

CLEAN ENERGY CANDIDATES

Clean energy can be implemented in a wide variety of settings, including industrial facilities, institutional facilities and campuses, and commercial buildings.

Industrial - Many industrial facilities can benefit from CHP and waste heat recovery. Candidate sites include chemical production, refining, food processing, pharmaceuticals, pulp and paper, semiconductors, rubber and plastics, and other types of manufacturing and fabrication.

Institutional - Institutional facilities and campuses can benefit from CHP and district energy to serve campus energy needs. Candidate facilities include universities and colleges, hospitals and medical centers, downtown energy systems, and wastewater treatment facilities.

Commercial - Many commercial buildings can benefit from the energy security and environmental performance of CHP. Candidate facilities include data centers, hotels and casinos, multi-family housing, office buildings, refrigerated warehouses, nursing homes, and other types of commercial facilities.

BEST USER PROFILE

CHP is ideally suited for those facilities that have the following characteristics:

- ★ Coincident electrical and thermal loads
- ★ Continuous operation (24 hrs. x 365 days)
- ★ Low seasonal variation in loads
- ★ High power reliability needs



U.S. DEPARTMENT OF ENERGY
Gulf Coast Clean Energy Application Center

Promoting CHP, District Energy, and Waste Heat Recovery

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CLEAN ENERGY

PROJECT SUPPORT SERVICES

ECONOMIC MODELING
Audits
Feasibility Studies
Technical
Independent
Review
Network of
On-Site Expertise
Assessments
CHP
industry linkage
PERFORMANCE SPECS
Support



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Project Development Cycle

We are a source of independent technical information useful for organizations in the early stages of project evaluation. Using our extensive expertise and national contacts, we can help organizations assess the potential and viability for clean energy projects at their facilities. Our services can help determine the value of progressing further into the project development cycle. Services include:

- **Feasibility studies** - We can provide technical evaluation and economic studies to assess project potential and viability. (*See middle panel for more information*)
- **Regulatory assistance** - We can help determine regulatory requirements related to grid interconnection, emissions, renewable energy credits, and related issues.
- **Incentives** - We can help identify current federal and state incentives, tax treatment, and other funding opportunities
- **Research** - Our staff can research specific questions or requirements as needed to respond to actual project needs.

If a preliminary feasibility study shows a favorable outcome for clean energy development, adopters may consider engaging with a project developer or engineering firm to continue with the project development cycle. Additional stages typically include:

- Preliminary Engineering Design
- Detailed Engineering Design
- Design Build
- Commissioning
- Operation and Maintenance

The US DOE Gulf Coast Clean Energy Application Center does not provide specific services for these latter stages, although we may be able to assist upon request.

Feasibility Studies

Feasibility studies assess the technical and economic viability for projects. To determine project feasibility, we conduct a two-step evaluation comprised of an initial screening analysis followed by a detailed analysis if warranted.

SCREENING ANALYSIS

- Establish if a site is a *potential* candidate for a clean energy project
- Uses industry averages and “rules of thumb”
- Considers a facility’s monthly electric and gas consumption data
- Results include simple payback
- +/-30% accuracy in savings in costs

DETAILED ANALYSIS

- Determine if a site is a *viable* candidate for a clean energy project
- Hour-by-hour simulation of building energy use using DOE software
- Calibration of baseline model to actual utility bills
- Sensitivity analysis for variability in electric and gas prices
- Well-defined CHP configuration and equipment set
- Evaluation of multiple scenarios
- Pro forma financial models generate internal rate of return (IRR)
- Calculation of emissions reduction potential
- +/- 20% accuracy in savings and costs

Resources

GULF COAST CLEAN ENERGY CENTER

- LEED-accredited professional
- Regulatory expertise
- Project development expertise
- Air quality expertise

EXTENDED NETWORK

- Extensive links within national Clean Energy Application Center network
- Links to industrial equipment suppliers, service providers, and engineering firms
- National connections with experts at:
 - ▶ U.S. Department of Energy Industrial Technologies Program
 - ▶ U.S. Environmental Protection Agency CHP Partnership
 - ▶ Regional Clean Energy Application Centers
 - ▶ International District Energy Association
 - ▶ National Laboratories

SOFTWARE TOOLS

- **Spreadsheets** - We use a number of spreadsheets to evaluate technical and economic viability.
- **Simulation tools** - We use sophisticated simulation software based on DOE 2.2 providing hourly load profiles based on local weather data.
- **Emissions** - We use the EPA emissions calculator to establish environmental benefits of clean energy projects.