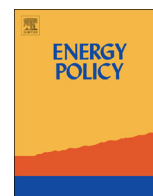




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Nuclear energy policy in the United States 1990–2010: A federal or state responsibility?

Raphael J. Heffron ^{a,b,*}^a Electricity Policy Research Group, University of Cambridge, Cambridge, UK^b Stirling Law School, University of Stirling, Scotland, UK

HIGHLIGHTS

- Examines the US nuclear energy sector, 1990–2010.
- Nuclear industry has evolved to a stage where an individual state is the key driver.
- Misunderstanding of the project management and public administration.
- Potential of the power of more localised (state) actions to re-ignite the industry.

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ABSTRACT

This paper examines from a policy perspective nuclear energy policy in the United States (US) from 1990 to 2010 and questions whether it is or has become a Federal or State responsibility. The present study, as befits policy research, engages with many disciplines (for example, in particular, law and politics) and hence the contributions move beyond that of nuclear energy policy literature and in particular to that on nuclear new build and other assessments of large infrastructure projects. Several examples at the Federal level are identified that demonstrate that the nuclear industry has evolved to a stage where it requires a focus on the power of actions at a more localised (state) level in order to re-ignite the industry. The research concludes that there remains a misunderstanding of the issue of project management for complex construction projects, and it is highly arguable whether many of its issues have been resolved. Further, the research asserts that the economics of nuclear energy are not the most influential reason for no nuclear new build in the US.

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1. Introduction

This paper examines from a policy perspective nuclear energy policy in the United States (US) from 1990 to 2010 and questions whether it is or has become a Federal or State responsibility. This paper seeks to identify and clarify those aspects of the legal, economic, and political requirements of the United States (US) in the nuclear energy sector and in particular those which affect prospects for nuclear new build but which, so far, have not been well understood by experts. The nuclear energy industry has a structure that is led by policies and institutions at a Federal (national) and even international level. This research demonstrates through several examples at a Federal level that the nuclear industry has evolved to a stage where it now requires a focus on the power of actions at a more localised (state) level in order to

re-ignite the industry. Through the exploration of policy inaction at Federal level, state policy emerges as a key driver in encouraging the growth and operation of the nuclear energy industry.

The present study, as befits policy research, engages with many disciplines, for example, in particular, law and politics. In this context, contributions are made not only at an academic policy level, but also to the literature in public administration, project management, and legal structure issues that exist for the planning of large infrastructure in the US; with the focus been on the nuclear energy industry and in particular, on nuclear new build and long-term waste management.

Finally, the research contributes to the nuclear energy policy literature and in particular to that on nuclear new build. In this regard, guiding this research are other in-depth examinations of nuclear energy policy (see, Jasper, 1990; Hecht, 2009; Pope, 2008) and other assessments of large infrastructure projects (Flyvbjerg et al., 2003; Altshuler and Luberoff, 2003; American Planning Association, 2005; Flyvbjerg, 2011). The 59 interviews used here have been carried out across the USA. The focus of this research is

* Correspondence address. Stirling Law School, University of Stirling, Stirling, UK. Tel.: +44 1786 467 591/786 857 27 84.

E-mail addresses: raphael.heffron@stir.ac.uk, raphael.heffron@gmail.com

on nuclear energy policy in the USA from 1990 to 2010, however, it references a few key publications published after 2010. However, the effect of the nuclear energy incident at Fukushima, Japan, in 2011 is beyond the scope of this research.

2. A brief background to the US electricity and nuclear industries

Civilian nuclear energy accounts for 22% of the total electricity supply in the US (see Table 1). There are 104 nuclear reactors across the US, representing a quarter of the total number of nuclear reactors in the world. The nuclear power industry in the US grew to its present capacity primarily through the construction programmes initiated during the 1960s and 1970s.

Renewable energy is playing a growing role in the US electricity market. Renewable energy sources are projected to have the

strongest growth over the medium term due to Federal and State level programs – such as the Federal Renewable Fuels Standard (RFS) and the various State Renewable Portfolio Standards (RPS) programs, and the rise in fossil fuel prices. In some projections renewables will account for 45% of the increase in total generation from 2008 to 2035 (EIA, 2010a).

Nevertheless, despite many reactor closures (23 reactors have been permanently shut down – NRC, 2011) and no new nuclear build, nuclear energy has maintained its position in the US electricity market in the period 1990–2010. This is due to the better utilisation of generating capacity, uprates and life extensions. For example, there has been 71 licence renewals granted and a further 29 applications in review or outstanding (NRC, 2011). Further, power uprates have been granted to the equivalent of six new nuclear reactors with further applications in review and expected by 2015 equivalent to that of three new nuclear reactors (NRC, 2011).

Reactors are located at 65 sites (plants) in the US with the majority of plants located in the eastern half of the country in 33 states as Fig. 1 demonstrates. Sixty-nine of the reactors in operation are pressurised water reactors, and 35 are boiling water reactors. Fig. 1 locates the current reactors in operation and also identifies how long the reactors have been in operation. Evident is that there are no new reactors in the 0–9 year category in the US.

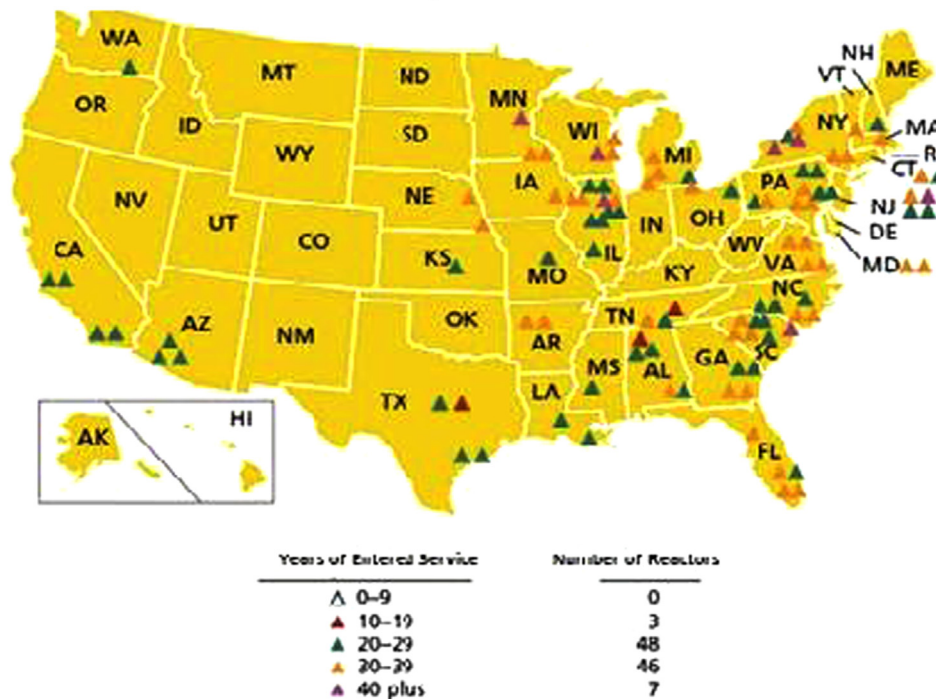
Table 1
Electricity generated by source in the US 2009.
Source: Compiled by the Author from the EIA (2011).

Supply source	Share of electricity generated by source in percentage	Electricity generating capacity (TWh)	Installed capacity
Coal	42	1755	3422
Natural gas	25	920	4672
Nuclear	19	798	1067
Renewable energy	13	417	135
Other	1	39	62

2.1. The major legislation in the civil nuclear energy sector in the US

The centrepiece of nuclear legislation in the US is the Atomic Energy Act of 1954 [42 USC 2011 *et seq.*] which is a comprehensive

**US Commercial Nuclear Power Reactors
Years of Entered Service by End of 2010**



Note: Ages have been rounded up to the end of the year.

Source: U.S. Nuclear Regulatory Commission

Fig. 1. Map of US Commercial Nuclear Power Reactors.
Source: Adapted by the Author as of October 2011 from NRC (2011).

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