

A high-angle, top-down view of a person looking up through a circular opening in a grey, tiled ceiling. The opening reveals a vibrant green wall covered in small, leafy plants. A white sphere is positioned at the top of the opening. The scene is framed by a thick orange ring.

# FREE ELECTRONS PROGRAM CHALLENGES



# 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.

# 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.

# 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.

# PROGRAM CHALLENGES



## 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.

## 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.





**THANK  
YOU**