

MICROGRIDS AND DISTRIBUTED ENERGY

Full-service solutions for a reliable, resilient and secure energy future

Michael Baker
INTERNATIONAL



WHO WE ARE

Michael Baker International is dedicated to enhancing our nation's energy security. We provide a wide range of microgrid and distributed energy solutions across energy generation, distribution, and storage. Our services support various sectors, including residential and commercial buildings, water and wastewater utilities, communication and data storage facilities, transportation infrastructure and military installations.

Resilience is a core principle that underpins our energy solutions. We design and implement systems that provide reliable energy and ensure continuity during adverse conditions. Our resilient energy infrastructure is built to handle natural disasters, cyber threats and other unforeseen events, minimizing downtime and maintaining critical operations. By incorporating advanced technologies and robust planning, we help our clients achieve a resilient energy framework that supports long-term operational stability and economic benefits.

Our innovative approaches help federal agencies reduce energy expenditures, optimize resource allocation, and support energy independence and economic growth. With our planning and engineering expertise, we deliver cost-effective solutions that integrate data, energy, and operational technology (OT) cybersecurity, ensuring our nation's energy infrastructure is secure, efficient and economically beneficial.



Electrical Grid Resilience Analysis and Feasibility Studies

[Marine Corps Base Camp Pendleton, San Diego, California](#)

Michael Baker conducted electrical grid resilience analysis and feasibility studies for multiple locations to facilitate the addition of onsite generation and off-grid power systems, known as nano-grids. The nano-grid systems stand alone and integrate with the base-wide microgrid. Functions of the nano-grids include backup power, grid-firming, and demand response, all with a return on investment that diesel generators cannot offer.

Cogeneration Facility Commissioning

[Yokota Air Base, Fussa, Japan](#)

To reduce utility costs, enhance power reliability and ensure operational continuity over 25 years, we commissioned a 10MW combined heat and power cogeneration plant with microgrid controls that support a selected group of 400 buildings. Our team performed functional acceptance testing on lighting systems, mechanical systems, and digital controls. We also upgraded the control systems for multiple boiler plants; specified upgrades to high-efficiency lighting, plumbing fixtures, and HVAC controls for 9.5M square feet of improved space within 450 buildings.

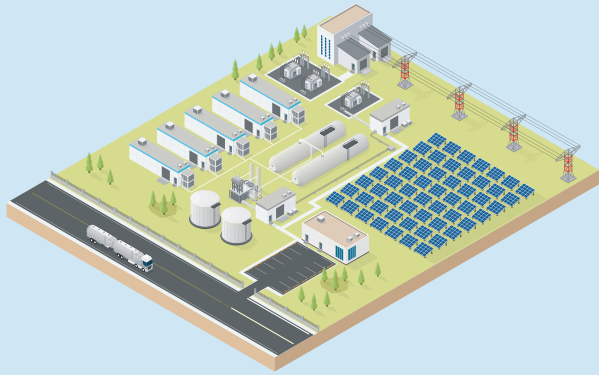


Emergency Generator Commissioning

[Naval Medical Center San Diego, California](#)

Michael Baker provided comprehensive commissioning services for the replacement of emergency generators and upgrades to the existing electrical infrastructure to support new automatic transfer switches and controls. This project was essential for the cogeneration plant and associated generator room, located at the heart of the hospital campus. The improvements ensured that critical patient care areas were provided with constant and reliable power.

We Make a Difference



Energy Resilience Conservation Investment Program (ERCIP) Smart Microgrid

Mountain View, California

As the managing partner of a joint venture, Michael Baker is providing microgrid and distributed energy planning, design and project management services for military installations globally. One project includes the development of a smart microgrid for the U.S. Army Reserve 63rd Readiness Division Headquarters. Our team is providing field investigations, utility coordination, cybersecurity technical reviews, fire protection engineering and design, construction schedules and cost estimates.

Electrical Design of Cogeneration Facility

BF Goodrich, Chula Vista, California

We provided electrical design-build services for this 13.4MW combined cycle facility. Our team supplied the electrical design, detailed control logic and operational sequences for programming the paralleling switchgear. The facility features four 3.165MW Fairbanks Morse dual-fuel gas reciprocating engines, a 12kV 3-phase 3-wire wye system and detailed integration with the local grid service at the substation. The plant provides all power and industrial heating, which manufactures multiple critical components for Boeing commercial aircrafts.

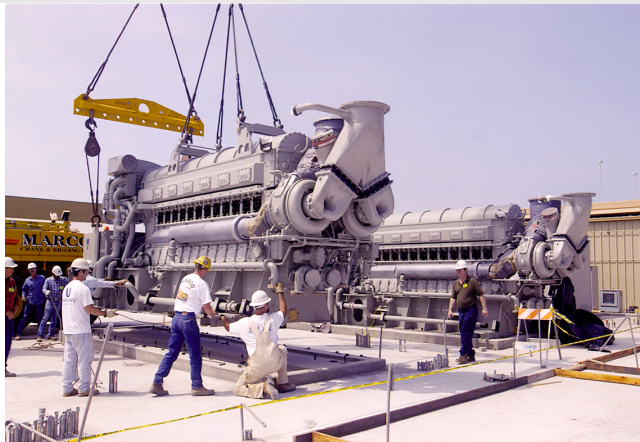


Photo courtesy of the Tobyhanna Army Depot

Energy Resilience Study

Tobyhanna Army Depot, Coolbaugh Township, Pennsylvania

In support of the Tobyhanna Army Depot's efforts to improve its energy resilience, Michael Baker provided a detailed approach for implementing an onsite microgrid. This included the identification of funding mechanisms, an energy analysis, distributed energy resource technology review, solar photovoltaic sizing calculations, biomass implementation, battery energy storage system planning, and development of a conceptual schematic to integrate a microgrid within the depot's existing electrical infrastructure.

CAPABILITIES

Civil & Structural Engineering

Commissioning & Construction
Support Services

Cost Estimating

Energy Master Planning & Roadmaps

Environmental & Regulatory
Compliance Services

Geotechnical Investigations & Analysis

Independent Technical Reviews

Innovative Finance Services

Land Development & Survey

Mechanical, Electrical & Plumbing
Engineering

Operational Technology (OT) Cybersecurity
Risk Assessments & Management

Value Engineering

Visit mbakerintl.com/practices
for more information about our capabilities
and iconic projects.

OUR NATIONAL TEAM OFFERS A FULL SPECTRUM OF SERVICES

Planning

- Establish long-term facility strategy
- Define critical loads & performance requirements

Analysis

- Assess existing infrastructure
- Identify facility optimization opportunities
- Develop critical load profiles
- Perform microgrid modeling & life cycle cost analysis

Design

- Perform detailed system design & documentation
- Coordinate interconnection with utility

REACH OUT TO ANY OF OUR SUBJECT MATTER EXPERTS TO LEARN MORE ABOUT OUR SERVICES, PROJECTS AND CAPABILITIES



Guy Carpino, P.E., RCDD
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Guy has over 29 years of electrical engineering experience and is an expert in power systems, technology systems and solar photovoltaic/renewable energy systems design. He has designed over 1.2GW of distributed generation and renewable energy resources throughout his career.



Carlos Dizon, P.E.
Electrical Discipline Manager
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Carlos has over 25 years of electrical engineering experience with expertise in power generation and distribution system design. He is a former electrical department manager for a renewable energy company where he performed system design for new facilities, generation additions, generation planning, analysis and evaluation of microgrid sites, feasibility studies, and technical support to hydroelectric and biomass facilities.



Patrick Hogeboom, P.E., F.SAME
Federal Program Manager
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Patrick leads microgrid projects supporting military installations through the ERCIP, the Military Installation Resilience Review Program, and Federal Planning, and Defense Community Infrastructure Program. He also assists defense communities with installation resilience and defense community infrastructure projects.



Susan Howard, CISSP
Vice President, ICS/OT Cybersecurity Lead
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Susan implemented the first IT/OT security operations center for a private utility and designed secure monitoring and control systems for traction power substations for light rail. Her microgrid experience includes secure monitoring and control system design for federal agency and military facilities.