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ICE
INTELLIGENT COMMUNITY ENERGY

Interreg
France (Channel Manche) England

EUROPEAN UNION

ICE REPORT 2.2

ICE NETWORK OF BUSINESSES

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BRETAGNE DÉVELOPPEMENT INNOVATION

EXETER

PLYMOUTH UNIVERSITY

UEA

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About ICE

Supported by Interreg VA France (Channel) England, the Intelligent Community Energy (ICE) project, aims to design and implement innovative smart energy solutions for isolated territories in the Channel area. Islands and isolated communities face unique energy challenges. Many islands have no connection to wider electricity distribution systems and are dependent on imported energy supplies, typically fossil fuel driven. The energy systems that isolated communities depend on tend to be less reliable, more expensive and have more associated greenhouse gas (GHG) emissions than mainland grid systems. In response to these problems, the ICE project considers the entire energy cycle, from production to consumption, and integrates new and established technologies in order to deliver innovative energy system solutions. These solutions will be implemented and tested at our unique pilot demonstration sites (Ushant island and the University of East Anglia's campus), to demonstrate their feasibility and to develop a general model for isolated smart energy systems elsewhere. The ICE consortium brings together researcher and business support organisations in France and the UK, and engagement with SMEs will support project rollout and promote European cooperation.

Summary

This document presents the ICE network of ICE-certified businesses, selected further to a Call for Expression of Interest (CEI). This CEI pinpointed firms capable of supplying innovative solutions for the energy transition of isolated territories. The survey also illustrated the firms' needs, expectations and stumbling blocks related to setting up their systems in hard-to-reach areas. These firms are helping these territories achieve energy independence using low-carbon facilities, as well as contributing to a renewable energy mix.

This document sets forth the many advantages of the ICE label: it is not only a guarantee of quality, it also opens up new markets, thus helping the sales departments, and raises visibility. Certified firms gain access to targeted funding by way of customised advice. Lastly, it provides access to a market survey describing the main non-interconnected areas (ZNIs) in the Manche *département*, thus supplying information on potential markets and qualified contact points.

With the aim of taking full advantage of the opportunities for local firms, a Call for Projects was launched in order to fund projects providing solutions to issues encountered by isolated territories and/or islands. The types of project may be feasibility studies, market surveys, territorial acceptance surveys, or proof-of-concept and prototypes. Firms must all pinpoint a specific territory and reach an agreement as to its needs and limitations.

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1. Introduction

The main goal of this Work Package is to design the business model for the energy transition of isolated territories using smarter energy system, integrating low carbon electricity generation and demand reduction. In this way, ICE will promote employment, support labour mobility and enhance competitiveness of SMEs in the channel area.

Previously, examples of smart energy island transitions were submitted and a general methodology that can be applied for establishing plans for smart energy transitions was proposed. It covers issues such as general electricity demand, energy supply and capacity, energy efficiency potential, exploitable indigenous energy resources, social, environmental and legal constraints and the potential for smart technologies and practices. It allows to identify the right skills required to operate in isolated territories for companies.

One of ICE project's key outcome is the constitution of a network of SMEs associated to the commercial offer. These companies must be able to provide services within the framework of low carbon energy models for isolated territories. This network consists of a selection of companies that will be 'ICE certified' as they have the right skills and expertise to operate/provide products and services related to specific energy issues.

This document first introduces the expression of interest with a description of the ICE label values, the selection criteria, and the survey results. In a second step, the ICE certified companies are listed in a portfolio and the different actions implemented to engage them. Finally, the last section of the document lays out the call for project, executed by ICE partners, to fund three 25k € projects in a target isolated territory.

2. Method: CEI and selection of firms

2.1 Call for Expression of Interest

2.1.1 General remarks

Several ICE project partners teamed up in order to launch a Call for Expression of Interest (CEI) with the aim of qualifying firms, mainly from Brittany and the south of England. Letting local firms seize opportunities is an important aspect of the ICE approach. The aim of this CEI was to pinpoint firms capable of bringing innovative solutions to energy transition for isolated territories. They have been awarded the ICE label giving access to a specific sales offer.

An isolated territory is an off-grid system that needs electricity generated on a small scale (10 kW to 10 MW), serving a restricted number of consumers via a distribution network, which can be operated independently of the national electricity grids (Mini-Grid Policy Toolkit, 2014).

Extending the national network to these areas is extremely costly and difficult in technical terms: access, installation methods, regulations and harsh environments are all obstacles to being part of the grid. By contrast, off-grid systems are flexible, easy to use, cheaper to implement and adaptable to local needs and conditions. They may also integrate local sources of renewable energy to supply electricity.

Against this backdrop, the CEI was launched, with a “Smart grid” theme, i.e. with innovative, low-carbon energy systems, to select firms in a position to supply solutions throughout the cycle, from generation to consumption. The solutions will first be tested on pilot sites prior to being opened up to other markets.

The aim is thus to set up a network of SMEs teamed with a targeted sales offer, covering a range of skills. The portfolio of companies is extensive, with as many firms as there are environments surveyed. There are several areas with market opportunities in energy transition: the supply and storage of renewable energy, smart technology to manage electricity, data analysis, installation and maintenance. The innovations chosen will contribute to facilitating energy transition in the Manche *département* to achieve an all-renewable energy mix by 2030.

2.1.2 Interest of the label for a company

The ICE label is dedicated to businesses willing to provide energy solutions to isolated grids. The ICE certified companies will form a consortium of entities offering technical and commercial knowledge and skills to ensure a strike force to apply to call for tenders at European level.

In the meantime, synergies between companies will open access to markets that they cannot reach by themselves.

With the ICE label, the selected companies will have access to the business offer described below:

MARKET KNOWLEDGE 	• Access to a database of isolated territories case studies at international level and an entry point to these territories (15 islands listed in Europe; 8 in the world).
NETWORKING / MATCHMAKING 	• <u>Visibility</u> The ICE certified companies will be offered an increased market exposure through various communication channels: ✓ Promotion of the labelled companies on the web (websites of each ICE partner, newsletters, press releases, etc.). ✓ An online directory of labelled companies. • <u>Networking</u> Match-making events will be organised by the ICE partners: a great opportunity for the ICE certified companies to pitch their solution or services to EU smart-energy businesses (e.g. Connect events). • <u>Mentoring</u> ✓ ICE will facilitate collaboration between labelled companies and companies in the energy sector at European level.
ACCESS TO FUNDING INFORMATION 	Companies awarded the ICE label will be offered support in identifying possible sources of R&D funding for their projects: - Monitoring calls for projects - Access to a database of private/public - national, European and international - funding - Project coaching.

2.1.3 Eligibility and selection criteria

Eligible businesses must be able to provide solutions or services within the framework of low carbon energy models for isolated territories. The selection committee will assess the solutions proposed based on the following criteria:

- **Technical:**
  Is the applicant providing a “green” solution that can be implemented in a smart grid?
- **Logistical:**
  Is the solution provided by the applicant implementable on isolated territories, considering the more difficult access conditions that generally induce logistics issues and higher costs?
- **Commercial**:
  Can the solution provided by the applicant be integrated in a grid jointly with technologies from other companies? Is the applicant able to work collaboratively with other companies?”
- **Social:**
  Is the solution proposed by the applicant fitting the ICE philosophy? In other words, is the solution in line with the idea of improving the energy transition in isolated territories with a high level of society implication and acceptance?
- **Territorial:**
  Is the solution provided by the applicant replicable and adaptable to different isolated territories?

2.1.4 Submission and selection process

Applications were submitted via the online form available here.

A selection committee met to choose the group of ICE-certified businesses. Firms with the ICE label are guaranteed special access to the business offer presented above. The selection committee included British and French experts in "smart grid" technology, business support organisations, NGOs, etc.

The CEI was launched in January 2019, initially with **three deadlines: 30 April**, **30 September** and **31 December 2019**. The selection committee met on each deadline date to select the applicants. The firms selected were notified in May and October 2019, and January 2020.

The project was then extended for 16 months with the decision to keep the CEI open until the end of the ICE project in December 2021, for the firms to be able to benefit from the label.

2.2 Results of the CEI

2.2.1 French firms

With a total of 21 responses:

In which sector would you classify your solution?

CHOICE OF ANSWERS	ANSWERS	
Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power)	76.19%	16
Offshore Renewable Energy (i.e. production of electricity at sea using solar and wind power)	28.57%	6
Renewable Marine Energy (i.e. generating electricity at sea using tidal and/or wave power)	28.57%	6
Network and Internet of Things (e.g. home automation systems)	38.10%	8
Machine to Machine	19.05%	4
Safety and security	19.05%	4
Total number of participants: 21		

Is the solution or service linked to smart energy-efficient solutions? (e.g. renewable electricity generation devices, energy demand management solutions, electric vehicles, etc.)?

CHOICE OF ANSWERS	ANSWERS	
Yes	100%	21
No	0%	0
Total number of participants: 21		

Is the solution or service adaptable to a smart grid?

CHOICE OF ANSWERS	ANSWERS	
Yes	100%	21
No	0%	0
Total number of participants: 21		

Can your solution or service be implemented in isolated territories, given the more difficult access conditions that lead to logistical problems and additional costs?

CHOICE OF ANSWERS	ANSWERS	
Yes	100%	21
No	0%	0
Total number of participants: 21		

Are you prepared to potentially interact with with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance?

CHOICE OF ANSWERS	ANSWERS	
Yes	95.24%	20
No	0%	0
Other	14.29%	1
Total number of participants: 21		

Are you able to implement your solution or service implementation in various isolated territories?

CHOICE OF ANSWERS	ANSWERS	
Yes	100%	21
No	0%	0
Total number of participants: 21		

Only 19 companies have been selected. One company applied twice and another was from Argentina and did not fit the scope of the CEI (house building).

3. Portfolio of ICE-certified business

3.1 French firms

IMEON ENERGY	IMEON ENERGY Your Power, Your Rules
Contact	10 rue Romain Desfossés 29200 BREST contact@imeon-energy.com
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power) > Network and Internet of Things (e.g. home automation systems) > Machine to Machine
Solution developed	Hybrid solar inverter.
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	Nothing.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	Company located in Brest.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

NAODEN	NAŌDEN
Contact	Damien HERVÉ 10 rue des usines 44100 Nantes damien.herve@naoden.com
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power)
Solution developed	Micro bioenergy power station.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	Biomass (waste, wood chips etc.)
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	Made in France (90% in west of France). To operate the power station, jobs will be created locally and local residents will be involved. All with the aim of creating a circular economy, recycling wood waste and producing renewable energy.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

ENTECH SE	Entech smart energies
Contact	Laurent Meyer 69 avenue des sports 29000 Quimper laurent.meyer@entech-se.com
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power) > Renewable Marine Energy (i.e. generating electricity at sea using tidal and/or wave power) > Machine to Machine
Solution developed	Integrated solutions for energy conversion and storage. From prototype to mass production, from kW to tens of MW, they help to design, produce, install and operate conversion and storage systems catering to all sorts of energy, whatever the size of the power grid. They specialise in power electronics, industrial IT, thermal and mechanical integration and managing complex projects.
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	The solutions can be adapted seamlessly to all environments.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	They call on a network of partners and sub-contractors as local as possible for equipment design and production. With resilient operational partnerships for the installation and maintenance of facilities in the regions where the systems are deployed, for better appropriation of the energy issue and higher acceptance rates.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

ENAG	
Contact	Henri LE GALLAIS 31 Rue Marcel Paul 29000 Quimper hlg@enag.fr
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power) > Offshore Renewable Energy (i.e. production of electricity at sea using solar and wind power) > Renewable Marine Energy (i.e. generating electricity at sea using tidal and/or wave power) > Machine to Machine
Solution developed	ENAG has come up with energy conversion solutions to make different sources of power (solar, wind and hydrokinetic power, as well as generators) compatible with needs relative to short- and long-distance transport, storage and consumption. For example the PMS (Power Management System) in St Nicolas Les Glénans (SMILE project) and the Paimpol Bréhat tidal farm.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	Their solutions adapt to different needs.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	It is a French SME with a manufacturing facility in Quimper, with a payroll of around 100. The business is controlled by its management team.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

KEYNERGIE	Keynergie
Contact	Jean-François Le Romancer 34 Rue des Clos Beauregards 92500 Rueil-Malmaison jf.leromancer@keynergie.com
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power) > Offshore Renewable Energy (i.e. production of electricity at sea using solar and wind power) > Network and Internet of Things (e.g. home automation systems)
Solution developed	Sizing tools for Smart Grids and energy storage.
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	Access to data regarding power generation and consumption.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	Keynergie has developed a general model that caters especially to isolated systems. The software suite developed helps to model the balance between supply and demand on an hourly basis over several years and test various energy mixes integrating wind, PV and marine RER power as well as flexibility in demand, mobility and storage.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

KEMIWATT	
Contact	Guillaume CHAZALET 11 ALLEE DE BEAULIEU CS50837 35708 RENNES CEDEX 7 gct@kemiwatt.com
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power)
Solution developed	KEMIWATT designs, produces and markets electrical energy storage solutions based on Redox battery technology, using organic molecules that are biodegradable and recyclable.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	They provide storage for intermittent energy production (photovoltaic panels, wind turbines and tidal farms) where the power grid is needed, even when it is unreliable.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	Local installation contractors may be trained to handle implementation and maintenance.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

GREEN SYSTEMES	
Contact	Benjamin COLBOC PARC ECO NORMANDIE 76430 SAINT-ROMAIN-DE-COLBOSC bcolboc@greensystemes.com
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power) > Network and Internet of Things (e.g. home automation systems)
Solution developed	An energy management tool (hardware and software) that records consumption data and steers the facilities. Development of a Microgrid for just a few buildings with photovoltaic shelters, charging stations for electric vehicles, a stationary battery (lithium ion) and energy management software to handle rolling blackouts and manual forcing.
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	An Internet connection (3G or broadband) for monitoring and steering. The hardware can stand alone but the connection ensures seamless monitoring.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	The hardware may be installed by a local electrician. Similarly, the shelter may be built by local builders (masonry, framework).
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

ENEDIS	
Contact	Éric LAURENT Rue Adolphe Porquier 29000 Quimper eric.laurent@enedis.fr
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power) > Network and Internet of Things (e.g. home automation systems) > Security and safety
Solution developed	EMS (Energy Management System) system.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	None
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	The partners to the solution are SMEs in energy. They are already working with the Fouesnant town council to supply occupants (residents and cafés/restaurants).
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

NEXEYA France	
Contact	Loic CARRE 24 avenue de PASLECK 16400 La Couronne loic.carre@nexeya.fr
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power) > Offshore Renewable Energy (i.e. production of electricity at sea using solar and wind power) > Renewable Marine Energy (i.e. generating electricity at sea using tidal and/or wave power)
Solution developed	NEXEYA markets energy storage solutions integrating hydrogen and batteries.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	Need of use-cases to size their solution and adapt it to isolated islands.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	NEXEYA is also established in BREST. Furthermore this type of solution may be incorporated into initiatives such as Bretagne Pôle Naval's SHELTI BREIZH.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

C3S NUMERIQUES	
Contact	Sébastien BOURHIS 1 le clos du sabotier 29510 Edern contact@c3snumeriques.bzh
Industries	> Network and Internet of Things (e.g. home automation systems) > Security and safety
Solution developed	Engineering services in urban digital infrastructure (street lighting management, sound systems, video protection, space management, communication data etc.)
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	We need a support network (such as a street lighting network) and a source of energy.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	The idea is to integrate suppliers in an overall solution, where individually they would not be pertinent. Having an overview as the designer, means we can implement existing or freshly designed systems to find new uses for them.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

GUINARD Energies	
Contact	Gwenole Le Bars 38 Rue Jim Sévellec 29200 Brest g.lebars@guinard-energies.com
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power) > Renewable Marine Energy (i.e. generating electricity at sea using tidal and/or wave power)
Solution developed	Hybrid power generation with storage: river and marine hydrokinetic turbines and solar panels. Evaluation of potential, sizing and installation.
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	For hydrokinetic technology: water depth of over 1.5m and 1.5m/s current velocity.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	Hydrokinetic turbines and all electric control facilities are completely made in France, of which 80% in Brittany. The installation system solution may be produced on site. Locals may help with installation. Guinard Énergies trains local contractors to operate and maintain the systems.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

BERTIN Technologies	
Contact	Frédéric NAUDI 19 rue Hélène Boucher 40220 Tarnos bee@bertin.fr
Industries	> Energie Renouvelable Onshore (i.e. production d'électricité à terre à partir d'énergie solaire, hydraulique et éolienne) > Sécurité et sûreté
Solution developed	Ils proposent de concevoir et de réaliser des systèmes énergétiques autonomes et intelligents. Bertin Energie Environnement a développé un produit ENERBIRD qui est un système de management de l'énergie, permettant le contrôle, l'optimisation et le monitoring de systèmes hybrides (PV, stockage, autres productions ENR) tout en apportant simplicité et flexibilité. La solution ENERBIRD est éprouvée sur un grand nombre de centrales photovoltaïques et éoliennes, principalement dans les ZNI des DOM-TOM français. Aujourd'hui, la solution ENERBIRD représente 19 installations dans le monde ; 51,3 MWc de puissance et 43,5MWh de stockage supervisés et pilotés en temps réel.
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	Une acceptation territoriale pour développer les projets ENR insulaires.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	La construction et la mise en œuvre nécessitent le recours à des fournisseurs et des moyens d'exploitation locaux. La mise en place d'actifs de production locaux permet d'améliorer l'accès à une énergie meilleur marché, décarbonée et plus fiable favorisant le développement économique local.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

E4V	
Contact	Philippe Jakubowski 9 avenue Georges Auric 72000 Le Mans pjakubowski@e4V.eu
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power) > Offshore Renewable Energy (i.e. production of electricity at sea using solar and wind power) > Renewable Marine Energy (i.e. generating electricity at sea using tidal and/or wave power)
Solution developed	Batteries and BMS (Multi-Service Batteries) including stationary applications.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	The batteries are used for storage, a source of production is also needed.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	The solution helps to reduce reliance on the grid.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	They are open to helping but not on the front line (i.e. with a front-line partner handling relations with the general public).
Adaptability of solution or service implementation in various isolated territories	

SENSING VISION	
Contact	Benoit Vagneur 4 rue de la Mairie 35250 Chevaigné bvagneur@sensingvision.com
Industries	> Network and Internet of Things (e.g. home automation systems) > Machine to Machine > Security and safety
Solution developed	Solutions to achieve energy efficiency, IP and IoT network infrastructure, supervision of smart grids, processing energy data and AI.
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	Internet access.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	Local suppliers: use of NKE IoT sensors (Vannes), IoT Kerlink Infrastructure network (Rennes). Installation and maintenance of facilities is handled by local service providers.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

EIFFAGE ENERGIE SYSTEMES	EIFFAGE ÉNERGIE SYSTÈMES
Contact	Yannick BUNEL ZI SUD EST 4 Rue des Charmilles BP 91458 35510 Cesson-Sévigné yannick.bunel@eiffage.com
Industries	> Network and Internet of Things (e.g. home automation systems)
Solution developed	Technical Energy Management / Energy Optimiser.
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	Interoperability of systems.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	Interface relationship between energy producers and consumers.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

ENERGY &+	
Contact	Frank MAINARD PA de KERBOULARD - 1 Rue Benjamin Franklin 56250 Saint Nolff com@ahcs.fr
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power)
Solution developed	AHCS develops power engineering, from design to manufacture, serving industry, agriculture and local authorities. They have a fine grasp of energy markets, constantly monitoring the following fields: - Agricultural, forest and marine biomass, biomass from recycling and/or waste, - Biogas & landfill gas, lean gas produced by industry, - Methanisation (excluding process) and Methanation - Hydrogen - Thermal solar power, photovoltaic power and combinations of both - Energy storage solutions
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	Biomass availability.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	They leverage the local ecosystem to supply components for their designs. In the same spirit, they are members of Bretagne Eco Entreprises precisely in order to empower stakeholders in the region to serve the territories. For energy production, they base their work on expertise regarding sources of matter and accurate analysis of these, making it easier to operate in an energy unit. They thus create fuel to order, using the smallest volumes in order to save on use, transport and processing costs. Territorial cohesion is an important link for them alongside social acceptance of their projects.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

STOLECT	 STOLECT CLEAN ELECTRICITY STORAGE
Contact	Jean-François Le Romancer 140 avenue Paul Doumer 92500 Rueil-Malmaison contact@stolect.com
Industries	> Onshore Renewable Energy (i.e. onshore electricity generation using solar, hydraulic and wind power)
Solution developed	Mass storage of electricity.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	Requires a use-case with variable, renewable production.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	Their solution facilitates the integration of renewable energy and helps to reduce the amount of carbon in the energy mix. They aim to develop a storage sector, which would have a highly positive impact on employment.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

SABELLA	
Contact	Diane Dhomé 7 rue Felix Le Dantec 29000 Quimper d.dhome@sabella.bzh
Industries	> Renewable Marine Energy (i.e. generating electricity at sea using tidal and/or wave power)
Solution developed	Hydrokinetic turbines.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	Adequate sea current velocity.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	Work with local sub-contractors (engineering, manufacturing, operating, diving, civil engineering, maintenance, etc.). Involving local scientific partners (Marine reserve of Iroise, universities, etc.). Involvement of the general public right from the start of the project (public meetings, social media and regular involvement). Crowd-funding possible depending on the project owner.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

FARWIND	FARWIND
Contact	Aurélien Babarit 1 rue de la Noë 44300 Nantes aurelien@farwind-energy.com
Industries	> Offshore Renewable Energy (i.e. production of electricity at sea using solar and wind power)
Solution developed	FARWIND markets a solution to make daily deliveries of electric energy stored in Li-ion battery containers. This electricity is produced by offshore wind power. The FARWIND "energy boat" solution is based on innovative technology whereby a hydrokinetic sailing vessel harnesses the wind for propulsion. As the vessel moves, electricity is generated by the velocity of turbines beneath the hull.
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	The solution requires a port large enough for the boat to enter (the trimaran is 100m long and 30m wide) as well as a RO-RO ramp for loading/unloading the batteries (each battery weighing 30 tonnes, 10 batteries per vessel).
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	The solution requires operators to load/unload the battery containers, and then take them to be hooked up to the network. It also requires operators to supervise the production operation (the vessel is remote-controlled). Light maintenance operations could also be performed by local players. Lastly, the solution might require the improvement of local port infrastructure, which would benefit all local players.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

3.2 Uk firms

SCENE CONNECT	
Contact	David Jones Suites 1 and 2, St Johns Studios 46a Constitution Street EH6 6RS Edinburgh (UK) david.j@scene.community
Industries	> Onshore Renewable Energy (i.e. generation of electricity from solar, water and wind power under, upon, or above the land surface) > Network and Internet of things (e.g. house automation systems)
Solution developed	Internet of things mini-grid monitoring and control hardware with peer-to-peer energy trading between households and businesses.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	Mini-grid network infrastructure.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	It is a business to business product. Their customers are local mini-grid providers and operators. Their technology provides added value to existing offerings. It also allows local people to sell surplus energy they may generate, providing a new household/business revenue stream for them.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

SWANBARTON Ltd	
Contact	Jez Kent Dairy Farm, Pinkney SN16 0NX Malmesbury (UK) jez@swanbarton.com
Industries	> Network and Internet of things (e.g. house automation systems)
Solution developed	Independent energy storage consultancy.
Is the solution or service linked to smart energy-efficient solutions?	✓
Is the solution or service adaptable to a smart grid?	✓
What does the solution need to be implemented and operational?	Nothing.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	They promote Local Energy Markets which encourage matching local energy generation with local energy demand.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	✓
Adaptability of solution or service implementation in various isolated territories	✓

DENCHI GROUP	DenchiGroup
Contact	David Aldrich Denchi House KW147XW Thurso (UK) david.aldrich@denchigroup.com
Industries	> Onshore Renewable Energy (i.e. generation of electricity from solar, water and wind power under, upon, or above the land surface) > Network and Internet of things (e.g. house automation systems)
Solution developed	Scalable Battery Electrical Energy Storage.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	Co-located with generation source or connected to the main grid.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	It can be implemented into community smart grid / VPP projects with a variety of local stakeholders including generators, consumers and local distribution grid providers.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

OPUS ONE SOLUTIONS	
Contact	Gemma Marina c/o TLT, 140 West George Street, G2 2HG Glasgow (UK) gmarina@opusonesolutions.com
Industries	> Network and Internet of things (e.g. house automation systems) > Machine to Machine
Solution developed	End to end flexibility platform. Optimisation and dispatch of DERS. Holistic system planning (all voltage levels, including economic optimisation).
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	Network Models: Existing network models and any mapped future network extension, Network Load Data. Can be implemented however the more data points, the better.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	At Opus One, their mission is to create an intelligent, connected and sustainable energy network. Their software offering is created with a vision of a digitalized, decentralized and decarbonized planet. They foster new business models and revenue streams that potentially lead to local jobs due to local support required.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

INGINE Wave Energy Systems	INGINE Affordable and Clean Energy
Contact	Jeff Sungwon LEE Unit 3 Freswick House, Forss Energy Park KW14 7UZ Forss (UK) jeff@inginewave.co.uk
Industries	> Marine Renewables (i.e. generation of electricity from tidal and/or wave power)
Solution developed	The INWave™ is an innovative onshore-type wave energy converter (WEC). Its scalable modular system can adapt to site conditions as well as to local demand - with installations ranging from 25kW to multi-MW in capacity. An INWave™ module is composed of a floating buoy nearshore, which harnesses multi-directional wave movements, and a power generating unit onshore. Efficient and stable in coastal waters as well as free of any expensive submarine cabling, the INWaveTM offers a sustainable and affordable path to energy security and independence for island and coastal communities.
Is the solution or service linked to smart energy-efficient solutions?	
Is the solution or service adaptable to a smart grid?	
What does the solution need to be implemented and operational?	In terms of site conditions, the floating unit(s) should be located no further than 150 meters away from the shoreline. At that point, the water depth should not be lower than 3 meters or greater than 50 meters. The chosen site's wave energy resources should not be under a yearly average of 5kW/m, nor above a yearly average of 50kW/m.
Positive socio-economic knock-on effect with the construction, implementation and operation of your solution fostering the participation of local suppliers / stakeholders	The INWave™'s floating unit is to be manufactured locally. Plant construction is handled by local contractors, creating economic opportunity. In order to ensure local ownership, their engineers can provide training to local technicians for the continuous operations and maintenance of the power plant, therefore contributing to long-term job creation (2 to 5 per power plant). Following commissioning, area residents are set to be provided with stable, affordable and clean electricity generated from waves.
Capacity to interact with NGOS, the general public, residents, etc. and, if necessary, find a compromise to maximise social acceptance	
Adaptability of solution or service implementation in various isolated territories	

4. Specific actions

4.1 Market survey of non-interconnected areas

The Pôle Mer ordered a survey from Junior Impact (a firm run by ENSTA Bretagne) to list the characteristics of the main non-interconnected areas (ZNIs) in the Manche *département*. It also helped evaluate the corresponding energy markets and political will in the various non-interconnected areas.

The aim was to supply ICE-certified firms with information on potential markets in territories working as local energy loops and qualified points of contact. Territories which mostly are determined to be included in an overall process to produce energy using renewable marine resources or any other renewable resources.

Several territories showing interesting potential have been pinpointed and a map was drawn up to locate them. For each non-interconnected area, the survey listed elements to identify, select and describe the current energy setup, with an emphasis on electricity. Furthermore, a pre-analysis of energy issues focusing on supply, storage, seasonal differences and cost was supplied.

Each territory was evaluated from 0 to 10, on the following six criteria:

- The will of local politicians to effect a transition to eco-friendly energy
- The will of local residents to effect a transition to eco-friendly energy
- The potential of renewable marine resources (marine RERs)
- The potential of other renewable energy resources than marine RERs
- The number of current programmes involving non-interconnected areas
- Relative evaluation of the market for marine RERs

This evaluation helped to rank the eight territories most supportive of independent energy transition. And to achieve this transition, the survey also listed all the organisations that can help with installation in each non-interconnected area:

- The electricity supplier and the electricity grid operator.
- The relevant local authority.
- The entity in a position to support the implementation of innovative energy solutions by firms.
- The entity in a position to provide the elements in connection with the resource (in terms of wind, waves, current etc.).

The report aims to act as a springboard for certified firms seeking out non-interconnected areas, to provide them with a glimpse of potential and local will, supplying contact details of stakeholders in energy transition in each territory. It is now online on the project site web.

4.2 Promotion and networking

With the onset of the pandemic in March 2020, some initiatives have been reworked, especially the networking events and B2B meetings initially scheduled to take place at that time. The network launch was also postponed.

LinkedIn

A LinkedIn group was set up for firms that were awarded the ICE label. It helps to circulate and pool information about funding opportunities, projects and consortium building, as well as organising events on specific themes.

Promotion

The ICE-certified firms are promoted on the ICE project website with a page all about them. A description of their innovative solution and their contact details will be accessible shortly.

The partners have all pledged to help with promotion on their own social media. The Pôle Mer has thus circulated information on the certified firms in its monthly newsletters in June and October 2019 with an article focusing on them.

Success story

ICE-certified firm NAODEN, has worked on its project VERDIR harnessing island waste to produce energy. Indeed, part of the waste produced on islands comes from the sea, and thus has high water content. The project involves developing a solution to use part of this waste to produce energy, with the heat generated being used to dry it. Benefits include lower water content in waste and an ensuing reduction in the quantity of waste to be exported, as well as energy being produced locally.

The Pôle Mer supported NAODEN, helping to identify possible sources of R&D funding for their project. The Pôle Mer certified the firm in June 2020, further to which the project won the "R&D collaborative Pays de la Loire" call for projects the same year, for a project worth €792K.

4.3 ICE network launch event

The launch webinar was held during SeaTechWeek 2020, an International conference organised by Greater Brest alongside the Campus mondial de la mer (world sea campus), 12-16 October 2020. As an exceptional measure, it was held in virtual format this year. It helps to forge and consolidate international collaboration and business in marine science and technology. It attracts scientists, entrepreneurs, institutions and students.

A workshop was held on the ICE project, on Monday 12, with the Pôle Mer attending an E-conference to discuss: How and where to develop my business helping with energy transition in isolated

territories. The aim was to give firms an overview of non-interconnected areas (ZNIs) where they could develop their products and/or services. Partners took an active part in the virtual preparation of the event attended by 35 participants.

The event took place as follows:

- A presentation of the market survey conducted by Junior Impact in July 2020, including a presentation of the most promising non-interconnected areas.

- An account and feedback on best practices for projects led by SDEF on non-interconnected areas, and a mention of their current issues.

- A presentation of innovative solutions developed by five ICE-certified firms: NAODEN, NEXEYA, KEYNERGIE, STOLECT and FARWIND. They were also able to express their current and future needs as well as their expectations of the territories.

5. Call for projects

Further to the CEI, which pinpointed firms in a position to act in favour of a transition to eco-friendly energy in the territories, the ICE partners implemented a call for projects.

This call for projects will be implemented as follow:

> Launch of the call for projects (3 May 2021 – 11 June 2021)
> Putting together a panel (May 2021)
> Selection of winners and subsidy agreement (25 June 2021)
> Implementation of winners' projects (as from July 2021)

> Reports on the winners' projects (October-November 2021)

An article was published on the Pôle Mer website, making the application document and the specifications available. The call was also widely circulated on social media.

5.1 Aim

Focusing on SMEs (in the Community sense of the term) working in energy transition, this call aims to fund projects tackling the issues encountered by isolated territories and/or islands. Eligible type of projects include:

> Feasibility studies
> Market surveys, surveys to determine territorial acceptance
> Proof-of-concept and prototypes

Projects are to focus specifically on the needs of isolated territories and/or specific islands and may for example involve:

> Reducing volumes of waste and local waste treatment (e.g. methanisation)
> Improving infrastructure and facilities to make them environment-friendly and less energy intensive
> Renewable energy, marine RERs and solar panels that can withstand a maritime climate

A week after the development period, selected projects with funding are to produce a report for the ICE project showing the results of said developments. This report will be included in ICE project results and sent to the joint secretariat for INTERREG FMA.

5.2 Eligibility criteria and funding

This call for projects is open to all French SMEs presenting solutions to issues encountered by the relevant territories, with technical potential to implement them. The firms must present innovative projects, within a budget range of 15 to 25k€, and lasting up to four months (starting in July 2021)

A single payment at the end of the project based on a recap of expenditure. All expenses must come with proof. R&D costs are considered eligible expenditure. This includes payroll, out-sourcing costs and hardware and software costs. Travelling/mission expenses are not considered eligible. Funding must be declared as "minimis" government aid.

5.3 Selection of projects

This action is conducted by the Pôle Mer Bretagne Atlantique with support from BDI, TBI, TQC and MSE.

In order to select the winning projects, a selection committee will be put together, involving:

- Partners of ICE projects: PMBA, TBI
- A representative of an isolated area: SMILO
- An expert in energy transition: SDEF

The Selection Committee shall examine the projects received, based on the application file, with special reference to the following criteria:

- Whether the project meets the aims of the specifications
- Whether the project meets the energy needs of the isolated territories
- Innovative aspect: to be pitched with market elements
- The service: how useful it is, how much value it adds
- Potential effect on the economy
- Project viability and development potential
- Capacity for commercial deployment