



**FREE
ELECTRONS™**

PROGRAM OVERVIEW

POWERING THE **FUTURE** OF ENERGY



ABOUT FREE ELECTRONS

Heading into its 8th edition, Free Electrons is a globally recognized open innovation program that brings together progressive utilities with pioneering startups/scaleups working in energy and adjacent industries to co-create the future of energy. The program focuses on working to pilot projects, commercially deploy products, facilitate investment opportunities, learning and development.

Over the past seven editions, the program has invested over \$85M USD & received +3500 applications from more than 75 different countries reached



75

MARKETS
REACHED



23M

PILOTS



32M

DEPLOYMENTS



32M

DIRECT
INVESTMENT



87M

GENERATED
VALUE

ABOUT THE UTILITY PARTNERS

The Free Electrons utility partners are leaders in delivering cutting edge solutions. The current partners consist of AEP, CLP, EDP, E.ON, ESB, Hydro Quebec and Origin.

<https://freeelectrons.org/the-utilities/>



80.3

Million
customers



204.3

Billion USD
in revenue



135,132

MW of owned
and contracted
capacity



2,686,135

KM of
transmission &
distribution lines



TARGET AUDIENCE | FREE ELECTRONS

Cutting-edge startups from diverse backgrounds, ready to collaborate with industry leaders and revolutionize the energy landscape.

World leading utilities in non-competing geographies eager to work with startups and peer partners to shape the future of energy.

Industry experts & mentors from varied educations willing and able to impart their wisdom and expertise to facilitate more informed business propositions.



VISION | FREE ELECTRONS

Source disruptive ideas and technologies that have potential so re-shape the energy industry

Facilitate successful collaborations and partnerships between utilities, startups and other relevant stakeholders

Provide effective innovation management and comprehensive support to startups

Foster a culture of thought leadership, continuous learning, and knowledge sharing

Build and maintain vibrant and interconnected communities



VALUE PROPOSITION | FREE ELECTRONS

Successfully execute pilot projects and deploy innovative energy solutions within utility businesses, driving practical implementation and impact

Drive positive change and contribute to shaping the global energy landscape towards a more sustainable and efficient future

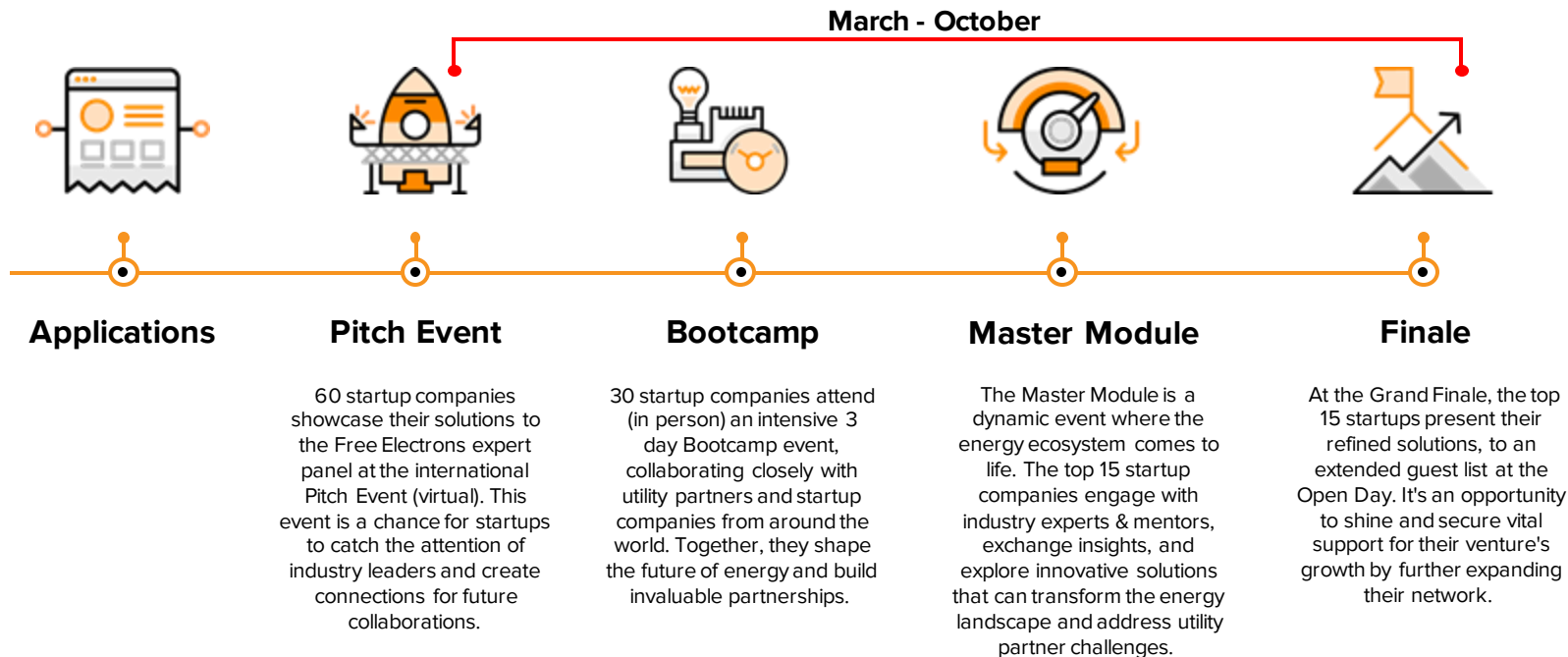
Engage in peer-to-peer learning and collaboration

Heighten startup potential by collaborating with other startups, pooling resources, and fostering knowledge exchange

Maintain a fair working environment for startup businesses - startups maintain ownership of their IP



FREE ELECTRONS PROGRAM STRUCTURE



<https://freeelectrons.org/programs/2023-program/>



FREE ELECTRONS

PROGRAM CHALLENGES

CONNECTIVITY AND COMMUNICATION SOLUTIONS



- Grid edge technologies including smart inverters, telemetry, sensing and control
- Leveraging captive utility customers for new services beyond electricity generation, transmission, and/or distribution
- Distributed energy resource aggregation as a service

ENERGY MANAGEMENT AND EFFICIENCY



- Easy to use platforms to manage disparate energy generating assets and loads, before and behind the meter to optimize energy efficiency
- Platform to trade energy offsets
- Services or technologies that support energy efficiency as a service across commercial and industrial customers

FACILITY AND ASSET MANAGEMENT



- Disaggregation of loads for predictive/preventative maintenance
- Solutions to help forecast grid impacts to extreme weather events
- Tools that enable the remote evaluation of assets (from single family homes, commercial buildings, city quarters to complex business/industrial sites) on energy reduction potentials
- Smart emissions reduction solutions for municipalities, commercial & industrial customers



FREE ELECTRONS

PROGRAM CHALLENGES

NEXT GENERATION CLEAN ENERGY



- Distributed generation including micro/modular nuclear, modular CHP, feeder/community level storage and low cost BTM solar + storage
- Long duration energy storage solutions with total installed costs <US\$100/kWh
- Mobile long duration energy storage solutions
- Innovative fuel cell technologies (e.g., small SOFC)
- Innovative sector coupling/seasonal storage technologies

SMARTER GRIDS AND ENERGY COMMUNITIES



- Virtual Power Plant/advanced demand side management - including technologies & service models that support residential, commercial or industrial applications
- Provision of services, devices and connectivity for energy/peak awareness, automated energy conservation and market participation/monetization
- Packaged reliability & resiliency solutions for residential, SMB and commercial customers
- Services & technologies that enable optimized planning, operation and maintenance of electricity, gas and district heating grids

SUSTAINABLE ALTERNATIVE FUELS AND CARBON MANAGEMENT



- Modular green/blue hydrogen or alternate energy carriers that support seasonal storage and/or adjacent industry feedstock needs
- Innovative and scalable carbon accounting, reporting & visualisation tools (scope 1-3) covering the whole supply chain
- Innovative negative emission technologies for carbon capture & removal for utility scale generation and/or industrial applications
- Innovative production technologies of low carbon hydrogen
- Hydrogen utilization for transport (land, water, air)
- Acceleration of cost curve for hydrogen installations e.g. solutions for rapid learning across the
- EPC industry to understand & minimize risk during estimation, solutions for rapid learning to provide cost effective deployment of hydrogen installations



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PROGRAM CHALLENGES



TRANSPORT & INDUSTRY ELECTRIFICATION

- Services or technologies that support the customer lifecycle (awareness, consulting, engineering, procurement, financing/capital, ownership, maintenance) for fleet, commercial or industrial electrification
- Service and technology combinations for unique approaches to reducing energy for decarbonization or cost savings
- Services and technologies for electrification and fuel switching, beyond fleets that help industry achieve cost or carbon goals
- Energy adjacent product or service offerings/models for promotion of electrification/decarbonization and user experience in using/consuming non-carbon generation sources



GREEN HEAT SOLUTIONS FOR B2B AND B2C

- Services and technologies to provide heat with a low or neutral contribution to CO2 emissions, e.g., biomass, solar and geothermal (including ambient heat from heat pumps)
- Services and technologies that enable residential/SME/industrial customers to reduce dependency on natural gas
- Services and solutions that enable increased efficiency in heat generation, utilization and storage e.g. waste heat recovery technologies
- Technologies that enable green heat (e.g. steam) production at industrial order of magnitude and at higher temperature levels



OTHER

- Innovative solutions for the “renovation challenge” e.g. making renovations faster, cheaper, easier and more efficient
- Retrofit solutions for heating and cooling in buildings
- Remote lead / potential identification and qualifications tools



FREE ELECTRONS

ALUMNI



Meet all our Startup Alumni [here](#)



**FREE
ELECTRONS™**

THANK YOU

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