Research and innovation on wind power

The Swedish Energy Agency has started a new programme for research and innovation on wind power in 2017 called VindEL. The first call for proposals of the program is now open and the agency welcomes those who are interested to send in project proposals. The call is open for project proposals within all prioritised research areas of the programme. The agency will allocate approximately 50 million kronor in this call. The deadline to apply for the call is June 20 at 16:00.

The aim of the VindEL programme is to contribute to the transformation to a sustainable and renewable energy system through research and development of technologies, systems, methods and issues related to wind power.

The aim of the programme is to fulfill the goals (target date 2030) that the Swedish Energy Agency has pointed out in its strategy for activities on wind power.

- Wind power is a significant part of the Swedish electricity supply.
- Wind power contributes to climate change mitigation, business development and the stability of the power system.
- The installation and operation of wind power takes place with regard to social, economic and ecological sustainability.

These goals for 2030 has led to the following goals for the programme.

- **Goal for installation in Swedish conditions.** There are effective solutions for installing wind power in forests, cold climate and inland seas, which makes it possible to install and operate cost effective wind power in these environments.
- **Goal for sustainability**. Installation and operation of wind power utilise a resource efficient, environmental and societal adapted methods and techniques that minimize climate impacts over the whole lifecycle.
- **Goal for integration in the energy system**. Wind power is a system friendly power production technology contributing to a robust Swedish energy system with high level of security of supply, i.e. the installation the wind power capacity needed to achieve a completely renewable electricity supply preserves function and reliability of the power grid.
- **Goal for competency provision**. There are highly educated individuals with specialist competences needed to develop Swedish wind power industry within the prioritised research areas who contributes to a sustainable expansion of wind power in Sweden.

- **Goal for knowledge dissemination**. The general knowledge of the properties, impacts and benefits of wind power is well known among contractors and decision makers in Sweden, which leads to well informed and well-grounded decisions.
- **Goal for innovation**. New innovative solutions in the prioritised research areas have been commercialised by Swedish companies.
- **Goal for research excellence**. Sweden has a significant role in research and innovation development within the prioritised research areas. Swedish researchers are active participants in cooperation projects on EU level.

The plan for the programme is to have one yearly recurring call for proposals. The call budget is larger every second year, to open up for longer research (up to 4 years) projects with PhD students. And every other year a smaller budget is allocated as only shorter projects (less than 2 years) will be funded. This call is of the larger size and is open for both long and short projects.

The call is open for proposals within the prioritised research areas of the Swedish Energy Agency's strategy for wind power. The prioritised research areas are currently: Wind power in Swedish conditions; Sustainability; and Integration in the energy system. The research areas are described in the section *Prioritised research areas* below. The call is open for proposals within all of the prioritised areas. Please pay attention that proposals which topics fall within the two other programmes at the Swedish Energy Agency, *Vindval* and *Nätverket för vindbruk*, shouldto apply within their corresponding calls.

The call is addressed to all actors, both public and private, which can contribute to the fulfillment of programme goals by means of research, development and innovation projects. The call welcomes project proposals within both humanities and social sciences and technology and natural sciences, as well as interdisciplinary project proposals.

The Swedish Energy Agency wants to promote diversity and gender equality and therefore would like to see these issues observed in the composition of the project group, in the choice of project manager and in the project's implementation, content and desired effects.

Time plan and reporting

Granted projects can start at the earliest in November 2017. The length of the projects depends on the project category, see *Project categories and criteria for assessment* below. Decisions regarding project proposals will be made at the earliest in October 2017.

Note that all projects that are granted aid are obliged to report on project progress and finances upon request by the Swedish Energy Agency, and to submit a final report for the project to the Swedish Energy Agency. This report will be made openly available via the Swedish Energy Agency's project database. Since the

report is a compulsory part of the project, it is important to set aside some time for writing the report.

Grant conditions

The decision of the Swedish Energy Agency is based on an agreed project and financial plan. The beneficiary will have to confirm the conditions for the grant in order to receive the granted support. The conditions are described in *Appendix 1- Conditions for funded projects*.

In addition to the conditions described in the appendix, there might also be further conditions concerning, for example, forms for the dissemination of results or the appointment of reference groups.

Project categories and criteria for assessment

Applications within this call must comply with one of the following project categories. The applicant should specify the project category that the application is aiming at. Please pay attention that all the specific criterions for the chosen category has to be fulfilled. If, for some reason, it is not possible to fit the proposed project into any of the categories, please contact the programme manager at the Swedish Energy Agency.

All categories are open for applications within all of the prioritised research areas, see the section *Prioritised research areas* below.

Category A – Demand driven research at universities or research institutes

This category covers research projects at universities and research institutes that are driven by a need in the wind power sector. The projects should clearly focus on solving a specific, existing or future, need. In the project, the researchers should cooperate with the actor or actors that owns the need. The projects can aim at a commercial application or use buthe also to generating knowledge within the prioritised research areas that contribute to a sustainable roll out of wind power.,.

Category-specific requirements	The results from the project should be published and publicly available to a high degree. Cooperation in some form between the researchers in the project and the actor/actors who the recipient of the results from the project. Note that the cooperation does not require that the recipient o cofund the project. A reference group with relevant stakeholders should be appointed.
Maximum allowed funding level for the project as a whole	100 %

Maximum allowed funding amount per project	5 000 000 kr
Maximum allowed project duration	4 år
Assessment criteria	Potential to contribute to one or more of the programme's goals Scientific quality Potential for utilisation and dissemination Feasibility

Category B – Industry driven innovation and development projects

This category covers industry driven innovation and development projects which aims at developing solutions within the prioritised research areas. The category includes: (1) Industrial research 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; (2) experimental development where existing scientific, technological, business and other relevant knowledge and skills are acquired, combined, shaped and used with the aim of developing new or improved products, processes or services. 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.

Category-specific requirements	The project group must include at least one organisation through which commercialisation or other form of utilisation of the results is expected to take place. All activities in the project has to be classified as industrial research or experimental development according to the regulation (2008:761) on governmental support to research, development and innovation in the field of energy.
Maximum allowed funding level for the project as a whole	50 %
Maximum allowed funding amount per project	3 000 000 kr
Maximum allowed project duration	2 år

Assessment criteria	Potential to contribute to one or more of the programme's impact goals Degree of innovation Potential for utilisation and dissemination Feasibility

Category C – Verification in relevant conditions

This category covers projects that are aiming at verifying the function of solutions (products, processes or services) in a relevant test environment. This often includes scaling up and validating solutions in a scale and environment that creates similar conditions as full scale operation. This category has two sub categories. For both categories the maximum level of support can be increased by 20 or 10 percentage points respectively for small or medium sized enterprises respectively.

Category C1 – Pre study: a shorter, preparatory project aiming at investigating and verifying the prerequisites before a real pilot project (category C2).

Maximum allowed funding level for the project as a whole	50 %
Maximum allowed funding amount per project	500 000 kr
Maximum allowed project duration	1 år
Assessment criteria	Potential to contribute to one or more of the programme's impact goals Degree of innovation Potential for utilisation and dissemination Feasibility

Category C2 - Pilot project: a project which aims at demonstrating innovation based solutions in a relevant environment. This often includes scaling up and validating solutions in a scale and environment that creates similar conditions as full scale operation.

Maximum allowed funding level for the project as a whole	25 %
Maximum allowed funding amount per project	2 000 000 kr

Maximum allowed project duration	2 år
Assessment criteria	Potential to contribute to one or more of the programme's impact goals Degree of innovation Potential for utilisation and dissemination Feasibility

Funding level refers to the proportion of the project's total eligible costs financed by the Swedish Energy Agency. The maximum allowed funding level for the project as a whole is based on the project's total eligible costs. In addition to this, the maximum possible funding level per participating organisation is limited by Ordinance SFS 2008:761 in the Swedish Code of Statues. Read more about which costs are eligible and which funding levels that are possible under the heading *The project's budget and funding levels* or under Legal prerequisites for receiving aid on the Swedish Energy Agency website.

Business development and commercialisation of energy related innovations

The Swedish Energy Agency is also supporting business development and commercialisation of energy related innovations besides the support to research and innovation projects. This call does not include that support. If your wind power project is in a situation where you need support financing, business development and networks to take your innovation further, then the Agency's support for business development might be something for you. You can find more information about this support on our website, Business development and commercialisation

Assessment criteria

Applications that don't comply with any of the categories will be denied.

The projects will be assessed on the basis of the following criteria. Different criteria will be weighted differently depending on project category. The assessment criteria for each category is described in the description of the project categories above.

- *The project's potential to contribute to one or more of the programme's impact goals*¸ including the need for and benefits of the project's results.
- *The project's scientific quality of the project (only category A),* such as the extent to which new knowledge is produced or existing knowledge is implemented in a new context, how the project relates to the state of international knowledge and the novelty value of the project.
- *The project's degree of innovation (not relevant for category A),* such as, how unique the project is, the novelty value of an intended product and the innovation's potential value on a market or benefits for the society.

- *The project's potential for utilisation and dissemination* through e.g., knowledge building, publications, new products, services, processes or commercialisation. Please observe that it is important in all projects to describe how the utilisation and dissemination is planned to take place and who the target groups for the results are.
- *The project's feasibility*, such as whether participants have the right expertise for the project, whether there is a clear plan for implementation, reporting of existing risks and how these are managed and whether the goal and budget are reasonable.

The application shall clearly explain how the project fulfils the assessment criteria.

Prioritised research areas

Wind power in Swedish conditions

A large share of the land area of Sweden is forested terrain (approx. 55 %). The technical development of wind power has enabled higher and larger wind turbines and this have opened up for efficient use of wind power also in forests. The potential to build new wind power in forested areas in Sweden is very big. But there are still challenges and issues that need research and innovation in order to facilitate for even more efficient and sustainable installation and operation of wind power in forests.

Example of topics:

- Measurement and modelling of the wind resource over forested terrain
- Optimisation and control of wind power production in forested terrain
- Logistics and installation of wind power in forested terrain
- Technology, operation and maintenance of wind power in forested terrain

In most of northern Sweden, a large share of the wind resource is located in areas that are subject to cold climate during winter, i.e. either very low temperatures or icing conditions. Cold and icing creates problems for installation and operation of wind power turbines. This creates more uncertainties for the calculation of the electricity production compared to land based wind power in temperate climate. Therefore there is a need to find solutions for efficient and sustainable installation and operation of wind power in cold climate. Sweden is well positioned in an international comparison within this field and there is a large potential for new innovations, products and services. There is also a significant potential for wind power in cold climate in other countries in the world, therefore there is a good potential for Swedish companies to develop solutions that can be used both in Sweden and be exported to other markets.

Example of topics:

- Mapping and characterisation of icing

- Dealing with potential environmental and security hazards, such as ice throwing and noise
- Prognostication of how icing influence electricity production
- Efficient ice detection, anti-icing, and de-icing equipment
- Logistics and installation of wind power in cold climate
- Technology, operation and maintenance of wind power in cold climate

Wind power in an inland sea as the Baltic Sea can offer cost reductions for offshore wind power compared the North Sea, due to shallower depths, lower waves, less extreme winds, and brackish water. As a whole it can open up possibilities for cost reductions for the offshore technology, equipment, and logistics in inland seas. The offshore technology has so far been developed for the North Sea. The specific conditions in the Baltic Sea opens up a possibility to adapt and optimise the offshore technology for these conditions.

Example of topics:

- Measurement and modelling of the wind resource over inland seas
- Optimisation and control of wind power production in inland seas
- Logistics and installation of wind power in inland seas
- Technology, operation and maintenance of wind power in inland seas

Sustainability

Sustainability is a wide area which includes all aspects of social, ecological and economical sustainability. The overarching challenge for this area is to find the solutions needed for a large scale implementation of wind power in Sweden.

Please pay attention that the VindEL-programme will only finance projects which aims at finding and developing solutions that minimise the environmental impact of wind power (on mankind, animals and nature), improve the resource efficiency and sustainability of wind power, or enables co-existence with other societal activities. In this way the VindEL-programme differs from the Agency's other research programmes in this area: Vindval, which finances knowledge creation of the effects of wind power on mankind, nature and the environment; and Nätverket för vindbruk, which finances projects that aims at building knowledge, raising the awareness and disseminating information about wind power.

Example of topics:

- Resource efficient planning and implementation of wind power, such as more efficient logistic solutions
- Increased knowledge of the effects of wind power during the whole life cycle.

- Solutions for increased resource efficiency and sustainability
- Development of technology and methods for repowering, reuse and recycling of wind power
- Solutions that prolongs the life span of the wind power turbines
- Solutions that decrease the environmental impact of wind power
- Solutions that enables the co-existence with other activities in the society

Integration into the energy system

With a large wind power deployment there will be an increasing variability in the electricity production in the system. As this share grows the challenges associated with variability will become more pronounced. Thus, increasing the need for knowledge of how wind power impacts the energy system and the need for development of solutions where wind power contributes positively to the energy system The impacts are for instance on grid balancing, price fluctuations, power system stability, frequency regulation, power quality, protection and dealing with faults. The contribution from wind power could for example be services for providing stability in the grid.

The projects in this area aims at building the knowledge, competence and finding solutions needed to achieve the programme goal of a 100% renewable electricity supply with a large share of wind while preserving function, reliability of security of supply.

Example of interesting topics

- The need for balancing power and rational system designs of the balancing service with a large share of wind power in the Nordic system. This topic contains several issues such as the interaction between different parts of the balancing market, the need for new balancing markets, localisation of primary balancing power, dynamic allocation of transmission capacity and dynamic level of balance reserves depending on demand
- Suitable market design accounting for a large share of wind power
- Better scenarios and models including a large share of wind power
- Benefits and design of prognosis, measurements, and monitoring in the grid to maintain electric quality and stability in the system
- Benefits and design of methods for controlling wind power turbines and parks to achieve power quality and stability in the system, for instance virtual inertia or solutions to issues related to connection of wind power parks
- Studies of control schemes for wind power parks, which analysed what functions can be decentralised to the turbine control, and which ones could be centralised at the park level.

- Studies on solutions to fulfill technical requirements related to grid codes, as well as development of methods to secure that the requirements are fulfilled.
- Demonstration of solutions that contributes to electric grid ancillary services and benefits the grid.
- Interplay between wind power and various storage solutions or other energy sources in the energy system.

How to apply

Applications shall be written in accordance with Instructions for application and submitted via the Swedish Energy Agency's electronic application tool E-channel. Since it can take a few days to have your user permission approved, the application should be made well in advance.

The application shall in the first instance be written in Swedish. The project application shall be written so as to enable those who are not familiar with the subject to understand what the project is about. The application shall describe the project's energy relevance and contain clear interim and final goals. The goals should be measurable and formulated in such a way that they can be fulfilled over the course of the project. The project description shall also contain background and analysis of the research front, the state of the market or knowledge, method description, cost calculation, summary budget and plan for the dissemination of results.

Applicants do not have the right to supplement their application after the call for proposals has closed. It is therefore important that the application is filled in completely before submission. The Swedish Energy Agency may, however, request supplements as necessary.

The full application shall be submitted no later than 20 June 2017 at 16:00.

Decisions regarding funding

All applications will be assessed by experts who are not employed at the Swedish Energy Agency. The experts make a recommendation to the Swedish Energy Agency concerning which projects they recommend to be funded, and this forms a basis for decisions made by the Swedish Energy Agency. When a decision has been made concerning the applications received, information is sent out to the applicants about the decision made and the reasons for this. Decisions regarding received applications are planned at earliest in October 2017.

The project's budget and funding levels

The maximum allowed funding level is assessed for each beneficiary individually on the basis of the costs that are eligible. If a project contains elements that do not constitute research or development, or if the project contains costs that are not eligible, these are not to form a basis for the calculation. In addition to the maximum allowed funding level per beneficiary, the total support per project is

also limited by the selected category. Read more about categories under The call's categories and assessment criteria and about eligible costs and aid intensities on the page Legal prerequisites for receiving aid on the Swedish Energy Agency website.

The funding level described below are the maximum allowed. However, the Swedish Energy Agency might grant lower levels. The project's cost is always weighed against its benefits when received applications are prioritised in relation to each other.

Note that an application may not include activities that have already been started.

Organisations engaged in an economic activity

The maximum allowed basic funding levels are 100 percent for basic research, 50 percent for industrial research and 25 percent for experimental development. When the applicant is a small or medium-sized enterprise, the funding level may

be increased by 20 and 10 percentage points, respectively.

Under certain circumstances, a supplement of 15 percentage points may be given when the project constitutes an actual collaboration between enterprises or between enterprises and research and knowledge-dissemination organisations (see Commission Regulation (EU) No 651/2014).

Organisations not engaged in economic activity

Organisations that are not enterprises are not subject to the above limitations on funding levels. These organisations can thus be granted funding up to 100 percent of their eligible costs. In this context, enterprise refers to any entity engaged in an economic activity regardless of the entity's legal form and regardless of how it is financed.

A description of the terms is given in Appendix 2 - Description of the terms.

Co-financing

Co-financing can consist of e.g., cash or in-kind contributions in accordance with The Swedish Energy Agency's guidelines for in-kind contributions.

The determining of funding amounts must take into account other state aid granted for the same purpose. The total funding may not exceed maximum allowed amounts and levels pursuant to European Commission Regulation (EU) No 651/2014. If the project has financing in the form of other state aid, this is to be added to the funding sought from the Swedish Energy Agency when the funding level is calculated.

Programme background

The VindEL-programme is based on the Swedish Energy Agency's strategy for wind power. The Swedish Energy Agency has a wide portfolio of different initiatives and programmes within wind power, both research as well dissemination activities, networks and other initiatives that promotes the

deployment of wind power in Sweden. The VindEL-programme gathers a large share of the Agency's budget for research and innovation within wind power.

In June 2016, the Government, the Moderate Party, the Centre Party and the Christian Democrats have concluded an agreement on Sweden's long-term energy policy with a goal of 100 % renewable electricity production until 2040. To achieve this a large amount new renewable electricity production capacity has to be installed and wind power is expected to have a large share of it.

But an electrical grid powered by renewables also brings many challenges that has to be addressed in order to maintain a reliable system. Wind power is a variable power source and the electrical grid and the whole energy system require new solutions to achieve a robust energy system with high level of reliability.

The wind power deployment is, like all infrastructure projects, an intrusion on our environment and our society. The deployment has to be ecological, social and economic sustainable. A large scale implementation of wind power requires a resource efficient and environment-friendly technology and planning, that supports economic and social sustainability. .

The specific conditions for wind power in Sweden brings challenges for the deployment. Solutions for wind power in forests is a important since a large share of Sweden is forested terrain, and solutions for wind power in cold climate is a prerequisite for installation in northern Sweden since the climate in this region is more extreme than what the wind turbines are generally designed for. These challenges also offer opportunities for development and commercialisation of innovations.

Sweden is not world leader nor in research or business on wind power as a whole. But within specific areas (e.g. power electronics and grid integration, cold climate) there is a cutting-edge expertise in Sweden.

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Appendix 1- Conditions for funded projects

The conditions that apply to funded projects are listed in the Swedish Energy Agency's funding decision. A description of the conditions follows below.

General conditions

The Swedish Energy Agency's funding decision is based on an agreed project plan and budget. The part of the costs not covered by funding from the Swedish Energy Agency shall be covered by resources or funds provided by another financier. The beneficiary is responsible for covering the extra costs that occur during the project period. When the Swedish Energy Agency's funding decision covers funding outside of the current financial year, the decision only applies provided that the Swedish Energy Agency receives/has at its disposal the required funds in the following years.

The shifting of costs between cost categories is accepted up to 10 per cent within each cost category, provided that the total budget does not change. Larger changes require approval from the Swedish Energy Agency.

§ 1 Payment of grants

The grants are disbursed without a requisition form, in the middle of the project period for each budget year, unless otherwise stated in the funding decision. Grants only cover value added tax when it occurs as net cost for the beneficiary (only applies to universities and university colleges). Verifications for accounted expenditures must, upon request, be submitted to the Swedish Energy Agency. Funds that have not been used shall be repaid. Advances can be provided, up to 30 per cent of the total grant provided (only applies to universities and colleges). 15 per cent, or another percentage set out in the funding decision, of the grant provided can be withheld until final reporting in accordance with § 4 has been submitted and approved by the Swedish Energy Agency.

§ 2 Employer relationship

The Swedish Energy Agency is not the employer or principal of the beneficiary or anyone else he/she engages in the project. Accordingly, the Swedish Energy Agency does not make deductions for taxes, social security contributions, etc.

§ 3 Notification obligation regarding other funding

The beneficiary is obliged to immediately notify the Swedish Energy Agency in writing, if funding for the project in the application process have been applied for or granted by anyone other than the Swedish Energy Agency.

§ 4 Reporting obligation

Reports and surveys as set out below shall be submitted in accordance with the Swedish Energy Agency's instructions. If additional special reports are required, it is stated in the funding decision.

Annual report
Universities and university colleges are obliged, for each budget year, at the

request of the Swedish Energy Agency, to submit annual reports concerning the complete activities of the department and/or research team.

Progress report
The progress report concerning the project's activities shall be provided at the request of the Swedish Energy Agency. The progress report shall include a description of the existing activities and results of the project as well as a financial reporting. In addition, the Swedish Energy Agency may request that the report shall include a technical status report. The progress report shall be submitted to the Swedish Energy Agency at the latest on the date stated in the funding decision.

Financial Accounting – only applies to companies
Financial accounts shall be submitted once or twice a year using a specific form provided by the Swedish Energy Agency or downloaded from the Agency's website (www.energimyndigheten.se). The account shall be submitted at the latest on the date stated in the funding decision.

Final report
The final report shall include the project results and contain a description of the implementation of the project and the fulfilment of objectives. Furthermore, the report shall contain a summary of the project results in English of no more than 200 words. The report shall be submitted to the Swedish Energy Agency at the latest on the date stated in the funding decision.

A specific final financial accounting shall be submitted no later than on the date stated in the funding decision using a specific form provided by the Swedish Energy Agency or downloaded from the Agency's website (www.energimyndigheten.se).

Survey
As a beneficiary, you need to complete a survey at the end of each year and submit this to the Swedish Energy Agency. We collect, on behalf of the Government, details from all beneficiaries in order to present a number of results in the form of indicators form in our annual financial statement.

§ 5 Changes

Significant changes within project and budget approved by the Swedish Energy Agency must be reported in advance to the Swedish Energy Agency for evaluation and approval. The beneficiary must immediately notify the Swedish Energy Agency if circumstances of significant importance occur that result in the cancellation or delay, etc. of the project. The beneficiary is obliged to immediately report any changes in name or address.

§ 6 Publication

The project results shall be published. Publication shall take place in accordance with international best practice for the publication of research results.

The beneficiary is entitled to protect the results by patents or other intellectual property rights and in doing so postpone publication until any application for such property rights has been submitted to the relevant patent office. The Swedish Energy Agency must be notified if the beneficiary intends to protect the results. Applications to the patent office must be submitted without delay. The written approval of the Swedish Energy Agency must be obtained in each individual case if the beneficiary wishes to delay publication for reasons other than those stated above or refrain from publishing certain results.

All presentations of the project must state that the work has been conducted with the support from the Swedish Energy Agency (when presentation is held in Swedish, the name should be reproduced as Energimyndigheten).

§ 7 Rights to results

The beneficiary or the rights holder of the results has the commercial right of use of the project results and is entitled to make available or transfer the rights to others.

If the rights to the project results are transferred to a company that runs economic activities, compensation corresponding to the market price for the rights shall be paid (only applies to universities and university colleges).

§ 8 Right to review

The Swedish Energy Agency or person/persons appointed by the Swedish Energy Agency (e.g. certified accountant) are entitled to follow-up the work and study documents that can provide information about the technical and economic development of the project. The Swedish Energy Agency is entitled to issue special instructions for reporting in order to enable the review.

In addition, the Swedish Energy Agency has the right to follow-up completed projects through requesting follow-up reports, that are to be structured and submitted in accordance with the Swedish Energy Agency's instructions. Such reports can be requested on three occasions within a ten-year period as of the day of the final report.

§ 9 Amendment to the decision

At the request of the beneficiary, the Swedish Energy Agency may grant well-motivated amendments to the project.

§ 10 Annulment of the decision

The Swedish Energy Agency may decide that unused funds shall be withheld alternatively that disbursed funds, that have not been used, shall be repaid if:

a) the conditions for the project's financing have changed

b) the project is not run according to the agreed project plan

c) there is no prospect of achieving a satisfactory result within a reasonable timeframe (for example, due to significantly changed project or market

conditions) or if the project's planned continuation cannot be considered secure (for example, due to insolvency in case the beneficiary is a company)

d) the beneficiary fails to sign and resend a copy of the conditions appendix to the Swedish Energy Agency.

§ 11 Recovery of amounts paid

The disbursed grant along with interest rate of 8 % (eight per cent) above the applicable reference interest rate may be reclaimed with immediate effect if:

a) the beneficiary does not provide the obligatory reports according to § 4

b) the beneficiary uses the grant for purposes other than what is stated in the agreed project plan

c) the project is not run according to the agreed project plan

d) the beneficiary does not otherwise satisfy the obligations according to the conditions in this Appendix or the special conditions in the funding decision.

§ 12 Retention of grant

The Swedish Energy Agency is entitled to stop further payment of funds until a decision is made to refuse payment or to reclaim granted funds according to paragraphs 10 and 11. Such a stop to further payment of funds may affect payments to other projects administered by the same department, company or corresponding administrative unit, if the Swedish Energy Agency so decides.

§ 13 EU State aid rules

As a condition for aid, funding measures may be repealed or changed and the grant reclaimed if the European Commission through judgements which have entered into force or the Court of Justice of the European Union has found the aid to be unlawful pursuant to Article 107 of the Treaty on the Functioning of the European Union. The decision to repeal or change the funding measures is taken by the Swedish government. In this context the conditions for repayment of aid are determined in each individual case.

Consent pursuant to the Swedish Personal Data Act and concession to making information available.

The Swedish Energy Agency makes information about projects financed by the Agency available on the Agency's website: www.energimyndigheten.se. Here the general public can search for information about on-going and completed research projects based on different keywords, such as research subject, research organisation, project title, project manager.

As the project manager and authorised signatory sign the conditions, the project manager agrees to publishing personal data (name and organisation), and the authorised signatory to non-confidential information and reports of the project, on the public domain on the Agency's website. The beneficiary is responsible for that

the copyright holder has given its consent to this publication and shall ensure that the copyright holder is entitled to enter agreements in each individual case.

Public documents and secrecy

Essentially all post and e-mail sent to the Swedish Energy Agency become public documents. Among other things, this means that the public and mass media may request to view their contents. Official letters and decisions sent from the Swedish Energy Agency are also public documents. The right to view public documents is part of the Public Access to Information and Secrecy Act, and the Freedom of the Press Act.

However, the Swedish Energy Agency is not allowed to disclose information covered by secrecy in accordance with the Public Access to Information and Secrecy Act. This means that a document or certain information in a document may be protected by secrecy. A secrecy assessment is therefore made on a case-by-case basis before a document is disclosed.

Secrecy applies to information on an individual's business or operating conditions, inventions or research findings, for example, if it can be assumed that the individual will suffer damages if the information is disclosed.

Appendix 2 - Description of the terms

Enterprise	An enterprise is considered to be any entity engaged in an economic activity, irrespective of its legal form. This includes, in particular, self-employed persons and family businesses engaged in craft or other activities, and partnerships or associations regularly engaged in an economic activity.
Small and medium-sized enterprises	The assessment of whether an enterprise is small, medium or large mainly considers the number of employees, turnover and balance sheet total. It is data from the latest approved accounting period that are to be taken into account. For commercial enterprises, the data can often be obtained from the annual report most recently registered by the Swedish Companies Registration Office. In order for a threshold to be considered passed, the enterprise shall have had higher or lower values for two consecutive years. A small enterprise may not have more than 50 employees and a medium-sized enterprise may not have more than 250 employees. The term employee here refers not only to salaried workers but also to owners working in the enterprise without being employees and consultants who are in a position of dependence on the enterprise, such as when an assignment constitutes the consultant's entire and sole activity. Students on work experience in the enterprise and employees on parental leave are not to be included in this. A small enterprise's annual turnover may not exceed EUR 10 million. For medium-sized enterprises, the annual turnover may not exceed EUR 50 million and the annual balance sheet total may not exceed EUR 43 million. Also relevant to the category to which an enterprise belongs might be the enterprise's relationship to other enterprises, primarily owners, and the degree of control exercised by such enterprises. The provisions in this respect are complicated. Such control can be exercised through means including a high ownership share, provisions in shareholder agreements or in other agreements between, e.g. owners and creditors.

Basic research	Experimental or theoretical work that is primarily aimed at the acquisition of new knowledge of the basic causes of phenomena and observable facts and that does not have the aim of any direct commercial application or use.
Industrial research	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. It comprises the creation of components parts of complex systems, and may include the construction of prototypes in a laboratory environment or in an environment with simulated interfaces to existing systems as well as of pilot lines, when necessary for the industrial research and notably for generic technology validation.
Experimental development	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. Experimental development may comprise 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.