Innovation Drive Microgrid, San Diego, CA

DISTRIBUTED SOLUTIONS

EDF renewables

Energy Innovation for the Next Generation

Creativity. Ambition. Imagination.

Our Mission

Delivering renewable **solutions** to lead the transition to a **sustainable energy** future

For over 35 years, EDF Renewables has been providing clean energy solutions throughout North America.

EDF Renewables North America is a market-leading, independent power producer and service provider, delivering:

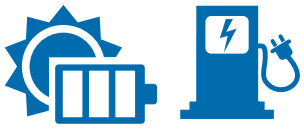
grid-scale power: wind (onshore and offshore), solar photovoltaic and storage projects

distributed solutions: solar, solar+storage, electrical vehicle charging and energy management

asset optimization: technical, operational and commercial skills to maximize performance of generating projects

EDF Renewables' North American portfolio consists of 20 gigawatts (GW) of developed projects and 13 GW of operating assets under service contracts.

EDF Renewables North America is a subsidiary of EDF Renouvelables, the dedicated renewable energy affiliate of the EDF Group.



DISTRIBUTED SOLUTIONS

Simple. Reliable. Integrated.

The energy industry has transformed, and renewables have claimed their place. The grid has evolved, with electricity now flowing both ways – to and from consumers. At the edge of the grid, where consumers and utilities interact, is where we see the most disruption and innovation.

In the grid edge ecosystem, EDF Renewables can offer complete integrated energy solutions – full microgrids, or standalone solar, storage, solar+storage and energy management.

We provide end-to-end service from development, engineering, procurement and construction to operations, and finance.

20+ years

Our distributed business began in 1998, consisting of residential and small commercial solar projects.

SOLAR

Solar energy is a sustainable, indefinitely renewable resource for energy consumption, experiencing continued growth as the cost to install solar has dropped 70% since 2010.

Source: SEIA

Producing sustainable energy to meet demands.

We provide industry-leading, cost-effective design, engineering, construction, and operation of solar projects throughout North America.

Our dedicated team of developers, engineers, construction managers, O&M service providers, finance and legal professionals are focused on making solar generation accessible, affordable, and responsive to the needs of our clients and the communities in which they operate.

EDF Renewables is a leading developer of environmentally sensitive sites, revitalizing former landfills, brownfields, and wastewater treatment plants into on-site solar facilities.

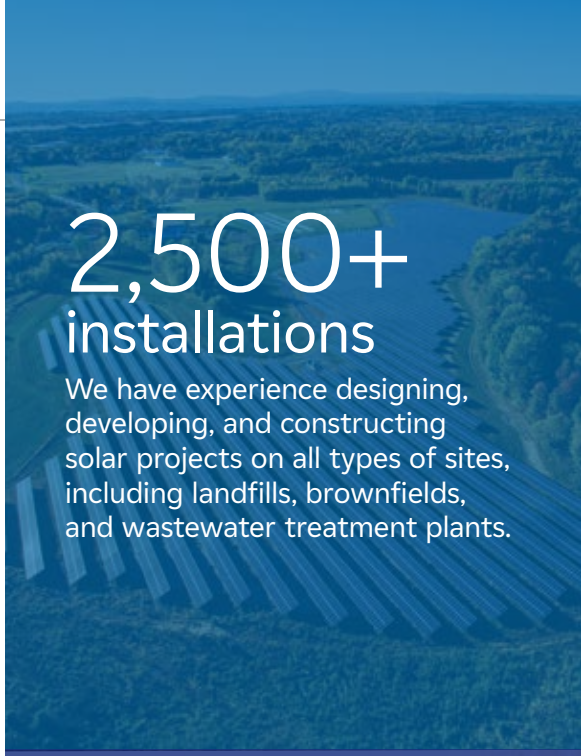
We work both in front-of-the-meter, adding value for load serving entities and their customers, and behind-the-meter, with on-site commercial and industrial systems.

entersolar
EDF Renewables

In January 2020, EnterSolar became a wholly owned subsidiary of EDF Renewables. The partnership leverages EDF Renewables' unparalleled experience in renewable energy and storage, along with EnterSolar's strong track record in developing behind-the-meter solar photovoltaic projects for a broad range of corporate clients. Together, we provide a full-service, single resource for companies looking for a seamless and profitable transition to renewable energy.

218
projects across the U.S.

324 MW
installed



2,500+
installations

We have experience designing, developing, and constructing solar projects on all types of sites, including landfills, brownfields, and wastewater treatment plants.

1,200+ MW

Our distributed solutions team has installed 1200+ MW of solar photovoltaic projects.

20-100
temporary construction jobs created per project during construction.

17
states with O&M jobs for the life of projects.

STORAGE

Storage systems help energy and facility managers to forecast, manage and reduce operational energy costs and hedge against rising costs as much as 5-10% annually.

Source: Southern California Edison (SCE), Pacific Gas & Electric (PG&E), SDG&E: San Diego Gas & Electric (SDG&E)

Adding value, cost control and energy security.

Reducing operational cost is in higher demand than ever before. EDF Renewables strives to bring our business customers solutions that fit their specific requirements. Storage may be the right solution for your business as a standalone system or bundled with a solar package. In addition to lowering operational energy costs, storage can help control and forecast long-term energy budgets and increase energy reliability.

There are several options when it comes to adding storage – direct purchase, power purchase agreement, shared savings or power purchase agreement with shared savings. Each solution comes with a different set of factors. We can help you navigate these options and find the best solution for your business and bottom line.

330 MW
in operation

EDF Renewables delivers storage on both the distributed and utility scale. It's not just commercial solar shoppers who benefit from installing energy storage. In fact, utility-scale battery storage is increasingly playing a major role in the operation of the electric grid, providing cost savings, environmental benefits and new flexibility for the grid. We specialize in providing the design, financing, installation, and operation of energy storage and solar solutions in order to help businesses and utilities reach their long-term goals.

We are at the forefront of this cutting-edge technology leveraging our global energy storage experience. To develop these innovative projects, EDF Renewables builds on the expertise of its dedicated EDF Store & Forecast subsidiary, which was set up in 2014 and has developed a smart software solution to coordinate generation from renewable sources via forecasting and energy storage.

EV CHARGING

EV Charging is rapidly accelerating with the United States reaching one million electric vehicles sold by 2020 and more than half of new cars sold by 2040 will be EVs.

Source: Electric Vehicle Outlook 2017, Bloomberg Energy Finance

powerflex
EDF Renewables

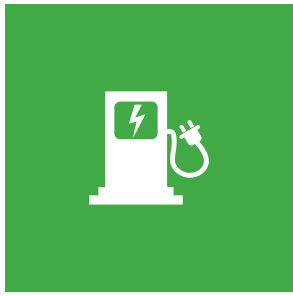
Electric vehicle smart-charging systems – large scale, cost effective, load managed.

Charging solutions must be implemented in the right places and quantities to sustain the growth of Electric Vehicle (EV) adoption.

To meet the scale required of the current adoption trends, businesses are confronted with substantial upgrades to their electrical systems, making EV charging installations financially burdensome and lengthy in time, if not completely infeasible.

PowerFlex created Adaptive Load Management (ALM), a software algorithm that optimizes power consumption across a large network of charging stations. ALM optimizes each station's output to meet user demand while only using a fraction of the aggregate power traditionally required.

This allows businesses to shave as much as 60% off the cost of electrical system upgrades and peak demand charges, paving the way to larger and more affordable charging networks that ultimately meet or exceed the adoption pace of electric vehicles.

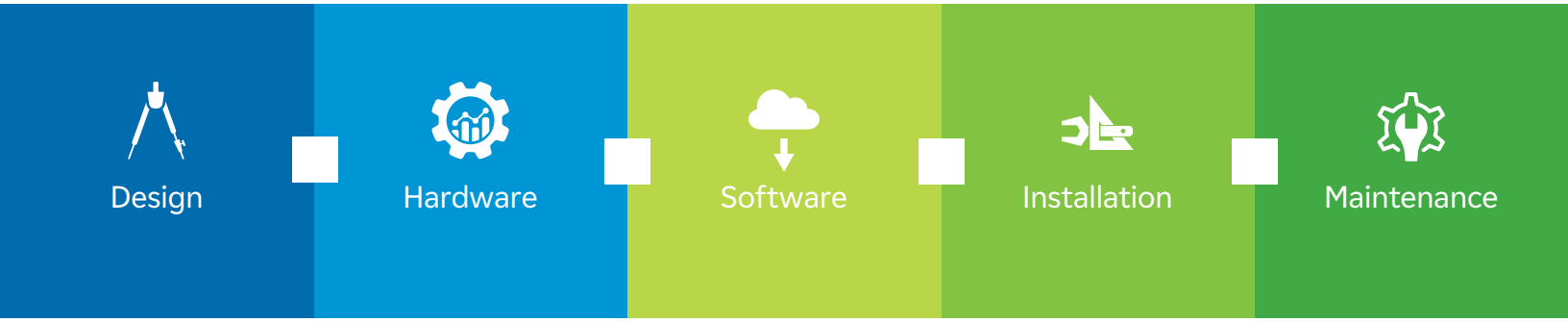


Workplaces
Campuses
Municipalities
Fleets

12,000
pipeline

500
in construction

5,000
deployed



MICROGRID

Power outages are estimated to cost the U.S. economy $150 billion annually. A microgrid is a zero-capital-cost energy solution that delivers energy resilience, reliability, lowers utility bills and achieves sustainability commitments.

Source: Department of Energy

Energy resilience and reliability.

A microgrid is a local, independent energy grid with control capability, which means during a power outage it can disconnect from the traditional grid and continue normal operations autonomously.

When there is a power outage, everyone is affected. This is where a microgrid can help. The solar and storage in a microgrid operates as normal while connected to the grid, but importantly, instead of turning off during an outage, the facility and its solar and storage microgrid can disconnect and continue to operate on its own using local energy generation in times of crisis like storms or planned rolling blackouts in times of high demand. A microgrid can be powered by traditional backup generators, batteries, and/or renewable resources like solar panels.

Combining Best of Both Worlds

Stand Alone Solar and Storage

Primary Purpose

Reducing Utility Bills and GHG Emissions

Power Outage Disadvantage

TURNED OFF

Integrated Solar + Storage + Diesel Generator Microgrid

Leveraging Advantages of all Existing Assets to Optimize Outage Operations

- **Reducing Fuel Costs**
- **Reducing GHG Emissions**
- **Extending Fuel Supplies**
- **Increasing Genset Lifetime**
- **Increased Resilience**
- **Increased Flexibility of Operations**

Standard Emergency Diesel Generator

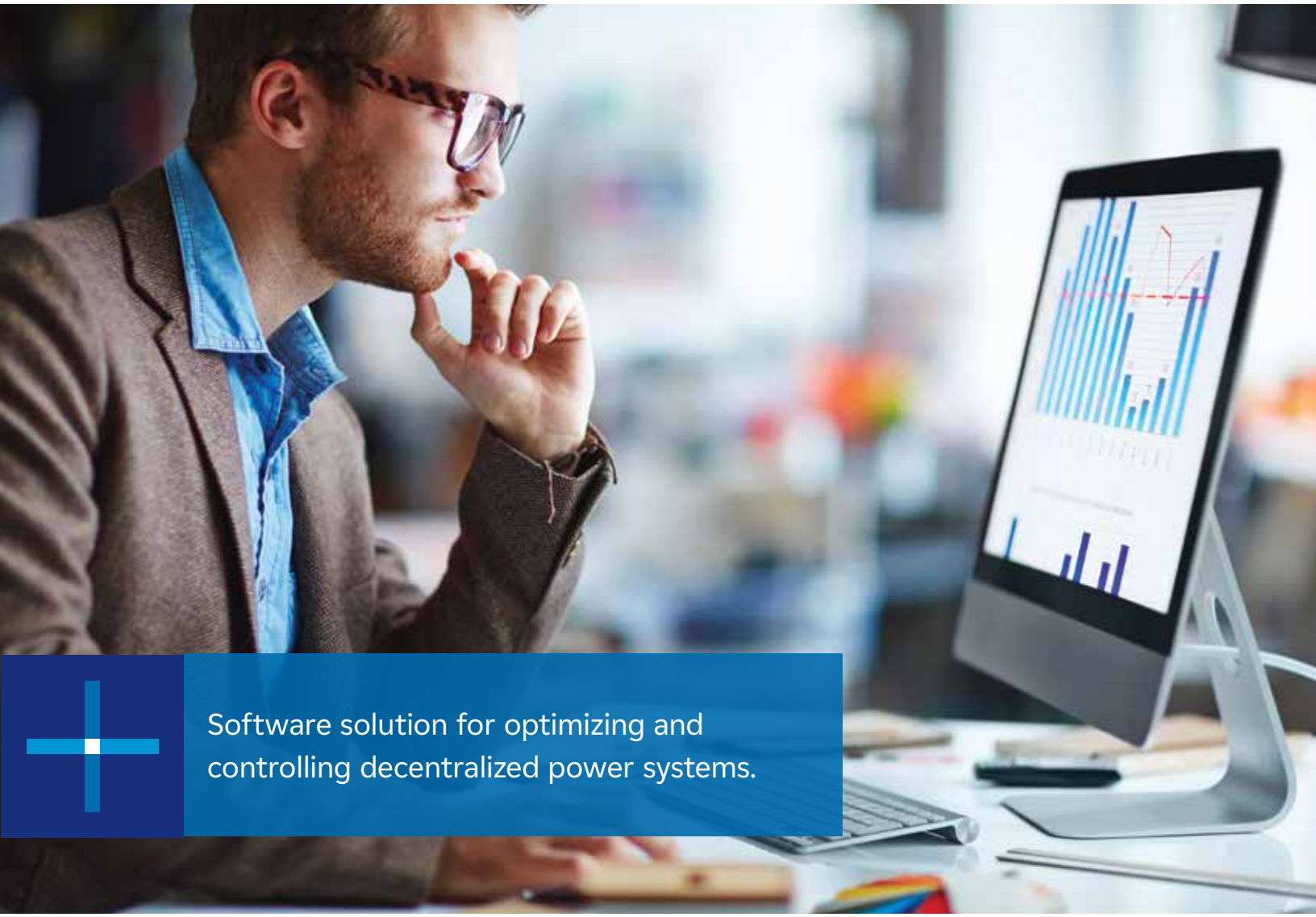
Primary Purpose

Providing Long-Duration Emergency Back Up

Power Outage Disadvantage

Fuel Costs, GHG Emissions, Single Point of Failure, Limited Fuel Supply

ENERGY MANAGEMENT SYSTEM (EMS) AND FORECASTING



Software solution for optimizing and controlling decentralized power systems.

EMS

A smart control of your installation

// Maximize renewable energy **operating revenue**

// Facilitate **renewable energy integration** and stabilize the grid

// Optimize the **electric bill** and secure **power supply**

// Support **energy transition** at a territory scale

Our EMS can serve multiple applications: renewable energy intermittency management, ancillary services, economic dispatch, auto-consumption maximization and energy bill reduction.

PROJECT SIZING

In advance of the project, we study the **optimal sizing of storage** (energy and installed power) through an economic and technical analysis, to adapt the sizing to the resource and grid constraints.

FORECASTING

Our **innovative method of production** forecasts for day-ahead or intraday and merges all weather forecasting methods.

EMS SUPPLY

Our software solution is an EMS based on **forecasts and real-time control software**. We manage the on-site implementation, configuration, commissioning and user training.

MAINTENANCE

After installing the solution, we take over the maintenance and supervision to guarantee the sustainability and performances of our control software.

Forecasting

Improve the control of energy assets

// **photovoltaic energy** production

// **electric consumption**

We commercialize on-demand renewable production and consumption forecasts to guarantee a better performance and energy control of your installation.

PV ENERGY PRODUCTION

PVSCOPE™* generates day-ahead and intra-day photovoltaic power production forecasts. It combines and offsets different methods to minimize prediction errors.

SKYSCOPE™ ** generates short-term photovoltaic power production forecasts within a horizon ranging between the next minute and the next 15 minutes.

ELECTRIC CONSUMPTION

CONSOSCOPE™** generates day-ahead and intra-day consumption forecasts by combining local weather variables that influence consumption with real-time consumption measurements and industrial process characteristics.

*Developed with EDF R&D and in partnership with the French Laboratoire de Météorologie Dynamique de l'Ecole Polytechnique

**Developed with EDF R&D

OPERATIONS & MAINTENANCE (O&M)

Transparent solutions with an owner's perspective.

Distributed Solutions provides operations and maintenance support for solar, solar + storage, and EV charging projects, whether or not initially designed and installed by us. Our O&M technicians provide remote and on-site trouble-shooting, warranty, and maintenance services to assure that each project we serve operates at maximum efficiency.

Maintenance

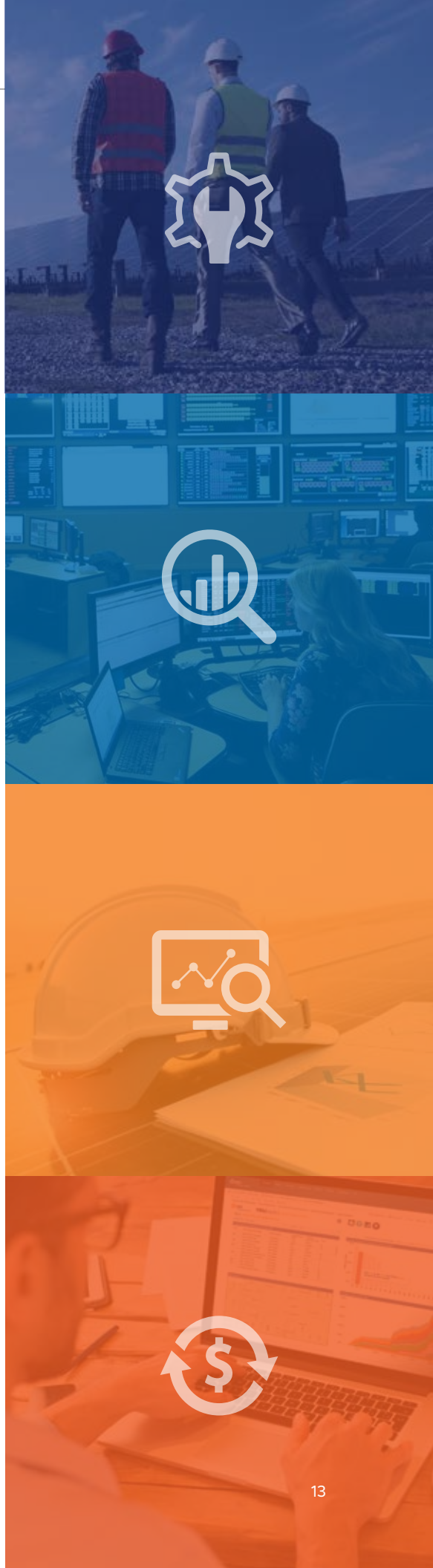
With **13 GW under contract** and over 400 full-time technicians, supervisors, managers, and support staff, EDF Renewables is fully equipped to perform all required services for your renewable energy project.

Monitoring

EDF Renewables provides critical 24/7/365 remote monitoring and diagnostics from its state-of-the-art Operations Control Center (OCC), increasing equipment availability, reducing downtime and its associated operational and maintenance costs. The OCC currently has **11.7 GW under remote monitoring**.

Asset Management

Our dedicated team actively manages **7.8 GW of wind, solar, and storage projects** in North America, bringing a depth of experience and expertise to every project to ensure ongoing profitability for project owners and investors.



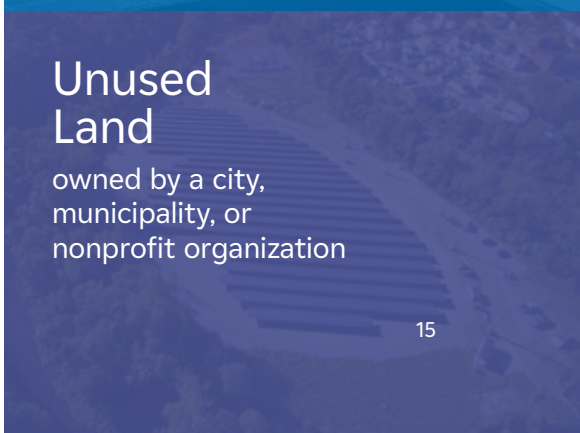
RENEWABLE POWER HELPS PEOPLE, BUSINESSES, AND COMMUNITIES FLOURISH

Areas of Great Opportunity

Landowners make the most of valuable land and existing infrastructure. Dual-use, agricultural production and electricity production on the same piece of land results in two revenue streams.

Corporate and industrial, education and public sector maximize rooftop, parking lot, and unused open spaces for increased benefit. Generate solar power to reduce, even eliminate, electric bills and provide a consistent return on investment.

Utilities and co-ops put unused land to work, using locally produced generation that reap measurable benefits of peak load management, reduction in fossil fuel usage and greenhouse gas emissions compliant with renewable portfolio standards.



CORPORATE SOCIAL RESPONSIBILITY

EDF Renewables has dedicated its efforts to creating a sustainable energy economy. We've done that by building and operating solar and wind energy generating projects across North America.

What helps to define us is our commitment to the communities in which we operate. At the core of every EDF Renewables project is sustainability and corporate social responsibility (CSR).

Our CSR efforts do not happen in isolation. They are part of our corporate DNA. We believe that the world of energy is changing, and customers are becoming more involved in all aspects of the business. Transparency and engagement with community stakeholders is an integral part of the process.

As a responsible electricity company that champions low-carbon growth, we have adopted a number of CSR goals that reflect our commitment to working closely with our customers and the communities in which we operate.

EDF Renewables
CSR GOALS

CLIMATE CHANGE

Go beyond the requirements of the 2°C trajectory set by COP21 by drastically reducing our CO_2 emissions.

PEOPLE DEVELOPMENT

Adopt industrial groups' best practices in people development, health and safety, gender diversity and social advancement.

FUEL POVERTY

Offer all vulnerable people information and support with energy use and energy benefits.

ENERGY EFFICIENCY

Innovate through digital energy efficiency solutions to enable all customers to use energy better.

DIALOGUE & CONSULTATION

Systematically organize a process of transparent and open dialogue and consultation for every new project around the world.

BIODIVERSITY

Launch a positive approach to biodiversity, not limited to understanding and reducing the impact of our activities in the long run but having a positive effect on biodiversity.

OUR AFFILIATES

EDF renewables

Distributed Solutions
Grid-Scale Power
Asset Optimization

EDF

Wholesale Trading
Energy Optimization

powerflex
EDF Renewables

Electric Vehicle Charging

dalkia
EDF GROUP

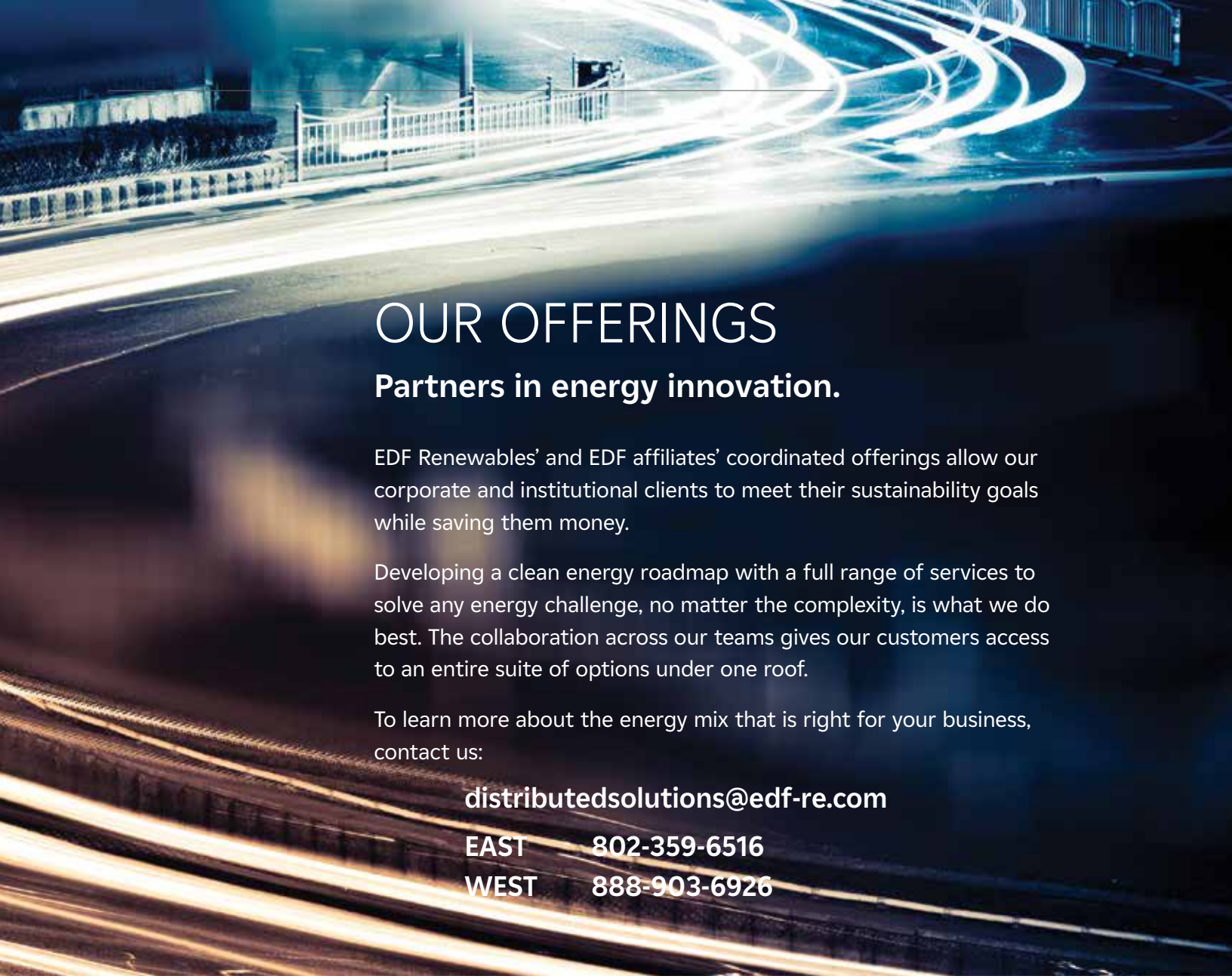
Building Energy Services

entersolar
EDF Renewables

Solar for Corporates

framatome

Supplier of Nuclear
Equipment and Services



OUR OFFERINGS

Partners in energy innovation.

EDF Renewables' and EDF affiliates' coordinated offerings allow our corporate and institutional clients to meet their sustainability goals while saving them money.

Developing a clean energy roadmap with a full range of services to solve any energy challenge, no matter the complexity, is what we do best. The collaboration across our teams gives our customers access to an entire suite of options under one roof.

To learn more about the energy mix that is right for your business, contact us:

distributedsolutions@edf-re.com

EAST 802-359-6516
WEST 888-903-6926

- Solar Carport
- Solar Rooftop
- Solar Ground-mount
- Electric Vehicles
- Operations & Maintenance
- Energy Efficiency
- Energy Management Systems
- Retail Energy Supply
- Thermal Generation
- Research & Development
- LED
- Storage

EDF Renewables
15445 Innovation Drive
San Diego, CA 92128
www.edf-re.com

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