

# BLOCKCHAIN FOR SUSTAINABLE ENERGY PROJECTS:

MicroGrid Solutions  
for Puerto Rico  
& Small Island  
Developing States

May 15, 2019  
UN STI FORUM  
SCIENCE  
TECHNOLOGY  
& INNOVATION  
FOR THE SDG'S

DIVERSE APPROACHES TO  
CLIMATE ACTION &  
RESILIENCE;  
HARNESSING KNOWLEDGE,  
TECHNOLOGY  
AND INNOVATION  
TO EMPOWER SOCIETY



San Juan, Puerto Rico



## SUSTAINABLE ENERGY AS A SERVICE

- Sustainable Energy for ALL (**SEforALL**) is a JV of **UN & World Bank** to achieve the **Paris Agreement** goal: **< 2°C** by **2030**.
- stimulate **\$1.3T** annual Sustainable Energy Project CAPEX funding through **2030**.
- Unfortunately, atmospheric **CO<sup>2</sup>** has reached **415 ppm**.
- **VITAL Cleantech** is raising **\$1B** in “forward commitments” to fund **Sustainable Energy Projects** globally.



# GLOBAL INITIATIVES



**RENEWABLE NATIONS**  
INSTITUTE

## Sustainable Energy Project Incubator & Campuses for Change

- sustainability work force development
- preparing investment-ready projects



## SDG-7 Sustainable Energy for All

- renewable energy
- energy efficiency
- access to clean energy



## ESCO PROJECTS

- Energy projects use **Energy Services COntracts (ESCO)** financing.
- Fraudulent **Enron** gave ESCO's a bad name.
- **Sustainable Energy Projects** use ESCO models like Power Purchase Agreement **PPA**, Energy Efficiency Agreement **EEA**, Shared Saving Agreement **SSA**.
- **ESCO** pays for Sustainable Energy Project **CAPEX** over time.

# BLOCKCHAIN FOR ESCO PROJECTS

- Multiple underlying contracts in **ESCO**: insurance wrap, manufacturer's warrantee, real estate lease, carbon offset, feed-in-tariff, PPA... **SmartContracts**
- Over the term of the **ESCO** stakeholders rely on accurate and verifiable accounting by all parties... **HyperLedger**
- Sustainable Energy Project **ESCO** financing greatly enhanced by immutable transaction logs on chained computers for participant consensus...

## Blockchain



# BLOCKCHAIN ESCO IN THE CARIBBEAN: IMPACTPPA



## Energy Generation

Renewable energy powers homes, businesses, or is connected to the existing utility grid

## Smart Meter

Energy flows to a “Smart Meter” connected to the blockchain. Consumers control consumption on a Pre-Pay model

## Mobile Connectivity

GEN Credits, purchased in fiat, to access the smart meter

# SUSTAINABLE ENERGY AS A SERVICE: BLOCKCHAIN ESCO PROJECT



# SUSTAINABLE ENERGY AS A SERVICE: BLOCKCHAIN ESCO PROJECT

Puerto Rico has recently enacted  
Energy Cooperatives law  
and microgrid law



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