

## Public Sector Decarbonisation Scheme Phase 3c: Complementary FAQs on bivalent and resilience systems scheme requirements

This document covers detailed clarifications on projects where part of the existing fossil-fuel heating plant is retained for the operation of a bivalent system and/or require backup heating plants fed from a separate fuel type to the main plant.

### **Definition:**

#### N+1 redundancy:

- 'N' is the number of components needed to achieve the design conditions. For example, this could be 4 boiler heating modules designed to achieve 100% of the heating load at design conditions.
- '+1' redundancy provides a minimal level of resilience by adding a single backup component. In the above example N=4 no. boilers and +1= 1 similar sized back up boiler to the N boilers.

Dual fuel requirements are a separate form of resilience from N+1 system redundancy, as the N+1 can be achieved on a single fuel system.

#### Bivalent system:

A bivalent system typically uses a primary and a secondary heating/cooling generator. The primary system provides part of the peak load, with the secondary system supplying either:

- a) the remainder of the peak load (a parallel bivalent system); this strategy minimises contribution by the secondary plant;
- b) the entire load, under peak conditions: an alternate bivalent system.

This guidance should be read in conjunction with the Phase 3c Public Sector Decarbonisation Scheme (PSDS) Guidance Notes, and applicants must meet all the scheme compliance criteria listed in the Guidance Notes.

As referred to in Section 4.18 of the Guidance Notes, Salix considers N+1 redundancy as part of the primary heating solution. Dual fuel resilience is a separate form of resilience from system redundancy, which is required by NHS sites, or by legal, regulatory, and contractual obligations.

Please note, in all scenarios listed below, **applicants are required to decommission their primary, end-of-life fossil-fuel heating plant and replace this with their new low carbon alternative** as per Section 4.2 of the Guidance Notes.

### **Q: Can we retain boilers to use in conjunction with a new low carbon heating system?**

**A:** Yes, as outlined in Appendix 3 of the Guidance Notes section '[System Specific Detail](#)', applicants can retain the existing non-end-of-life plant that is intended to operate in a bivalent configuration with a new low carbon heating solution.

Applicants are expected to demonstrate:

- How the operation of the low carbon heating solution will be prioritised by providing plant operation strategy details.
- How the operating flow temperatures of the different plant will operate together.
- How the carbon savings are calculated and proportionate to the capacity of the new low carbon heating solution and the fossil fuel plant retained based on the operation strategy chosen for the whole heating solution. To note that the grant funding is determined by the direct carbon saving calculated.
- How long the retained fossil fuel plant will operate for in this configuration.

**Q: Can we retain boilers which are older than 10 years to use in conjunction with a new low carbon heating solution?**

**A:** The Public Sector Decarbonisation Scheme requires boilers to be at least 10 years old for them to be defined as coming to the end of their useful lives and eligible for replacement. Salix recognise that boilers can operate beyond this, with CIBSE Guide M giving an economic life expectancy for fossil fuel heating plant greater than 10 years. Therefore, if an applicant wishes to retain a boiler which is 10 years old or above this will not render their application ineligible.

Applicants should list all fossil fuel heating plant within their buildings and select whether they will be removed or retained in Step 3.3 of the Application Form. If the boiler retained is part of multiple boilers heating plant with the same manufacturing and age as the boilers being removed, the end-of-life criteria will be reviewed on a case-by-case-basis. In this situation where a boiler is retained, then the responsibility will fall on the applicant to ensure its suitability and operation as required.

It is important to note that Salix technical assessors will assess the proposed low carbon heating system sizing, and applicants should pay close attention to Section 4.14 of the Guidance Notes when preparing their application.

**Q: We are an NHS site and require primary and secondary fuel arrangements to ensure continuity of supply in the event of disruption. Can we replace the primary end-of-life fossil fuel plant with a low carbon heating system under the Public Sector Decarbonisation Scheme and purchase a new fossil fuel plant with our own funding for dual fuel resilience? Or would this render our application ineligible?**

**A:** Salix appreciate the requirement for NHS sites to have a required level of backup in line with their procedure and standard. For example, primary and secondary fuel arrangements should the primary heating plant fail. The scenario above would not render the application ineligible as stated in Section 4.18 of the Guidance Notes. If the NHS trust must replace the existing backup fossil fuel plant, this will be at the applicant's own cost, and would be considered outside of the scope of a Public Sector Decarbonisation Scheme application. It is important for applicants to note that this is an exception only for NHS sites or other sites that are contractually or legally required to have primary and secondary fuel requirements.

**Q: Are there any conditions for how an existing backup fossil fuel heating plant would be defined?**

**A:** A backup plant, required to provide dual fuel resilience, is only required to operate in instances of major disruption to the primary energy supply. For example, at an NHS site or a prison. Salix would not expect they contribute any fossil fuel use to the yearly consumption data provided as the low carbon heating system should be sufficient for all planned usage. Evidence should be provided to demonstrate this.

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