

Presented to



European Technology & Innovation Platform for Ocean Energy

## Off-grid applications of ocean energy: Powering remote communities

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# Patented technology, proven through 17 successful deployments since 2010



## Who we are

- Founded 18 years ago, in Portland, Maine, US
- 45 employees in 4 countries (USA, Canada, Ireland & Chile)

## What we do

- Convert kinetic energy in water currents into clean, predictable, affordable sources of renewable electricity
- Provide smart microgrid solutions powered by ORPC power systems



## ORPC's objectives

- Develop clean energy solutions for remote communities and critical infrastructure
- Create local jobs for installing and maintaining equipment

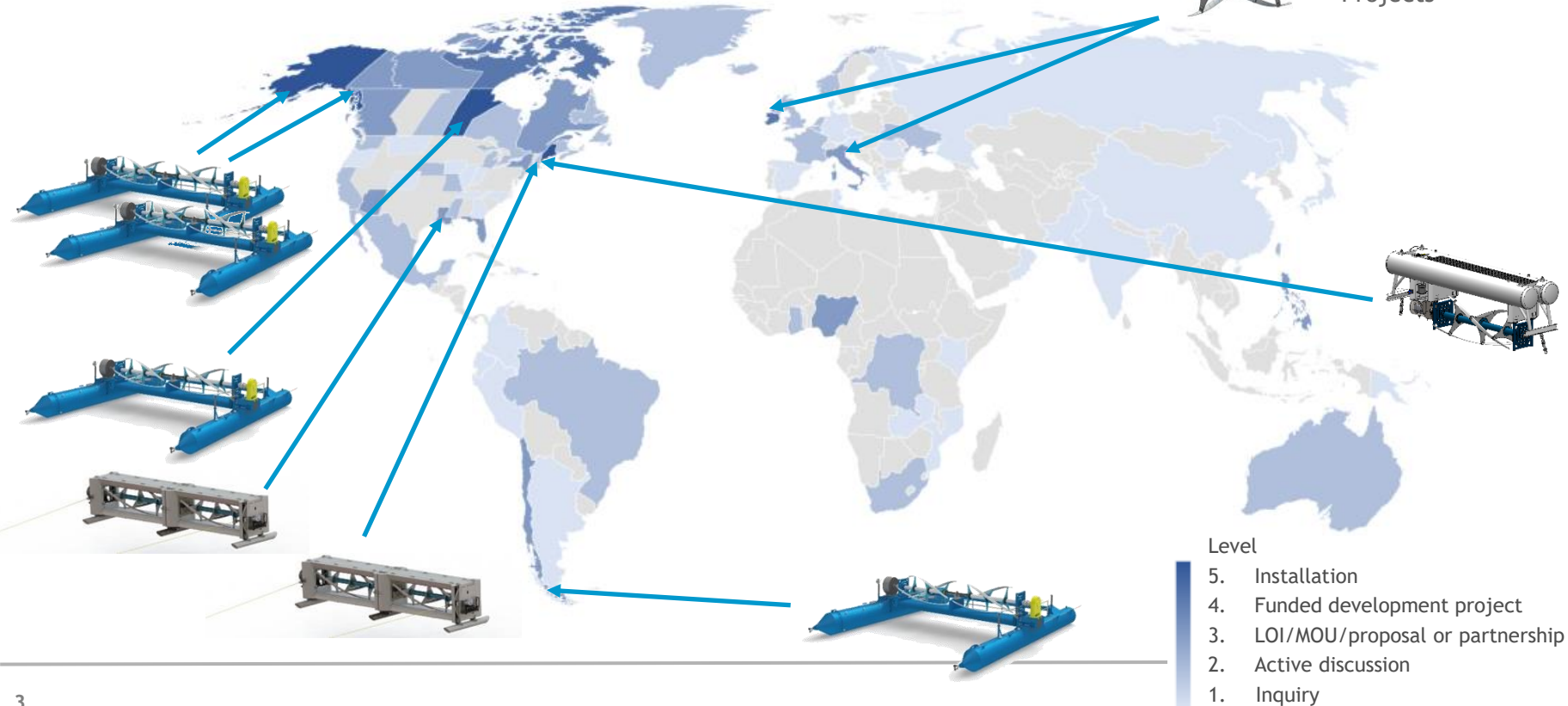


# Product Line & Global Expansion

Deploying 3 Product Lines with Outreach from 50+ Countries



CRIMSON  
& X-Flow  
Projects



# Why target remote communities and off-grid applications?



A large and global market: 675 million people worldwide using diesel generators

High value proposition and cost competitive versus existing sources of power

High impact potential: CO<sub>2</sub> & emissions reduction, electrification, local economic development, societal benefits



# ORPC Off-Grid Projects



# Igiugig Hydrokinetic Project: 2019 to present

## Two RivGen® devices deployed to power an off-grid community



Microgrid and energy storage system developed with Schneider Electric will relegate diesel generators to backup only.

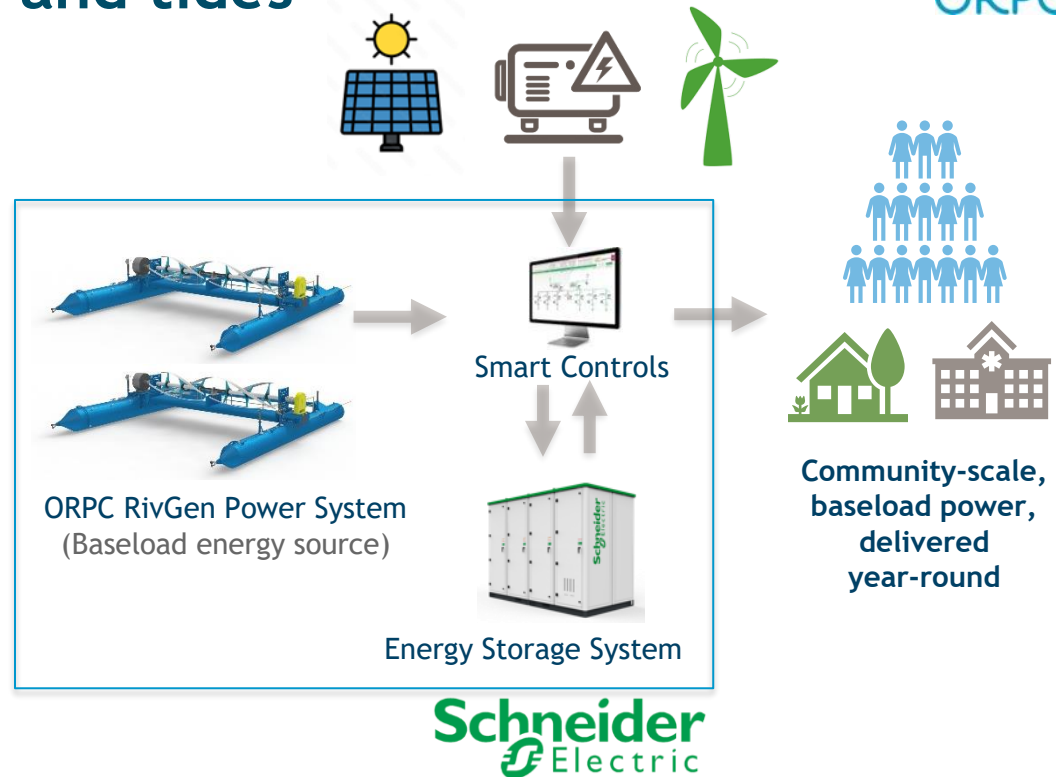


*Photo Credits: Igiugig Village Council (2023)*

# Baseload renewable energy from free-flowing rivers and tides



- A smart microgrid powered by an ORPC Power System will relegate diesel generators to backup only.
- Energy storage and smart controls, coupled with ORPC baseload power system, allow incorporation of intermittent sources like wind and solar.



# Chile Chico, Patagonia

## Preparing for first deployment in Chile in 2024



Working with the local municipality on long-range plans to decarbonize, establish EV mobility along a remote road network, and increase energy capacity to support economic development with minimal transmission line build-out



# False Pass, Alaska

## Hydrokinetic Baseload Microgrid for an Island Community



ORPC has worked with the City of False Pass and NREL to evaluate and design a community-scale microgrid integrated with tidal power systems.

# Industrial Use-Cases for Off-Grid Marine Renewable Energy

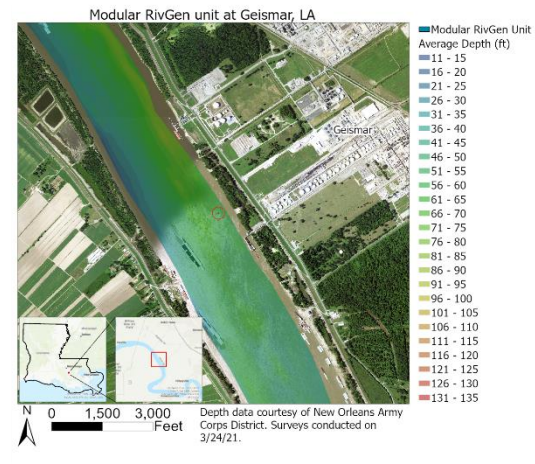


## Port MacKenzie, Cook Inlet, Alaska



Partnered with Matanuska-Sustina Borough to demonstrate how predictable output from tidal devices can provide baseload power to the port's cathodic protection systems for corrosion prevention.

## Mississippi River, Louisiana



Pilot project with Shell Technology-Marine Renewable Program to be deployed in 2024. Learnings from this demonstration to inform scaling into other major rivers.



# What we have learned from remote community projects

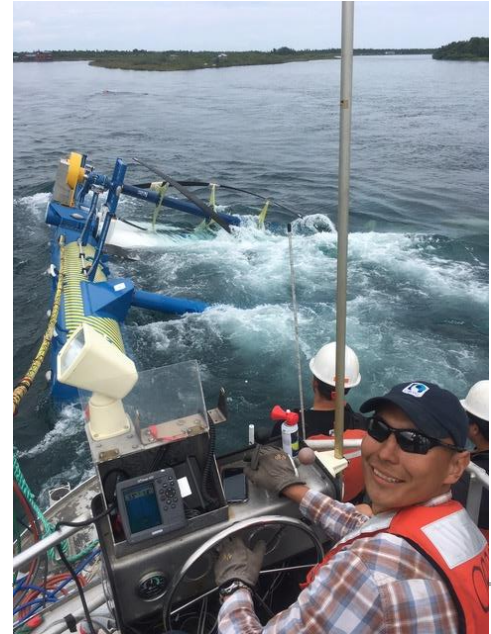
# LCA Results: ORPC Power Systems significantly reduce emissions in off-grid communities.



- Installing a RivGen in a diesel-powered community in Alaska reduces emissions per MWh of electricity generated from 1,345.45 kg CO<sub>2</sub>eq<sup>1</sup> to **20.81 kg CO<sub>2</sub>eq.<sup>2</sup> [98% Reduction]**
- Over its 20-year life, a RivGen device helps the community avoid up to **9,277** metric tons of CO<sub>2</sub>eq emissions.<sup>2</sup>
- That's equivalent to saving over **3.4 million** liters of diesel.<sup>3</sup>



# Designed for ease of installation, operation, and maintenance in remote locations



✓ *Accomplished safely with the help of local equipment and expertise*

# Stakeholder engagement and community partnership is critical in the project development process.



- Fundamental to ORPC's deployment success and brand
- Based on frequent and transparent communication
- Includes host communities, marine users, governmental officials, and regulatory agencies
- Local expertise and input delivers a better project



**Thank You**

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