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AN ORAL HISTORY OF  
THE ELECTRICITY SUPPLY INDUSTRY

Scoping Study for proposed  
National Life Stories Project

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PARTNERSHIP  
WITH



## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

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## Table of Contents

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Table of Contents .....	3
Definitions and Acronyms.....	5
Key Organisations in the UK Electrical Supply Industry .....	7
Section 1 - Summary and Recommendations .....	10
Section 2 - Historical Overview of the Electricity Supply Industry in the UK.....	12
2.1 The Structuring and Restructuring of the Nationalised Electricity Supply Industry .....	12
2.2 Generation .....	14
2.3 Atomic Aspirations .....	16
2.4 Transmission.....	21
2.5 The Years of Crisis.....	22
2.6 Privatisation.....	25
2.7 After Privatisation - Corporate Structure .....	30
2.8 After Privatisation - Technology .....	31
Section 3 - Survey of Existing Oral History and Other Collections on the Electricity Supply Industry .....	33
3.1 Clearly Defined Oral History Projects on the Electricity Supply Industry .....	33
3.2 Other Projects .....	34
3.3 Relevant Oral History Material Held Within Other Collections.....	35
3.4 Radio Interviews.....	37
3.5 Moving Image Material.....	37
3.6 Written Archives .....	40
Section 4 - Results of Stakeholder and Potential User Interviews.....	43
4.1 Views on the need for an oral history project on the Electricity Supply Industry .....	44
4.2 Scope and Coverage .....	45
Section 5 - The Case for an Oral History Project on the Electricity Supply Industry .	46
Section 6 - Outline Shape of an Oral History Project .....	49
6.1 Scope .....	49
6.2 Electricity Men .....	51
6.3 Unheard Voices .....	51
6.4 Influential Figures On The Margins.....	53
6.5 Possibilities for Video.....	53
6.6 Recommendations.....	54
Bibliography .....	55
Appendix 1: Potential Interviewees .....	60

**NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

Appendix 2 – Examples of Television Material held by the Media Archive for Central England ..... 61

Appendix 3 – Lists of Energy Ministers, Chairs of CEGB and Electricity Council..... 63

Appendix 4 - The Gendered Nature of Employment in the Electricity Supply Industry ..... 65

## Definitions and Acronyms

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### Definitions

- **Base Load** – level of constant demand for electricity, aside from seasonal and daily peaks in use.
- **Distribution** – local and low voltage transport of electricity.
- **Fossil Fuels** – fuels from fossilised organic matter, such as coal, oil and natural gas.
- **Generation** – production of electricity.
- **Kilowatt (KW)** – unit of power, a thousand Watts.
- **Kilovolt (KV)** – unit of electric potential, a thousand Volts. Used in this report to indicate the capacity of transmission systems.
- **Load** – the sum of the electricity requirements of all the consumers on an electrical network. How much electricity is needed.
- **Megawatt (MW)** – unit of power, a million Watts. Used in this report to indicate the output of power stations.
- **Pocket Power Station** – small power station used to provide electricity at short notice for short periods.
- **Renewable Resources** – sources of energy which are naturally renewed, such as wind, hydroelectric and biomass.
- **Supply** – the retailing and marketing of electricity.
- **Transmission** – high voltage transport of electricity.

### Acronyms

- Advanced Gas-Cooled Reactor (**AGR**)
- Area Electricity Board (**AEB**)
- British Electricity Authority (**BEA**)
- British Nuclear Design & Construction (**BNDC**)
- British Nuclear Fuels Limited (**BNFL**)
- Central Electricity Generating Board (**CEB**)
- Central Electricity Generating Board (**CEGB**)
- Central Electricity Research Laboratory (**CERL**)
- Combined Cycle Gas Turbine (**CCGT**)
- Department of Energy (**DoE**)
- Department of Trade and Industry (**DTI**)
- Eastern Electricity Board (**EEB**)
- East Midlands Electricity Board (**EMEB**)
- Electricity Council (**EC**)
- Kilovolt (**KV**)
- Kilowatt (**KW**)
- London Electricity Board (**LEB**)

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

- Merseyside and North Wales Electricity Board (**MANWEB**)
- Ministry of Technology (**MoT/MINTECH**)
- Midlands Electricity Board (**MEB**)
- Megawatt (**MW**)
- North Eastern Electricity Board (**NEEB**)
- North Western Electricity Board (**NORWEB**)
- North of Scotland Hydro-Electric Board (**NSHEB**)
- National Coal Board (**NCB**)
- Office of Electricity Regulation (**OFFER**)
- Pressurised Water Reactor (**PWR**)
- Regional Electricity Company (**REC**)
- Southern Electricity Board (**SEB**)
- South Eastern Electricity Board (**SEEBOARD/SEEB**)
- South Scotland Electricity Board (**SSEB**)
- Steam Generating Heavy Water Reactor (**SGHWR**)
- South Western Electricity Board (**SWEB**)
- The Nuclear Power Group (**TNPG**)
- United Power Company (**UPC**)
- United Kingdom Atomic Energy Authority (**UKAEA** or, simply, **AEA**)
- Kilovolt (**KV**)
- Kilowatt (**KW**)
- Yorkshire Electricity Board (**YEB**)

## Key Organisations in the UK Electrical Supply Industry

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The following alphabetically organised list summarises the roles of the key organisations which made up the electricity supply industry in the UK at different times during its existence.

- Area Electricity Board (AEB) – Nationalised regional electricity board created in 1947 and given more independence after 1957. In Wales and England they were responsible for distribution and supply of electricity generated and transmitted by the CEGB. Their operations included running electricity appliance shops and responsibility for local distribution systems. A few also had minor generation capacity. Post 1955, the two remaining Scottish boards became vertically integrated, taking over facilities for generation and transmission within their areas.
  - North Western Electricity Board
  - North Eastern Electricity Board
  - Yorkshire Electricity Board
  - Merseyside and North Wales Electricity Board
  - East Midlands Electricity Board
  - South Wales Electricity Board
  - Midlands Electricity Board
  - Eastern Electricity Board
  - South Western Electricity Board
  - Southern Electricity Board
  - London Electricity Board
  - South Eastern Electricity Board
  - North of Scotland Hydro-Electric Board (created 1943)
  - South Scotland Electricity Board (formed by merger of South West Scotland Electricity Board and South East Scotland Electricity Board in 1955)
- British Electricity Authority (BEA) – Initial nationalised electricity industry created by 1947 Electricity Act, with responsibility for transmission, generation and 14 area boards in England, Wales and Scotland. Renamed as the Central Electricity Authority (CEA) after loss of Scottish responsibilities in 1955 and replaced by the CEGB and EC after 1957.
- British Nuclear Fuels Limited (BNFL) – Originally a government owned company split off from UKAEA in 1971 to supply and transport nuclear fuel. Post privatisation of the industry it expanded its interests into nuclear decommissioning, acquired Magnox Electric and its nuclear power stations and American reactor builder Westinghouse. After divesting of assets, it is currently scheduled to be abolished.
- Central Electricity Board (CEB) – Pre-nationalisation body tasked with overseeing electricity industry and managing national grid, replaced by BEA in 1948.

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

- Central Electricity Generating Board (CEGB) – Nationalised electricity generation and transmission organisation, controlling most of the power stations and the transmission system outside Scotland. Formed in 1958 as the successor to most of the CEA's operations. Split in 1990 into privatised generators National Power and Power Gen, the National Grid Company, and the government retained Nuclear Electric.
- Electricity Council (EC) - Nationalised industry council with responsibility for advising the appropriate minister on electricity supply matters and a variety of duties toward the industry, including advising the industry, research, industrial relations, training, and health and safety. It was made up of a chairman, two deputy chairmen, independent members and representatives from the CEGB and each AEB. (Lists of CEGB and EC chairmen are included in the appendices.) Disbanded in 2001 and replaced by the Electricity Association.
- “The Ministry” - the electrical supply system in the UK has been the responsibility of different government departments at different times, reflecting the prevailing political mood of the day and how important energy matters have been seen.
  - 1942 Ministry of Fuel and Power.
  - 1957 Ministry of Power.
  - 1969 Ministry of Technology.
  - 1970 (Merged into) Department of Trade and Industry.
  - 1974 Department of Energy created (post 1973 oil crisis).
  - 1992 Disbanded and functions spread around between Office of Gas Supply and the Office of Electricity Regulation (Regulation), Department of the Environment (Energy Efficiency), and Department of Trade and Industry (Energy Policy).
  - 2008 Department of Energy and Climate Change created.
- National Coal Board (NCB) - Statutory corporation responsible for running the nationalised coal industry.
- National Grid – Nationwide high-voltage transmission network, connecting power stations with local distribution. Originally responsibility of CEB, transferred to BEA upon nationalisation. In 1955 transmission in Scotland was transferred to the Scottish area boards. The rump organisation was retained by CEGB until privatisation when it was split off as the National Grid Company, initially owned by the RECs.
- National Power – Privatised company formed to take over majority of CEGB generation assets, originally intended to include nuclear power stations until it proved economically infeasible. Held about 70% of energy generation at privatisation. Colloquially known as “Big G.”
- Nuclear Electric - Government owned organisation responsible for former CEGB nuclear power stations post privatisation. Scottish Nuclear was the equivalent in Scotland. Assets divided between Magnox Electric (public

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

owned, older Magnox stations) and British Energy (privatised, newer AGR and PWR stations) in 1996.

- Office of Electricity Regulation (OFFER) – Non-departmental government agency which acted as the regulator of the electricity industry with responsibilities for ensuring demands for electricity were satisfied, licensing electricity suppliers and promoting competition. Later merged with gas market regulation to form Ofgem (Office of Gas and Electricity Markets) to reflect the more integrated nature of the utilities industry.
- Power Gen – Privatised company formed to take over remaining minority of CEGB non-nuclear generation assets Held about 30% of energy generation at privatisation. Colloquially known as “Little G”. Under Ed Wallis and John Rennock was more dynamic than its larger competitor in the early years.
- Regional Electricity Company (REC) – Privatised successors to Area Electricity Boards, formed in 1990. Some expanded their interests from distribution and supply to include generation. Varied fates in subsequent years.
- United Kingdom Atomic Energy Authority (UKAEA or, simply, AEA) – Governmental body responsible for overseeing nuclear research. As first constituted in 1954 UKAEA had a wide remit, with responsibility for both military and civilian nuclear technology, including an influential role in the development of nuclear power stations. It also ran experimental nuclear power stations, such as Calder Hall. In subsequent years its role was pared down, splitting off British Nuclear Fuels Ltd (BNFL) in 1971 and selling its decommissioning business to Babcock in 2009 amongst other organisations. Today it concentrates mainly on fusion power research.

## Section 1 - Summary and Recommendations

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The importance of the electricity supply industry in British national life has not been reflected in the collection of oral history interviews with those who planned, organised, built and operated it. There has been no extensive oral history project that considers the industry as a whole, and only a limited range of its components have been covered in smaller scale projects. Many of the academic researchers who undertook interviews as part of their investigations into particular aspects of the industry either did not record those interviews or have not deposited them in an archive where they are accessible to future researchers. While there is an extensive body of documentary material on the industry that has been preserved, some key aspects have not survived and others can only be elucidated through oral history interviews. Many of those who might fill these gaps are already beyond the reach of oral history, and some of those that remain are elderly. In addition, the combination of the rise of digital communications and the uncertainty of preservation of company records during the post-privatisations period of frequent mergers and acquisitions means that recording oral history interviews now with key participants is the only way we can be certain that a comprehensive record will survive.

To understand the electricity supply industry as a whole we need to understand how its constituent parts functioned together as a system. An oral history of the industry will need to interview a range of individuals that together provide a picture of its key components and how these changed over time. At an organisational level this means looking at the organisations established during nationalisation in the 1940s, primarily the BEA and the AEBs and the reorganisation of the BEA from the CEGB and the Electricity Council as well as the process of privatisation and the subsequent reorganisations. The changing technologies of generation will also need to be considered, with particular attention to the increase in scale of coal fired power stations, the shift to gas during the 1990s 'dash for gas' and the development of renewables since the 1970s. The construction and operation of nuclear power stations and of the super grid will also need particular attention. The operation of these technologies and their integration into a coherent and robust system that withstood some severe challenges should also be addressed. Strategic decision making and the direction of energy policy will also need to be covered.

While it is important that this project captures the recollections of those who held key roles, keeping the system operating required large numbers of people who are difficult to identify and track down, but nonetheless played key roles and who will be able to provide important insights into what it was like to work in the industry. This project will need to develop a strategy for identifying and locating these people for interview. In addition it will be important to include representatives from those groups who were not within the industry, but who had a significant role, for example advisers and contractors. An oral history project will not only establish a lasting record of the activities of the electricity supply industry but it will also provide unique insights into how it felt to work in the industry and how organisational change affected individuals and their relationship to their work both during their working lifetimes and in retirement. It will also uncover aspects of working relationships

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

between key groups and of workplace cultures within the industry that remain absent from written sources.

Our recommendation is that an oral history project on this sector should interview at least 45 individuals. This should include interviewees whose careers span over each of the key areas of policy, technology, operations and organisations. To be representative of the industry as a whole the project would benefit greatly from an additional 10 or so interviews from lesser heard voices, that is people who played a vital role in the operation of the industry but who did not reach high-level management positions where they had a visible public presence. These lesser heard voices should be drawn from people working across the operations of the industry, such as grid control engineers and AEB employees. Given the life-long involvement with the industry of many potential interviews, life story interviews should be used in the large majority cases. However, there is a strong case for shorter interviews with figures such as energy ministers or advisers, whose involvement with the industry was fleeting, but significant. An additional programme of up to 10 supplementary short video interviews should be included to document promising interviewees at key locations or with key technologies. There may be some overlap between the viewpoints offered by even key interviewees, and further discussion is needed to determine the exact mix of interviewees within whatever the constraints of the project turn out to be. We have identified over 120 potential interviewees from which to select individuals for this project. Of these around 45 occupied key posts within the industry, played important roles in significant episodes in its history, or had rich careers touching on several areas. Further research will undoubtedly reveal more figures and this list can only be a start given the size and diversity of the electricity supply industry. It is important that the final selection of interviewees takes into account how the combination of those chosen ensures that key areas are covered and that the interconnections between them recorded.

We also recommend that full transcripts of the interviews are prepared and that, subject to copyright permissions, as many of them as possible are made available through the British Library Sounds website [<http://sounds.bl.uk>]. This is particularly important in this case because of the international interest in this industry and in particular in its experience of privatisation.

## Section 2 - Historical Overview of the Electricity Supply Industry in the UK

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*Persons who build electric light and power systems invent and develop not only generators and transmission lines but also such organizational forms as electrical manufacturing and utility holding companies.* T. P Hughes, 1987.

The electricity supply industry, as its distinguished historian Thomas Hughes established, is best understood not as the story of any one particular artefact or theme, but as a large technological system. It is not just the story of power stations and high voltage cables, but of the organisations that build and manage it, the legislation that governs it, the political ideologies that shape it, the people who work in it and far more besides. This history of the electricity industry in postwar Britain provides an overview of the key developments and the issues that shaped the electricity system in Britain, looking particularly at the organisation, policy, and technology of the system. In doing so, it lays out the ground that an oral history of this sector should seek to cover. Where appropriate, it identifies individuals and groups for possible interview and suggests topics of interest for interviews.

### **2.1 *The Structuring and Restructuring of the Nationalised Electricity Supply Industry***

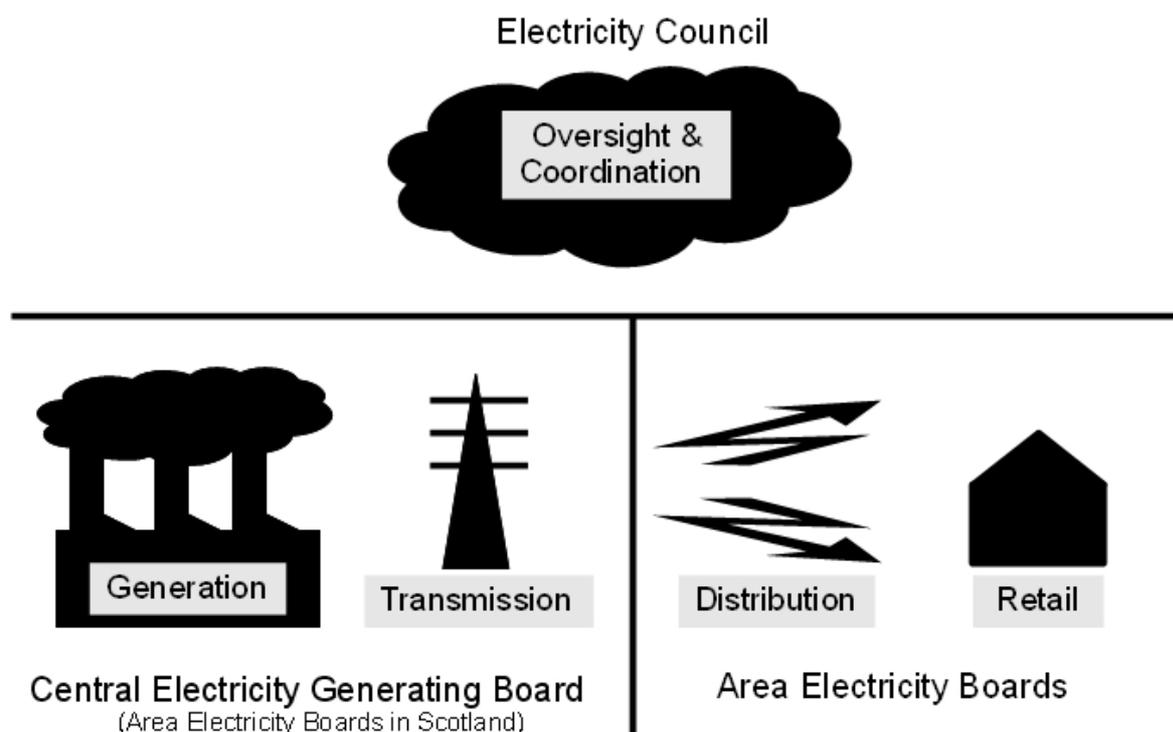
The early electricity supply industry in Britain can best be visualised as a patchwork of local electricity supplies provided by private companies and local authorities. A situation quite unlike those in, for example the USA or Germany, and created by a long running laissez-faire attitude toward regulation of the industry. In the 1920s the Electricity (Supply) Act 1926 increased central control of the industry by providing the legislation for the creation of a “national gridiron”, a 132kV high voltage transmission network linking together the disparate parts of the electricity supply industry. Managed by the Central Electricity Board (CEB), by 1938 this had evolved into the National Grid. However, the diversity of supply and distribution organisation continued, albeit managed more effectively. Prior to nationalisation in 1947/48 generation and local distribution remained largely the preserve of around 200 private electricity companies and 369 local authority electricity concerns.

After debate throughout the war years, the Electricity Act 1947 nationalised the electricity industry under a Labour Government committed to the public ownership of key industries. This saw the creation of 14 regional Area Electricity Boards (AEB) controlling retail and distribution across Wales, England, and Scotland, under the central auspices of the British Electricity Authority (BEA), which also controlled generation and transmission through its Central Authority. The North of Scotland Hydro-Electric Board, which had already been formed in 1943, remained independent, and in Northern Ireland the electricity industry was formed into a single vertically integrated board. Most of the key figures in the industry at nationalisation are deceased and safe from the attentions of oral historians, however there are certainly people who began their careers before nationalisation, including some who later rose to senior industry positions. These include Frank Ledger (who

## NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK*

distinguished himself in planning during the 1984 miners strike), Cyril Wickstead (later head of the EEB) and Bryan Townsend (later head of the MEB).

The BEA became a highly centralised organisation under its chairman Lord Walter Citrine. This did not go without criticism, both from within the industry, with a desire by some AEBs for more independence, and from without, particularly Conservative politicians. The structure of the nationalised electricity supply industry was reformed under the Conservative Governments of the 1950s. Backed by election pledges of decentralisation, and with the support of the Scottish Office, the electricity supply industry in Scotland was split off in 1955. The two AEBs in Southern Scotland and the associated BEA generation assets were merged into an independent, vertically integrated South of Scotland Electricity Board. Consequently the BEA, which had been against the move, was renamed as the Central Electricity Authority (CEA). More fundamental change was to come after the 1955 Herbert report, which recommended a less centralised industry with more of a commercial outlook. The consequent Electricity Act 1957 created a structure that would largely remain until privatisation in the 1990s, summarised in the figure below.



A new Central Electricity Generating Board (CEGB) was made responsible for generation and transmission with the senior nuclear engineer Sir Christopher Hinton appointed as its first chairman. Hinton, it was hoped, would champion nuclear power, the coming next big thing, over the reservations of the CEGB's own engineers. The 12 Area Electricity Boards were given more independence in their operations. Finally, the Electricity Council (EC), including representatives from the CEGB and AEBs, was formed to oversee and coordinate the industry, particularly in such matters as policy, advising the minister, industrial relations, training, and health and safety.

The various functions of an electricity supply industry were divided and to be representative of the activities of the whole industry an oral history project should try

to interview representatives from each of its organisations within the industry. The CEGB, in charge of power stations and transmission, seems to be the most prominent organisation in the history of the electricity supply industry and is a obvious focus for an oral history project. It is, however, only the most obvious part of the story. The electricity supply industry was much more than the CEGB and a systematic history of the industry as a whole needs to understand the less obvious roles of the AEBs, whose activities seem to have attracted little interest, in spite of the fact that they were the public interface of the industry to its customer, and included the Area Electricity Consultative Councils. The role of the Electricity Council is even more nebulous, with some commentators noting its relative lack of clear purpose compared to the rest of the industry. Oral history could provide a richer account of the activities of these other organisations.

At top level, only Glyn England and Gil Blackman remain of the CEGB heads, and Francis Tombs is the last surviving Electricity Council chairman, making these priority interviewees. England and Tombs are also amongst several surviving AEB chairmen who could be interviewed, of whom Thomas Rutherford (Chairs of SEB then NEB 1975-1989) and Kenneth Whittle (Chair of SWEB 1977 - 1987) seem to be the longest serving in post. However, the managerial story is only one level of the history of the electricity supply industry. Beneath the managers were tens of thousands of employees working to develop and run the system in a variety of capacities. Such is the nature of large organisations and the teamwork nature of developing and operating a large and diverse technical system, that the names throughout this report can only be the tip of an iceberg.

### **2.2 Generation**

The immediate problem for the newly nationalised electricity industry was to address the postwar shortage of electricity. Damage and lack of maintenance in wartime, and continuing postwar shortages in coal and building materials led to electricity shortages for domestic and industrial users. In February 1947 widespread cuts to industrial customers caused 15% of the UK workforce to be laid off, and power cuts and peak time restrictions in voltage (brownouts) were a fact of life. Problems were made worse by the fact that electricity was underpriced as a result of wartime controls and there was no incentive for the independent electrical companies to raise prices in the run up to nationalisation. In some places the cost of electricity to consumers did not even match the price of the coal needed to generate it, let alone meet other costs.<sup>1</sup> With coal rationed until 1958, the use of cheap electricity to heat homes boomed, adding to the already hard to meet demand.

The pricing of electricity would remain a problematic subject over subsequent years, the decentralised nature of the industry making it difficult to implement effective price structures. The BEA Central Authority imposed a bulk supply tariff (BST) on the AEBs, which was not necessarily related to the retail price they actually charged consumers for it. The ongoing pricing debates between the Treasury, CEGB, Electricity Council and AEBs would bring in academic economists such as Ralph Turvey and Ian Little as consultants (not to mention the deceased Ronald Meek,

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<sup>1</sup> Leslie Hannah, *Engineers, Managers and Politicians*, 29-32.

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

Ronald Edwards and Michael Posner).<sup>2</sup> However, as late as the 1970s AEBs were still reporting that tariffs were set at a level insufficient to meet their outgoings, partly due to Government counter inflation measures.<sup>3</sup>

The electricity supply industry resorted to a number of measures to manage use of electricity, encouraging domestic customers to use less and spreading the load by working with industrial customers to shift working hours. The curiosity of an industry working to limit use of the product it was supposed to be selling goes without saying. The fundamental need was for more generation capacity. In the postwar programme of power station construction individual generating units, of which a few might be used in a single power station, were standardised in 30MW and 60MW capacities by ministerial order to expedite more rapid construction and enhance reliability. This helped to meet the immediate need for more power stations - 66 were built between 1948 and 1952 -<sup>4</sup> but it also limited innovation and the construction of larger, more efficient generating units.

Management changes to give more voice to less conservative engineers, such as the new CEGB generation design engineer F.H.S Brown, resulted in the adoption of larger generation plants over the 1950s. These progressed steadily through 120MW, 200MW and 275MW equipment sizes. In 1966 Ferrybridge C, the first of a series of 2000MW stations, based on multiple 500MW equipment sets, came online. To put this into comparison, Ferrybridge B, finished in 1959 was only 300MW in total. By 1970 600MW equipment was being introduced – 10 or 20 times the power of the standard equipment of 20 years before. With this increase in capacity came enhanced thermal efficiency, but also complexity and the larger stations' development was marred by design and construction problems caused by the ambitious up-scaling. It was some years before these problems were rectified. Nevertheless they were the zenith of a long process of technological advance made by the electricity supply industry in increasing the efficiency and scale of fossil fuel generation.

To address this topic we should consider interviewing those within the CEGB concerned with the planning and development of power stations and solving the problems required to put them into operation. The CEGB maintained a large research organisation of its own to help it solve technical problems, centred at the Central Electricity Research Laboratory (CERL) at Leatherhead, but also including Marchwood Engineering Laboratory (MEL), Berkeley Nuclear Laboratories (BNL) and CEGB Generation Development and Construction Division at Barnwood. The Electricity Council also had a research centre. Ian Preston (SSEB Chief Engineer of Generation Design and Construction 1972-1977 and Director General of the CEGB Generation Development and Construction Division 1977–83) appears a strong candidate. The whereabouts of his successor Ron Burbridge are unknown, however Andy Spurr, who worked at MEL and Berkeley in the 1970s and 80s and is currently British Energy's Managing Director of Nuclear Generation, would be able to provide a later view. CEGB and SSEB chief engineers and technical directors should also be well-placed to provide an overview of generation development, including John Harris,

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<sup>2</sup> For a detailed discussion of the development of electricity pricing, see Martin Chick, *Electricity and Energy policy in Britain, France and the United States Since 1945*, chap. 4.

<sup>3</sup> South Western Electric Board, Annual Report 1973-74.

<sup>4</sup> CEGB, *Advances in Power Station Construction*. 4.

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

David Jeffries, Francis Tombs and Donald Miller. Dr Peter Chester, the director of CERL from 1973-82 and previously a manager of scientific services at the EC research centre and CEGB NW Region should be interviewed about the role of in-house scientific services within the electricity industry.

Extensive though its facilities were the CEGB was not self-sufficient in power station construction. They required the services of a range of specialised engineering firms such as Parsons, GEC, Babcock, Ferranti and English Electric. However, the CEGB in-house expertise and monopoly market position allowed them a dominant position to specify the equipment they wanted rather than simply buying it. The relationship was not simply that of customer and supplier and, it is tempting to view these private suppliers as essentially part of the extended nationalised electricity industry. The long serving GEC engineering director David Kalderon, who solved some of the technical problems with the 600MW equipment at Longannet power station in the 1970s, should be interviewed to provide a long term perspective from an industry supplier embedded in the electricity supply industry. It is likely that others listed in the nuclear section will also be able to contribute here.

Coal, of course, was not the only fuel available. However, with the coal industry also nationalised it was, naturally, a favoured source for the government, who protected the coal industry from the early 1950s with taxes on oil imports. However, in the early 1950s coal shortage were predicted, leading to the Ministry of Power to direct the CEGB to convert some stations to dual firing. By the 1960s, when a glut in coal appeared, the CEGB was ordered to increase their coal burn, with a surcharge if it failed to burn enough. British energy policy was thus at least partly geared to propping up the National Coal Board. In 1964 88% of the fuel burned by the CEGB was coal, to only 11% oil, which would remain a secondary fuel, burned in limited quantities by stations closer to ports than coal fields.<sup>5</sup> However, the real rival to coal was to come from a rather more hyped source.

### **2.3 Atomic Aspirations**

The nuclear energy policy of the United Kingdom is of long lasting importance to understanding the shaping of the electricity generation industry and its privatisation. More so than conventional power, its complex history was shaped by national strategic aims, competing technologies, industrial interests, the divergent aims of different government agencies and, latterly, environmental concerns. And yet, for much of the postwar period, the question rarely seems to have been: *nuclear power or not? But how much nuclear power? And what sort of reactors will generate it?*

In 1956 Calder Hall, the world's first commercial nuclear power was 'switched on' by the Queen. Calder Hall was much celebrated at the time, but its inauguration was just the crowning moment of a more complex story. Just as the coal fired power stations supported the nationalised mining industry, so nuclear power stations supported the UKAEA, the associated nuclear power construction industry, and even the nuclear deterrent. The prototype for the UK's Magnox reactor programme, Calder

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<sup>5</sup> Martin Chick, *Electricity and Energy policy in Britain, France and the United States Since 1945*, 9-15.

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

Hall was intended as much for plutonium production for nuclear weapons as civilian power generation. This dual purpose was partly behind a serious miscalculation in the long term economics of nuclear power, based on the assumption that plutonium could be used as fuel for future reactors, offsetting the costs of nuclear energy. Unfortunately, as it gradually emerged, plutonium cannot readily be used as reactor fuel and contributed little to income whilst generating a stockpile of nuclear waste that would someday have to be paid for. The UKAEA would pursue the partially plutonium fuelled Fast Breeder Reactor (FBR) for decades without getting further than a series of prototypes. Electricity costs per kWh of the first Magnox stations were two and a half times that of the best coal power stations.<sup>6</sup>

Calder Hall was the responsibility of UKAEA, not the CEA and the relationship between the two organisations, and their successors, was sometimes a difficult one. Some have argued that Britain would have been better served by a more cautious programme of nuclear development, but the interests involved, not least national pride, were complicated. For the CEGB nuclear power was one of a number of means to an end, but it was the *raison d'être* of the AEA. An oral history project should touch on the relationship between the two organisations, ideally through interviewees from both organisations. Those who served on both sides may be uniquely qualified to contrast both points of view. These include Brian Eyre, who held various CEGB and UKAEA research posts from the 1950s to 1970s, and Norman Sellers of the UKAEA FBR team from 1957 and later a CEGB research manager and nuclear power station manager. Such was the secrecy ascribed to nuclear matters that the BEA had been excluded from the Trend working party which planned the expansion of nuclear power in the early 1950s. The consequent programme of nuclear power station construction was largely imposed on them. At the time an energy gap has been predicted caused by an expected shortfall in coal production, and troubles in the Middle East, the Abadan and Suez crises, heightened worries over the security of oil supplies.<sup>7</sup> The AEA was naturally more optimistic in their assumptions about nuclear power than the electricity supply industry. In the climate of the time and with a government who supported nuclear expansion, the “nuclear knights” view was influential. The result was that in 1957 the programme was expanded to 19 nuclear power stations generating up to 6000MW of power.

However, the CEGB, under the leadership of Sir Christopher Hinton, the former head of the AEA's Industrial Division, fought to reduce the number of nuclear power stations that were to be built. The foreseen coal and oil shortages did not materialise, indeed the nationalised coal industry had something of a glut to dispose of, for which the CEGB was the obvious buyer. Indeed, in later years the nationalised mining industry and mining unions, who naturally saw the expansion of nuclear power as a threat to their own interests, lobbied against nuclear's over-expansion. Conventional power stations were becoming more efficient and the Magnox stations seen as expensive, obsolete technology. Hinton, with the gravitas of a distinguished nuclear engineer, lobbied successfully to bring about a reduction in the proposed nuclear generating capacity, although Britain could still, for a time, claim the largest civilian nuclear power programme. The first CEGB operated nuclear power stations, Berkeley (276MW) and Bradwell (142MW) came online simultaneously in 1962 and

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<sup>6</sup> Leslie Hannah, *Engineers, Managers and Politicians*, 243.

<sup>7</sup> Roger Williams, *The Nuclear Power Decisions*. 60.

## NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK*

the Magnox programme was completed with 11 stations in 1972. The early over committal and eventual scale back of the first nuclear programme neatly illustrates one of the big recurring questions in the saga of nuclear power - *how many nuclear power stations does Britain actually need?*

<b>Original Nuclear Consortia 1955-57<sup>8</sup></b>	
<b>Consortium Name</b>	<b>Constituent Companies</b>
AEI/John Thompson	Associated Electrical Industries, John Thompson, Balfour Beatty and John Laing.
GEC/Simon/Carves	GEC, Motherwell Bridge, John Mowlem.
Nuclear Power Plant Co (NPPC)	Parsons, Rayolle, Chapman, Wrightson, Strachan & Henshaw, Whessoe, Robert McAlpine and Alexander Findlay.
Atomic Power Constructions	Richardson Westgarth, Crompton Parkinson, International Combustion, Babcock & Wilcox, Trollope & Colls and Holland, Hannen & Cubitts.
EE/B&W/TWC	English Electric, Babcock & Wilcox, Taylor Woodrow.
Reorganisations over subsequent years reformed the consortia into The Nuclear Power Group (TNPG), British Nuclear Design & Construction (BNDC) and United Power Company (UPC).	

Quite aside from its extent, the other key question of nuclear power concerned the type of reactor. For example, over the 1960s the CEGB and UKAEA clashed over the choice of reactor to succeed Magnox. The AEA, with their own research agenda, favoured their own Advanced Gas-cooled Reactor (AGR) as the solution for Britain's medium term nuclear power needs. Hinton and the CEGB considered other options, including foreign designs such as the Canadian CANDU reactor. This clearly did not agree with the best interests of the AEA, which was also trying to market its reactors abroad. An acrimonious debate rolled on until 1965 when the AGR was eventually chosen by the new Labour Government, at least in part to be seen to be buying British, rather than technical reasons, a decision that did not sit well with CEGB.<sup>9</sup> As it happened the AGR programme did not go smoothly, with considerable design and construction problems. Dungeness B, started in 1965, was not up and running until 1983, a delay that CEGB insiders tend to blame on the decision to appoint the wrong contractors. The questions of *how many reactors?* and, *what sort of reactors?* would return in the 1970s and 1980s. In 1973 CEGB chairman Arthur Hawkins called for a programme of 18 new power stations to be built over the next decade. By now the AEA's favoured reactor was their Steam Generating Heavy Water Reactor (SGHWR), whilst the CEGB looked favourably on the American developed Pressurised Water Reactor (PWR). Another lengthy debate ensued, the details of which are less important to this summary than the groups involved. Amongst these was the distinguished metallurgist and chief scientific advisor Sir Alan Cottrell

<sup>8</sup> S H Wearne and R H Bird, *UK Experience of Consortia Engineering for Nuclear Power Stations*.

<sup>9</sup> Roger Williams, *The Nuclear Power Decisions*, chap. 6.

## NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK*

(interviewed as part of *An Oral History of British Science*, though not about his role in this debate).

As with conventional power stations there were many groups other than the CEGB and UKAEA which had a stake in the building of nuclear power stations. Political considerations and the sheer size of the undertakings led nuclear power stations to be constructed by consortia of engineering firms supplying various reactor and power plant equipment and necessary civil engineering expertise. Quite apart from the wrangling over which consortium built what, the consortia helped shape the nuclear power industry through detailed station design work and exerting influence on the shape of the programme through the influence of its members. GEC's Arnold Weinstock, for instance would weigh into the reactor debate in favour of the PWR. Meanwhile, the independent SSEB under Francis Tombs were in favour of the SGHWR. To further complicate matters, anti nuclear campaigners were beginning to make themselves heard for the first time, with Friends of the Earth targeting the safety of the PWR in particular. After debates over comparative safety, economics, and operating experience the British SGHWR was chosen by the government in 1974, leading to the resignation of CEGB chief planner Donald Clark. In any event, the new programme was dramatically cut back and in 1978, with the reactor debate still rumbling, Energy Minister Tony Benn decided that two more AGRs would be built. Britain would eventually get a PWR in the 1980s, Sizewell B, but by a rather roundabout route.

The early decisions over the shape of British nuclear policy were largely taken in private, but by the 1970s the dangers of nuclear power were becoming more widely understood and opposition to them more vocal. The long term hope of the AEA, the Fast Breeder Reactor (FBR), which could be partly fuelled with plutonium, was dealt a blow by the 1976 Flower's Report for the Royal Commission on Environmental Pollution which warned of the dangers of nuclear waste, and of plutonium in particular (Lord Flowers has previously been interviewed as part of NLS *Leaders of National Life*). Between 1977 and 1978 a high-profile inquiry was held into BNFL's (split off from UKAEA in 1971) plans to build a reprocessing plant for both British and foreign nuclear fuel at Windscale. After a public debate, whose outcome was probably not really in doubt, BNFL won the day, leading to the building of THORP nuclear reprocessing centre. The building of the next power station Sizewell B, was subjected to an even more extensive process of public scrutiny.

After the arrival of a Conservative Government in 1979, Energy Minister David Howell outlined a new programme of ten nuclear power stations to be constructed over the next decade, at least partly to reduce the nation's dependency on coal and the effects of striking miners.<sup>10</sup> The PWR was the favoured design, but with the 1978 accident at the American Three Mile Island power station, a PWR design, fresh in the mind, another public inquiry was called for. The Sizewell B Inquiry lasted from 1983 to 1985 and turned into a comprehensive review of the issues of nuclear energy, including comparative costs with other fuels, decommissioning costs, and safety concerns. Its scope went beyond the decision of a single power station, as the adoption of the favoured American PWR design would mean abandoning the UKAEA's own reactor development line, with consequences for the Authority's own

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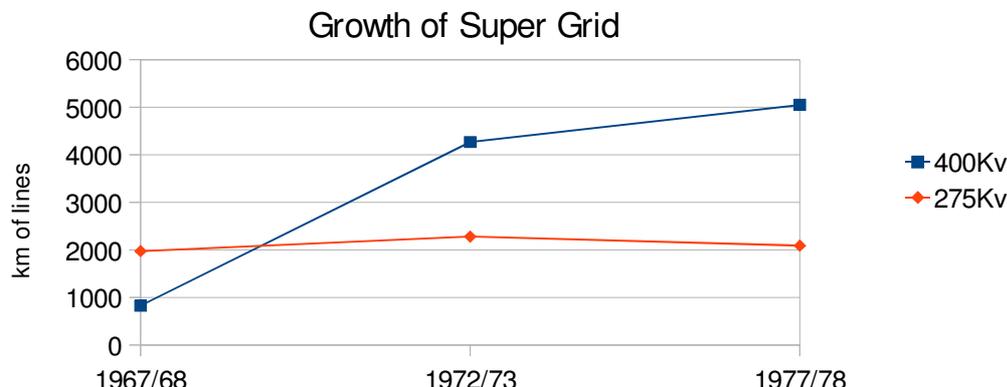
<sup>10</sup> Tony Hall, *Nuclear Politics*. 173.

future. On the other hand it would allow Britain to gain experience in PWR construction and operation for a new generation of projected power stations, even though at the time its electricity would be surplus to demands. In the event the decision was made in 1987 to build Sizewell B, but changes in the industry as a whole would leave it as Britain's sole PWR power station. Ron Anthony, the Government's chief nuclear inspector from the National Nuclear Inspectorate at the time, who also earlier worked on the AGR, should be interviewed about the Sizewell B debate.

The story of nuclear power in the UK is a particularly complicated one involving several different groups, which an oral history project should survey. Given their important role, interviewees from the UKAEA and Nuclear Consortia involved with design and construction of nuclear power stations should be sought out. From the consortia there is likely to be some crossover with conventional power station development technology. Large scale technical projects of this kind necessarily involve a great many people working as a team, meaning individual contributions are hard to judge. A partial list of people whose careers touch on these events include Sel Ghalib, a manager from 1955 to 1975 in the AEI-Thompson and The Nuclear Power Group consortia; Georg Inglis, whose career began at Parsons, including contributions as a design engineer on the prototype 1962 PIPPA reactor and Calder Hall; Roger Vaughan, Chief Engineer of the Nuclear Power Plant Company from 1955 and a supporter of AGR; Stuart Nelson, who held various posts at UKAEA from 1958, including research management posts in the 1980s in the run up to privatisation; Kenneth Durrands, who held various positions in reactor engineering at UKAEA Risley in the 1950s and 60s, in addition to a university career.

On the electricity industry side of the debate, CEGB chair Glyn England and Ian Preston, director of generation development over the late 1970s and early 1980s would be well placed to offer comment. The SSEB's desire for a SGHWR in the 1970s, contrary to CEGB policy, meant that its head Francis Tombs was prominent in the reactor debates and his successor, Donald Miller, would be amongst the witnesses of the Sizewell inquiry. Tony Benn as Energy Minister in the later 1970s, during the tail end of the reactor debates and the Windscale affair, and Minister of Technology in the 1960s, which included responsibility for the UKAEA, could offer valuable insights on the nuclear power debate from policy levels. This viewpoint could be balanced by that of his Conservative successor David Howell.

## 2.4 Transmission



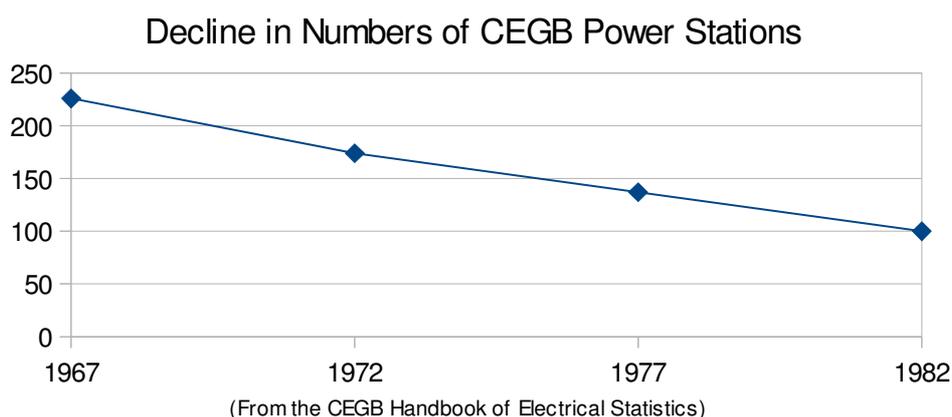
The developing physical infrastructure of the electricity supply industry was not limited to generation, but also transmission. From the early years of nationalisation rural electrification was pursued in spite of the costs involved, an activity whose implementation fell largely to the AEBs at local level. Strategically, the National Grid, which had been in operation since the late 1930s was upgraded by the Super Grid, planned by Eric Booth (d.2005). This took place in two phases. An initial 275kV network was begun in the 1950s, upgradeable to 400kV, and capable of more efficient transmission of greater levels of power than the existing 132kV network. In the 1960s the network was upgraded to 400kV and eventually much of the lower voltage 132Kv network was transferred to AEB control. The Super Grid would have important consequences on the locating of power stations, as they no longer had to be located close to sources of demand. 2000MW class stations, which required as many as 20 train loads of coal a day, could be located near the coal fields in the North. Oil fuelled power stations could be concentrated in the coal poor South close to ports.

The National Grid is vital to any history of the electricity industry. Its design and construction was a significant engineering feat, and the ability of the Super Grid to move power in bulk around the country was to influence the strategic shape of the industry through the positioning of power stations. Other than CEGB chief planner Donald Clark, it has not been possible to identify individuals involved with its construction. However, further research on the CEGB's transmission development centre in Guildford should turn up potential interviewees. CEGB's later chairman Glyn England spent part of his early career in transmission planning, and chief engineers listed above should be able to provide a start for tackling this area.

However the operational impact of the grid is perhaps the most important story to be told here. The Super Grid allowed the electricity supply industry to operate as a robust nationwide system whose value and flexibility was demonstrated throughout the crises of the 1970s and 1980s. Power generation could be concentrated at the most efficient stations; energy moved in bulk, not from the coal fired stations of the North and Midlands *to* the South, as the system was originally planned to do, but *from* the South to strike hit areas further North; and, with the help of the AEBs, planned rolling power cuts could be applied on a large scale. Unfortunately this flexibility would be sorely put to the test over the 1970s and 80s.

## 2.5 The Years of Crisis

The first two decades of the nationalised electricity supply industry were dominated by the build up of the system and arranging its organisation. However, this period of building stalled in the 1970s and 1980s, when operational concerns came to the fore. In the 1970s government policy, technology, labour disputes, operational issues, and uncontrollable external events interacted to bring about an unhappy decade for the industry that clearly show its systematic nature. Over the 1970s competition from cheap gas and an economic depression reduced demand for electricity from what had been expected. In the same time-frame the problems with the 500MW power plants were beginning to be resolved, Drax, now the largest power station in the UK and the last coal burner to be built, came online in 1974 (3,960 MW today). At the start of the 1970s the last of the Magnox reactors came online, joined in the middle of the decade by the first operational AGR reactors. The CEGB reacted to this imbalance of supply and demand by closing older, less efficient power stations, over 100 of them between 1967 and 1977. In common with other British industries, the CEGB also experienced some labour disputes over the 1970s, including a ban on overtime and work to rule in 1970 and 1977. However, the CEGB's internal labour problems seem minor compared to the impact on it of disputes in other industries.



Over the winter of 1971-72 the miners went on strike demanding higher wages. However, they did not just strike, but targeted the power stations and their supply chain with large scale picketing. As the coal and oil supply to power stations dwindled, the CEGB resorted to desperate measures to bring in essential supplies, such as manhandling drums of fuels from ships or even using helicopters to supply the hydrogen gas, used in lighting up. By February the government had handed the CEGB emergency powers to ration electricity. Voltage restrictions were in place, the AEBs were running a rota of rolling power cuts, the use of electricity for non-essential purposes such as advertising and office heating had been banned and power stations with low stocks were closed. By the 18<sup>th</sup> of February, the date that a report favourable to the miners' wage demands was published, there were just 9 days supply of coal remaining. With such a strong position, the miners pushed a settlement before returning to work on the 28<sup>th</sup> of February. The country had been almost brought to a standstill by the miners' actions, but it was only granted a temporary reprieve.

In late 1973 as oil supplies were reduced by the Yom Kippur war, the NUM began an overtime ban, which extended into a strike by early 1974, with sympathetic industrial

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

action by rail workers. With supplies of essential fuel dwindling, the government announced a three-day working week in December 1973 at the instigation of the electricity supply industry, which again resorted to juggling the use of its stations and applying voltage restrictions. In the event, the country did not grind to a halt. Instead, the crisis triggered a snap general election, which the Conservatives narrowly lost and a minority Labour government settled with the miners. The miners, by threatening a crisis in the electricity supply industry had effectively brought down a government. To those in the CEBG and the Conservative Party, the events of the 1970s would have long lasting consequences.

In 1984, when Margaret Thatcher's Conservative Government confronted the miners anew, the CEBG was ready: coal and essential supplies had been stockpiled; nuclear reactors were authorised to run for their full 2 year safety cycle, rather than shut down early as was normal practice; gas turbine 'pocket power stations' used to provide extra power for short periods were prepared for continuous operation; the National Grid used to move power from the oil fired South to the coal fired North; local initiatives modified equipment for new demands and brought decommissioned oil stations back online; early on in the crisis, Walter Marshall, head of the CEBG, made the decision to massively increase the (expensive) oil burn to conserve coal supplies; and Ed Wallis' systems operations team made extensive use of computer simulations to manage the whole affair. The CEBG also benefited from external factors: Mrs Thatcher's desire to confront the unions, limited disruption to transport systems, and a split in the mining unions that saw the Nottinghamshire miners continue working. The strike lasted a year, far longer than originally expected. But this time the lights stayed on.

A system as complex as the electrical supply system does not just run itself. Its operation involves many people doing such activities as estimating loads, keeping power stations running, deciding on which power stations to run and how much electricity should cost the consumer. That the lights did stay on in 1984 was less about the design and organisation of the electricity supply industry, but about its operation. Crises not only make engaging interview topics, but also reveal the day to day operations involved in running a technological system more clearly than when things are working well. It is when systems come under strain that we appreciate the normally invisible issues involved in their running and the various parts they are made up of. For an interviewee it is also likely that crisis provides a memorable set of examples of day to day activities that suddenly assumed enormous importance. Stories told by the massive group of hidden voices involved in the operation of the industry are also important to explore how wider changes in industry policy, organisation and technology actually affected its running.

To ensure that an oral history project is representative not only of how an industry was planned but how it was actually operated, it should include representatives from the groups who kept the system running, not only those who built it. Whilst we can point to a core group of key decision makers and managers, there is a much wider group of hidden individuals who are vital to keeping the lights on, not only at times of crisis, but all the time. As a starting point for individuals involved with the operation of the system we should consider power station managers, such as Norman Holland (10 years as manager of Didcot Power Station, including the 1984 strike) and Granville Camsey (manager of Rugeley conventional and Heysham nuclear power

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

stations in the 1970s, in the operations department during the 1984 strike and later director of production SE Region CEGB). Others who became senior in the industry also served out periods as power station managers, including Ed Wallis. Glyn England, prior to becoming CEGB chairman, had some experience of transmission, but there are a larger group of invisible individuals who worked within the National Grid control centre who need to be found. Francis Ledger (later author of a book on crisis in the power industry), who was CEGB Director of Operations during the 1984 miners strike, would make another good interviewee. From these key names it should be possible to snowball to a larger and more representative group of individuals involved in running the electricity supply industry. Further strategies for locating figures from the operations of the industry are listed in the section of this report concerned with the shape of an oral history project.

The 1970s and 1980s also seem to be the start of greater attention to environmental and energy conservation concerns at a governmental level. John Guinness, who was at the Government's influential Central Policy Review Staff during the early 1970s, and Eric Price, an economist at the Department of Energy in the same time-frame, could provide a view on energy policy development in this period. The energy crises of the 1970s also led to an increased effort in renewable energy development funded by the government. Salter's Duck, a wave power machine developed by Stephen Salter is the best known of these schemes, and CERL's research journal showcased a number of other concepts of alternative energy in the 1970s. The first wind turbine was connected to the grid in 1982, the VAWT 850 in Carmarthen Bay. However, it seems only after privatisation and the opening of the market to more generators that larger scale renewable energy schemes began. The growth in opposition to nuclear has been covered above, but quite apart from this acid rain became the environmental issue of the day. Sulphur dioxide from British power stations was seen to be killing forests in Scandinavia. British power stations had tall chimneys to avoid pollution for those nearby, but this did not stop it travelling a long way when carried by winds higher up. This led to efforts to clean up coal and 'scrub' the flue gases before they were released, an issue whose costs would be factor at privatisation. Allan Jones, currently director of New Build and Technology for E-On and an expert in cleaner generation from fossil fuels, was amongst those involved in the CEGB's efforts to clean up coal.

In the background to all these events were the rumblings of change in the structure of the electricity industry, partly caused by concerns over the CEGB's handling of power generation problems and the limited powers of the Electricity Council to call them to account and to coordinate the industry. In 1976 the Plowden Report, commissioned by a new Labour Government, recommended the unification of the industry into a central Electricity Corporation, which would overcome problems of control. At its head would probably be Electricity Council chair Francis Tombs and CEGB head Glyn England as deputy.<sup>11</sup> However, the implementation of this scheme was slowed by the replacement of Energy Minister Eric Varley (d.2008) with Tony Benn, under whom debate began anew. With the election of a Conservative Government in 1979, Plowden's scheme was shelved and a quite new direction for industry reform set.

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<sup>11</sup> Francis Tombs, *Power Politics*, chap. 5.

## **2.6 Privatisation**

The history of the process of electricity privatisation, which followed the Conservatives 1979 election win, can be divided into 4 phases:

- Political, leading up to the 1988 white paper, *Privatising Electricity*, Cmnd 322
- Creative, leading to the principles of privatisation enshrined in the *Electricity Bill*, 1988
- Executive, during which these principles were translated into a system for operating the privatised system, concluded in time for vesting in March 1990
- Selling, which included the establishment of capital structures and the preparation for flotation, ending the sale of shares in distributing and generating companies in December 1990 and March 1991.

Thereafter the history is that of the privatised industry and its subsequent changes in ownership and structure, although some of these changes were governed by agreements put in place during privatisation.

### **Political**

Following the election of the Conservative government in 1979, efforts to reform a state-owned energy sector were set aside in favour of policies aimed at creating a market for energy. The *Oil and Gas (Enterprise) Act 1983* was aimed at liberalising the gas market and the *Energy Act 1983* sought to do the same for electricity. The *Gas Act 1986* was the prelude to privatisation of that industry as a monopoly provider and created the *Office of Gas Supply* to regulate it. During preparation for the *Energy Act*, *Coopers and Lybrand* was commissioned to report on the feasibility of restricting and privatising the electricity supply industry. Throughout the process of privatisation there was extensive input from teams of consultants but the names of individuals involved in producing these reports are either not given in the official history or have been redacted. This report concluded that the best option for introducing competition lay in generation but that the nuclear programme, and in particular the anticipated programme of new-build then envisaged, made this complicated. *Walter Marshall*, head of the *CEGB* responded by suggesting the abolition of the *Electricity Council*, amalgamation of the *Area Boards* into a single distribution company to balance the power of the *CEGB* and the expansion of the *CEGB's* ability to sell direct to large consumers. Following the privatisation of *British Gas* the *Department of Energy*, now headed by *Peter Walker* (d. 2010), returned to the electricity supply industry. Initially there was support for options that avoided the fragmentation of the industry. The intention to privatise the industry was included in the *Conservative Party manifesto* for the 1987 General Election, which also contained a commitment to nuclear energy. The *White Paper*, launched by *Cecil Parkinson* proposed reorganisation of the *CEGB* into two privatised generators, one with 30 % of existing capacity, with the nuclear stations remaining in the hands of the larger generator. The *Area Boards* were to become distribution companies and together would own the *National Grid*. Competition was to be introduced into generation, but the new distribution companies would have an obligation to supply.

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

Measures to ensure security of supply were envisaged and regulation to protect consumers through a new role of Director General of Electricity Supply. A separate white paper for Scotland, Privatisation of the Scottish Electricity Industry Cmnd 327, proposed privatisation of the existing vertically integrated organisations with the SSEB's nuclear stations under the joint control of both companies.

### **Creative**

The schedule for privatisation envisaged at the outset was ambitious and sought to ensure that as much as possible could be completed before the next General Election. Kleinwort Benson acted as sponsors of the sale of the industry and under David Clementi advised the department during the process. The first steps were the establishment of a dedicated team within the Department of Energy devoted to the project, separate from other activities and the establishment of shadow boards for each of the proposed new companies that would emerge from the CEGB. Designated appointments announced on 9 June 1988 were

	Chair	Chief Executive
Big G	Lord Marshall	John Baker
Little G	Robert Malpas	Ed Wallis
GridCo	David Jeffries	W. Kerss

In July 1989 John Wakeham replaced Cecil Parkinson as Minister for Energy. It was John Wakeham who oversaw many of the key decisions in the privatisation process and he, alongside Tony Benn should be regarded as the two key Ministers of Energy who should be targeted for interview by this project. Given the long and varied political careers of both men it might in these cases be appropriate to undertake interviews that concentrate on this particular aspect of their lives. Lord Marshall subsequently resigned once it was decided not to privatise the nuclear stations and was replaced in July 1990 by Sir Trevor Holdsworth (d. 2010). Robert Malpas was replaced by Sir Graham Day in November 1990.

Discussions were held about the distribution of power stations between the generating companies, the allocation of other CEGB assets such as research establishments and about the continuation in post of Area Board chairs. In September 1988 it was agreed to retain a central organisation to replace the Electricity Council, to be known as the Electricity Association and headed by Roger Farrance. Intensive discussions were held to determine the regulations under which the industry would operate and the contractual arrangements which would govern the relationship between the privatised companies and any new entrants that took advantage of second tier supply licences. At this stage the different interests of area boards and generators emerged strongly, particularly in relation to the ability of generators to supply large industrial customers direct. Nuclear was a key issue, in particular the size and mechanism of the non-fossil fuel obligation and the extra costs and their impact on the flotation of Big G, a major concern of Kleinwort Benson. The extent of those costs, particularly what were known as 'back end liabilities' turned out to be far larger than anticipated and the nuclear stations were removed completely from the privatisation process. The Electricity Bill received Royal Assent on 27 July 1989.

## **Executive Phase**

During this phase systems for operating the privatised system were established. Particularly thorny issues were the contractual arrangement for nuclear power, the operation of the 'pool' system, under Margaret Thompson, which fixed prices and determined how much each company paid for electricity and the issue of contracts with British Coal. The Association of Independent Electricity Producers fought hard for the interests of its members. Vesting took place on 31 March after 1,223 documents setting out the new arrangements had been signed

## **Selling**

The selling phase involved the establishment of capital structures and the preparation for flotation, ending in the sale of shares in distributing and generating companies. Distribution companies were sold first, yielding proceeds of nearly £8 billion. High demand for shares and the subsequent premium at which they were traded suggested that the best price might not have been obtained. The subsequent sale of the generating companies was also over-subscribed, and yielded gross proceeds of £2.2 billion. Here there were anxieties about how the impact of the 1988 European Union Large Combustion Plant Directive but these did not deter investors.<sup>12</sup>

After the flotation of the generating and distributing companies there was a pause before the subsequent privatisations of the National Grid and Nuclear Electric.

The National Grid was initially owned collectively by the RECs through a holding company. In 1995 this holding company was listed on the Stock Exchange and the RECs mostly divested themselves of their interests. In 2000 the firm made the first of several acquisitions in the North Eastern United States and in 2002 merged with Lattice Group plc, owners of Transco, the UK gas distribution business. The new entity was known as National Grid Transco plc. That part of the company that operates the UK electricity grid is currently known as National Grid Electricity Transmission plc while National Grid plc describes itself as 'an international electricity and gas company and one of the largest investor-owned energy companies in the world.'<sup>13</sup> Nick Winser, current director of transmission, will be able to provide insights into these developments and compare them with the CEGB prior to privatisation.

The nuclear stations remained in state ownership as Nuclear Electric until 1996, when the AGR stations and Sizewell B were privatised as British Energy. The key actor here was John Collier (d.1995). The company expanded into conventional generation by buying the Eggborough power station from National Power in 2000. In 2002 it faced considerable financial difficulties and required both restructuring and a substantial government investment to survive, seen by many as de facto

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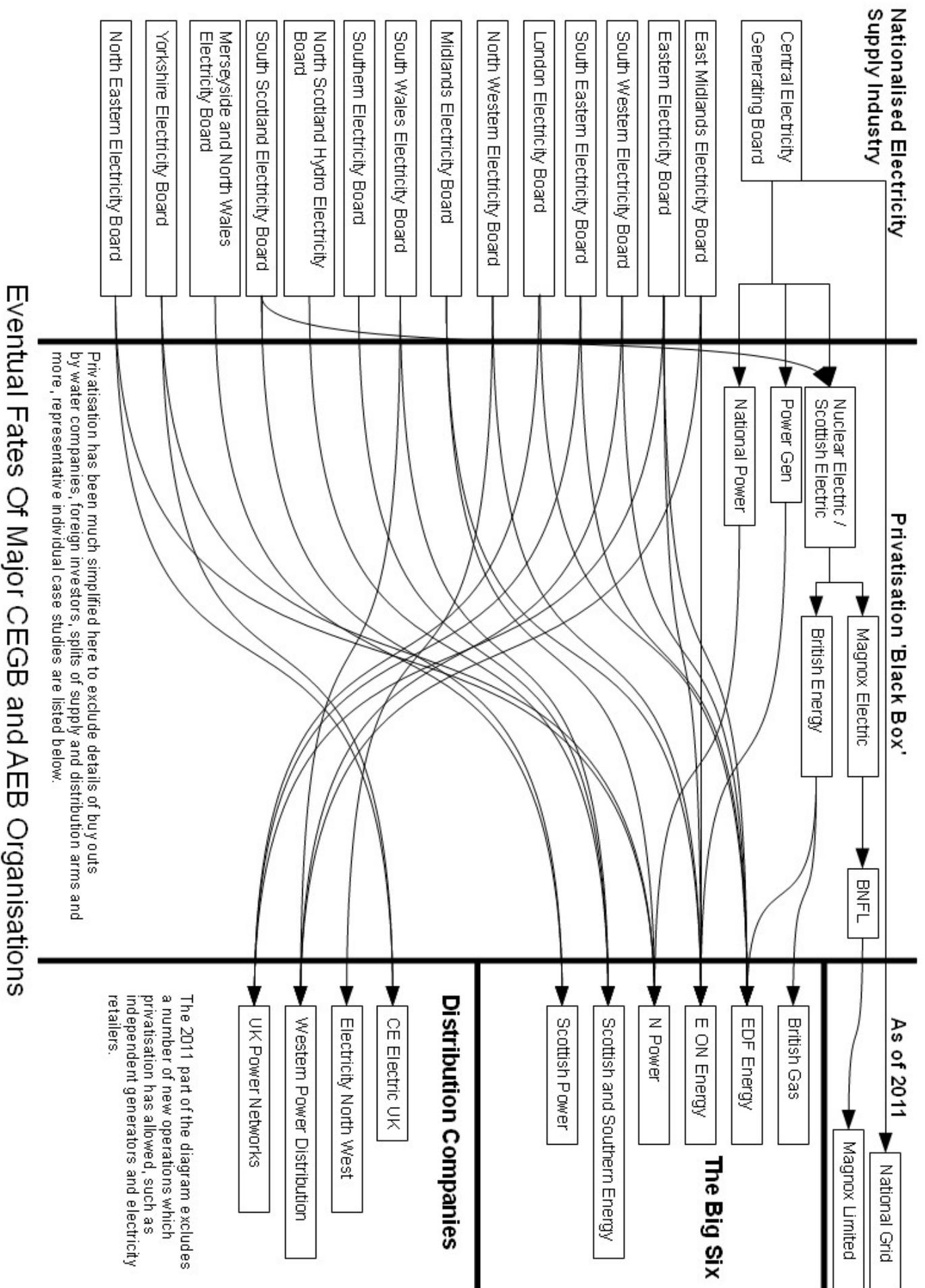
<sup>12</sup> Electricity Division, Department of Energy, History of Electricity Privatisation (England and Wales) 1992. This is the official history of the process, from which some text has been redacted.

<sup>13</sup> <http://www.nationalgrid.com/> (23/11/11)

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

nationalisation. In 2008 EDF purchased the company and now operates the remaining nuclear stations: Hunterston B, Hinkley Point B, Hartlepool, Heysham 1 and 2, Dungeness B, Torness and Sizewell B. The magnox nuclear stations were transferred to Magnox Electric under which a programme of decommissioning has been undertaken. Most magnox stations have now been shut down and defuelled. The residual activities of the UKAEA were purchased by Babcock International in 2009. In the run-up to the sale the UKAEA was headed by Norman Harrison, a former director of several nuclear power stations, who has been recommended as an interviewee on the recent history of the nuclear sector.

The monopoly of domestic customers enjoyed by the regional distribution companies was relaxed in 1994 and abolished in 1998. This increased flexibility helped to underpin a raft of consolidations, mergers and purchase by overseas investors of parts of the British electricity supply industry which means that the firms operating in this sector are now rarely confined exclusively to the British electricity supply industry. It is the distribution companies who have felt the main force of customer dissatisfaction and accusations of excess profiteering that have dogged the industry since privatisation.



## **2.7 After Privatisation - Corporate Structure**

Compared to the relatively straightforward division of the CEGB, the post privatisation stories of the AEBs are more varied and there does not seem to be a 'typical' story. The basic division of the country into 14 distribution areas remains to this day, but the organisations that run it are quite different. A full history of the complex sequence of purchases, diversifications and swaps would require a lengthy report in itself, and so we restrict ourselves to the general trends.

Privatisation essentially retained the division between generation and distribution and retail, but the former area boards began to acquire generation capacity, sometimes through joint ventures with each other. As the market was deregulated, a series of mergers created more integrated energy companies. The power generators acquired RECs, in whole or part, to give them distribution and supply capability. Power Gen, for example, purchased East Midlands Electricity in 1998, and parts of NORWEB in 2002 and Eastern Electricity in 2004. The Scottish Area Boards were in a relatively strong position at privatisation as they already included substantial generation and transmission capability, unlike the AEBs in Wales and England. Both Scottish Area boards developed into members of the 'big six' - Scottish Power, and Scottish and Southern Energy – after merging with Southern RECs.

The history of the electricity industry post privatisation has to be seen in broader terms than before. As deregulation and privatisation affected gas and water, these companies entered the electricity marketplace to form a wider market for 'energy' or 'utilities' and integrated companies to meet gas, water and electric needs. North West Water purchased NORWEB in 1995 to create United Utilities, and Welsh Water purchased SWALEC in 1996 to create Hyder. However both later sold their energy interests. The privatised British Gas entered the electricity market in 1998, generating power largely from gas fired power stations and, later, a 20% stake in nuclear power provider British Energy acquired in 2009 from EDF.

Foreign investment has been substantial in the former AEBs, even before the purchase of EDF, N Power and E ON by French and German companies. American companies were significant early entrants after privatisation. Between 1995 and 1997 Texas Utilities (later TXU) bought up Eastern Electricity (and later part of NORWEB), Yorkshire Electricity was purchased by American Electric Power, Cal Energy bought Northern Electric, SWEB Energy was bought by the Southern Company and Entergy purchased London Electricity. PPL subsidiary Western Power operates the distribution arms of three of the old RECs. However TXU's European operations collapsed in 2002, and the French EDF purchased London Electricity and SWEB from their American owners in the late 1990s, before adding SEEBOARD and British Energy in subsequent years.

A few post privatisation REC corporate histories are insightful as to the nature of changes. They also provide a possible focus for interviews in exploring the impact of these changes on individuals.

- SWEB Energy was bought by the Southern Company, an American electricity supplier, in 1995. In 1996 Southern sold a 51% stake of SWEB to PPL, another American electricity supplier. In 1999 the

business was split. The distribution organisation joined part of SWALEC to become Western Power Distribution, while the remainder was sold off in 2003 to EDF.

- London Electricity was bought by American company Entergy in 1996, before being sold to the French company EDF in 1998.
- NORWEB was bought by North West Water in 1995 to form United Utilities. In 2000 the business was split. United Utilities retained the distribution business until 2007 when it sold to investors JP Morgan Infrastructure Fund and Commonwealth Bank of Australia Colonial First State. American company TXU purchased the remainder, which was subsequently acquired by PowerGen in 2002 after TXU's European operations collapsed.

## **2.8 After Privatisation - Technology**

Since privatisation there have been significant shifts in the balance of UK generating capacity, with a dramatic decline in the proportion of electricity generated from coal, a lesser decline in the contributions of nuclear stations, and the almost total disappearance of oil generation. Compensating increases in generation from gas and renewable sources have kept the lights on, at least up to now but concerns remain and debate continues to rage about the relative contributions of nuclear and renewables and the extent to which clean coal technologies should be included. It would be wrong to suggest that these developments were solely a consequence of changes in ownership. In part at least they reflected trends and issues that were already emerging during the 1980s, notably environmental considerations, which drove a regulatory environment that favoured renewables. However, it is also the case that the financial regimes of a privatised industry and the obligation of firms to maximise value for shareholders have been influential factors in technology choice, particularly during what is generally referred to as the 'dash for gas'.

During the 1970s the CEGB installed gas turbines to generate electricity at times of peak load because they required far shorter start-up times than alternatives and could be used to meet rapid increases in demand. By the late 1980s Combined Cycle Gas Turbine power stations were being ordered, the first at Roosecote Power Station (privately run) came online in 1991. In these a gas turbine generates electricity directly and also a hot exhaust, which is used to generate steam for an electricity generating turbine. They are thus quite efficient and are quick to build compared to nuclear or coal stations, although their generating capacity is far lower. British equipment suppliers, used to a close relationship with the CEGB that limited their own need to innovate, were poorly placed, compared to foreign suppliers, to take advantage of this unexpected development. Nearly 40 CCGT power stations came online between 1991 and 2002 in the 'Dash for Gas', running on cheap gas, made more attractive as a fuel in relation to coal by decisions made regarding the coal market at privatisation which made it increasingly difficult for coal to compete. These stations were attractive to the newly privatised Regional Electricity Companies and other suppliers who wanted to enter the electricity supply market quickly and attractive to investors seeking far more rapid returns than had been allowed for by the accounting systems used by the CEGB, which assumed a 40 year operating life

for a power station. Ed Wallis, now Chief Executive of PowerGen, however, argued that the 'dash for gas' was not a consequence of privatisation and that the CEGB would have switched to burning gas had it still been in existence.<sup>14</sup> The 1997 Labour government tried to limit numbers, but by 2002 they provided 28% of the UK's power.

Experiments have been carried out with a range of new sources of fuel that have been used to run conventional power stations. In the 1990s a few power stations (Ince and Richborough) were converted to use Orimulsion a thick bitumen-based liquid fuel, but there were a lot of environmental worries and bad press and the experiment only lasted a few years. In the new millennium several small biomass (e.g. wood) power stations have been commissioned and several older power stations (e.g. Drax) have been converted to partially run on biomass. Several schemes have been developed to generate electricity from domestic waste, often referred to as energy recovery. Plants such as Lakeside EFW, frequently face opposition from those concerned about harmful emissions, whilst presenting themselves as offering significant environmental benefits.<sup>15</sup> New pricing regimes led to the revival of combined heat and power generating projects that have since come to fruition.

Renewables have made the transition from development to full commercialisation, assisted by incentives based on environmental considerations. Windfarms have been the most visible and also the most contentious example. Two onshore windfarms were commissioned in 1991 and 25 in 2010. Over half of the 220 or so farms are less than 10MW and they are controlled by a range of suppliers, both traditional energy companies, local concerns and international companies. In 2002 Blyth Offshore Wind Farm (4MW), the UK's first offshore wind farm was completed. New suppliers such as Good Energy, founded by Juliet Davenport have entered this market, sometimes sourcing their electricity from community owned renewable generating units including wind turbines. The potential for harnessing tidal power has been debated for decades, with several schemes for a Severn Barrage proposed. In 2000 the Islay LIMPET (Land Installed Marine Powered Energy Transformer), the world's first commercial wave power device rated at 0.5MW was connected to the National Grid. LIMPET was designed and built by a team from Wavegen and Queen's University, Belfast led by Professor Alan Wells. Other schemes are planned or under construction in Scotland and Cornwall. The financial viability of other renewable sources such as solar has been affected by government policy on feed-in tariffs but uptake has been fostered through policy incentives and by significant technological improvements as well as by falling unit costs as demand has risen. There has also been an increase in off-grid microgeneration projects that supply power direct to users.

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<sup>14</sup> Quoted in Mark Winskel, 'When Systems are Overthrown: The 'Dash for Gas' in the British Electricity Supply Industry', *Social Studies of Science*, 32 (2002), 577.

<sup>15</sup> <http://www.lakesideefw.co.uk/> (24/11/11).

## **Section 3 - Survey of Existing Oral History and Other Collections on the Electricity Supply Industry**

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Our desk-based survey of existing resources has revealed that there have been very few oral history projects of any kind previously carried out specifically on the electricity supply industry whose results are available for consultation by researchers. A number of academic researchers have undertaken projects on the industry but their recordings, if indeed they recorded their interviews with key actors, have not been deposited for use by other researchers. Where oral history recordings exist they are mainly of individuals who worked in the industry at a local level, frequently in manual occupations or middle management. In addition there is an extensive quantity of moving image and audio material of other kinds relating to the industry in existence, but this is not always easily accessible.

The interviews undertaken by academic researchers and the audio-visual material available via television, radio and the industry's own publicity film making, primarily consists of short interviews on specific topics, with minimal biographical content and do not meet the need for an oral history project that documents in detail the life stories of those involved with the history of the electricity supply industry.

In addition it is worth noting that despite the wealth of archival material that has been retained relating to the industry, there are significant gaps in this, most notably in relation to the CEGB central records. Personal papers of key figures other than those who served as Energy Secretary or equivalent, are also lacking.

### ***3.1 Clearly Defined Oral History Projects on the Electricity Supply Industry***

There are no major collections of existing oral history interviews of those who worked in the electricity supply industry to be found in established archival repositories. Two recent projects, Sellafield Stories and the Glendoe Oral History Project based at the University of the Highlands and Islands have started to address this, but the arising interviews are not yet fully available for consultation by researchers. The Heritage Strategy associated with the decommissioning of the Dounreay site called for an on-going project to collect oral histories and suggested that it was already underway but this does not appear to have been implemented.<sup>16</sup>

#### **3.1.1 Glendoe Oral History Project**

This project was carried out in 2007-8 by Dr Hugo Manson for the UHI Centre for History, sponsored by Scottish and Southern Electricity. It collected interviews with those involved in the construction of a new power scheme at Glendoe and veterans of past hydro schemes in the region. Recordings, summaries and associated material have been deposited at the Highland Council Archives. Under the terms of

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<sup>16</sup> Delivering a Cultural Legacy Through Decommissioning, [http://www.dounreay.com/UserFiles/File/Heritage%20Strategy%20consultation%20/Heritage\\_Strategy\\_Issue\\_2\\_Aug\\_2010.pdf](http://www.dounreay.com/UserFiles/File/Heritage%20Strategy%20consultation%20/Heritage_Strategy_Issue_2_Aug_2010.pdf)

the sponsorship none of this will be available until at least 2012. Access requests will go via the UHI Centre for History to the archives. The material was used for a booklet produced by SSE for the opening of Glendoe, which is currently not operational. Dr Manson is intending to use the material in future publications.<sup>17</sup>

### **3.1.2 Sellafeld Stories Oral History Project**

This project was funded as a BNFL legacy project with a grant of £261,000 and managed by a team based at the Whitehaven Record Office and Local Studies Library headed by Jenni Lister. It recorded around 100 interviews with people whose lives were touched by the plant, not just those who worked there but farmers, other residents and those influenced by Sellafeld in some way. The recordings are housed at Whitehaven Record Office and Local Studies Library and are available to the public. They will be transcribed and transcriptions also made available. The project website will be [www.sellafeldstories.org.uk](http://www.sellafeldstories.org.uk) and a book edited by Hunter Davies and CD/DVD are also planned. A travelling exhibition toured the region in summer 2011.<sup>18</sup>

## **3.2 Other Projects**

This section includes projects where we are aware of where oral history material has been collected but for which there is either no intention to make it available or no current timescale for deposit. The very nature of these projects means that they are difficult to track down so this list should be seen as indicative only. In addition, it is clear from references in published work that several researchers, for example Mark Winkler and Simon Taylor have carried out interviews as part of their data collection but these have not been deposited. New projects such as that on Siemens in the UK just started by Katherine Platt in the Centre for the History of Science, Technology and Medicine at the University of Manchester, are also planned to include oral history interviews. It should be part of a major oral history project on the electricity supply industry to identify these existing collections and recommend that they be deposited for future use.

### **3.2.1 Echoes of Blackburn Meadows**

This project to create a sound trail on the site of the former Blackburn Meadows Power Station in Sheffield drew on interviews carried out by Jennifer Rich as part of the research for her MA in cultural geography at the University of Nottingham. The project is currently in abeyance following the failure of a funding application but the intention is to deposit all interviews and transcripts in the Sheffield Local Studies Library once it is complete. The project team is currently considering re-applying for funding or releasing downloadable mp3's on its website, [www.sheffieldelectricity.com](http://www.sheffieldelectricity.com).<sup>19</sup>

### **3.2.2 Nuclear Engineering**

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<sup>17</sup> <http://www.history.uhi.ac.uk/Comple2138.asp> and email from Hugo Manson to Sally Horrocks, 28/10/11

<sup>18</sup> [www.sellafeldstories.org.uk](http://www.sellafeldstories.org.uk), email from Jenni Lister to Tom Lean, 31/8/11 and North West Evening Mail, 30/9/10 'Cumbrian Author Hunter Davies to Help Tell Sellafeld Story'

<sup>19</sup> Email from Jennifer Rich to Sally Horrocks, 31/10/11

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

Sean Johnson, University of Glasgow, undertook a number of interviews with nuclear engineers as part of his comparative study of the early years of the discipline in the UK and North America. His focus was on those working at research centres, not in commercial reactors. His interviews were used to support and guide archival research but have not been deposited.<sup>20</sup>

### **3.2.3 Alternative Energy**

Campbell Wilson, a current PhD student at the University of Glasgow, has interviewed many of those involved in this sector during the 1970s for his research.<sup>21</sup> His thesis is due for submission shortly.

## **3.3 *Relevant Oral History Material Held Within Other Collections***

Relevant material does exist within other collections, although it is not always possible to tell the extent to which the industry figures alongside other aspects of the interview when it is not the primary focus. Much of the material we have identified from the desk-based survey of resources is local in focus and it is likely that substantially more material exists in local oral history collections which do not have online catalogues.

There is substantial material in archives that covers the impact of electricity in the home and this has not been included here

### **3.3.1 The British Library Oral History collections**

#### Millennium Memory Bank

George Kenneth Wilson, b 1929, retired power station engineer, NE England, C900/11076

Lawrence De Carteret, b 1935, Electrical Engineer, Sark, introduction of electricity to Sark, C900/06144

Harry Poloway, b 1915, retired engineer, working life as engineer with Electricity Board but interview more on leisure interests, C900/13511

Andrew Harry, b 1905, retired electrical engineer, worked in electrical sales room, remembers first women engineers, C900/01560

Dave Collett, b 1931, electricity worker and jazz pianist, worked for SWEB for financial security, C900/0538

#### Work-based Apprenticeship interviews

Peter Waller, b 1939, electrical installation engineer, worked for Southern Electricity Board, C957/29

Brian Ilett, b 1941, electrical engineer, apprentice at London Electricity Board, worked for AEA C957/18

Graham Ridgley, b 1949, electrician, shift engineer for electricity company, C957/05

#### Families, Social Mobility and Ageing: A Multigenerational Approach

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<sup>20</sup> Email from Sean Johnson to Thomas Lean, 14/11/11

<sup>21</sup> <http://www.historyandpolicy.org/lessons/energy.html>

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

Electricity Board Foreman, b 1953, residence Hatfield, apprenticed as electrician with electricity board C685/181/1-2

### **3.3.2 Local and regional archives**

These contain interviews with many individuals who worked in the electricity supply industry for some or all of their careers. These interviews are often part of 'working lives' collections or contributed as part of a project on a particular locality. Most of those involved were active at a local level. Examples include:

- East Midlands Oral History Archive:
  - George Brown, b 1907, worked at Freeman's Meadow power station and lived in the area, 903, EM/031
  - Leonard Richardson, b 1929, worked at Freeman's Meadow power station, then National Grid 1294, EM/054
- Museum of Science and Industry, Manchester: Bill Maclean, b 1963, British Gas, Transco, National Grid, OH260
- Working Lives: Memories of Work & Industry in Nuneaton & Bedworth: an oral history
  - Percy Rogers, last job was for East Midland Electricity Board, but only one of many posts
  - Alan Green, 14 years working for electricity board
- Portsmouth Museums: John Dean, shift worker in Portsmouth power station, PORMG: 2328A/2
- London Transport Museum: Ron Jewitt, chemist at Lots Road Power station, LTM\_2006/6225
- Essex County Record Office: The Development of Modern Essex Oral History Project:
  - Charles 'Jim' Izzard, working at Bradwell nuclear power station and involvement with its construction, SA 36/27/1
  - Kathy Aldridge b 1946 and Peter Banner b. 1939, Bradwell employees, SA 36/21/1

### **3.3.3 Collections on related topics**

Nuclear Research was covered in *An Oral History of British Science* scoping study, and some of interviews already completed for that project or carried out for other NLS projects are of people who worked at Harwell. These include Brian Flowers, Stephen Moorbatch, and John Glen. There has been an NLS project on the oil industry and a Heritage Lottery Fund supported the Coal Mining Oral History project that focused on the Durham coal field.

### **3.4 *Radio Interviews***

#### **3.4.1 Independent Local Radio**

The Independent Local Radio material accessible via the British Universities Film and Video Council (subscription access) contains a rich collection from 1975 to the mid 1990s of interviews on specific topics with many leading players in the industry, union leaders and politicians, some of them making repeated appearances. Most of these interviews were with Radio London and can be listened to online.

Main points of interest are industrial unrest in the late 1970s, the run up to privatisation during the late 1980s and early 1990s, the subsequent consequences of privatisation, particularly impact on consumers. These interviews are concentrated on topics of current interest and do not contain much, if any, personal content other than in cases where the events discussed are more personal in nature, eg Glyn England's departure as chair of the CEGB. We have drawn on this material in generating our list of potential interviewees.

#### **3.4.2 BBC**

There is a limited amount of material in the BBC Sound Archive of relevance, much of it from the period during and after privatisation. This can be accessed at the British Library. Again this is useful for identifying potential interviewees and where relevant they have been included in our list.

### **3.5 *Moving Image Material***

There is a substantial quantity of moving image material relating to the electricity supply industry. This includes material sponsored by the different parts of the industry- CEGB, Electricity Council, UKAEA, area boards, trade bodies such as British Electrical Manufacturers Association and British Electrical Development Association, education and instructional films, recruitment films, public information films and other productions by the Central Office of Information, industrial films produced by contractors to the industry, television documentaries, newsreels and cinemagazine items and news items from national and regional television stations. The output of the privatised industry is limited in comparison. Overall much of this material falls into the category of public relations or public information.

This review will concentrate its attention on those productions that might be expected to include individuals talking about aspects of their lives that might form part of a life story oral history interview, such as their role in the industry, its working practices and policies or aspects of their lives outside work. It is worth noting, however, the importance that the industry placed on film as a means of communicating its messages to the public. The BFI database lists 136 productions linked to the Electricity Council, 135 with the CEGB, 113 with the UKAEA and 62 for the British Electrical Development Association. The vast majority of these were either intended to inform the public about the achievements of the industry and impress them with its wonders or were public safety information films but a few can be considered:

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

- *Is This The Job For Me?: Electricity-Generation And Distribution* (1952) Traces the apprenticeship of two boys who enter the Electricity Supply industry, showing the opportunities offered. Production Company: Crown Film Unit Sponsor: Ministry of Labour and National Service
- Catalogues list *Men of Harwell*, a film about the working lives of those employed at the Atomic Energy Research Establishment at Harwell, but enquires suggest that there is no extant copy of this COI production

### **3.5.1 Television Documentaries listed in the BFI Database.**

Four productions are listed, each of which may contain relevant interview material although details of interviewees are limited.

- *The Goldring Audit: Electricity* (1993) Last in the series examining Britain's privatised industries. Production Company: Juniper Productions
- *The Money Programme: Electricity* (1996) Asks whether the electricity regulator will be able to keep the American companies (who are buying up British electricity companies) under control. Production Company: BBC News and Current Affairs
- *The London Programme: What Price Electricity?* (1981) Report on the tough new policy of the London Electricity Board and an examination of three personal experiences of it, a pensioner, a widow and a mother with a small child, who were all cut off without any real reason. Production Company: LWT
- *Weekend World: Privatising Electricity - The End Of Nuclear Power?* (1988) Report on the possible effects of privatisation on electricity generation in the UK, especially nuclear power. Production Company: LWT On-screen Participants: HOWELL, David, LYONS, John, ROBINSON, Colin

A recent BBC 4 series in 3 episodes *The Secret Life of the National Grid* contains by far the most relevant material and we understand that the producers have expressed a willingness to deposit interview material collected for this series.

### **3.5.2 Regional Television**

The Media Archive for Central England (MACE) at the University of Lincoln holds the most comprehensive collection of regional television news material, which covers the Midlands region and Central TV and its predecessors for the period 1956- late 1980s. This includes significant relevant holdings on the electricity supply industry, perhaps not surprising given the concentration of power station development in the Trent valley and the inclusion in the region of Harwell. The search term 'power stations' yielded 167 hits in the catalogue and electricity 131, although there is much overlap. I have elsewhere argued that coverage of science and technology in the news in this area frequently sought to present an image of the region as progressive and modern to its inhabitants, and power stations fitted well into this. This collection

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

should be seen as representative of what might be found in much smaller quantities elsewhere. Most of the material is short news items or the filmed inserts for such items of between 20 seconds and 3 minutes. Some items are longer. Much of it, particularly the earlier inserted material, is silent because the commentary was broadcast live and never recorded. Other items include sound only when those on screen are speaking, and lack the accompanying voice over. Only a small proportion of the material is digitised and available online. There are a number of strong themes relevant to the history of the electricity supply industry that are represented in this material, including interviews with individuals. Themes are listed below, Appendix 2 contains details of some relevant clips

- Construction, operation and deconstruction power stations
- Innovations in Operation and management
- Incidents affecting electricity supply
- Microgeneration projects, particularly after the 1973 crisis
- Financial performance of the industry
- Concerns about rising prices and ability of consumers to pay
- Industrial Disputes- one of the main themes covered
- Environmental Issues
- Companies in the region winning export orders for equipment
- Harwell and Culham
- Appliances and gadgets, new used for electricity at home and work
- The CEGB nuclear flask experiment
- Power station personalities
- Unexpected activities at Power Stations

### **3.5.3 Newsreels and Cinemagazines**

These contain much material on the electricity supply industry, particularly its nuclear aspects, but participants rarely speak for themselves. Electricity receives 147 hits in BUFVC newsreel and cinemagazine database and power station 235, although many are not really relevant. A lot of these show people at work, eg *Pylon Men*, Pathe Colour Pictorial, 17/9/56, id 53.20, 'rising to the occasion in every sense'. These, along with others on new power stations and other developments often look like electricity industry propaganda and may well have re-used footage from the industry sponsored productions Eg *Rural Electrification*, British Pathe 8/4/48, id 1426.04-

*Peace and the Atomic* (first time cameras allowed in to Windscale, Springfields and Capenhurst), 12/4/54 id 150.08 *Mining Review* has some more serious items, for example, *High Tension*, issue 5 January 1952 on the Leatherhead Electricity Research Station.

### **3.5.4 YouTube**

You Tube contains a lots of visual material but this is generally lacking in clear context, eg demolition of cooling towers. Much of this is culled from television programmes or official films and appears to have been reposted without

permissions, eg BBC Bradwell Power Station Turbine Hall Demolition at [http://www.youtube.com/watch?v=CZ3dWWnIyaE&feature=mfu\\_in\\_order&list=UL](http://www.youtube.com/watch?v=CZ3dWWnIyaE&feature=mfu_in_order&list=UL)  
More recently interviews about topics such as climate change and energy policy have been posted but it has not been possible to survey these systematically.

### **3.6 *Written Archives***

#### **3.6.1 The National Archives**

The National Archives contain substantial records of the electricity supply industry both within the dedicated ministries and elsewhere, reflecting their dealings with other parts of the state. Key classes are

- POWE, Records created or inherited by the Ministry of Power and related bodies, 75 series
- EG, Records created or inherited by the Department of Energy, 22 series
- AB, Records of the United Kingdom Atomic Energy Authority and its predecessors, 100 series

The main other classes that contain material are

- Department of Trade and Industry, BT
- Ministry of Works, WORK
- Treasury, T
- Ministry of Housing and Local Government, HLG
- Ministry of Agriculture, MAF
- Ministry of Labour, LAB
- National Coal Board, COAL
- British Transport Commission, AN
- Cabinet Office, CAB

The National Archives does not contain the records of the Electricity Council or of the CEGB, other than in their interactions with other departments.

#### **3.6.2 Local Record Offices**

Local Record Offices are a rich source of materials on the pre-nationalisation period as well as nationalisation. The period since privatisation is, not surprisingly, less well covered. Given the extent of these holdings it would be inappropriate to attempt to list them. Instead an indication of the nature and scope of the most frequently held material is provided.

- Records of Area Electricity Boards and predecessor companies and undertakings
- Electricity Consultative Councils
- Records relating to individual power stations. These include planning consent, construction, operation and archaeological surveys undertaken prior to demolition.
- Records of many companies who acted as contractors to the industry

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

- In the case of counties where nuclear power stations were/are located record offices contain a wealth of material relating to these sites. Somerset Heritage Centre, for example has the records of the Hinkley Point Nuclear Power Station Local Liaison Committee, the Hinkley Point C Power Station Public Enquiry Papers, Civil Defence plans relating to the site, substantial material in County and Parish Council records and in the papers of local MPs, including correspondence from constituents on the topic.

The tables in appendix 3 outline the availability of archival material relating to government ministers with responsibility for fuel and power or energy, chairs of the CEBG and Electricity Council and other figures identified with the nationalised industry. While the papers of several of the politicians, including some of those who are still alive, have been deposited, there is very little material from those more closely involved with running the industry. Most of these are now beyond the scope of oral history, but interviews with those that remain would provide an important counter to the dominance of politicians in the written sources that relate to individuals.

### **3.6.3 Other Material in Formal Repositories**

- Museum of Science and Industry, Manchester has extensive collections, including the archives of the Electricity Council and its predecessor bodies, material relating to Area Electricity Boards, the British Electrical Development Association and the Electrical Association for Women. It also houses the archives of major contractors including Ferranti and Metropolitan-Vickers.
- Modern Records Centre, University of Warwick has many relevant union and other records, eg Amalgamated Union of Engineering Workers, National Federation of Construction Unions, Confederation of British Industries and its predecessors, Electrical Power Engineers' Association
- Ruskin College The National Joint Industrial Council for the CEBG

### **3.6.4 Informal Collections and Websites with Personal Recollections**

Former employees of the electricity supply industry have been active in establishing groups that document aspects of the history of the industry and in creating websites that convey this to a wider audience. Some of these include personal recollections of former employees.

Examples include:

- CEBG Midlands Region, a website linking craft apprentices and student trainees from the 1960s, <http://www.cegbmidreg.co.uk/>
- Power Stations Revisited <http://powerstationsrevisited.org.uk/index.html>
- South Western Electricity Historical Society, <http://www.swehs.co.uk/>
- Leicester Electricity Quarter Century Club <http://www.leicesterelectricityqcc.org.uk/index.htm>
- Picture Stockton memories of Head Wrightson, a key power station

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

- contractor
- <http://www.picturestockton.co.uk/viewpage.aspx?id=2565>

These may well be of use for identifying potential interviewees. The effort that former employees have made to sustain these organisations and websites suggests the sense of personal identification many employees had with the industry and its ethos of service that would be an important element of any oral history programme. They also provide evidence that privatisation created a rupture that they have struggled to come to terms with and which has left them disappointed about the post-retirement relationship they have been able to retain with their former employment. In particular, it has shattered a strong sense of belonging that was important to many individuals' sense of self.

## Section 4 - Results of Stakeholder and Potential User Interviews

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As part of this scoping study a number of potential users were contacted for their views on the need for such a project and the shape that the proposed project might take. Responses were collected either through telephone interviews or via email from scholars in the UK and the USA. These included historians of business and technology as well as those with an orientation towards policy issues, former consultants and economists. All respondents were asked to rank a list of proposed 'strands' that might be addressed by the project in order of significance. These were

- **Public Policy:** The impact on the electricity supply industry of England and Wales ("ESI-EW") of government and regulatory decisions concerning ESI-EW structure, regulation, tariff and market arrangements [Government Officials, ESI-EW executives, Regulator].
- **Nuclear Power:** The development, construction and operation of nuclear power plants in Britain [electricity supply industry and engineering company executives, Officials, Academics].
- **Privatization:** The politics, policy development, negotiation and implementation of the ESI-EW restructuring privatization during 1988-1992 [Officials, ESI-EW executives, Regulator, Advisors].
- **Generation Evolution:** The development of the generation sector, ex-nuclear, but including renewables and diversification of British companies abroad and foreign generating companies entering the UK market [ESI-EW executives including foreign parents, Regulator, Gridco and Pool executives].
- **Gridco Evolution:** The development of The National Grid Company ("Gridco") as a business and as dispatcher for the generators, including its diversification in Britain and abroad [Gridco executives, Regulator].
- **Associated Industries:** The impact of ESI-EW evolution on associated engineering and fuel supply industries [engineering company executives, British coal executives and union leaders, British gas executives, Regulators].
- **Industrial Relations:** The evolution of labour relations within the electricity supply industry [Union leaders, ESI executives].
- **Scottish electricity supply industry:** The evolution of the electricity supply industry in Scotland [Scottish ESI executives, Officials, Regulator].
- **Northern Ireland electricity supply industry:** The evolution of the ESI in Northern Ireland [Northern Ireland ESI executives, Officials, Regulator].

The respondents were:

Consulted by Hodson Thornber  
William Hogan

Consulted by Judy Slinn  
Martin Chick  
Mira Wilkins  
Simon Taylor  
Andrew Taylor  
Steve Jennings

Consulted by Sally Horrocks  
David Edgerton  
Ray Stokes  
Herself

#### ***4.1 Views on the need for an oral history project on the Electricity Supply Industry***

There was considerable enthusiasm about the need for an oral history project of this kind on the electricity supply industry. Responses were positive and frequently enthusiastic, noting the absence of detailed studies of the industry as a whole since the publication of Leslie Hannah's history of the early years of nationalisation and of any comprehensive history of the British nuclear power project that extends beyond Pocock's *Nuclear Power: its development in the United Kingdom* published in 1977 by the Institution of Nuclear Engineers. Respondents felt that such a project is timely given the very few remaining potential interviewees with any experience of the industry prior to nationalisation and what many of them saw (when told) as a surprisingly small number of the most senior figures from before privatisation who are still available for interview. They also indicated the importance of being able to capture the experiences of those who were part of the industry before privatisation but who remained thereafter and of new entrants whose experiences are solely that of the privatised electricity supply industry. Overseas respondents were especially enthusiastic about capturing the UK experience of privatisation given that it has been highly influential globally, one noting that 'oral history is the only way to get a significant amount of the essential material into the record and widely accessible.'

Several stressed the ways in which an oral history project would complement other records of the industry and enable historians in particular to consider a range of questions that are difficult to address from written sources, for example the differences in attitudes between different groups in the industry such as engineers and accountants and the changing balance of power between them. They also felt that interviewees might be asked about how they felt about their job and what its aims were, and how these changed over time, particularly with privatisation. The notion of a public service ethos and how this might have changed is seen as key here.

## **4.2 Scope and Coverage**

There was a degree of consensus that of the areas listed the first four were of key importance, that is Public Policy, Nuclear Power, Privatisation and General Evolution although the relative importance given to these varied with individual research interests. Some felt that the description applied to General Evolution was very 'present minded' and not especially helpful since it conflated technological developments and aspects of financial ownership and control subsequent to privatisation that should actually be considered under the heading of privatisation and its aftermath, as indeed they have in this scoping report. On the other hand several respondents were keen that alternative energy sources were also included, and the extent to which their history is longer than is frequently supposed recognised. Gridco evolution was again regarded as anachronistic, with the development during the nationalised phase of the 'Super Grid' part of the technology story and the development of the National Grid company part of the privatisation and after story. The associated industries and industrial relations both generated enthusiasm in line with the interests and specialisms of respondents. Historians of business and technology are particularly keen on the associated industries but felt that a focus on contractors and equipment suppliers might be most appropriate given the extent of existing research on the fuel supply industries. The evolution of the electricity supply industry in Scotland and Northern Ireland defined geographically elicited little specific enthusiasm. The post-privatisation success of what is now Scottish and Southern was seen more as part of that story than of the Scottish industry per se. Few respondents were keen to suggest additional areas for consideration, suggesting that the list includes the key elements. The response of the system to crises was the main proposal, with the 1984-5 miners' strike the example most strongly favoured.

There were very few specific suggestions for interviewees, but there was a general feeling that it is important to interview as soon as possible the remaining key figures from the era of nationalisation and those who were instrumental in the transition to privatisation.

## Section 5 - The Case for an Oral History Project on the Electricity Supply Industry

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Our research suggests that there is a strong case for initiating an oral history of the electricity supply industry as soon as possible. This is based on five key factors

- Interest
- Timeliness
- Rapid change since privatisation and paucity of written documentation
- Limited nature of existing oral history collections
- Putting the people back into the history of the electricity supply industry

### **5.1 Interest**

There is a consensus among scholars across a range of disciplines that the electricity supply industry, particularly historically, has not received the attention it might warrant given the central significance of the industry and its large number of employees. A major oral history project would help to redress this by providing the resources for scholars to undertake such studies. It is now several decades since any detailed and comprehensive studies were published covering the industry beyond the early years of nationalisation and the process of privatisation and the years after it have yet to receive attention. The story of nuclear power generation is seen as particularly neglected. Scholars across disciplines and internationally are anxious that the UK experience of privatisation is adequately documented given its global significance. In addition former employees of this industry feel a strong affinity and would also be likely to be interested in the results of an oral history project.

### **5.2 Timeliness**

This project is timely in three senses. As we again approach a period in history when energy shortages are a matter of international concern, this project would facilitate an examination of the lessons that can be learned from the history of the electricity supply industry, particularly in regard to such matters as the expansion of generating capacity under severe resource constraints, nuclear policy, organisational structures and the management of crises. That such lessons are being drawn was exemplified in July 2011 when Jeremy Warner, assistant editor of the *Daily Telegraph*, started an article on energy policy by saying

‘Oh for the glory days of Sir Arthur Hawkins and the Central Electricity Generating Board. I never thought I'd say that about an organisation that seemed, at the time, to embody the very worst aspects of post-war corporatism and central government planning. But compared with the abject

chaos into which British energy policy has descended since privatisation, the absolute rule of the CEBG seems a paragon of virtue.<sup>22</sup>

Yet in fact we lack the detailed historical analysis that should underpin an assessment of this kind.

It is also timely in that many of the key actors from the era before privatisation are already beyond the reach of oral history and there are few remaining representatives from among those who held some of the key roles and whose recollections are important to understanding the operation of the system. Those that remain will not only be able to tell us much about their own experiences, but provide a perspective on what it was like to work with individuals such as Walter Marshall and Christopher Hinton. Very few individuals from the era before nationalisation have been identified, but it is not yet too late to record some experiences from this period.

The third sense in which this project is timely relates to its synergies with the current National Life Stories project *An Oral History of British Science*. The current project has developed significant expertise in interviewing engineers and those with a background in physical sciences that can inform the development of this project. It has also established insights into scientific and technical careers that can help shape this project and the questions it asks. A possibility that should be considered is that some of the interviews with technical staff in the electrical industry might be undertaken by current *Oral History of British Science* interviewers, particularly given the large number of themes with which an interviewer carrying out the whole project would need to become familiar. Researchers will find it useful to consult interviews from both projects when exploring the issues that they have in common and there will be opportunities to disseminate the findings of both projects in tandem.

### **5.3 *Changes since Privatisation***

This is an industry that has undergone substantial change and in which these changes are on-going. An oral history project would capture how individuals experienced these changes. The frequent changes of ownership since privatisation and the increasing domination of digital communications makes it highly possible that written records for this period will be more limited than they have been in the past, and less likely to be preserved and an oral history project would help to address this gap in the records.

### **5.4 *Limitations of Existing Oral Histories***

There is an abundance of written records for the nationalised industry but existing oral history collections contain few interviews with its leading figures. Two major recent projects have collected material on very specific aspects of the industry, but will not provide the comprehensive overview of its evolution and operation and of the

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<sup>22</sup> The Government's energy policy leaves everyone in the dark, Daily Telegraph, 6/7/2011  
<http://www.telegraph.co.uk/finance/comment/jeremy-warner/8621631/The-Governments-energy-policy-leaves-everyone-in-the-dark.html>

transition from nationalised to privatised industry that are seen as important by potential users. A coordinated project that takes account of the different levels on which the industry needs to be considered and selects its interviewees to reflect this, as proposed in this report, is important to redress these inadequacies.

### ***5.5 Putting the People Back into the History of the Electrical Supply Industry***

Existing studies of the electricity supply industry tend to be strong on organisations, technologies and functions, but relatively weak on individuals. This makes it difficult to see the significance of individual contributions and how much it mattered that X was the Y at a particular point in time. The few biographies and memoirs of key figures such as Francis Tombs and Frank Ledger suggest just how important this was. An oral history project would make it possible to explore these questions in depth and ensure that they can be asked in the future. It would also capture how those involved experienced organisation change.

In addition there is strong support for an oral history project from users precisely because it will generate the kind of material that cannot be obtained from written sources.

## Section 6 - Outline Shape of an Oral History Project

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### **6.1 Scope**

Just what should an oral history of the electricity supply industry cover? As the historical overview has demonstrated, the history of the electricity supply industry is a story of organisations, policy decisions, technological development, operations, and their interaction and overlap. This interlinked nature makes it impossible to neatly separate the strands and in considering the shape of an oral history project, we should seek to touch on each of these four areas and the major issues within them, using the categories below as a strategic check list in building up a project from the various groups of interviewees outlined below.

#### **6.1.1 Organisations**

One history of the electricity supply industry is that of the organisations that made it up and how they were constituted and arranged. There were four key organisational paradigms in the history of the industry, which spawned new or modified organisations.

- i. The initial nationalisation of the industry in 1948 and the formation of the BEA and AEBs.
- ii. The reorganisation of the industry between 1955 and 1958 leading to the creation of the CEGB and Electricity Council.
- iii. The process of privatisation in the 1990s, after debates stretching back from the late 1970s and through the 1980s.
- iv. The ongoing post privatisation reorganisations from the late 1990s to the present day.

We should seek to cover the organisational history of the electricity supply industry through interviewing people who worked for each of the major organisations within it so we can appreciate the role of the organisations and how they interacted. However, the first period of nationalisation (1) is so far in the past that key figures from within it are mostly deceased, and the most recent phase (4) is still ongoing rather than history. Therefore, it might wise to concentrate on the middle phases, between 1955 and the 1990s, to capture how the organisations of the electricity industry functioned under nationalisation and how privatisation altered them into different structures which worked in different ways. We will, in any case, pick up stories from the later and earlier periods as a matter of course from life story interviewing.

#### **6.1.2 Technology**

The evolving technology of the electricity supply industry is a story in itself, particularly the issues involved with the generation of electricity. There seem to be four key stories of interest here which we should try to touch on:

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

- i. The evolution of coal fired power stations from the 1940s to the 1970s.
- ii. The sudden explosion of closed cycle gas turbines in the 1990s 'Dash for Gas'.
- iii. The development of renewable energy sources from the 1970s to the present day.
- iv. The development of nuclear power from the 1940s to the present day.

To an extent, the post war development of energy generation can almost be characterised as nuclear power and its competitors. From the 1950s to the 1970s nuclear power was in competition with coal, in the 1990s nuclear expansion was pre-empted by the dash for gas, and we are living through the new nuclear or renewable debate today. Given this overarching relevance and its influence on the post privatisation restructuring, understanding nuclear energy should perhaps be a key story of this section. However, the others should not be neglected as the nuclear option has never become the dominant source of power generation. Interviewees for this section should include those within the electricity supply industry, UKAEA and private companies who were involved with the development of power stations. While the focus here is inevitably on generation, the project must also explore the development and construction of the 'Super Grid'.

### **6.1.3 Operations**

We should not neglect the operational history of the electricity industry by being seduced by its changing structures and technology. A system as complex as the electrical supply system involves many people doing such routine activities as estimating demand, keeping power stations running, calculating pricing, and deciding on where power will be generated. These issues are highlighted at times of crisis, but they were always there. Frequently these activities involved lesser heard voices rather than key individuals. There is already coverage of power station workers in local archives, and so this section may not need to be an overly large one. However, it should be representative of the various activities that went into keeping the industry running and keeping the lights on.

### **6.1.4 Policy**

Overarching each of the areas above is the matter of energy policy - strategic decisions over what fuel is to be burned, how the industry should be organised, how electricity should be charged for, what technology should generate power, and many more matters besides. It is an area that involves individuals from both within the electricity industry, the heads of the various organisations involved in generating, distributing and retailing power, and various people from outside it, such as academic consultants and government officials. In particular we should consider interviewing energy ministers and consultant advisers concerned with the key organisational and technological turning points of the industry noted above.

## ***6.2 Electricity Men***

The lifetime of the nationalised electricity supply industry equates roughly with that of the working lifetime of those serving within it. Many of the people who ran the industry at the turning point of privatisation were individuals who had spent their working lives there. They joined in the early years of nationalised electricity, or even before, and moved up through the industry serving in increasingly senior posts as station managers, group managers, assistant regional directors and chief officers. Their careers take in multiple categories of activity and these all-rounders should be a priority of an oral history project and promise to make rich life stories. Moreover, there is a generation of electricity men (and they seem overwhelmingly to be men) who span the whole history of the industry from nationalisation to privatisation, people who could provide an oversight of how the industry they grew up in developed. However, it is a generation who are passing.

There are only two surviving heads of the CEBG and one of the Electricity Council. Our investigations have turned up several other senior figures who have passed away in recent years, amongst them Eric Booth (d.2005), the planner of the Super Grid, Electricity Council Chair Sir Austin Bunch (d.2008), Frank Chapple, trade union leader (d 2004), FCW Colmer, CEBG director of planning (d 2011), Brian Flowers chair of the Royal Commission on Environmental Pollution (d 2010) This makes a compelling case that this is a project that needs to be carried out sooner rather than later. Key figures have been prioritised as 'A' in the attached list. However, it should not just be a project about the managers.

## ***6.3 Unheard Voices***

There were over 60,000 people employed in the CEBG alone in the 1970s, and each AEB might have something in order of 8,000 employees. It is the case with large organisations that rely on the interaction of a wider team that most of those within the team go unrecognised. The names listed in this scoping study are only the tip of this iceberg, the key people at the top of the industry's hierarchies. Whilst they should be well experienced to provide an overview, they were not always the people who were actually doing the work. They will be less able to provide the finer details of the operations beneath them and the personal details that managers simply don't get to see. If we concentrate solely on the key figures we risk creating a history of managers rather than one representative of the industry as a whole. If we aim for a top to bottom history by including lesser known voices, we should be able to better appreciate the details of broad changes, document the practical effects of changes in policy, uncover hidden stories, and crucially to cover the operational history of the industry – how it was run not just how it was directed and arranged. By their very definition we have not been able to include more than a scattering of lesser heard voices in this report and further research is required to reveal them. We recommend a number of strategies:

- **Personal Contacts and “Snowballing”** - Those who worked within the industry are obviously the best placed to know their former colleagues, as well as such valuable details as the sort of insight they might provide and contact information. As the project progresses interviewees should be asked to

## NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK*

suggest others who might make good interviewees, particularly those who are unlikely to be listed in other sources. Taking this route would also link lesser heard voices to key figures.

- **Grey Literature** – The electricity industry generated much internal publicity such *Midlands Power - The Staff Newspaper for the CEGB in the Midlands*, and *Power News*, which could be profitably mined for interesting looking stories and the names attached to them.
- **Historical Groups** – Former electricity industry employees have already taken an interest in the history of their sector and in forming associations for former industry employees. These could be contacted to provide suggestions of interviewees whose careers might be of interest. Amongst these groups are: *C.E.G.B. Midlands Region* (for apprentices and trainees) <http://www.cegbmidreg.co.uk/> ; South Western Electricity Historical Society <http://www.swehs.co.uk/> ; and former employees of Bradwell Nuclear power station <http://www.thisistotalessex.co.uk/Bradwell-power-station-s-ex-staff-recall-happy/story-13543121-detail/story.html>
- **Industry Groups** - There are a number of groups to which substantial number of employees involved in operating the electricity supply industry belonged or belong and these may be a means of locating potential interviewees below top management. These include Institution of Engineering and Technology (formerly Institution of Electrical Engineers), Institution of Mechanical Engineers, Energy Institute and the Nuclear Institute. Within these there are special interest groups for example the IET Midlands Power Group, <http://www.theiet.org/local/uk/westmids/specialist/midlands-power-group.cfm>
- **Case Studies** – Where there are multiple organisations that essentially did the same task but in different places (for example the area boards or power stations) then it may be an economical strategy to just try and document one of them with several interviews, rather than to spread the project over a wider area. While this may involve losing a perspective on the local colour of an organisation it would permit the range of activities happening in a typical organisation of this type to be more comprehensively mapped. If this route were to be taken we would recommend case studies of: at least one AEB in England and Wales, perhaps counterbalanced by a Scottish AEB; one nuclear power station; one coal power station; one CEGB region.

Perhaps unsurprisingly for a technical industry of the period, the history of the electrical supply industry is one largely dominated by men. For example, amongst its technical staff, in 1960 the CEGB employed a grand total of 36 qualified women scientists and engineers and there were none at all in the area boards. The situation has begun to change in recent years, however women still represent a minority of electricity supply industry employees. In this capacity as the exceptions to the rule, female interviewees may be able to provide a different perspective on the industry from their male colleagues. Suggestions for how this group can be addressed are noted in the appendices.

## **6.4 Influential Figures On The Margins**

A history of the British electrical supply industry should naturally focus most of its attention on lives lived within that industry, largely the employees of the CEGB, AEBs and Electricity Council, and their predecessors and successors. However, there are compelling reasons to widen the focus of the project to touch on some of the more significant figures from outside the electricity supply industry, who impacted on the development and operations of it. At a policy level, for example Energy Ministers may only be fleeting figures in post for a few years, but they made key decisions on the direction the industry would take. Academic advisers on such matters as structure of the industry or pricing, may be influential in the history of the industry but they were essentially outsiders lending expertise on specific matters. Short focused interviews seem more applicable to the goals of the project in the case of ministers and others whose lives only touched incidentally on the electrify industry.

The technical story too cannot fully be told without some representation from the other organisations embedded into the development of the electricity supply industry, notably the UKAEA and the private contractors and consortia who built both nuclear and nuclear power stations. Such was the influence of the CEGB as a virtual domestic monopoly in power plant purchasing, that these nominally outside organisations essentially functioned as parts of the electricity supply industry, albeit with other activities on the side. Given the long-term careers many of these people had in the development of power generation they seem legitimate candidates for life story interviews. A comprehensive system wide history of the electrical supply industry should include at least some representation from these outside groups who were influentially involved in its development.

## **6.5 Possibilities for Video**

Given the favourable experience of using video to elucidate technical matters and convey insights into places and people in *An Oral History of British Science*, we recommend that an oral history of electricity supply should include a video interview component of up to ten supplementary video interviews. There is an abundance of suitable visual material to complement audio recordings of life stories. The electricity supply industry is all around us – criss-crossing cables, looming power stations or small substations - yet to many people what it does is a mystery. Video could be used to highlight the importance and activities of this infrastructure, to add visual support to audio recordings and to highlight the project to potential users.

Possibilities for video include featuring people involved in the building or operation of:

- A nuclear power station, e.g. Sizewell B, or one currently under decommissioning such as Bradwell or Berkeley.
- A coal power station, e.g. Drax or Ratcliffe on Soar.
- A renewable power station.
- National Grid control centre.
- Local power infrastructure, e.g. sub-stations.

The inclusion of video interviews will enhance the opportunities for disseminating the results of this project, another area in which the expertise available in *An Oral History of British Science* will be of value.

## **6.6 Recommendations**

Our recommendation is that an oral history project on this sector should interview at least 45 individuals. This should include interviewees whose careers span over each of the key areas of policy, technology, operations and organisations. To be representative of the industry as a whole the project would benefit greatly from an additional 10 or so interviews from lesser heard voices. These lesser heard voices should be drawn from people working across the operations of the industry, such as grid control engineers and AEB employees. Given the life-long involvement with the industry of many potential interviewees, life story interviews should be used in the large majority of cases. However, there is a strong case for shorter interviews with figures such as energy ministers or advisers, whose involvement with the industry was fleeting, but significant. An additional programme of up to 10 supplementary short video interviews should be included to document promising interviewees at key locations or with key technologies. There may be some overlap between the viewpoints offered by even key interviewees, and further discussion is needed to determine the exact mix of interviewees within whatever the constraints of the project turn out to be.

In Appendix 1 we have listed over 120 potential interviewees. Of these we have categorised around 45 as A or A/B, people who occupied key posts within the industry, played important roles in significant episodes in its history, or had rich careers touching on several areas. In addition there are a further 20 or so people who we have categorised as B, including less senior people or interesting looking figures from the margins of the industry, such as politicians at times of significant change or those who worked for consortia. We have also rated around 15 individuals as C, mainly people who were only involved with the industry briefly. A number of current industry figures have also been included in the list, rated as D. Further research will undoubtedly reveal more figures and this list can only be a start given the size and diversity of the electricity supply industry. These lists are by no means definitive, but should be sufficient to initiate a comprehensive oral history project on the electricity supply industry in Britain.

We also recommend that full transcripts of the interviews are prepared and that, subject to copyright permissions, as many of them as possible are made available through the British Library Archival Sound Recordings webportal that allows recordings to be accessed by researchers anywhere in the world. This is particularly important in this case because of the international interest in this industry and in particular in its experience of privatisation.

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*Power Stations Revisited*. <http://powerstationsrevisited.org.uk/index.html> [Accessed 25/11/11]

*Picture Stockton memories of Head Wrightson*,

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**NLS Scoping Study: An Oral History of the Electricity Supply Industry in the UK**

*Reporting on Progress Towards Equality of Opportunity for Women and Men Made by Public Authorities in Scotland: Ministerial Priorities for Gender Equality: Tackling Occupational Segregation: A Review of Key Evidence and National Policies.*

<http://www.scotland.gov.uk/Publications/2010/07/02120508/12>

[Accessed 28/11/11]

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South Western Electricity Historical Society. <http://www.swehs.co.uk/> [Accessed 25/11/11]

## Appendix 1: Potential Interviewees

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See Separate File:

## Appendix 2 – Examples of Television Material held by the Media Archive for Central England

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- Construction, operation and deconstruction power stations  
Eg Midlands News: 28.07.1966: 35 Midlands Power Stations to get overhall,  
[Midlands News: 02.05.1960: Last Midlands Electricity Board generator in Birmingham](#)  
[Central News East: 18.04.1985: Power Station Demolition](#)  
[Midlands News: 02.10.1959: New power station opened at Willington, Derbyshire](#)  
[Midlands News: 01.10.1963: New Rugeley Power Station opened](#)  
[ATV Today: 27.04.1979: Cooling tower demolished](#)
- Innovations in Operation and management  
[Midlands News: 28.02.1968: East Midlands Electricity Board](#) covers use of helicopters to patrol power lines  
[ATV Today: 13.02.1976: East Midlands Electricity Board's new computer systems](#)  
[ATV Today: 06.04.1971: Making the switch to natural gas](#)
- Incidents affecting electricity supply  
[Midlands News: 14.02.1968: Explosion and fire at electricity sub-station](#)  
[ATV Today: 17.01.1974: Storms](#)  
[ATV Today: 20.12.1976: Explosion at an electricity sub-power station, Northampton](#)
- Microgeneration projects, particularly after the 1973 crisis  
[ATV Today: 06.02.1974: Power crisis](#)  
[ATV Today: 19.12.1973: Matlock cotton mill](#)  
[Central News East: 26.03.1985: Waterwheel](#)
- Financial performance of the industry  
[ATV Today: 29.07.1975: Midlands Electricity Board announce £23m loss](#)
- Concerns about rising prices and ability of consumers to pay  
[ATV Today: 08.02.1977: Enquiry in £100 electricity bills received](#)  
[ATV Today: 21.01.1972: OAP died after electricity cut off](#)  
[ATV Today: 26.11.1979: Electricity meter fiddles](#)  
[ATV Today: 09.12.1981: Keith Shaw - Electricity Consumer Council](#)
- Industrial Disputes- one of the main themes covered  
[ATV Today: 18.07.1977: Head of the Midlands Electricity Board, Geoffrey Shepherd](#) (Shepherd was head of the MEB)  
[ATV Today: 01.11.1977: Electricity Board workers dispute](#)  
[ATV Today: 14.05.1975: Drakelow Power Station strike causing serious concern](#)

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

- Environmental Issues

[ATV Today: 13.12.1978: Electricity pylons move controversy](#)

[Midlands News: 00.08.1958: Farmer Protests Against Pylons](#)

[Central News East: 26.10.1983: Acid Rain](#)

[ATV Today: 12.11.1981: Anti-nuclear demo](#)

- Companies in the region winning export orders for equipment

[Central News: 12.03.1982: Electricity](#) Electricity - Abacus Municipal of Sutton in Ashfield, Nottinghamshire, wins orders to supply lighting columns and 'bendy' masts to the Qatar Gas and Petroleum Company and the Bahrain State Electricity Department.

[ATV Today: 16.07.1976: GEC Rugby wins £70 million order](#)

- Harwell and Culham

[ATV Today: 19.09.1977: Culham Nuclear Research Centre in Oxfordshire](#)

- Appliances and gadgets, new used for electricity at home and work

[Central News East: 10.07.1984: Gadgets](#)

[ATV Today: 25.02.1980: Electriex Exhibition at the NEC](#)

- The CEGB nuclear flask experiment

[Central News East: 09.11.1983: Nuclear Waste](#)

[Central News East: 14.11.1985: Nuclear Test](#) (includes interviews with participants)

- Power station personalities

A small section but worth noting, especially several films of Ken Matthews, Olympic 20km walk Gold Medallist in Tokyo and employee at Hams Hall Power Station

[ATV Today: 15.02.1965: Ken Matthews](#)

[Midlands News: 30.10.1964: Olympic Gold Medalist Returns To Work](#)

Midlands News: 02.12.1964: Interview with Ken Matthews

- Unexpected activities at Power Stations

[ATV Today: 23.04.1970: Fishing at Drakelow Power Station](#)

[ATV Today: 02.06.1970: Wild fowl sanctuary opened, Drakelow Power Station](#)

## Appendix 3 – Lists of Energy Ministers, Chairs of CEGB and Electricity Council

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Here we list details of the archival holdings and major biographical material available pertaining to those who served as Energy Ministers or chaired either the CEGB or the Electricity Council during the period of nationalisation.

Name and Period In Office	Repository Holding Personal Papers	Key Dates	Included in Oxford Dictionary of National Biography?
<b>Ministers of Fuel and Power</b>			
Hugh Gaitskell (1947-50)	University College London	1906-1963	yes
Philip Noel-Baker, (1950-51)	Churchill Archives Centre, NBKR	1889-1982	yes
Frederick Leathers (1951-53)		1883-1965	
Geoffrey Lloyd (1953-55)		1902-1984	
Aubrey Jones (1955- 57)		1911-2003	yes
Percy Mills (1957-59)	See Hazlehurst, Whitehead and Woodland <i>guide to the papers of British cabinet ministers, 1900-1964</i> , 1996	1890-1968	yes
Richard Wood power (1959-63)		1920-2002	
Frederick Erroll (1963-64)	Churchill Archives Centre, correspondence with Sir EL Spears, SPRS, personal papers, for location see Chris Cook, <i>Sources in British Political History 1900-1951</i>	1914-2000	yes
<b>Ministers of Energy</b>			
Lord Carrington (8 January 1974 – 4 March 1974)	Churchill Archives Centre, CRTN	1919-	
Eric Varley 1974-1975)		1932-2008	
Tony Benn (1975-1979)	Substantial published memoirs and large personal archive etc	1925-	
David Howell (1979 –1981)	Churchill Archives Centre, HWLL	1936-	
Nigel Lawson (14 September 1981 – 11 June 1983)	Private possession	1932-	
Peter Walker (1983 –1987)	Correspondence with Lord Avon and Lord Beaverbrook	1932-2010	

**NLS Scoping Study: An Oral History of the Electricity Supply Industry in the UK**

Cecil Parkinson (1987-1989)		1931-	
John Wakeham (1989 –1992)	Churchill Archives Centre, WKHM	1932-	
<b>Chairs of the Electricity Council</b>			
Sir Henry Self 1958-1959		1890- 1975	
Sir (Clifford) Robertson King 1959-1961		1895– 1974	
Prof Sir Ronald Stanley Edwards 1962-1968	London School of Economics, EDWARDS and EDWARDS (M3395)	1910- 1976	yes
Sir Norman Elliott 1968-1972		1903- 1992	
Sir Peter Menzies 1972-1977		1912- 1992	
Sir Francis Tombs (Baron Tombs) 1977-1980	Corresp with Lord Hinton, IMechE	1924-	
Sir Austin Bunch 1981-1983		1918 - 2008	
Sir T Philip Jones 1983-1989		1931- 2000	
<b>Chairs of the CEGB</b>			
Sir Christopher Hinton (1957-64)	IMechE, CSAC 116.7.86	1901- 1983	yes
Sir (Frederick Herbert) Stanley Brown (1965-72)		1910- 1997	
Sir Arthur Hawkins (1972-77)			
Glyn England (1977-82)		1921-	
Walter (Lord) Marshall (1982- 1989)	Churchill Archives Centre, MRSL	1932- 1996	yes
Gil Blackman (1990)		1925-	
<b>Others</b>			
Frank Chapple	Modern Records Centre, Warwick University	1921- 2004	yes
William Graham Holford Architect, part-time CEGB member 1958-73, Baron Holford of Kemp Town	University of Liverpool D147/AU, D147/7, D147/8	1907- 75	

## Appendix 4 - The Gendered Nature of Employment in the Electricity Supply Industry

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Employment in the electricity supply industry was and is strongly segregated along gender lines. A 1960 inquiry by the Social Survey on the employment of qualified women scientists and engineers in industry and analogous public sector organisations included both the Electricity Council and the UKAEA. This revealed that the CEBG employed only 36 qualified women scientists and engineers, of whom 26 were chemists working in R&D or testing, analysis and control. Only 4 were electrical engineers. The associated correspondence also noted that 'there are no qualified women engineers or scientists employed by the Area Boards' and outlined in detail why women engineers were regarded as unsuitable for many roles.<sup>23</sup> In the Atomic Energy Authority, there were 94 qualified women scientists and engineers, not including the Health and Safety Group. Of these only 1 was an engineer. Women were mainly employed in research, and few in the industrial group.<sup>24</sup> Since a background in engineering was an important qualification for promotion to senior management posts within the CEBG it is not surprising that few women reached these levels prior to privatisation. In the years prior to privatisation advertisements for technical posts at the CEBG declared that it was 'an equal opportunities employer', but more recent studies suggest that the labour force is still strongly segregated along gender lines. A landmark ruling in 1994 forced the privatized companies to compensate 10,500 female clerical employees and bring their pay into line with that of male manual workers.<sup>25</sup> A recent report to the Scottish parliament reported that in the electricity industry only 17% of employees were women, and these were mainly to be found in back office support roles, while a prominent graduate recruitment website notes a particularly low proportion of women in the electricity industry.<sup>26</sup> It follows that in seeking to interview those involved in the design, management and operation of the system as well as its political masters we find almost exclusively men until very recently, with Helen Liddell as Minister of State for Energy and Competitiveness in Europe the first woman to hold responsibility for the sector. It will be important to ensure that this does not preclude asking interviewees questions about gender in the workplace, and means that this might be a good opportunity to gather more interviews with partners and spouses that explore their contributions to the development of careers.

Since privatisation the number of senior women in the industry has increased, in part because engineering expertise is less exclusively associated with senior posts than it previously was and women with a background in finance have risen to senior roles,

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<sup>23</sup> TNA: LAB 8/2482 L O'Donnell to JM Vincent Smith, 18 March 1960

<sup>24</sup> TNA: PRO AB 16/3960 FW Bamford to JM Vincent Smith, 21 March 1960,

<sup>25</sup> <http://www.independent.co.uk/news/uk/campaign-forces-electricity-firms-to-raise-womens-pay-1446829.html>

<sup>26</sup> <http://www.scotland.gov.uk/Publications/2010/07/02120508/12> Reporting on Progress Towards Equality of Opportunity for Women and Men Made by Public Authorities in Scotland: Ministerial Priorities for Gender Equality: Tackling Occupational Segregation: A Review of Key Evidence and National Policies, [http://www.prospects.ac.uk/industries\\_energy\\_overview.htm](http://www.prospects.ac.uk/industries_energy_overview.htm)

## **NLS Scoping Study: *An Oral History of the Electricity Supply Industry in the UK***

such as Dorothy Thompson, CEO of Drax power station. In addition women with a background in the nuclear sector have risen to prominence. The relatively young field of renewable energy is also more diverse in gender terms, reflecting a longstanding pattern regarding women's access to engineering where new and lower status fields where gender roles are less fixed offer opportunities not available elsewhere, but do not necessarily carry equivalent status or remuneration.