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| **Project Scope Template** | | | |
| **Project Title** | Virtual ES: Common Framework Demonstrator | | |
| **Contact** | [Charlotte.Horne@nationalgrideso.com](mailto:Charlotte.Horne@nationalgrideso.com) | **Company** | National Grid ESO |
| **Project details** | | | |
| **Start date** | September 2022 | **Funding source** | NIA |
| **Duration** | 12 months | **Budget estimate** | £550,000 |
| **Innovation Strategy theme** | | Network improvements and system operability | |
| **E6 benefits category** | | Improve Network Performance | |
| **Estimated annual benefits** | |  | |
| **Problem** | | | |
| The way we generate, manage, and consume energy is changing rapidly; the transition to a future decentralised energy system is being accelerated by renewable generation, storage, and flexible demand. Interactions between energy and other sectors are also increasing, with electrification in heat and transport. These changes are essential for achieving net zero and for a cost-effective energy landscape, but they also bring challenges and complexity which necessitates changes in the way we design and operate the energy system.  Multiple individual models and data sources exist across the sector which are not interoperable or openly shared, these models and data cannot be combined to provide a more accurate representation of the whole interconnected system. A common framework is required if a connected ecosystem of digital twins is to be delivered for the energy system.  The previous discovery phase identified the need for a tangible demonstrator to test the Virtual Energy System (VirtualES) Common Framework’s ability to create an eco-system of digital twins, centred on a whole system flexibility use case. This demonstrator will allow the factors to be developed iteratively and linked to a real-world scenario. | | | |
| **Solution method** | | | |
| This project will provide a greater understanding of the requirements from the common framework to support the overall Virtual ES. This will be achieved through a small-scale demonstration of the priority key factors, including application through a tangible use case:   * **WP1**: Project Management Office * **WP2**: Demonstrating the common framework through the whole system flexibility use case; establishing key data sets and granularity required, determining a secure and scalable solution to store shared data and models, and outlining how the demonstrator will be developed * **WP3**: Developing the common framework best practice guidance; including priority social and technical factors * **WP4**: Benefits of the use case & common framework | | | |
| **Project scale** | | | |
| The project will be delivered following an agile approach over 12 months and will require industrial and partner engagement throughout. Arup will be the main delivery partner, supported by their subcontractors: Energy Systems Catapult and Icebreaker One. | | | |
| **Collaboration** | | | |
| **Open to Networks** | Yes | **Network partners** | NGESO |
| **Partner roles** | | | |
| * **NGESO –** Project partner, providing data and knowledge of the ESO * **NG Gas Transmission –** Supporting partner providing data and knowledge of gas system operation * **Arup –** Main delivery partner, responsible for delivery of each milestone and bringing experience from subcontractors Energy Systems Catapult and Icebreaker One. | | | |
| **Related Projects** | | | |
| Reference projects include (key projects in bold):   * **A Common Framework for a Virtual Energy System (NIA)** * **Virtual Energy System (SIF)** | | | |

# Notes for populating

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# Reviewers to provide feedback and/or supporting information via track changes and comments