Schweizerische Eidgenossenschaft
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Federal Department of the Environment,
Transport, Energy and Communications DETEC

Swiss Federal Office of Energy SFOE
Energy Research and Cleantech Section

Pilot and Demonstration Programme

2023 call for field test projects

"Relief of the power grid through appropriate use of energy"

With this call for projects, the Swiss Federal Office of Energy (SFOE) Pilot and Demonstration Programme (P+D) aims to support technological applications that are designed to relieve the strain on the electricity grid of the future, in accordance with the Energy Strategy 2050. Existing solutions capable of easing the load on the present power grid have been tested in protected environments or under near-real conditions. However, such solutions will rarely have been implemented on a genuinely relevant scale, often because of the lack of clear business models for operation under the current framework. Furthermore, the robustness of today's electricity grid enables it to absorb present issues with energy transmission, thus allowing the installation of distributed intermittent power generation facilities. With this in mind, the massive deployment of solutions to "relieve" the network is not yet a necessity. That said, the increasing speed at which distributed intermittent renewable energy generation is being rolled out, and growing electrification in areas such as mobility and buildings, will increasingly put the electricity grid as we know it under pressure. The SFOE is launching this call for projects in the interests of knowledge-gathering, to identify the most effective solutions in due course, and to develop the legal framework appropriately. The objective is to promote the deployment and testing under real-life conditions of innovations that could help to limit the pressure that the energy transition will place on the electricity grid of the future. A further aim is to mitigate the costs of the necessary work to strengthen the grid if current ways of managing and using energy generation facilities and electricity transmission networks remain unchanged.

The call for projects identifies the following principal areas of application: (1) dynamic energy pricing, (2) local energy communities,[1] (3) flexibilities, and (4) increased efficiency and energy savings. The primary objective is to test solutions at scale, for example in an industrial complex, a neighbourhood, a city or an entire region. Solutions that address the appropriate use of energy at single-building level are excluded from this call for proposals. To be eligible for support, projects must generate added value for the system as a whole, and not just for a particular actor.

Proposals submitted under this call for projects will be evaluated in accordance with the specific criteria set out in this document. All other legal requirements, including the principles and conditions governing the submission and evaluation of applications to the P+D Programme, are set out in the applicable Directive. Sandbox projects that require an exemption from the legal framework in accordance with Article 23*a* of the Federal Act of 23 March 2007 on the Supply of Electricity (ESA; SR 734.7) are also invited to participate if they fall within the scope of this call for projects and require financial support to go ahead.[2] P+D applications concerning the topics defined in this invitation to tender may be considered only within the bounds of this competitive process. A 12-month moratorium applies from the submission deadline for the first round of the competition, other than in the case of international submissions and the SWEET programme.

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[1] Local energy communities are self-consumption communities that do not use their own network for exchanges but a third-party proprietary network. An appropriate remuneration linked to the use of the grid by the local energy community is levied to cover maintenance costs.

[2] If no financial support is required from the P+D Programme, sandbox projects may be submitted at any time in accordance with the applicable Directive.

Focus areas[3]

This call for projects focuses specifically on the four areas of application described below. A project may tackle one or more aspects of the given fields. It must test solutions on a relevant scale, such as an industrial complex, a neighbourhood, or an entire region. Projects that target other areas of application but that contribute significantly to relieving the electricity grid may be submitted. However, they will be handled as a secondary priority and in accordance with the expected impact of the proposed solution.

Dynamic energy pricing may lead to an alignment of demand and supply, which in future will be based on major intermittent renewable energy sources. The output of these facilities may vary significantly depending on the time of day and season. Projects submitted in this category could, as examples, answer to the following questions:

- How could dynamic pricing for electricity and/or grid usage alleviate the immediate pressures on the network, with particular regard to the incentive effect for flexible generation and usage patterns?
- How could dynamic pricing for electricity and/or grid usage alleviate the long-term pressures on the network and make it economically viable to install seasonal storage facilities?
- What reduction in or exemption from the grid tariff, and its differentiation according to grid levels (vertical differentiation) and grid domains (horizontal differentiation) is appropriate to ensure optimum grid use without discriminating against customers or socialising the cost of a local exemption to all customers of the Swiss grid?
- What special pricing provisions might work with providers of control energy or consumers with load shedding or shaving devices to boost the provision of such services?
- Etc.

Local energy communities might create local markets for the production from renewable sources, and thus support investment in distributed renewable electricity generation plants or storage. Projects submitted in this category could, as examples, answer to the following questions:

- What is the optimum geographical scope for a local energy community? To what degree would a public grid be used to transmit the traded electricity, and against what remuneration?
- How can the economically viable operation of the local grid and/or local electricity supply be ensured using distributed renewable generation and storage facilities? Underlying questions include differentiation and prioritisation between regular grid customers, participants in the control power markets and in support for local grid operators, and how these can be managed to facilitate future scaling.
- How can neighbourhoods or regions be set up so that they can function continuously if necessary in AV islands on the basis of renewable energies? Underlying questions include the proper use of grid-forming inverters, appropriate storage sizing and operating strategies, as well as security aspects and how responsibilities are defined.
- How can the barriers to optimising distributed and cellular consumption of self-generated power be lowered (e.g. peer-to-peer, operator/local supplier status)?
- What incentive is needed to provide a useful degree of flexibility, without amending flat-rate grid tariffs?

[3] Various projects that address these issues have already been conducted or are in progress. To be eligible for and to claim support under this call, projects must differ from any relevant past or current initiative, and must offer added value over, among others, the following examples: Quartierstrom, OrtsNetz, GIASES, Netflex, REEL, MULDER, BAT4SG, Lugaggia, Möriken, SMILE, SMILE FA, V2X, SunnYparc, Mesh4U.

- Etc.

The potential offered by **flexibilities**, whether in the generation or consumption of energy, is still largely under-exploited. Yet intelligent use of these flexibilities might help to relieve the pressure on the grid. Specifically, the smoothing of energy demand and production curves would limit the need for costly investments in grid reinforcement, costs that affect all Swiss end consumers. Projects submitted in this category could, as examples, answer to the following questions:

- What costs of reinforcing the grid could be saved by making optimum use of flexibilities, and what are the relevant business models here?
- What grid costs could be saved by factoring the expansion of renewables and flexibilities into grid planning? What are the associated risks, and how can they be mitigated?
- Which industrial consumers are relevant for a flexibility offer?
- What business models might apply to flexibility on the part of major consumers such as those from industry, self-consumption associations (ZEV), or local energy communities, and encourage them to make this flexibility available to the grid?
- How can ZEV and local energy communities offer these flexibilities? Underlying questions include the infrastructure that is required, the types of internal and external contracts that are needed, and how to manage priorities in the event of load shaving/shedding.
- How to operate distributed seasonal storage facilities economically?
- How can local energy markets be established that take account of both the condition of the local grid and the needs of the system, and does this make more sense than having a grid operator control flexibility directly, with compensation paid to the owner of that flexibility?
- Many projects on the use of flexibilities suggest setting up an additional monitoring and management infrastructure, especially for small end customers. Is this the future? Are there alternatives, and how far would they go?
- Etc.

Increased efficiency and energy savings are major issues supporting the energy transition. The cheapest energy is that which is not consumed in the first place. These are cross-cutting themes that must also be incorporated in other areas. However, projects targeting these topics alone are still possible. Projects submitted in this category could, as examples, answer to the following questions:

- How can a grid operator encourage its consumers to reduce their consumption?
- How can renewable energies replace fossil fuels in the production of industrial heat, without overloading the grid?
- What comprehensive approaches are there to maximising the energy and resource efficiency of flexibilities?
- Etc.

Acceptance criteria

This call for projects is aimed in principle at the private sector, universities of applied sciences, universities, the ETH domain, and public institutions. Supported projects will preferably be backed by a consortium of different stakeholders, although a single party may also submit a proposal providing it has all of the capabilities required to conduct the project and achieve its intended objectives.

Consideration will only be given to projects that comply with the framework conditions set out in this call. Projects must address issues that are relevant to Switzerland. Non-Swiss project partners are permitted, but the lead party must be registered in Switzerland and projects must create primarily expertise and added value in Switzerland. It must be demonstrated that the solution has a significant application po-

tential in Switzerland and that its future implementation on a large scale is conceivable due to the economic or technical advantages that the solution provides. Potential for multiplication abroad is a plus, but it is secondary to the project's application to the Swiss context.

The projects must include a measurement concept and carry out detailed monitoring of the results during the project. The monitoring must examine the technical, economic and/or social aspects of the solution that are relevant to its broader application. These might include the following areas:

- Relief of the power grid
- Acceptance among users
- Simplifications compared with available alternative solutions
- Profitability and realised savings
- Energy efficiency in operation
- Other added value.

Evaluation process

This call for projects will follow a two-stage evaluation process. Firstly, a pre-proposal of no more than eight pages (see 'Pre-proposal' form) is submitted for evaluation by the SFOE. The pre-proposal describes the general content of the project (the technology/solution/concept that is being developed, planned implementation and monitoring strategy) and its context (innovation, contribution to security of supply, energy-related potential, multiplication and future use). It also gives an estimate of the related costs. If the pre-proposal meets the evaluation criteria and offers sufficient prospect of success during the second stage, applicants will be invited to submit a full proposal. The full proposal provides in-depth information on the methodology and phases of work on the development, realisation and operation of the technology/solution/concept, as well as details of project costs and financing.

An invitation to submit a full proposal is no guarantee of financial support. There is no subjective right to financial assistance.

Justification must be provided for any change made to project planning between the pre-proposal and the full proposal.

Project duration and grant support

Projects must be conducted for between one and four years, and may benefit from an SFOE grant of between 100,000 and one million Swiss francs. The SFOE grant may not exceed 40% of the project's non-amortisable supplementary costs. These comprise the costs of implementing the project (project management, report writing, dissemination of results, etc.) as well as the costs of developing, realising and operating the technology/solution/concept, less expected savings and earnings over its operating life, and less the cost of purchasing and operating conventional facilities.

If deemed necessary as proposals are being evaluated, or if required by the applicable provisions in law, the SFOE may reduce the budget or impose special conditions for support.

The full proposal must state any other sources of financing. In the second stage of evaluation the SFOE will examine the solvency of project partners, as provided for in the applicable Directive.

Timeline

The exact timeline will depend on the number of proposals there are to be reviewed. The tentative schedule for the full process is as follows:

4 January 2023	Publication of call for projects
1 February 2023	**Deadline for questions on the content of the call for projects**
13 March 2023	**Deadline for submission of pre-proposals**
end of April 2023	Notification of accepted pre-proposals invited to submit a full proposal
July 2023	**Deadline for submission of full proposals**
September 2023	Notification concerning accepted projects
October 2023	Earliest possible start for accepted projects without sandbox exemption
February 2024	Earliest possible start for accepted projects with sandbox exemption

Questions and contacts

Questions concerning this call for projects should be sent in writing to the following address:

Karin Söderström
pilot_demo@bfe.admin.ch
Phone: + 41 58 480 84 16

Questions must be sent by 01 February 2023. Administrative questions only will be considered after this date. Questions of general interest will be published on the P+D Programme website. No extension of the deadline will be granted.

Proposals must be submitted by sending the completed PDF template to pilot-demo@bfe.admin.ch (subject line: 'P+D project call, grid 2023'). Deadline: 13 March 2023.

Receipt of pre-proposals will be confirmed. If you have not received confirmation of receipt of your pre-proposal by 17 March 2023, please contact Karin Söderström.

Evaluation criteria

Both pre and full proposals are evaluated in accordance with the following criteria. The application will be rejected if it does not meet any one of the formal or content criteria.

Formal criteria		
F1	The proposal is complete and includes all of the necessary information.	Yes/no
F2	The proposal is comprehensible and well structured, and the project objectives are clear.	Yes/no
F3	Deadlines were met.	Yes/no
F4	There is proof of consent from all participating partners (signatures, declarations of intent).	Yes/no

Content criteria		
C1	The project complies with applicable law.[4]	Yes/no
C2	The project relates to one or more of the areas of application set out in the call for projects.	Yes/no
C3	The project delivers added value for the system as a whole.	Yes/no
C4	A monitoring of the project results is planned.	Yes/no

Additional content criteria for sandbox projects[5]		
C5	The project complies with the law with the exception of one or more of Articles 6, 8, and 10-20*a* ESA and the related provisions.	Yes/no
C6	The project contributes to the development of the relevant legal provisions.	Yes/no

Divided into four categories, the qualitative criteria listed below are scored on a scale of zero to five. The project is then assessed in accordance with the total number of points awarded for the different criteria, out of a maximum of 20. A score of less than the minimum specified of 3 will result in the proposal being disqualified.

The points awarded for the criteria correspond to the following quality levels:

0 – Fail: The criterion is not addressed at all or cannot be assessed due to incomplete information.

1 – Poor: The criterion is inadequately addressed or there are serious inherent weaknesses.

2 – Fair: The criterion is broadly addressed but there are significant weaknesses.

3 – Good: The criterion is well addressed but with a number of shortcomings.

4 – Very Good: The criterion is very well addressed but with a small number of shortcomings.

5 – Excellent: All relevant aspects of the criterion are addressed; any shortcomings are minor.

Qualitative criteria		Minimum score
Q1	**Conformity with energy policy**	**3**

Security of supply

The technology/solution/concept that is the subject of the proposal will help to further ensure the security of electricity supplies in Switzerland and/or will mitigate the costs of reinforcing the grid.

Degree of innovation

The technology/solution/concept that is the subject of the proposal is novel in terms of its application and/or technical specifications, and is not yet available on the market in the same form. First experimentation with the solution will generate new knowledge.

Value creation

The project creates substantial economic value added in Switzerland and generates relevant new knowledge (technical, economic and social) through the planned results monitoring.

[4] Exception for sandbox projects, see criterion C5.

[5] These criteria are not relevant to projects that do not require regulatory sandbox exemptions.

Sustainability/efficiency

The technology/solution/concept that is the subject of the proposal results in the appropriate and efficient use of energy, and does not create any harmful effects from the sustainability perspective in particular.

Q2	Potential of application	3

Energy potential

The technology/solution/concept being proposed has significant energy potential or is likely to influence social behaviour in the energy field in a significant way.

Implementation potential

One or more members of the consortium has/have the capability to launch the technology/solution/concept commercially in Switzerland, or there are plans for specific agreements with the industrial partners concerned.

Multiplication potential

There is considerable volume on the Swiss market. The proposed solution will enable potential to be exploited to the full.

Q3	Probability of success	3

Approach

Technical and organisation project implementation are feasible and appropriate.

Capabilities and organisation of project team

All of the capabilities and experience necessary to conduct the project effectively are present.

Q4	Cost/utility	3

The requested financial support and project costs are well proportioned to the expected results and overall potential of the proposed solution.