

Distributed Energy Resources at Federal Facilities

Distributed energy resources can help to meet increased demand and improve the reliability of the power generation system



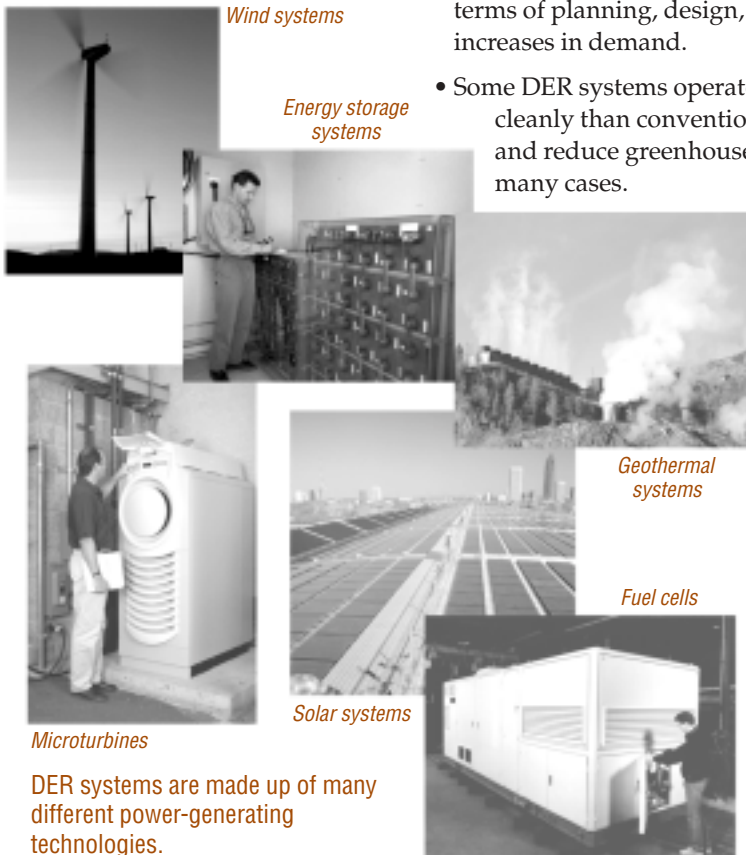
The need for reliable, affordable electricity is clear. In some regions of the country, today's high demand for electricity has been met with inadequate energy supplies and skyrocketing costs. Consumers, business owners, service providers, and government groups alike are looking for new ways not just to conserve energy but also to add new energy sources to meet their needs.

Distributed energy resources (DER) can provide an answer to the question, "How can we make sure that the power stays on?" For hospitals, schools, fire stations, police and military units, and emergency response teams, DER can be a very good solution to problems caused by disrupted energy supplies.

What are distributed energy resources?

Distributed energy resources are small, modular, decentralized, grid-connected or off-grid energy systems located in or near the place where energy is used. These integrated systems can include effective means of energy storage and delivery as well as power-generating technologies. DER systems can be used in residential, commercial, and government applications for many different needs, such as continuous electric power, backup power, or supplemental power during times of peak demand.

Both large and small DER systems are used at many government facilities, such as national



DER systems are made up of many different power-generating technologies.

park. But many opportunities remain to use these systems in the nation's 500,000 Federal facilities.

What are the benefits of DER?

Federal agencies can benefit in many ways from integrated DER systems:

- They can provide a highly reliable power source for facilities that require an uninterruptible power supply (UPS), and they can be integrated into UPS systems.
- They allow electricity costs to be more predictable, and they can help reduce electrical energy and demand charges.
- When combined heat and power systems are sited near the point of use, they provide an economical source of efficient thermal energy with greatly increased system efficiency.
- They can provide cost-effective peak power.
- Their modularity permits a quick response—in terms of planning, design, and installation—to increases in demand.
- Some DER systems operate more quietly and cleanly than conventional power generators and reduce greenhouse-gas emissions, in many cases.

Federal agencies that use reliable, integrated DER systems in their facilities are making a significant contribution to the nation's sustainable energy future.

What are the DER technologies?

Existing and emerging DER power-generating technologies include the following:

- Advanced industrial turbines and microturbines

Technical Assistance

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy



- Combined heat and power systems (CHP, or cogeneration)
- Fuel cells
- Geothermal systems
- Natural gas reciprocating engines
- Photovoltaic and other solar systems
- Wind turbines, both large and small
- Small modular biopower systems
- Energy storage systems
- Hybrid systems (for example, a fuel cell and a combustion turbine, or a renewable energy and fossil-fuel system).

Where can the government use DER systems?

DER systems can be used in many kinds of facilities:

- Large government office buildings
- Data processing, communications, and control centers
- Hospitals, schools, and housing
- Laboratories and other R&D facilities
- National parks
- Federal prisons.

Why choose DER now?

More and more DER equipment is being purchased or considered all over America. One reason for this is that utility restructuring is creating a market demand for energy-efficient systems that reduce peak operating costs, increase system-wide reliability, and give customers more choices.

In addition, while the demand for electricity is increasing, the central-station power system is aging in many areas. Numerous power plants now need either costly repairs or replacement. Market forces are beginning to allow energy purchasers to take advantage of small, modular, power and CHP systems that can provide an economic hedge against peak energy prices, grid reliability problems, and future emissions costs. The result is a growing demand for smaller, fuel-flexible energy systems that are installed close to the point of use.

Who can help?

To learn more about DER systems for facilities in your region, please contact your DOE Regional Office representative (see the following list).

Denver Regional Office (Central)

(CO, KS, LA, MT, NB, ND, NM, OK, SD, TX, UT, WY)
1617 Cole Boulevard
Golden, Colorado 80401
FAX: 303-275-4830
Randy Jones, 303-275-4814

Philadelphia Regional Office (Mid-Atlantic)

(DE, MD, NJ, PA, VA, WV, DC)
1880 JFK Boulevard, Suite 501
Philadelphia, Pennsylvania 19102
FAX: 212-264-2272
Bill Klebous, 212-264-0691

Chicago Regional Office (Midwest)

(IL, IN, IA, MI, MN, MO, OH, WI)
1 South Wacker Drive, Suite 2380
Chicago, Illinois 60606
FAX: 312-886-8561
Michael Bednarz, 312-886-8585

Boston Regional Office (Northeast)

(CT, ME, MA, NH, NY, RI, VT)
JFK Federal Building, Room 675
Boston, Massachusetts 02203
FAX: 617-565-9723
Paul King, 617-565-9712

Atlanta Regional Office (Southeast)

(AL, AR, FL, GA, KY, MS, NC, SC, TN, PR, VI)
75 Spring Street, SW, Suite 200
Atlanta, Georgia 30303
FAX: 404-562-0538
Rich Combes, 404-562-0563

Seattle Regional Office (Western)

(AK, AR, CA, HI, ID, NV, OR, WA, Pacific Territories)
800 Fifth Avenue, Suite 3950
Seattle, Washington 98104
FAX: 206-553-2200
Arun Jhaveri, 206-553-2152

For More Information

FEMP Help Desk: 800-DOE-EREC (363-3732)

On the Internet:

<http://www.eren.doe.gov/der>

<http://www.eren.doe.gov/femp/>

Photo credits (clockwise from top): Warren Gretz, NREL (San Clemente wind turbines); Warren Gretz, NREL (battery storage system); David Parsons (The Geysers geothermal plant); U.S. DOE (fuel cell); David Parsons (Natatorium rooftop solar systems); Capstone Turbine Corporation (microturbine).

FEMP Help Desk:
800-DOE-EREC
(363-3732)

Internet:
<http://www.eren.doe.gov/femp>



Produced for the
U.S. Department
of Energy by the
National Renewable
Energy Laboratory,
a DOE national
laboratory

DOE/GO-102001-1211
July 2001