

Open Renewable Energy Systems Home



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Open Renewable Energy Systems (ORES) is a proposed Working Group under LF Energy. It will be considered for acceptance as an official LF Energy Working Group by the Technical Advisory Council at the 12 March 2024 meeting.

The proposed charter follows:

Charter for Open Renewable Energy System (ORES) Working Group at LF Energy

Mission Statement

To revolutionize the residential renewable energy sector by developing an open standard architecture, APIs, and protocols, fostering innovation, accessibility, and sustainability.

Background

The formation of the Open Renewable Energy System (ORES) Working Group is a follow-up endeavor that stems from the insights of the LF Research whitepaper "[The Open Source Opportunity for Microgrids: Five Ways to Drive Innovation and Overcome Market Barriers for Energy Resilience](#)." In light of the considerable potential for open source solutions in areas such as Microgrids, Virtual Power Plants, and Distributed Energy Resources, Futurewei has taken the initiative to develop a thorough and innovative architecture for ORES. This includes designing a power network topology, block diagrams, functional requirements, and core design principles. Supported by community interest, this effort led to the creation of the ORES Working Group within LF Energy.

Objective

ORES aims to develop an open standard architecture, API, and protocol for renewable energy systems, initially for residential use cases. This project seeks to provide an open alternative to the dominance of proprietary black box energy solutions and promote a more open, innovative, and collaborative approach in the renewable energy sector.

Initial Contribution

Futurewei will contribute the initial project design specifications, architecture, API specifications, and protocols to the LF Energy community. Furthermore, Futurewei will sponsor a hardware vendor to further develop the specification, and to further design and implement these standards, providing a reference implementation of the ORES standard.

Problem Statement

The residential renewable energy sector is currently hindered by several key issues:

1. **Prohibitive Costs:** The high cost of equipment, installation, and permitting presents a significant barrier to the widespread adoption of renewable energy systems.
2. **Proprietary and Black Box Solutions:** The market is largely dominated by proprietary and black box solutions, notably from major industry players, leading to a lack of transparency, limited consumer choice, and hindered innovation.
3. **Lack of Open Solutions:** Based on the [research report](#), there is a critical need for open solutions in this field to encourage innovation, increase consumer choices, and break the monopoly of proprietary systems.
4. **Regulatory and Integration Hurdles:** Complex regulations and opaque interfaces with utility grids are major obstacles to the adoption of open renewable systems and DIY solutions.

Description

ORES aims to address these challenges by developing a set of easy-to-follow open standard specifications on system architecture, APIs, and communication protocols that empower device manufacturers, hardware and software developers, and DIYers to implement their own disaggregated, easy-to-use and plug-and-play renewable energy solutions, initially for residential use cases, and potentially expand to commercial and industrial usage scenarios in the future.

Key Deliverables

1. **ORES Specification:** Develop ORES standards including architecture, APIs, and communication protocols among various system modules and components, and cloud APIs.
2. **Reference Implementation:** Develop a working demo system of the ORES specification.
3. **Multi-vendor adoption and interoperability:** Standards exhibit value when multiple vendors adopt it. Target at least one other hardware vendor's adoption of ORES.
4. **Utility's participation, engagement, adoption:** Adoption and recognition of ORES standards by Utilities encourage mass adoption of ORES by consumers and manufacturers. Target at least one Utility service provider's adoption of ORES.
5. **Marketing and Community Engagement:** Execute strategies for broader adoption and stakeholder engagement.

Working Group Detailed Operation Plan

1. **Guidance and Strategy:** Provide expertise on technical, business, and policy aspects, steering the project's direction.
 - **Technical Guidance:** Offer expert advice on technical aspects, including system architecture, API design, and protocol development.
 - **Business Strategy:** Provide insights on market trends, business models, and strategies for commercial viability.
 - **Ecosystem Development:** Advise on building a robust network of producers, consumers, and other stakeholders.
 - **Policy Insight:** Guide the group on regulatory and policy matters relevant to renewable energy systems.
2. **Standards Development:** Provide input and feedback on ORES standards development.
 - **Collaborative Design:** Work with industry experts and community members to refine the ORES standards.
 - **Documentation:** Produce comprehensive documentation for the ORES architecture, APIs, and protocols.
 - **Demonstration Platform:** Creation of an interactive online system to display ORES in real-time operation.
 - **Utility Integration Protocols:** Development of guidelines for utility adoption of ORES solutions.
 - **Prototype Implementation:** Development and testing of hardware and software prototypes.
3. **Ecosystem Building:** Engagement with producers, consumers, and trial sites to expand the ORES network.
 - **Marketing, Outreach and Promotion:** Develop ORES website, online demo system, and active promotion of ORES at industry events and through media.
 - **Vendor Partnerships:** Formation of relationships for commercial adoption of ORES standards, and for multi-vendor interoperability.
 - **Utility Advocacy:** Lobbying for policy support and utility integration.

Initial Working Group Members

In no particular order:

- Chris Xie, Head of Open Source Strategy, Futurewei
- Tony Shannon, Head of Digital Services, Irish Government
- Karl Yang, CEO, Degcent (Hangzhou) Energy Technology Co., Ltd.
- Genmao Chen, CTO, Independent
- Vivien Barnier, CEO, The EnAccess Foundation
- Pranav Myana, CEO, Amaterra Tech

Roles and Responsibilities

1. **Chair (Chris Xie):** Sets vision and direction for the ORES Working Group, leads strategic decisions, and represents the group in LF Energy.
2. **Co-Chair (Tony Shannon):** Shares Chair responsibilities, co-leads meetings, and assists in decision-making.
3. **Subject Matter Experts:** Contribute expertise to the Working Groups's work items, focusing on standards development, prototype development and testing, and other technical, business, policy and regulation aspects etc.

Meetings and Communication

The Working Group will convene regularly, with meetings scheduled biweekly or monthly, as determined by the Working Group. These meetings will serve as a platform for progress updates, discussion of key issues, and collaborative decision-making.

Additional Expertise and Participation

The project seeks additional expertise in utilities, policy, regulations, and hardware vendors. We encourage a diverse range of stakeholders to join this grassroots effort.

Timeline/Roadmap

- Q1 2024: Release version 1 of the ORES standard, including architecture, components, APIs, and protocols.
- Q2 2024: Develop a hardware reference implementation and a functional demo system, targeting a showcase at the LF Energy Summit.
- Q3 2024: Achieve multi-vendor interoperability, expand hardware vendor participation and adoption.
- Q4 2024: Cultivate an ecosystem of vendor and hardware adoptions for commercial deployment. Begin exploring ORES applications beyond residential to commercial and industrial sectors.

Recent space activity

Space contributors



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- [Dan Brown](#) (Jan 29, 2024)
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