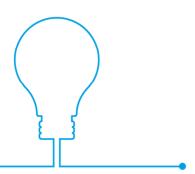


# THE ENERGY ENTREPRENEURS FUND

Phase 5 Guidance Notes



# THE ENERGY ENTREPRENEURS FUND

#### Phase 5 Guidance Notes

The Energy Entrepreneurs Fund

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# Section 1: BEIS's Energy Entrepreneurs Fund – Summary

#### 1. The Energy Entrepreneurs Fund – Overview

The objective of the Energy Entrepreneurs Fund (EEF) is to support, through capital grants, the development and demonstration of innovative technologies and/or processes in the areas of energy efficiency, power generation, and heat and energy storage.

The scheme seeks the best ideas, irrespective of source, in these areas from the public and private sector. However, the scheme particularly aims to assist small and medium sized enterprises, including start-ups. Those companies that are selected will receive additional funding for incubation support.

Previously, the Energy Entrepreneurs Fund was launched over four phases – the first in August 2012, the second in June 2013 and the third in January 2014 and the last in November 2014. 86 projects to develop innovative, low carbon products across a wide range of technologies were awarded grants to a value of c. £38.3m.

We are now launching Phase 5 of the Energy Entrepreneurs Fund with up to £9 million available. There will be two opportunities to enter:

- Phase 5a will have up to £4 million available. Expressions of interest are required by 5pm on 25th November 2016 and the deadline for applications is noon on 9<sup>th</sup> December 2016;
- Phase 5b will have up to £5 million available. Expressions of interest are required by 5pm on 20th January 2017 and the deadline for applications is noon on 3rd February 2017.

Only one proposal per applicant may be submitted into either Phase 5a or Phase 5b. Proposals that are not successful in the first Phase of competition but meet eligibility criteria will automatically be entered to Phase 5b, unless the applicant withdraws. Companies can apply for up to £1m per proposal, depending on the state aid requirements outlined in section 5.

During the application process, applicants will be expected to demonstrate a robust evidence based case for funding, which will include but not be limited to:

 the potential impact of the innovation on 2030 and 2050 low carbon targets or security of supply

- the technical viability of their innovation and coherent development plan that will commercially progress the innovation
- value for money, including cost reduction potential
- the size and nature of the business opportunity

BEIS will fund project proposals which meet the definition of Industrial Research and Experimental Development. Funding levels under this definition will vary according to conditions as set out in section 5.

#### 1.1 Definition of Industrial Research

Industrial research is defined as 'the planned research or critical investigation aimed at the acquisition of new knowledge and skills for developing new products, processes or services or for bringing about a significant improvement in existing products, processes or services.'

Activities may include:

- the creation of component parts of complex systems;
- the construction of prototypes in a laboratory environment or in an environment with simulated interfaces to existing systems;
- pilot lines, when necessary for the industrial research and notably for generic technology validation.

#### 1.2 Definition of Experimental Development

Experimental development is defined as: 'acquiring, combining, shaping and using existing scientific, technological, business and other relevant knowledge and skills with the aim of developing new or improved products, processes or services. This may also include, for example, activities aiming at the conceptual definition, planning and documentation of new products, processes or services'.

Activities undertaken may include prototyping, demonstrating, piloting, testing and validation of new or improved products, processes or services in environments representative of real life operating conditions where the primary objective is to make further technical improvements on products, processes or services that are not substantially set. This may include the development of a commercially usable prototype or pilot which is necessarily the final commercial product and which is too expensive to produce for it to be used only for demonstration and validation purposes.

Experimental development does not include routine or periodic changes made to existing products, production lines, manufacturing processes, services and other operations in progress, even if those changes may represent improvements".

#### 2. Incubation Support

The scheme will provide incubation support to successful applicants. This support will focus on helping the applicant to prepare commercial plans and actions that will increase the chance of successfully bringing the innovation to market or reduce the time to market.

The starting point for incubation support is to consider the current stage of commercial preparation and identify (with the applicant) critical next steps, business strengths and gaps, benchmarked for the stage of the individual business across all key capabilities namely:

- Market understanding
- Business development and sale
- Strategy and Business Planning
- Technology
- Product
- Supply chain and operations
- Team
- Funding and investment readiness

Specialist advisers will be assigned by BEIS to support the company in the development of the appropriate knowledge and skills. This may include but will not be limited to services such as:

- Market research, segmentation and validation of market requirements
- Assistance to determine route to market and engaging industrial partners
- Intellectual property advice
- Evaluating alternative commercial strategies and support with business planning
- Investment readiness/fund raising support

All proposals that are awarded funding for innovation development will undergo assessment for incubation support requirements. This planning session will be conducted by the BEIS Supplier appointed to deliver Incubation Support. A member of the BEIS Innovation Team will attend this session to discuss any issues raised during the grant project assessment process, as well as explain the content of the Grant Offer Letter.

BEIS have designed this strand of the Energy Entrepreneur's Fund to help ensure that grant recipients achieve maximum commercial impact from the grant. Therefore, receiving the identified incubation support is a condition of the grant award and grant recipients are required to co-operate with both the Incubation Planning Session and the Incubation Manager who will oversee the delivery of the incubation support.

The role of the Incubation Manager has been integrated into the grant monitoring processes and thus any failure or refusal to support this element of the programme will result in termination of the grant.

#### 3. Application and Assessment Process

The following dates are applicable to the fifth phase of the Energy Entrepreneurs Fund (launched 30<sup>th</sup> October 2016):

#### Phase 5a timings: Launch 30<sup>th</sup> October 2016

Application

- Survey Monkey Registration (30 Oct 25 Nov)
- Send confirmation email to entrepreneur@beis.gov.uk by
   5pm 25th November 2016
- Submit application on Basecamp (9th December 2016)

Assessment

- Eligibility check (12-16 December)
- Technical assessment (19 Dec- 20 Jan 2017)
- Technical assessment steering panel (February)
- Commercial panel meeting (February)

Grant award

- Conditional letters, Incubation meetings (March 2017)
- Grant awards (March/April 2017)

#### Phase 5b timings: Launch 30th October 2016

Application

- Survey Monkey Registration (30 Oct -20 Jan 2017)
- Send confirmation email to entrepreneur@beis.gov.uk by 5pm 20th January 2017
- Submit application on Basecamp (3rd February 2017)

Assessment

- Eligibility check (6-10 February)
- Technical assessment (13 Feb 10 March)
- Technical assessment steering panel (March 2017)
- Commercial panel meeting (April 2017)

Grant award

- Conditional letters, Incubation meetings (April 2017)
- Grant awards (April/May 2017)

As outlined in the diagram above, the EEF competition process for both phases will be undertaken in three key stages comprising application, assessment and grant award.

#### Stage 1: Application

- Applicants are invited to submit expressions of interest and key project and contact details through an online survey at: <a href="https://www.surveymonkey.co.uk/r/EEFRound5">https://www.surveymonkey.co.uk/r/EEFRound5</a>
   The deadline for expressions of interest is
  - o Phase 5a: 5pm on 25<sup>th</sup> November 2016.
  - o Phase 5b: 5pm on 20<sup>th</sup> January 2016.
- In addition to completing the expression of interest on survey monkey, applicants must also send an email by the deadline above to <a href="mailto:entrepreneur@beis.gov.uk">entrepreneur@beis.gov.uk</a> stating the company name, project title and confirmation of intention to submit an application. If you have read the guidance notes and FAQs and still have

questions, you may also address any queries regarding the competition process to this email address.

N.B Applicants must complete BOTH the survey monkey registration AND send a confirmation email by the deadlines specified to be eligible to apply for the EEF competition. Please only send the confirmation email if you intend to submit an application for funding.

- From 7<sup>th</sup> November and once an applicant has sent the email confirmation, BEIS will send an individual electronic invitation via Basecamp to the email provided by the applicant at registration. This will provide the applicant access to their unique and confidential project folder to upload the required competition documents to Basecamp. The folder will be pre-populated with discussions to provide advice on using Basecamp and the EEF competition process, as well as the Phase 5 application templates and guidance notes. A task list will also be provided in your project folder to guide you through the application process.
- BEIS offers a range of different funding schemes, each with different application processes. It is therefore important that you have the correct documentation for the Energy Entrepreneurs Fund and that all the requested documentation is uploaded to the applicant's individual project folder on Basecamp by

o Phase 5a: 12 noon on 9th December 2016

o Phase 5b: 12 noon on 3<sup>rd</sup> February 2016

The application documents are:

- Application form
- Finance form
- Gantt chart
- Letters of support from collaborators/partners (where relevant)

BEIS will accept additional supporting information in the form of further annexes, however you should not assume that any additional information will be reviewed as part of the selection process and your application should not rely on information cross-referenced within annexes.

Once your application has been submitted and entered the assessment process, no further material information can be added to your application. Applications will be judged on the information that is provided.

#### Stage 2: BEIS Assessment and Investment Panel

Applications will be initially checked according to Eligibility Criteria detailed in section 4.

N.B. Applications which fail the Eligibility Criteria will not be assessed further, so it is essential to ensure that your project meets these before you submit your application.

Applications which meet the Eligibility Criteria will then be assessed using a two-part process:

Part 1: Assessment against Project Criteria (technical, commercial and project feasibility) summarised below and described in more detail in section 8:

- Level and nature of the innovation.
- Impact on energy and climate targets
- Value for money, including any cost reduction potential
- Market viability and potential for commercialisation

This assessment will be conducted by both internal and external low carbon technology professionals appointed by BEIS. According to the demand and quality of applications, BEIS will rank the top scoring applications for submission to the Investment Panel.

Part 2: Review by an external Investment Panel.

The panel will consider the following areas:

- Market viability and potential for commercialisation
- Impact on energy and climate targets
- Value for money
- Attractiveness of target market and business proposition for investment

The panel will consider the Project Criteria as listed above and will provide feedback and recommendations to BEIS based on these considerations.

After this stage, all applicants will receive a short summary of key feedback regarding their applications irrespective of whether they are successful or not. BEIS aims to have provided all feedback to applicants within two months of the final funding decision. However, applicants are asked to remember that BEIS may receive a significant number of applications and the timing of the release of feedback will be at BEIS's discretion.

#### Stage 3: Incubation Planning and Grant Award

Following stage 2, successful applicants will be notified via email that they have been preselected for an incubation planning session. Following notification of pre-selection, the eligible costs of proposals will be checked and the company's financial viability confirmed. A meeting will be set up with the applicant, the incubation co-ordinator and manager, and a BEIS official.

Once this planning session has taken place, any funding pre-requisites and receipt of the identified incubation support will become conditions of the grant. The incubation planning may identify some actions that need to precede the innovation development project. In such cases funding may be provided at BEIS's discretion to help carry out these actions and the milestones in the project plan amended accordingly.

There will also be an opportunity to discuss the Grant Offer Letter at this meeting and an official from BEIS will explain the conditions of the letter and respond to any queries which the applicant may have at this stage.

Where an incubation planning session identifies any issues with the applicant's project which were not clear from the application documents or which may impact on the successful delivery of the project, BEIS reserves the right not to proceed to the Grant Offer Letter stage.

N.B. Successful applicants have only received provisional approval for a grant, until successful completion of the incubation planning meeting and BEIS's acceptance of the incubation plan which comes from it.

#### 4. Eligibility for funding

To be eligible for funding, proposed projects must meet all of the following criteria:

- 1. Innovation and technology readiness:
  - i. The project is at TRL 3 or above (Critical Function or Proof of Concept Established).
  - ii. Projects must fall within the EU General Block Exemption regulation Article 2 definitions of industrial research (85) or experimental development (86) (as described above in section 2) and be eligible under Section 3 Article 22 (Aid for start-ups) or Section 4 Article 25 (Aid for research and development projects).<sup>1</sup>
- **2. Project Status**: BEIS is unable to fund retrospective work on projects. The value of retrospective work may, however, be taken into account in the assessment process.
- **3. Aid Intensity including cumulation**: The funding levels applied for must be consistent with the appropriate Block Exemption aid intensity levels (including consideration of the cumulative effect of other forms of state aid) and costs must be consistent with the eligible cost criteria (as set out in Appendix 1).

http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN
. NB The UK's rights and obligations of EU membership, including compliance with State aid rules, continue to apply until the UK's exit from the EU has been completed.

- **4. Match-funding**: Given the aid intensity rules, applicants will need to have private funding in place to cover the balance of the eligible costs. Such funding may come from a company's own resources or external private sector investors, but may not include funding attributable to any public authority or EU institution. The match funding must be at least 10% of the total project costs.
- 5. Project Location: The project's activities must largely be conducted in the UK.
- **6. Grant size:** The total requested grant does not exceed £1m, or £800,000<sup>2</sup> if applying as a small innovative start-up under Article 22. The maximum total project value must not exceed £2.5m. Since BEIS is seeking to maximise the impact of government funding, projects looking for public funding intensities that are lower than the applicable maximum are likely to be marked higher in the appraisal process.
- 7. **Technology scope:** The project must fit within one of the technology areas defined in Section 6 below.
- 8. Project duration: Financial completion must not exceed 31st March 2020.

#### 4.1 General conditions:

Companies of any size are eligible to seek funding. Applications from SMEs, as defined by the EU<sup>3</sup>, are particularly encouraged.

Applicants who did not receive funding in the first, second or third or fourth phases will be eligible to re-apply for funding in this phase. However, applicants are only permitted to submit an application for the same technology twice. If they are unsuccessful on both occasions they are not allowed to resubmit the same technology a third time.

Successful applicants from Phases 1, 2, 3 or 4 may apply for funding for additional activities or new projects under this phase. There will be no advantage for existing EEF projects applying for further funding in the application process, as all applications will be treated on an equal basis in accordance with the competition criteria.

An individual organisation may not submit more than one application to a specific funding phase.

#### 5. Funding Levels and State aid requirements

This scheme operates under two different General Block Exemption Regulation articles for State Aid. The two articles are Article 22 'Aid for start-ups' and Article 25 'Aid for research and development projects'.<sup>4</sup>

<sup>&</sup>lt;sup>2</sup> This limit is set in accordance with Article 22. The limit is article 22 is set in Euros, therefore this value is the maximum available but could go down.

<sup>&</sup>lt;sup>3</sup> http://ec.europa.eu/enterprise/policies/sme/files/sme\_definition/sme\_user\_guide\_en.pdf

The size and type of funding that the project can receive will depend upon the type of applicant and which GBER Article they qualify under. These can broadly be defined as "small enterprises" (as defined by the EU) and "all other applicants".

#### 5.1 Funding for Small Innovative Start-ups

Small start-ups applying under this scheme may be eligible to be funded under Article 22. In order to be eligible the company must be:

- A small enterprise as defined by the EU<sup>5</sup>
- In existence for less than 5yrs and unlisted

R&D expenses must represent at least 10% of total operating expenses in at least one of the three years preceding the date of application or in the case of a start-up without any financial history, in the audit of its current fiscal period, as certified by an external auditor.

The maximum amount of funding that a company may receive shall not exceed £800,000<sup>6</sup>. SMEs need to demonstrate a 10% cash match. BEIS is seeking value for money from its funding and will therefore look favourably on applicants who can demonstrate a match that is greater than 10%. Contributions in kind are not considered as eligible match funding.

Companies that are successful in receiving funding and that have indicated that they are eligible for funding under this State Aid article, may additionally be asked to provide a copy of their business plan prior to the final award letter being issued.

If as a 'Small Start-up' you are not eligible for the Small Start-ups scheme defined above (have been in existence for over 5 years, or have not spent 10% of total operating expenses in one of the last 3 years on R&D) then it is still possible to qualify for funding under the All other Applicants scheme as detailed below.

#### 5.2 Funding for All Other Applicants

The scheme is also open to:

- all SMEs (including Small Enterprises who do not qualify above)
- other private sector organisations irrespective of size
- collaborative proposals
- Universities and Public Sector Research organisations (it is expected that these will be part of a collaborative proposal, preferably with a SME partner)

<sup>4</sup> http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN

<sup>&</sup>lt;sup>5</sup> See Annex 1 of the General Block Exemption Regulation: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN

<sup>&</sup>lt;sup>6</sup> This limit is set in accordance with Article 22. The limit is article 22 is set in Euros, therefore this value is the maximum available but could go down.

These applicant(s) to the scheme will be eligible to receive up to £1m for funding a project under Article 25<sup>7</sup>. The maximum percentage of public funding that can be provided for the project is summarised below in Table 1.

NOTE: If you are applying as a Small Innovative Start-up, this table is not applicable please refer to section 5.1.

**Table 1: Maximum public funding for projects** 

Research Category	Size of Enterprise	Maximum amount of aid towards eligible Project Costs
Industrial Research - Single Companies	Small	70%
	Medium	60%
	Large	50%
Industrial Research - Collaborations (either Business	Small	80%
to Business or between Business and research organisations)  1. Note: certain conditions must be fulfilled for collaboration (See Article 25(6) of the Block Exemption <sup>8</sup> )	Medium	75%
	Large	65%
Experimental Development - Single Companies	Small	45%
	Medium	35%
	Large	25%
Experimental Development - Collaborations (either Business	Small	60%

 $<sup>^7</sup>$  http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN  $^8$  http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN

to Business or between Business and research organisations)	Medium	50%
Note: certain conditions must be fulfilled for collaboration (See Article 25(6) of the Block Exemption <sup>9</sup> )	Large	40%

The figures represent the maximum aid intensity that BEIS can provide. State Aid compliance is a legal requirement and the risk of non-compliance rests with the grant recipient<sup>10</sup>. It is therefore crucial that you address State Aid fully within the application, as any errors at this stage may result in BEIS being able only to offer a reduced level of funding. BEIS is seeking value for money from its funding and proposals that demonstrate matched funding greater than minimum requirement will be looked on favourably.

Please note: if you are applying under Article 25, you will be required to demonstrate that your project falls within the definition of industrial research or experimental development as set out in Article 2(85-6) of the regulation.

#### 5.3 Public funding

When considering levels of aid intensity (described above), public funding includes the grant and all other funding from, or which is attributable to, other government departments, UK public bodies, other Member States or the EU institutions. Such funding includes grants or other subsidies made available by those bodies or their agents or intermediaries (such as grant funded bodies).

In applying to this Call you must state if you are applying for, or expect to receive, any funding for your project from public authorities (in the UK or in other Member States) or the EU or its agencies. Any other public funding will be cumulated with BEIS funding to ensure that the public funding limit and the aid intensity levels are not exceeded for the project.

Whilst BEIS will check the information provided to try and ensure that applicants meet the requirements of State Aid, applicants should establish that they fall within the state aid rules before submitting applications. BEIS requires applicants to notify them of any change to situation or circumstance during the project.

If there is a breach of State aid regulations, for whatever reason, the European Commission requires repayment of any grant received, including interest, above that which

<sup>9</sup> http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN

The UK's rights and obligations of EU membership, including compliance with State aid rules, continue to apply until the UK's exit from the EU has been completed, and therefore for this competition.

was due. In this situation applicants will be required to repay any funding received. It is also important to ensure that the total grant funding for the project from public sources (including from the European Commission) does not exceed the permitted percentages stated for the relevant Article.

As part of the assessment process, the added value and additionality of public funding will be tested. Applicants will need to demonstrate why public funding is required to deliver this project.

#### 6. Eligible Technology Areas

The EEF is open to applications for innovative technology development and demonstration projects in the areas of energy efficiency, power generation, heat and electricity storage.

Applicants should also be aware of other open and future innovation calls, such as Innovate UK's:

- Infrastructure Systems: Round 2 is due to open January 2017.
- Open Funding Competition: Round 2 us due to open December 2016.

Information on the latest innovation calls can be found here: <a href="https://www.gov.uk/government/collections/innovation-grants-for-business-apply-for-funding">https://www.gov.uk/government/collections/innovation-grants-for-business-apply-for-funding</a>

#### 6.1 Eligible Technology Areas

These areas will be considered in their broadest context and support could be given to proposals that whilst helping achieve the 2030 and 2050 targets might demonstrate any of the following:

- Improved performance characteristics over existing technologies or products
- Novel component technologies that can be implemented in existing systems to deliver improved performance or reduced costs of the system
- Products, processes or technologies that can reduce the cost of installation or maintenance of existing systems
- Types of technology supported may include but not be limited to those listed in Table 2.

The scheme will only fund innovations that are Technology Readiness Level (TRL) 3 up to TRL8. TRLs provide an indication of the level of maturity of a particular technology and BEISs descriptions of the TRLs is provided in Appendix 2. As part of the application form applicants will be asked to provide the TRL of their innovation and provide details of the work that has been undertaken to demonstrate that the innovation is that stage.

Table 2: Examples of technology areas supported

Energy Efficiency and Building Technologies	Power Generation and Energy Storage
Insulation, glazing and ventilation technologies	Fuel cell technology
Building control systems	Control systems for micro and distributed generation
Novel or improved building fabric	Solar (including third generation and organic PV)
Advanced lighting systems	Energy or fuel from waste or waste heat
Space heating and cooling technologies	Energy storage technologies including heat and electricity storage, batteries, Super-capacitors and flywheels
Improved design, surveying or measurement technology	Ground source, water and air source heat pumps
Manufacturing systems, installation and integration processes that reduce costs	Electricity network process or technologies to support integration and deployment of low carbon generation or storage technologies
Energy demand reduction technologies	Bio-fuels (including advanced conversion)
Energy efficient motors and/or pumps (beyond EU Eco-design Directive requirements)	Wind Technologies (including new component technologies to reduce costs)
Installation and/or technology integration techniques	New Marine devices (including second generation tidal stream)

#### 7. Project Plans, Finances and Financial Viability

#### 7.1 Project Plans

Projects are expected to be up to 36 months in duration. All projects must be financially complete by 31<sup>st</sup> March 2020. All projects must submit a detailed Gantt chart, or equivalent as part of their application, which details the project timeline, the various work packages and the project milestones.

#### 7.2 Project Costs

All applicants must complete the Entrepreneurs Fund Finance Form detailing their expected expenditure and spending profile for the project on a quarterly basis. Further details about this form can be found in Section 2 of this document.

During the assessment of applications, the project costs and plans that are submitted as part of the application process will be fully assessed along with the answers to the questions on the application form to ensure they are what might be reasonably expected.

The eligibility of all costs under state aid rules and the financial viability of your organisation will be checked following the decision to pre-select an applicant but before a formal offer is made. Being contacted for this information does not indicate either success or failure in the assessment process.

While BEIS understands that project costs are subject to change prior to agreeing a Grant Offer Letter and throughout the course of the project, we do expect the final version of the Finance Form to be our guide to project expenditure through delivery and costs should not vary significantly from this without prior agreement of the Department.

#### 7.3 Financial viability checks

BEIS will undertake financial viability checks on all successful applicants. These will include looking at the latest independently audited accounts filed on the Companies House database.

Where a business is not required to file accounts with Companies House, other financial information may be requested to enable an appropriate financial viability review to be undertaken. We will be looking for evidence of your ability to resource the project appropriately, so the information we request will be focused on understanding how your business operates in this respect.

Before your project starts, BEIS will ask for evidence that you have the funding mechanisms in place to manage your cash flow across the life of your project. This could include letters of credit or other such mechanisms. We do not expect you to have cash deposits to cover the entirety of your project at the start. If you do not complete your project due to cash flow problems that you could have anticipated and managed, we may request repayment of any grant already issued to you.

BEIS will not make payments in advance of need. BEIS understands, however, the difficulties which small businesses may face when financing this type of project. BEIS will explore cash flow issues with the applicant as part of developing the financial and milestone profile within the Grant Offer Letter. BEIS will offer flexibility in terms of profiles and payments, within the confines of the requirements for use of public money within which it operates.

#### 7.4 Grant Use

Grants provided will only cover eligible costs within the meaning of Article 25(3) of the General Block Exemption Regulation. Companies should note that the grant may not be used to subsidise commercial activities and that where BEIS awards a grant for the purpose of the development of commercially usable prototypes or pilot projects, any revenue generated from such commercial use will be deducted from the grant (and, where the grant has already been paid, will be required to be returned to BEIS).

#### 8. Assessment Process and Criteria

All applications will be considered against the assessment areas and ranked against each other.

The application form and guidance notes are designed to inform you about the types of information you should provide to BEIS in order for your proposal to be assessed.

For the avoidance of doubt, the individual questions listed under the headings below do not constitute assessment sub-criteria, but are an indication of the kinds of factors that will be taken into account in assessing each aspect of a proposal.

Each application will have to meet a minimum threshold either with regard to impact on climate change or security of supply. An application will not be successful where it does not meet the minimum threshold even if that project scores highly according to the other criteria. Equally, meeting the minimum threshold does not guarantee that an application will be successful.

#### 1. Impact on Climate Change and/or Security of Supply

For this aspect of the proposal assessors will consider a range of questions. These will include (but not be limited to) the following:

To what extent does the proposed project offer a potential impact or contribution towards the UK's 2030 and 2050 carbon reduction targets?

How big are the relative savings against existing products, processes and technologies?

To what extent does the proposed innovation offer a potential impact on security of supply? How does this compare with existing products, processes and technologies?

Further information regarding the type of information to be provided can be found in Section 2, 1.2 of this document.

In assessing each of the following areas minimum thresholds will be applied and there will be a minimum threshold across all assessment areas below which no funding will be received. We will select projects that offer the best value for money taking account of the following areas:

#### 2. Business Opportunity

20%

For this aspect of the proposal assessors will consider a range of questions. These will include (but not be limited to) the following:

Is the market need compelling?

How large is the addressable market? (niche/small/medium/large)

Nature of the market and ease of market penetration?

Does the route to market and business model make sense?

3. Innovation 30%

For this aspect of the proposal assessors will consider a range of questions. These will include (but not be limited to) the following:

How innovative is the project? Is it a simple improvement on an existing product?

How significant is the potential advantage which this innovation offers over existing solutions or alternative technologies that can meet current market needs?

Can the innovation be protected?

#### 4. Project Details (+ Gantt Chart)

10%

For this aspect of the proposal assessors will consider a range of questions. These will include (but not be limited to) the following:

Is the technical and methodological approach appropriate to the needs of the project and are the innovative steps achievable through the proposed approach?

Is the project plan sufficiently detailed in comparison to the complexity of the project?

Is the timing of key milestones realistic?

Has the applicant demonstrated sufficient resource commitment and capability to undertake the project?

#### 5. Value for money

30%

For this aspect of the proposal assessors will consider a range of questions. These will include (but not be limited to) the following:

Is the budget realistic for the scale and complexity of the project?

Has the applicant provided a realistic budget breakdown?

To what extent does the project provide match-funding?

Do the work packages align with the predicted spend profile shown on the finance form?

How strong is the case for added value of public funding?

How strong is the case for reducing the costs of meeting the UK's emissions targets?

Assessors will also consider whether or not the proposal offers a good value for money proposition.

#### 6. Experience and Skills

10%

For this aspect of the proposal assessors will consider a range of questions. These will include (but not be limited to) the following:

Does the business have the right, available mix of skills and experience to deliver the project successfully?

Is appropriate use being made of sub-contractors where in-house skills are either insufficient or not available in the right timeframe?

Where sub-contractors are being used, does the management team have experience of managing external contractors? Can any skills gaps be addressed by the incubation support?

#### 9. Notification

Applicants will be informed by email whether their application has been successful, subject to compliance with the terms and conditions of the Conditional Offer that will be received and successful completion of the Incubation Planning meeting.

BEIS may wish to publicise the results of the scheme which would include engagement with the media. At the end of the application and assessment process, BEIS may issue a press release or publish a notice on its website. These may, for example, outline the overall results of competitions and describe some of the projects to be funded.

Some organisations may want their activities to remain confidential and you will be given a chance to opt out of any involvement in media relations activity and further case study coverage of projects, should you see this as being absolutely necessary. However, the public description of the project you provide in your application will be made available in the public domain if your application is successful, and you are not able to opt out of the project description being published.

Any organisation that wishes to publicise its project, at any stage, must contact the Project Manager of the Energy Entrepreneurs Fund at BEIS before doing so.

#### 10. Feedback, re-application and right of appeal

A short summary of key feedback regarding the applications will be provided to all applicants, this feedback will be based on the comments of technical assessors and the Investment Advisory Panel. No additional feedback will be provided and there will be no further discussion on the application.

The feedback from the assessors is intended to be constructive. Comments are not a check list of points which must be answered or argued in a resubmitted application as the assessors may be different and it is your decision as to whether you act on the suggestions made.

#### 11. Confidentiality and Freedom of Information

Where any request is made to BEIS under the Freedom of Information Act 2000 ("FOIA") for the release of information relating to any project or applicant, which would otherwise be reasonably regarded as confidential information, then BEIS will notify you of the request as soon as we become aware of it. An applicant must acknowledge that any lists or schedules provided by it outlining information it deems confidential or commercially sensitive are of indicative value only and that BEIS may nevertheless be obliged to disclose information which the applicant considers confidential.

As part of the application process all applicants are asked to submit a public description of the project. This should be a public facing form of words that adequately describes the

#### Section 1: BEIS's Energy Entrepreneurs Fund – Summary

project but that does not disclose any information that may impact on Intellectual Property (IP), is confidential or commercially sensitive. The titles of successful projects, names of organisations, amounts awarded and the description of the project may be published once the award is confirmed as final.

All assessors used during the assessment of applications will be subject to a confidentiality agreement.

# Section 2 - Completion of the Application and Finance Forms

#### 1. Completion of the Application Form

This section aims to guide you through the completion of the Entrepreneurs Fund Application Form. It is important that a response is provided to every question. This guidance is intended to explain what type of information applicants should consider providing to BEIS in order to assess their application effectively.

Applications will be judged based on the information provided in the application form and any supporting information provided. There will not be the opportunity to enter into discussion about your project with the assessors or BEIS. These guidance notes are not intended to be exhaustive; applicants are expected to develop their own responses based on your own skills, knowledge and experience. You are encouraged to be concise and to the point whilst providing all the necessary and relevant information.

Throughout the form there are grey boxes, in order to answer the question or provide information you should simply click on the box and begin typing or select from the drop-down menu. Questions do have character limits and when the text has reached the character limit you will not be able to add any further information and the text must be edited to fit within the character limit.

Any graphs, diagrams or supporting evidence that you are providing to support your application should be attached to your submission

#### 1.1 Summary Information, Contact Details and Business Information

The initial section of the application asks you to provide details about your organisation.

Section/Field	Guidance
Summary Information	
Project Title	A brief title that can be used to summarise the project
	Select the month you would propose to start work assuming successful funding

_	Enter the expected duration in months, taking into consideration the maximum project length of 36 months
Total Project Costs	This figure should match the figure calculated in the Entrepreneurs Fund Finance Form. It should be the total value of the project including all eligible costs.

Section/Field	Guidance
Company contribution	This is the amount of total eligible project costs that you will be paying from your own resources/private sector investment into the project.
BEIS Grant Applied for	This is the amount you will be asking for from the BEIS. You should ensure that you do not request a grant higher than the maximum allowed, taking into account all public sector funding for the project.
Is this a collaborative project?	If you are applying collaboratively please provide details of the partner organisations in the Entrepreneur Fund Partner Details Form. You should also submit to BEIS a copy of the collaboration or joint venture agreement that you propose to work under. Sub-contracting work to a third party does not classify as a collaboration.
Contact Details	Name and details of the person who will be the main point of contact for the application process
Organisation Name	Provide the full registered name of the organisation applying for funding
Business Type	Please select from the drop down menu
Number of employees (including directors)	Number of staff in your organisation (this will help us confirm the nature of your company)

Turnover (in most recent annual accounts)	Please provide your most recent turnover figure from annual accounts and the date of those accounts
Balance Sheet Total	Please provide your most recent balance sheet total (total assets net of depreciation) and the date of the calculation.
Does the business have a parent company?	We need to understand if there any significant shareholders in your business. The parent company details should be provided in the Parent Company details section.
How is your business currently funded?	Please select all the types of funding that your company has received to date
·	Please provide full details of other public funding that you have received, including but not limited to grants and investments, in the past 5 years, in relation to this, or related, projects. Related projects means any project using resources or assets (including intellectual property) which are being used by this project.
	Please include any grants that have been used to reach this point in the development process and are now completed or close to completion.
Are you applying as an 'small innovative start-up' (Article 22)?	If you are applying under this GBER State Aid rule. You must indicate that you comply with the financial obligation rules by providing the relevant information.
Are you applying as an R&D project (Article 25)?	If you are applying under this GBER block exemption, then please select this option and then select which element of Article 25 you are applying under.
	I

Section/Field	Guidance
Public Description of the Project	This should be a brief, public facing description the project – no more than 1500 characters – using language that can be understood by people without specialist knowledge or expertise. It should explain why the project is innovative and

describe the key aims and objectives. BEIS reserves the right to amend the description before publication if necessary, but will consult you about any changes.

This should not contain reference to any intellectual property as this description will be made available to the public domain if the application is successful.

#### 1.2 Section 1 - Impact on Climate Targets and/or Security of Supply

This section focuses on the impact on climate targets and/or security of supply that you believe your innovation will have.

Any data or references that might help to support your answer that cannot be included in the application form should be provided to BEIS as a separate attachment. These may include for example tables of data, diagrams.

Section/Field	Guidance
How will the innovation impact on carbon targets and/or security of supply and over what timescale? Attempt to quantify the impact your innovation may have.	Applicants should highlight how their innovation will make an impact on climate change targets. For example:  is it through change in user behaviour resulting in reduced energy usage  does the innovation reduce the cost of installation and/or maintenance for existing equipment  improved performance characteristics of a component or a material leading to greater efficiency  Applicants should attempt to quantify the potential impacts.  Using data provided in previous sections around market size, share and assumptions around market penetration they should highlight the potential for carbon or energy savings.  Where impacts are around cost reductions and savings the size and scale of these should be estimated.  They should identify the timescales over which the impact will take place taking into account when the innovation would expect to reach market and its uptake within the market

place.

Applicants should consider whether any technologies that are currently being developed will supersede their innovation. These technologies should be highlighted and the potential impact on the timescales considered.

Where possible, applicants should also provide relative data against existing technologies, products or processes to highlight the comparative savings.

Applicants should outline their methodology and any assumptions they are making.

Applicants may also wish to consider calculating the payback period for the innovation to demonstrate the benefits of their innovation. Applicants may also wish to consult BEIS's guidance for valuation of energy use and greenhouse gas emissions at the link below. This provides data and information and a toolkit for calculating the impact of changes in energy usage.

http://www.decc.gov.uk/en/content/cms/about/ec\_social\_res/iag\_guidance/iag\_guidance.aspx

#### 1.3 Section 2 - Business Proposition

This section focuses on the business opportunity that you believe exists, the potential return on investment and the products, processes or outcomes from the project and how you plan to derive value from them.

Section/Field	Guidance
What is the business opportunity that this proposal addresses?	You should outline the business opportunity that you have identified and what you need to do to address it successfully, within the desired timeframe and cost.
What is the size and nature of the market opportunity for this innovation?	You should describe the particular problem or issue that is facing your business, marketplace or customers that your innovation addresses. You should outline how the outcomes of the project will help address these problems and issues.  If you have customers or potential customers already in place
	these should be identified and evidence of their support

provided.

You should describe the size of the market opportunities that this project might open up, including details of:

Current nature of the specific market(s) at which the project is targeted (e.g. is it characterised by price competition amongst commoditised suppliers? Is it dominated by a single leading firm? Is it a UK market or a global one?);

The dynamics of this market including quantifying its current size, value, actual and predicted growth rates;

The projected market share for the project outcome, with justification in the light of any potential competitors;

You should:

describe and clearly quantify the return on investment that the project could achieve and provide relevant evidence

provide evidence for your statements about the addressable market for project outcomes

outline your strategy for developing market share.

For highly innovative projects where the market may be unexplored, you should explain:

what the route to market could or might be;

what its size might be, is national, global?; and

how the project will seek to explore the market potential

what sources you have used to reassure yourself that sufficient demand exists to justify the investment

How will the outcomes of the project be exploited? What business model will your company use to generate value from the Applicants should list the potential exploitable outcomes of the project such as:

Products or services

Processes

innovation?	Applications
	You should describe how these outcomes will be exploited including where applicable protection of intellectual property rights, reconfiguration of the value system, changes to business models and business processes and other methods of exploitation and protection.
	In addition to the immediate practical exploitation of the outcomes, you should identify and quantify the likely impacts of a successful project on your business and indicate the timelines over which these impacts will be realised.

#### 1.4 Section 3 – Innovation

Section/Field	Guidance
potential advantage which this innovation offers over existing solutions or alternative technologies	You should clearly identify the extent to which the project is innovative both commercially and technically.
	The timeliness and novelty of the research aspects of the project should be highlighted and explained in an industrial/business context.
market needs?	You should describe the evidence you have to substantiate your belief that the intended work is innovative – this should not be based on your opinion alone. Evidence could include the results of patent searches, competitor analyses, literature surveys etc. If applicable, you also should briefly outline your own background IPR, as related to the project. You should also include any data that you may already have collected that demonstrates the performance of the innovation.
Technology readiness level	These indicate the level of maturity of the product or process. Using the guidance in Appendix 2, applicants should choose the TRL they feel most appropriate to their proposal. The TRL chosen should be supported by the information provided in the next question.
What work has been done to date? What stage of development is the innovation at?	You should detail what has been done to date, (lab or bench demos, component tests, development prototypes, engineering or operational prototypes) and over what timescale.

What is the latest position with the innovation and where is it located? If you were showing the innovation to us today, what would we see?

Outline any results that you have to date and any sources of

Outline any results that you have to date and any sources of technology you have used.

#### 1.5 Section 4 - Project Plans

This section focuses on what work you plan to do during your project, the key milestones and timings, risks associated with the project and how you propose to manage the project. A project Gantt chart (or similar) should also be submitted as a separate file. The details provided below should match what is provided in the Gantt chart.

Any data or references that might help to support your answers that cannot be included in the application form should be provided to BEIS as a separate attachment. These may include for example tables of data, diagrams.

Section/Field	Guidance
taken to solve the problem? What work do you propose to do in your project? Identify other organisations or individuals that you plan to contract/work with and how the work will be managed.	You should provide an overview of the technical approach you propose to take including the main objectives including an estimate of the minimum level of technical or cost performance that the proposed project needs to demonstrate (how big a step is this?)  As part of this you should include rival technologies and alternate R&D strategies that could be used and explain why the approach you have chosen will provide better outcomes.  You should also describe the programme of work you intend to undertake with the funding. This includes demonstrating sufficient resource commitment and capability to undertake the project, with clear management reporting lines identified. Describing the main work packages identifying who will be carrying these out and outlining the resource and management requirements and highlighting any subcontracted work and how you propose to manage the project.

What will be the milestones and deliverables for the project?

Identify the key milestones of the project and any interdependencies between the various work packages. Applicants should also outline the key deliverables for the project.

Identify any go/no-go decision points in the project (e.g. dependencies on achieving particular performance milestones or component solutions)

What are the key risks associated with the project? What is the risk management strategy?

BEIS recognises that projects of this type are inherently risky. However, it seeks assurance that the projects it funds have adequate arrangements for managing this risk. Applicants should consider all risks technical, commercial, and environmental. Your answer should focus on the arrangements for managing and mitigating risk as follows:

Identify the key risks and uncertainties of the project and provide a detailed risk analysis for the project content and approach, including the technical, commercial, managerial and environmental risks as well as other uncertainties (e.g. ethical issues) associated with the project. The main risks should then be rated as High/Medium/Low (H/M/L);

State how the project would mitigate these key risks.

Identify key project management tools and mechanisms that will be implemented to provide confidence that sufficient control will be in place to minimise operational risk and, therefore, promote successful project deliver. This should include the arrangements for managing any significant subcontractors.

You may wish to answer this on a separate sheet or within an Excel spread-sheet rather than in the application form. However, the answer to this question must be submitted.

#### 1.6 Section 5 - Project Funding

This section focuses on the finances of the project and the justification for the funding that you require. The Entrepreneurs Fund Finance Form should also be downloaded, completed and submitted as part of the application. The numbers provided in the application form should match those within the Finance Form.

Any data or references that might help to support your answers that cannot be included in the application form should be provided to BEIS as a separate attachment. These may include for example tables of data, diagrams.

Section/Field	Guidance
Total company contribution	This is the amount of total eligible project costs that you will be paying from your own resources/private sector investment into the project.
Amount of BEIS grant applied for	This is the amount you will be asking for from BEIS. You should ensure that you do not request a grant higher than the maximum allowed, taking into account all public sector funding for the project.
Other Public sector funding applied for	Please provide full details of other funding that you are currently applying for or have already applied for or received in relation to this particular project. This data is important as other public sector support is counted as part of the grant you can receive for the project and total state aids contribution.
	Do not include grants that have been used to reach this point in the development process and are now completed. Please include this information in 1.1.
Total project value	Please add total company contribution, amount of BEIS grant applied for and other public sector funding applied for to give the total value of the project
Funding % requested	Input percentage calculated in the Finance Form.  N.B. This figure must be compliant with the relevant State  Aid Article under which you are complying.

Section/Field	Guidance
Project Start Date and	Please indicate when (subject to approval) you would expect

End Date	to be able to start your project, and when you expect it to complete. Please be aware that there are restrictions on project length and make sure your project completes within the maximum time allowed.  The start date should only be considered as an indication. Should you start your project before final approval any costs will be incurred at your own risk, will not be eligible for grant, and will not be included in project costs you can claim against.
Explain the financial commitment required for this project?	Please indicate the anticipated project cost, making clear the level of contribution from the business and the level of funding required from BEIS.
	This should be provided within the application form as well as completing the Entrepreneurs Fund Finance Form, with supporting information and explanation provided in this section of the application form.
	You should attempt to demonstrate that:
	The budget you are proposing is realistic for the scale and complexity of the project
	If applicable financial commitment from other sources is demonstrated for the balance of the project costs
	The budget breakdown is realistic and consistent with what is being proposed
	The spend profile matches the work packages and project plan
	Guidance on eligible costs is provided in Appendix 1
What is the added value of public funding for this project? Why can't you fund this yourself?	To demonstrate this you will need to provide evidence that:
	There will be an increase in your total Research & Development spend on low carbon technologies in the UK;
	and either:
	Why you are not able to wholly fund the project from within

your business's own resources; or
How BEIS's funding would allow you to undertake the project differently or more quickly and why this would be beneficial to the UK

#### 1.7 Section 6 - Experience and Skills

This section focuses on the experiences, skills and track record of your business and its personnel.

Section/Field	Guidance
Provide details of the companies track record and management team and any other key personnel who will be involved in the project	You should highlight the experience of your management team and key personnel within your organisation that are involved in the project. This should focus on experience in project management, technology commercialisation, business development and raising finance (i.e. loans, equity finance).
	You should detail any track record individuals involved or your business has in undertaking and exploiting the results of research and development projects, to show your capability to develop and exploit the technology.
	If you feel the incubation support aspect of the scheme might be able to provide additional skills or knowledge necessary for the successful completion of the project you should highlight these in this section.

#### 2. Completion of the Entrepreneurs Fund Finance Form

You will need to complete the financial details in the Financial Summary section of the application form and also complete the Entrepreneurs Fund Finance Form. The information in both sections should be consistent.

If the application is for a collaborative project, you are required to submit one finance form per project partner.

The Entrepreneur Fund Finance Form consists of 8 worksheets:

Summary

**Labour Costs** 

**Material Costs** 

Capital equipment costs

Sub-contract costs

Travel and subsistence costs

Other costs

Project quarterly breakdown

Milestone costs breakdown

Each of these sheets can be accessed by using the scroll bar at the bottom of the worksheets.

Within the spread-sheet there are boxes that are shaded grey, these boxes are autocalculating and can only be altered by changing data in the manual entry boxes. All white boxes are manual entry boxes into which data can be input.

Guidance on eligible costs is provided in Appendix 1 of these guidance notes.

Guidance on what needs to be entered in some fields is provided within the sheet when you click on the box.

Worksheets only need to be completed if you have costs in those categories, so for example, if your project has no planned capital equipment or sub-contract costs, the form will assume these entries are £0 and calculate without them.

#### 2.1 Project Quarterly Breakdown Worksheet

This worksheet provides the breakdown of all costs across the duration of the project. It represents the spending profile you expect for your project. In entering this information

#### Section 2 - Completion of the Application and Finance Forms

you should ensure that the profile is consistent with the timings of the various work packages you are proposing within the project plan.

You must ensure that the total, in the spread-sheet, for each category matches the total that has been calculated on the individual worksheets.

### Appendix 1 – Eligible Costs

In addition to the requirements of the EU Block Exemption Regulation, BEIS will only provide the grant to cover eligible costs incurred and defrayed in the period between acceptance of the BEIS grant and the deadline specified in the grant offer letter for completion of the project.

The definition of eligible costs includes the applicant's own costs, eligible costs incurred by consortium members and eligible costs incurred by companies connected to any of these. The cost of work contracted to connected companies, to consortium members or to companies connected to consortium members should be on the basis of eligible costs.

Costs must be denominated in GB pounds. Applicants should indicate where conversion has been made to GB pounds from other currencies and indicate the rate and assumptions used.

#### **List of Eligible Costs**

Under Article 25(3) of the EU Block Exemption Regulation<sup>11</sup>, eligible costs are defined as the following:

- a) Personnel costs: researchers, technicians and other supporting staff to the extent employed on the project;
- Costs of instruments and equipment to the extent and for the period used for the project. Where such instruments and equipment are not used for their full life for the project, only the depreciation costs corresponding to the life of the project, as calculated on the basis of generally accepted accounting principles are considered as eligible;
- c) Costs for of buildings and land, to the extent and for the duration period used for the project. With regard to buildings, only the depreciation costs corresponding to the life of the project, as calculated on the basis of generally accepted accounting principles are considered as eligible. For land, costs of commercial transfer or actually incurred capital costs are eligible;
- d) Costs of contractual research, knowledge and patents bought or licensed from outside sources at arm's length conditions, as well as costs of consultancy and equivalent services used exclusively for the project;

<sup>11</sup> http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN

e) Additional overheads and other operating expenses, including costs of materials, supplies and similar products, incurred directly as a result of the project.

#### **List of Non-eligible Costs**

Under no circumstances can the grant be claimed or used:

For activities of a political or exclusively religious nature;

In respect of costs reimbursed or to be reimbursed by funding from other public authorities or from the private sector;

In connection with the receipt of contributions in kind (a contribution in goods or services as opposed to money);

To cover interest payments (including service charge payments for finance leases);

For the giving of gifts to individuals, other than promotional items with a value no more than £10 a year to any one individual;

For entertaining (entertaining for this purpose means anything that would be a taxable benefit to the person being entertained, according to current UK tax regulations);

To pay statutory fines, criminal fines or penalties; or

In respect of VAT that you able to claim from HM Revenue and Customs.

#### Staff Costs

BEIS would not normally expect to see contractors in key posts, e.g. CEO, FD, etc. Exceptionally, where BEIS is willing to fund a project which includes contractors in key posts, the day rate attributable to the project must be agreed with BEIS at the outset and cannot be varied without written agreement.

# Appendix 2 – Technology Readiness Levels (TRLs)

Technology Readiness Levels are an indication of the maturity stage of development of particular technology on its way to being developed for a particular application or product. Below are some broad definitions of the TRLs

Research

TRL 1 – Basic Research Scientific research begins to be translated into

applied research and development.

TRL 2 – Applied Research Basic physical principles are observed, practical

applications of those characteristics can be

'invented' or identified. At this level, the application is still speculative: there is not experimental proof or

detailed analysis to support the conjecture

Industrial Research (guideline)

TRL 3 – Critical Function or Proof

of Concept Established

Active research and development is initiated. This includes analytical studies and laboratory studies to physically validate analytical predictions of separate elements of the technology. Examples include showing the performance of critical technical features or components are feasible (even if not yet integrated or representative of real-life environment).

TRL 4 – Laboratory Testing/Validation of

Component(s)/Process(es)

Lab and Test Bench Demos of sub-systems & key components. Modelling & experimentation with parameters representing future conditions.

Application proof-of-concept

TRL 5 – Laboratory Testing of Integrated/Semi-Integrated System

The system, sub-system, components, or sub-scale units are integrated with reasonably realistic supporting elements so it can be tested in a simulated or representative environment.

Experimental Development (guideline)

TRL 6 – Prototype System Verified

Engineering Prototype. Representative full-scale prototype system is tested in a relevant

#### **Appendix 2 – Technology Readiness** Levels (TRLs)

	environment. Proof-of-application or
TRL 7 – Integrated Pilot System Demonstrated	Operational Prototype. Near or at planned operational system, requiring demonstration of an actual system prototype in an operational environment.
TRL 8 – System Incorporated in Commercial Design	Production Prototype (or process). Technology is proven to work - technology design for production or roll-out is completed and qualified through test and demonstration.
TRL 9 – System Proven and Ready for Full Commercial Deployment	Actual application of technology is in its final form - Technology proven through successful operations.