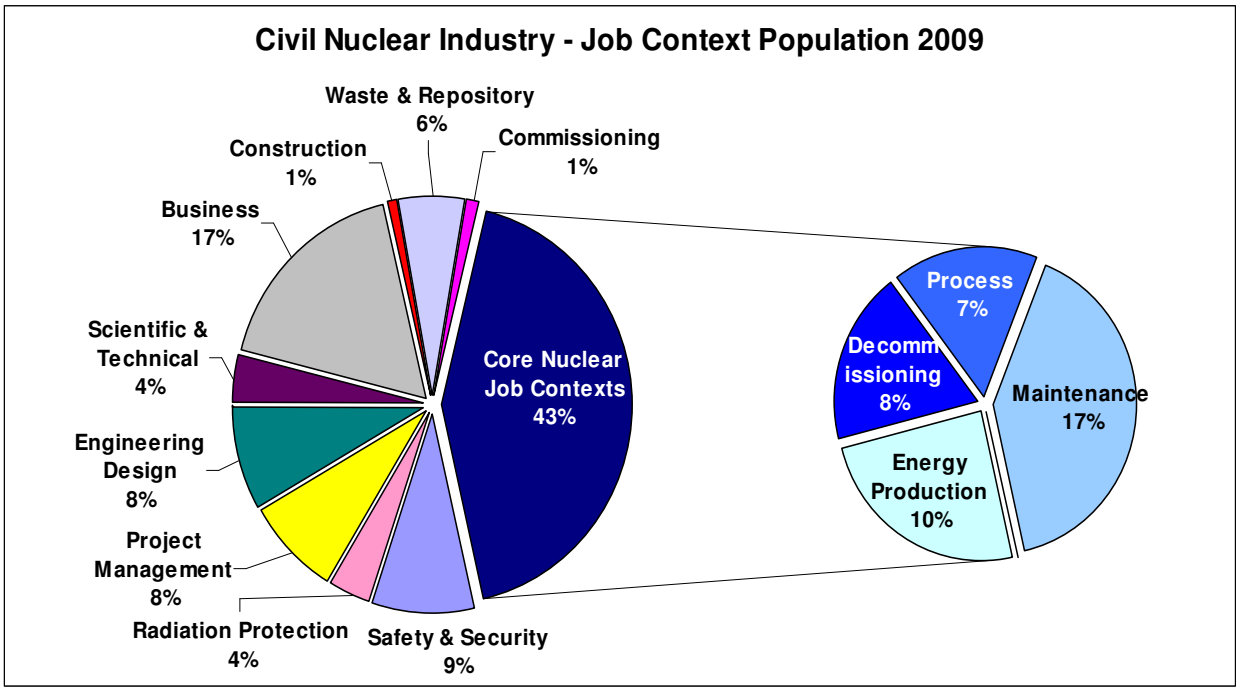
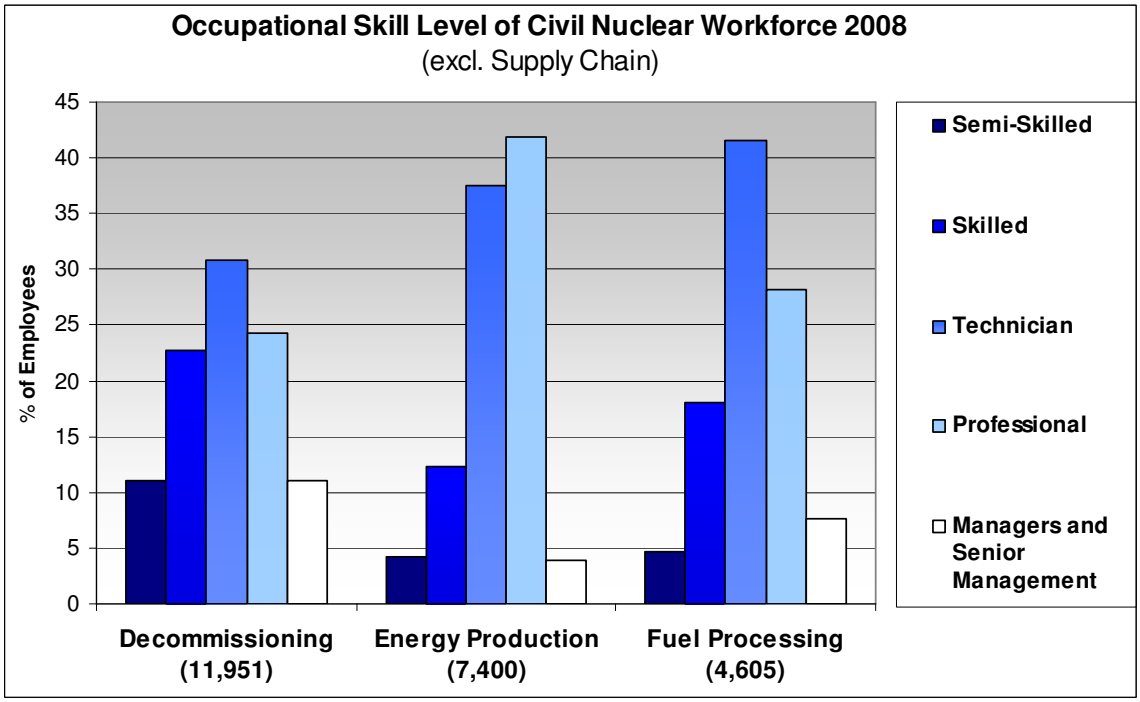


Chart 3 Occupational Skill level



Demand Forecast

Chart 4 Demand Forecast for Civil Nuclear Industry without new-build program

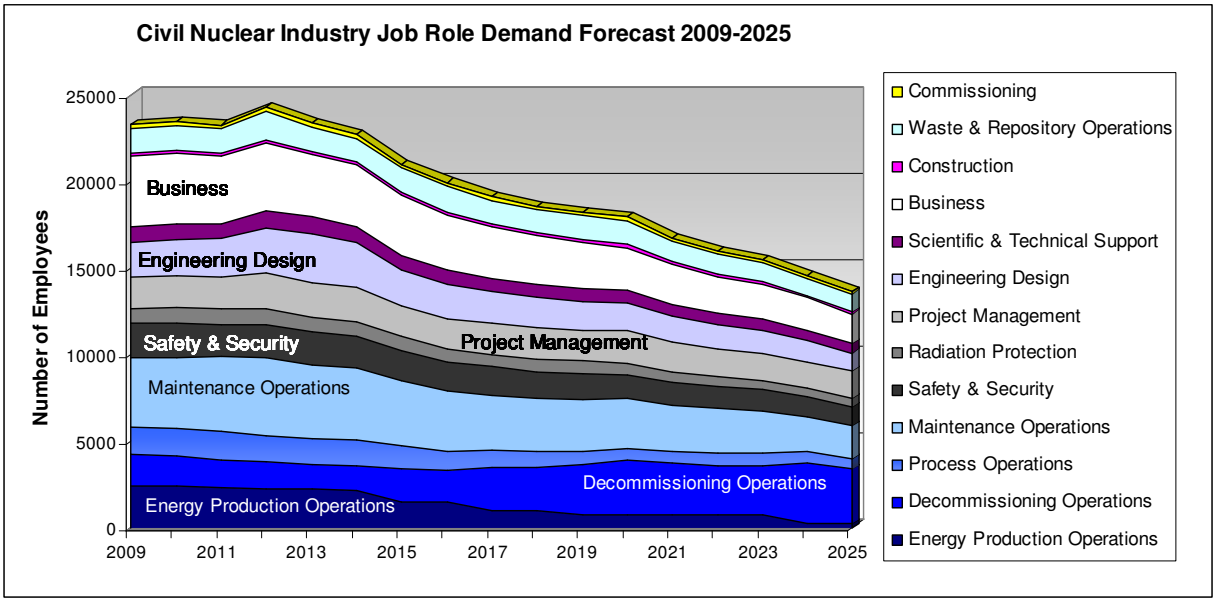
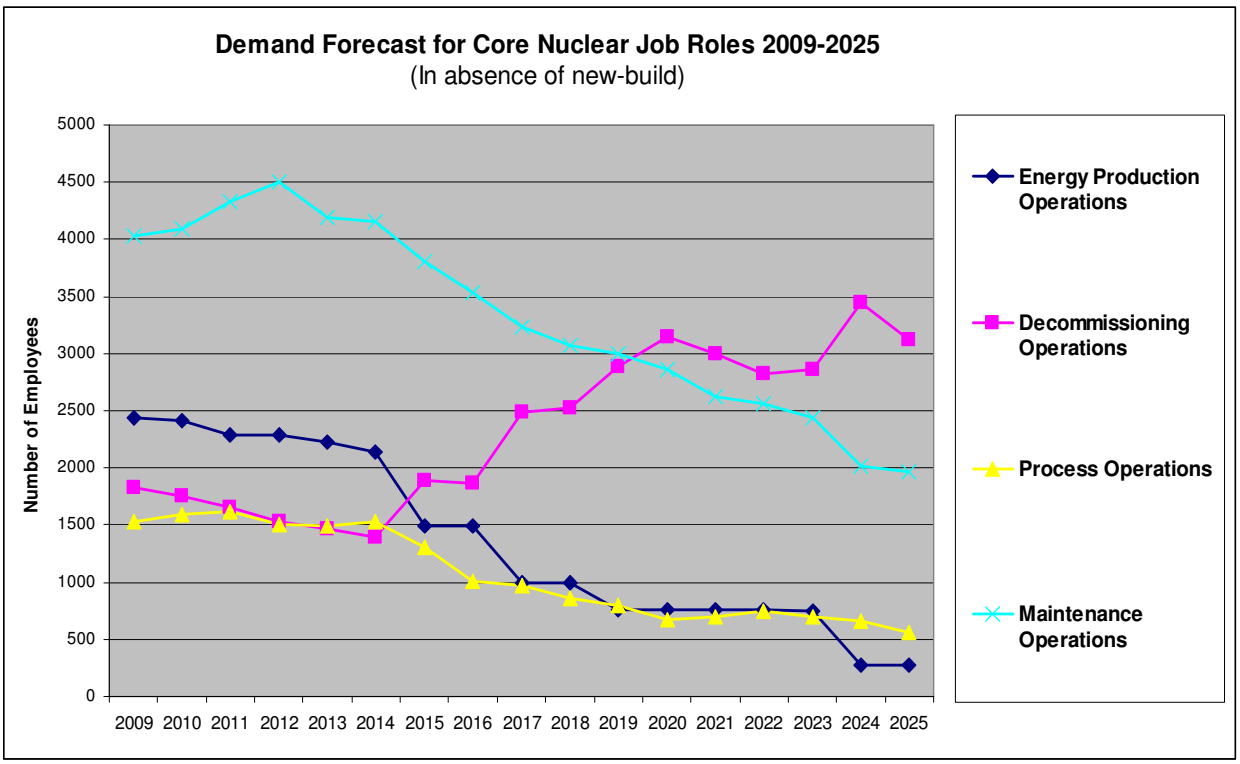


Chart 5 Demand Forecast for Core Nuclear Job Roles (without new-build program)



Age Profile and Retirement

Chart 6 Age Profile Comparison

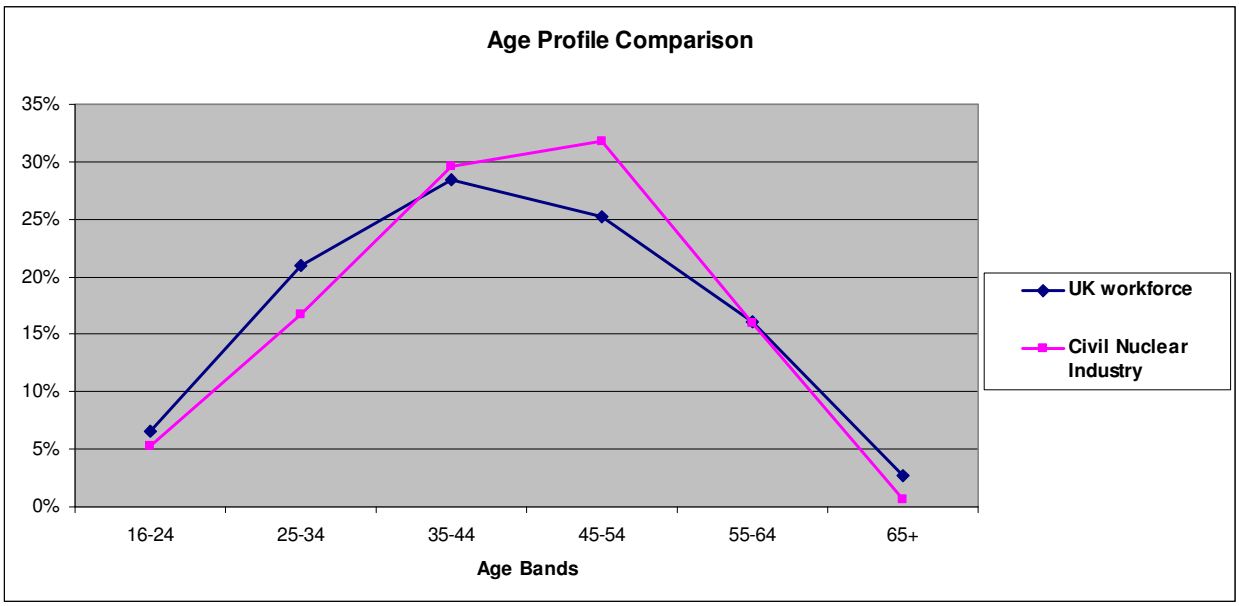


Chart 7 Age Profile of Civil nuclear operating workforce by Skill level

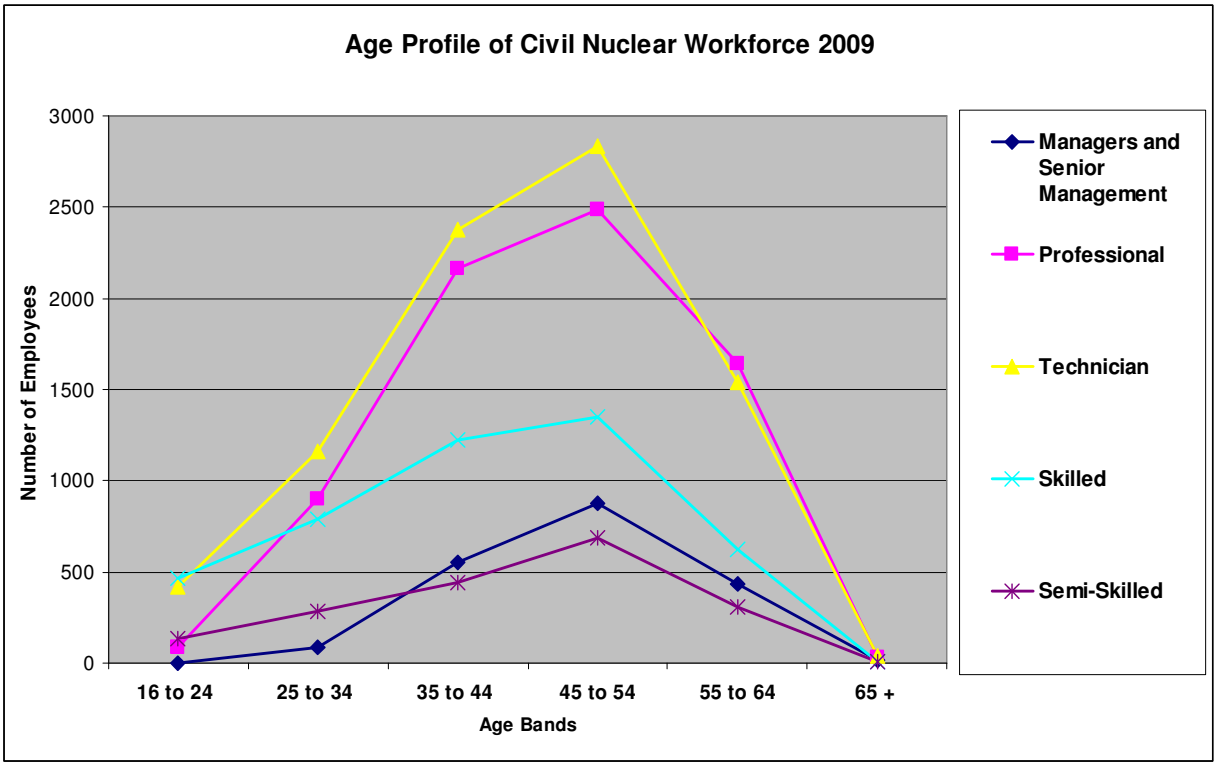
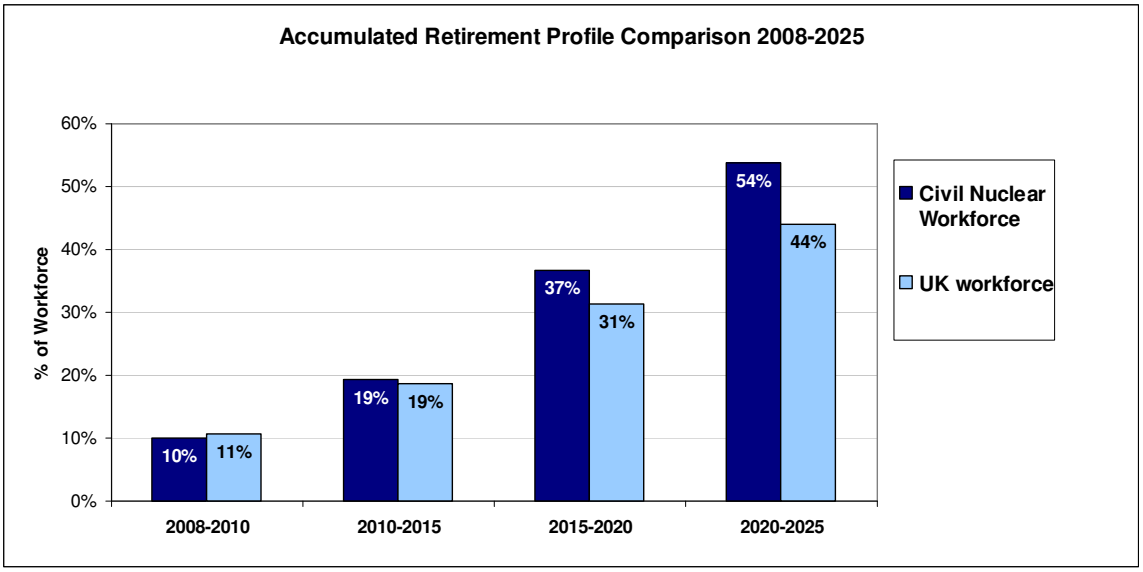


Chart 8 Accumulated Retirement Profile Comparison



New Build Scenarios

Chart 9 Civil Nuclear Workforce Demand

Scenario 2 in the illustration below refers to the replacement capacity scenario (See chart 11) used in this paper; Scenario 1 refers to an alternative at half this capacity.

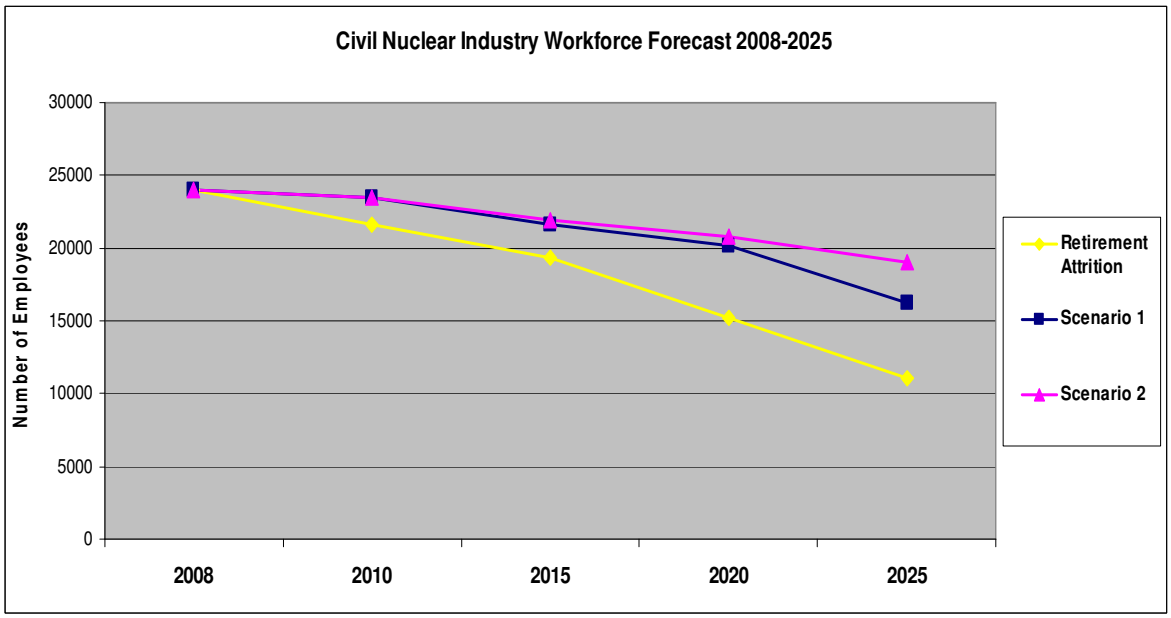


Chart 10 Workforce Requirements for 1 PWR

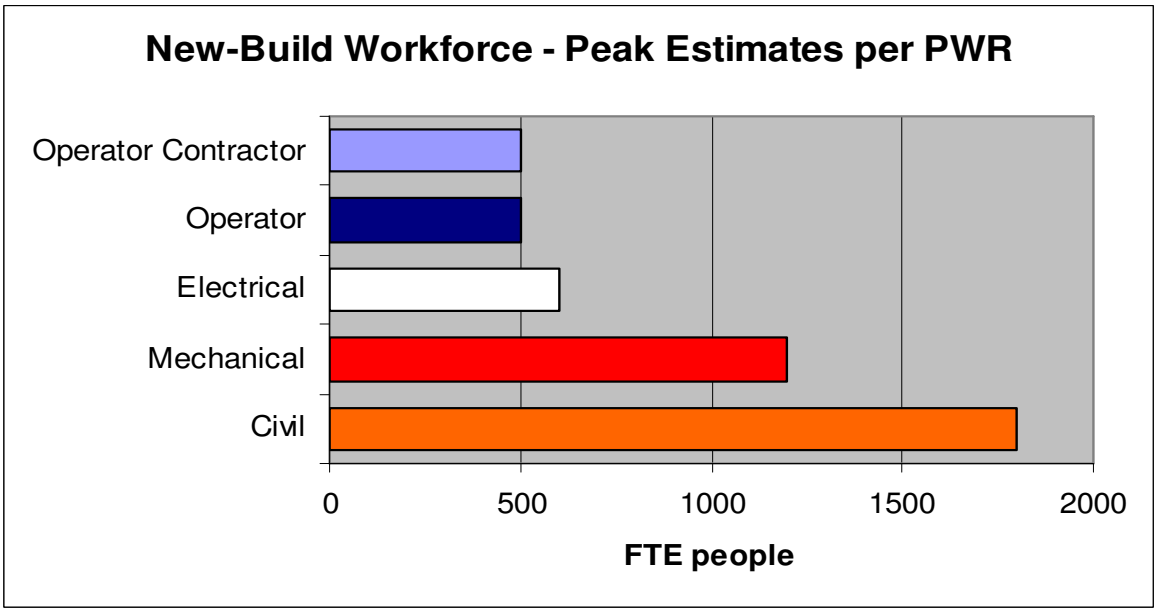


Chart 11 Civil Nuclear Workforce- Replacement Generating Capacity Scenario

Following chart shows a hypothetical scenario of 8 new PWRs and across-the-board lifetime extensions to the existing AGR estate.