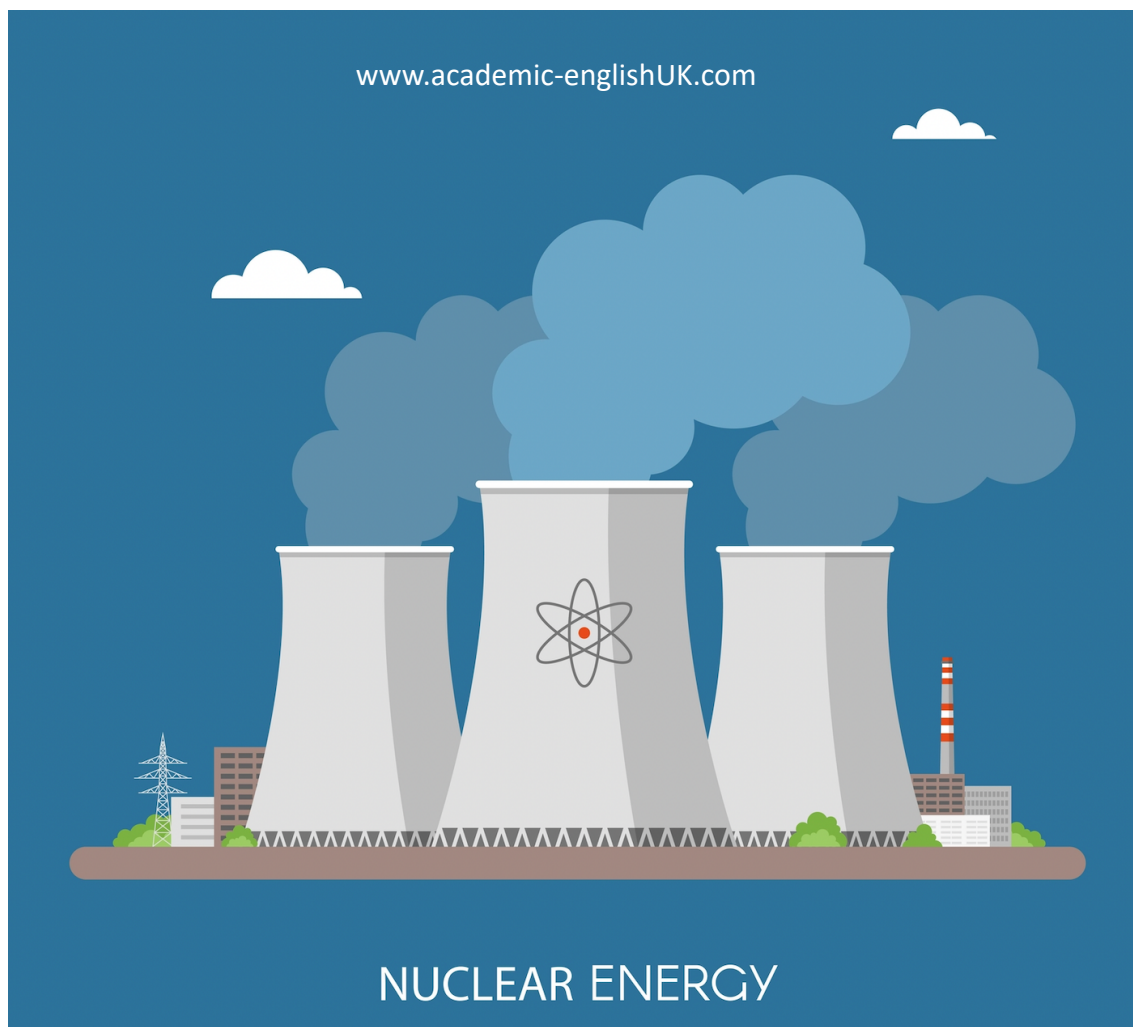


Nuclear Power



SPSE Reading & Writing Test

EXAMPLE

Question: *Making reference to the points made in texts 1,2,3,4 outline the situation and problem(s), summarise the solutions suggested and evaluate their effectiveness. Write between 400-600 words.*

Teacher's Notes

Reading & Writing Text - SPSE

Time: 1:30 – 2:00 hours

Level: *****(C1)

Lesson Plan

Aim: to develop the students' ability to read four academic texts and highlight key points connected to background, problems, solutions and evaluation. Students then use the key points to write a 400-600 word SPSE essay using summarising, paraphrasing and referencing skills.

Lead in

- What is nuclear power? Brainstorm topic and associated vocabulary.
- Associated vocabulary: *Reactor, uranium, rods, nuclear fusion, radioactivity, generate electricity, gas/coal fired power station, CO2, renewable energy, sustainable energy, energy demand, Fukushima disaster, Chernobyl disaster.*

SPSE Revision

- Remind students what an SPSE essay is.
- Go here: <https://www.academic-englishuk.com/spse> (Models / Language).

Task

1. Students read **essay question** and check understanding.

Essay Question: Making reference to the points made in texts 1, 2, 3 & 4, outline the situation and problem(s), summarise the solutions suggested and evaluate their effectiveness. Write between 400-600 words.

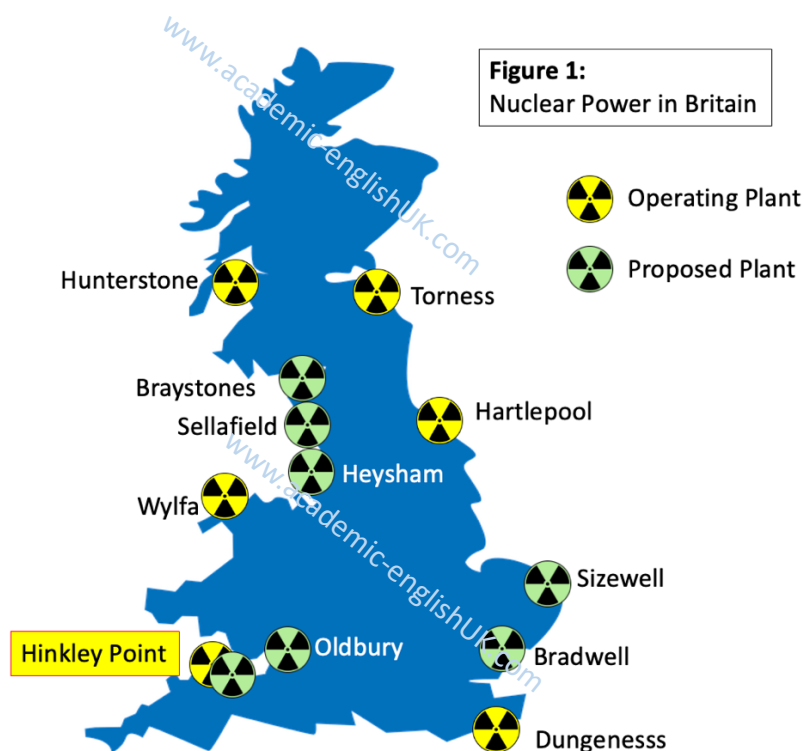
2. Distribute **SPSE essay outline** & the **four texts**.
3. Students take notes on the **four texts** using the **SPSE essay outline**.
4. Students write essay from their outlines. Allow 1.30 – 2.00 hours.
5. Feedback: Either distribute **SPSE essay outline answers** & **model essay** for students to check themselves or take in and mark. Use error correction code:
<https://www.academic-englishuk.com/error-correction>

Scaffolding/differentiation

- Students compare with **SPSE essay outline answers** before writing essay.
- Key phrases sheet to support students with SPSE language at the back of this book.

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Hinkley Point C Nuclear Power Plant



Text 1: By Farrell (2016)

Hinkley Point C (HPC) in Somerset will be the first of a new batch of nuclear power stations to be built around the UK with Sizewell and Bradwell next in line (see figure 1). The plan is to build two 1,650-megawatt nuclear reactors, [REDACTED] at the HPC site as part of the UK's energy security strategy. The £18bn project plans [REDACTED] use anywhere else and is being built by France's EDF (Electricite de France), with some funding [REDACTED]. The site is already home to the disused Hinkley Point A and the still-operational Hinkley Point B (see figure 2). The HPC began construction in 2017.

New nuclear stations such as HPC would reduce the UK's reliance on imported gas. Gas and [REDACTED] the country's electricity. HPC is designed to meet 7% of the country's total energy needs. The UK's existing nuclear plants, such as Hinkley Point B, which was connected to the grid in 1976, are nearing the end of their working lives. In addition, the [REDACTED] to meet new EU air quality rules. That will create a big gap in generating capacity that must be filled if the lights are to stay on.

EDF, France's state-controlled electricity company, bought British Energy, which owned the UK's nuclear [REDACTED] but when the outline of the plans was announced in October 2013 it was clear the company needed an [REDACTED]. Two years later China's General Nuclear Power Corporation agreed to take [REDACTED]. However, EDF has still not made a full commitment to go ahead with building Hinkley Point C.

HPC will use two EPRs (European Pressurised Reactors) build by Areva. These are very high [REDACTED] of electrical production capacity of more than 1650 MWe (megawatts electric). It reduces production [REDACTED] which is nearly a third more than that of conventional nuclear power stations. These reactors are currently under construction [REDACTED] in China (2 units in Taishan), and is currently undergoing certification in the United States and the United Kingdom.

Text 2: by Johnson (2016)

Many economists are concerned with EDF's financial situation. The company has debt [REDACTED] past 12 months. The biggest concern is whether EDF should be building a power plant that is worth more than the company. A serious consequence of this is that with such [REDACTED] or met financial difficulties. HPC is a giant undertaking. Its two 1.65GW European Pressurised Reactors (EPR) would be among the biggest in the world. Of the original EDF £16bn estimated cost, £14bn was for construction with another [REDACTED], regulatory approvals and training future employees. In October 2015, EDF announced it needed [REDACTED] what they claimed was the increase in inflation. In addition to pre-build rising costs, there are concerns over EDF's construction of another nuclear power plant at Flamanville, on France's west coast. Its [REDACTED] running six years late.

If financial problems [REDACTED] use Avera's European Pressurised Reactors (EPR) technology. These reactors are being used for the [REDACTED] years behind schedule due to a serious fault in the reactor and cost overruns nearly bankrupting the company from four years of losses. As a result, the reactors for HPC [REDACTED] concerns and are now due to be ready for 2020. Delaying the construction of the project and adding to public anxiety of levels of safety.

The UK government is committed to the HPC project as it wants to invest in Britain's future energy market [REDACTED] EDF have offered the government a 'strike price' that it will charge for electricity from HPC. The current electricity price [REDACTED] the price to £92.50 per megawatt hour when HPC goes onto the grid. Many consumer watchdogs are stating that EDF are forcing the Government into a corner to pay a highly marked up price. However, others argue that this price will be a constant and [REDACTED] will be a good deal for British consumers.

Text 3: by EDF (2016)

Nuclear power stations are a key part of the UK's strategy to reduce carbon emissions and fight climate change. HPC will be a first in the next generation of nuclear power stations with a [redacted] to deal with climate change. One step needed to achieve this is to replace our old, polluting oil, coal- and gas-fired power stations, with new, efficient, lower carbon alternatives (see figure 3). These alternatives include renewables, and indeed EDF Energy has invested in them in the UK. But renewables are intermittent, only [redacted]. So EDF Energy and others have also invested in modern gas-fired power plants, which can be switched on quickly when intermittent sources are not [redacted]. Nuclear power stations do not emit carbon dioxide when generating electricity. In fact, the total lifecycle emissions of HPC will be just 5g CO₂e/kWh. The gas-fired power [redacted] times higher. It will generate enough low carbon electricity to power more than 5million homes, meeting 7% of the UK electricity needs. By restarting the UK's nuclear new build industry, HPC will pave the way for the UK to build further new nuclear power stations, [redacted] coast of England (see figure 1).

Thriving economies: HPC will create at least 1,000 apprenticeships and invest £14 million in education and training for that next generation. [redacted]. The construction and operation of Hinkley Point C is creating 25,000 employment opportunities, and the new nuclear power station will provide 900 jobs for its 60 year lifetime. EDF Energy's local and regional investment goes beyond this, [redacted] in local employment and skills, £16m in roads and infrastructure, and £3m for the 'inspire engineering programme' for young people.

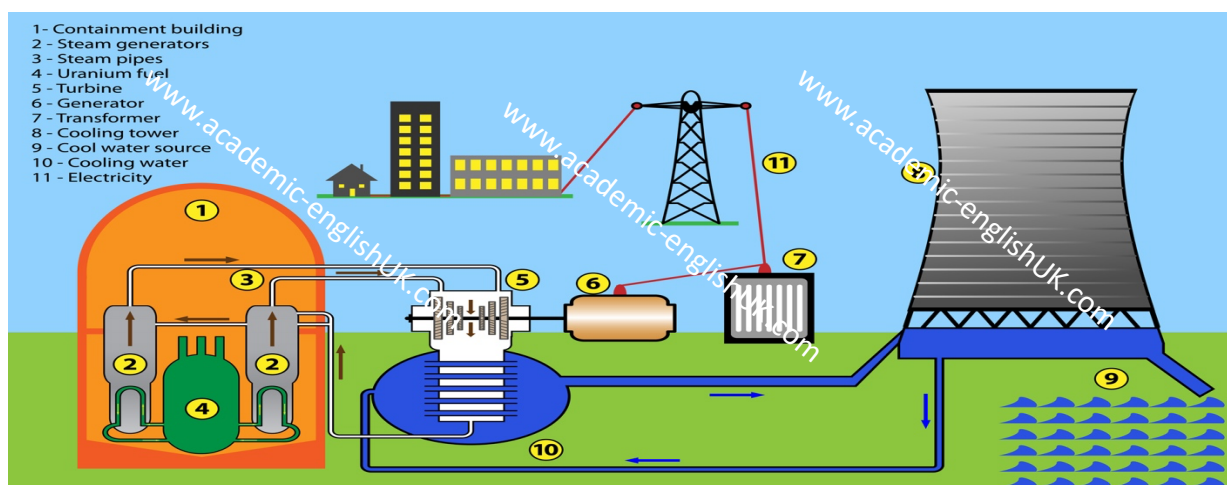


Figure 3 - non-polluting generation system.

Text 4: by Wilson et al (2015)

The clear reality is that the UK has ageing nuclear plants that need replacing or alternative forms need to be found rapidly. The government has invested heavily into renewables, producing [REDACTED] have found that solar and wind power are variable and lack the ability of energy storage. This leaves a dilemma [REDACTED] trying to meet the 2025 EU air quality rules. Germany, who are opposed to nuclear power from the recent Fukushima disaster, have decided to [REDACTED] could significantly affect their target to be using 80% renewable energy by 2050.

The UK, on the other hand, seems focused on nuclear power. Electricity demand is growing yearly and [REDACTED] the UK also has to stay globally competitive and attract global business with fair electricity cost. [REDACTED]. EDF is state-owned and the French Government need to be more committed in financially supporting EDF in its nuclear construction programme. Many economists [REDACTED] so that it meets the design specifications of its construction and can implement better safety protocols to prevent future delays. The UK government needs to set clear objectives with EDF with no extension to budget and costly penalties if they go over time.

Of course, the environmental impact of nuclear power is incredibly controversial. What never seems to be [REDACTED] uranium is a heavily polluting industry often done in other countries and not factored into pollution counting in the country where it is used. [REDACTED] before it is safe, there is no recycling process at this moment. And finally the decommissioning and dismantling of a nuclear power station takes up to 50 years and can cost over £10bn per station. These costs are not [REDACTED] so who pays for this?

Overall, the debate is healthy. The UK needs to become energy self-sufficient and the government needs electricity. [REDACTED]. Many people would prefer more research in alternative forms of energy but the economic and [REDACTED] to outweigh this research.

SPSE Outline Plan

Situation
Problems (and development)
Solutions (and development)
Evaluation (positive & negatives)
Conclusion

SPSE Outline Plan

Situation

[REDACTED] (Wilson et al. 2015)
HPC Somerset. (Farrell, 2016)
Reduce fossil fuel / replace ageing plants. (Farrell, 2016)
EDF & Chinese [REDACTED] (Farrell, 2016)
7% energy / peak power. (Farrell, 2016) / (Wilson et al. 2015)
Reduce carbon (EDF, 2016)
[REDACTED] (Farrell, 2016)

Problems

Nothing built yet. (Farrell, 2016)
[REDACTED] (Johnson, 2016)
Project more than company / liability. (Johnson, 2016)
[REDACTED] (France). (Johnson, 2016)
Avera reactor problems. (Johnson, 2016)
Safety concerns. (Johnson, 2016)
[REDACTED] (Johnson, 2016)
Renewables not enough. (EDF, 2016)
Power plants coming to an end. (Wilson et al., 2015)
[REDACTED] (Wilson et al. 2015)

Solutions

Cut CO2 emissions. (EDF, 2016)
[REDACTED] (EDF, 2016)
Initiate more nuclear programmes. (EDF, 2016)
French [REDACTED] (Wilson et al.2015)
Buying Avera EPRs. (Wilson et al. 2015)
UK Government set clear objectives. (Wilson et al. 2015)
U.K. Government committed. (Johnson, 2016)
[REDACTED], infrastructure. (EDF, 2016)
Electricity [REDACTED] (Johnson, 2016)

Evaluation

Improve the economy. (EDF, 2016)
[REDACTED] (Farrell, 2016)
World leaders in Nuclear power. (EDF, 2016)
Support the renewable energy [REDACTED] fossil fuels (Farrell, 2016) /
(EDF, 2016) The environmental impact not accounted for (Wilson et al. 2015) Decommissioning
- [REDACTED] (Wilson et al. 2015)

Conclusion

[REDACTED] in storing energy. (Wilson et al. 2015)
Healthy debate - may [REDACTED] (Wilson et al. 2015)

Model answer

The U.K. has nine nuclear [redacted] of their life. Recently, the British government commissioned EDF to build a nuclear power plant next to an [redacted]. The new plant will be called Hinkley Point C (HPC) and will be one of the biggest nuclear power plants in the world at a cost of £18bn (Farrell, 2016). It will use two newly [redacted], than existing reactors. The plant will produce 7% of the UK's electricity and will run for 60 years. This essay will discuss the associated problems with building HPC and offer suitable solutions.

There are a number of serious problems associated with EDF and the construction of HPC. The most significant concern [redacted], Johnson (2016) argues that if a construction company is in more debt than the project, this [redacted] EDF are in the process of building a similar plant in Flamanville, France, which has gone over budget by [redacted] (Johnson, 2016). This provides evidence that EDF are unreliable in meeting budgets and time targets. Another equally important [redacted] is having a host of pre-installation problems with the efficiency of their reactors. Johnson (2015) points out that one of the reactors being installed in Finland has a serious reactor fault, and is over schedule by four years. This [redacted] more importantly safety. A final point is the price of electricity HPC will provide is double the current price. Although this is going to be a fixed concurrent price for 20 years, there is the possibility that electricity [redacted] will be over-charged.

The British government wants to be self-sufficient in energy and less reliant on fossil fuels so [redacted]. There are a number of concerns with EDF but there a number of solutions that can be implemented to reduce the financial stress and construction issues. Wilson et al (2015) suggests [redacted] French Government commit to the project and offer financial assistance if EDF go over budget. Another solution is that EDF buy out Avera and take control of the EPRs, this would mean more safety protocols could be applied and implement [redacted] (Wilson et al, 2015). Of course, all new projects normally come with imperfections and with the two plants already under construction ([redacted] weaknesses that can be addressed for HPC.

Overall, the bottom line is the UK needs an electricity solution to meet future needs. A new nuclear plant will improve the economy and generate [redacted] (EDF, 2016). It will also support the fluctuations in the

renewable [REDACTED] (Farrell, 2016). However, the reliability of EDF and Avera are questionable, the evidence suggested highlights significant financial [REDACTED] plant on time and under-budget. Even, if the British Government enforce a working contract that penalises EDF going over [REDACTED] and performance.

[Words 584]

SPSE Language Phrases

Key phrases for writing an SPSE essay

Situation

Follows the conventions of an introduction

(general > specific > definition > situation > outline)

Outline: This essay will discuss two problems, propose possible solutions and evaluate the effectiveness of these solutions.

Problems

Adjective: central / main / major / common / immediate / serious / significant.

Verbs: associate / raise / consider / discuss / address / resolve / discuss.

- *The most significant problem is...*
- *... poses / presents an immediate problem because...*
- *Another possible issue is ...*

Cause & effect language

Leads to / results in / gives rise to / as a consequence / owing to / because of / as a result.

Cause and effect phrases

This suggests / ... Is linked to / associated with / connected to / ...may be affected by...

Solution

Adjective: long-term / short-term / proposed / effective / comprehensive / possible / practical / feasible / cost-effective / workable / realistic.

Verbs: propose / put forward / suggest / adopt / provide.

- *One possible solution would be to.... / One way of solving the problem is...*
- *One practical approach could be to...*

Evaluation [Show both positive effects and negatives]

- *Implementation of these solutions would ... However, ...*
- *Although these solutions provide..., there are a number of limitations. The first one is...*
- *Overall, these solutions offer a range of ..., but it needs to be highlighted that...*

Conclusion [Make a decision]

In conclusion / to sum up / to conclude.

If clause: if these solutions are implemented, then this would ...