



Professional Engineering Services

Energy Development Programs



Kimley»»Horn

Firm Overview

Kimley-Horn is a national leader in development consulting services. Our firm has more than 2,200 employees with multidisciplinary capabilities as well as ample resources to serve clients responsively from 70+ offices nationwide. Our resources and geographical base enable us to serve key local areas and partner efficiently with leaders in the energy field. More than 45 years of successful projects—from inception through facility dedication—proves that you can depend upon Kimley-Horn to assist you throughout the development process.

Services

- Airspace analysis
- Avian studies
- Construction administration and observation
- Due diligence and entitlement services
- Environmental assessment
- Floodplain studies and FEMA permitting
- Landscape architecture
- Natural gas pipeline design
- Permitting
- Predevelopment/site selection
- Project scheduling
- Roadway and bridge design
- Shadow analysis
- Site civil engineering
- Stormwater management
- Stormwater Pollution Prevention Plan design, monitoring, and inspection
- Structural design
- Survey/FAA evaluation
- Sustainable/green design
- Transportation access and route analysis
- U.S. Army Corps of Engineers permitting
- Utilities
- Wetland/stream mitigation



Benefits of Kimley-Horn

Kimley-Horn can help energy companies address a wide range of challenges, including:

- Biofuel production facilities
- Centralized solar system development
- Energy feasibility studies
- Geothermal applications
- Infrastructure support for oil and gas upstream and midstream facilities
- Natural gas pipeline design
- Nuclear infrastructure permitting and design
- Wind farm development

Specifically, Kimley-Horn offers you the following benefits:

National firm experience and expertise

- Offers full breadth of services to meet all challenges of a renewable energy project
- Can call upon back-up resources from across the country on an as-needed basis

Network of local offices and deep agency relationships in the areas where new energy projects are developing

- Expedites local permitting/site plan approvals
- Assures thorough understanding of local regulatory and political environment
- Is cost-effective
- Reduces risks in new markets

Relationships with land owners and industrial developers

- We can and will bring new development prospects to our clients

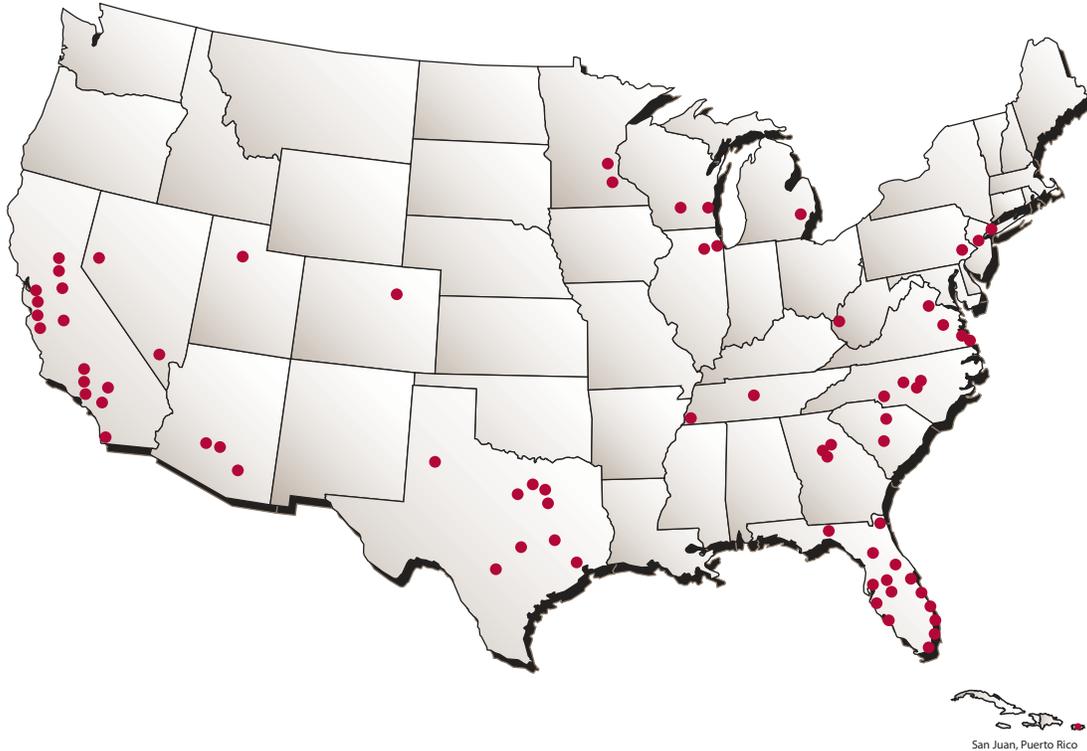
National client approach

- Provides consistent quality
- Reduces training time because we are already up to speed in your new market
- Promotes success of your development program, not just a single project
- Offers additional resources as you need them

Client-minded culture

- Unusually attuned to the client's perspective
- Constantly looking for ways to increase value for our renewable energy clients
- Achieves construction savings and regulatory process efficiencies through smarter design and client advocacy

Office Locations



UNITED STATES

Arizona

East Valley
Phoenix
Tucson

California

Capitola
Fresno
Los Angeles
Los Angeles Downtown
Oakland
Orange
Pleasanton
Riverside
Sacramento
Sacramento North
Salinas
San Diego
San Jose

Colorado

Denver

Florida

Boca-Delray
Charlotte County
Fort Lauderdale
Jacksonville
Kissimmee

Florida (continued)

Lakeland
Miami
Ocala
Orlando
Sarasota
St. Lucie
Tallahassee
Tampa
Vero Beach
West Palm Beach

Georgia

Alpharetta
Atlanta Midtown
Atlanta North

Illinois

Chicago Downtown
Chicago Suburban

Michigan¹

Troy

Minnesota

Rochester
Twin Cities

Nevada

Las Vegas
Reno

New Jersey

Princeton

New York²

New York

North Carolina

Charlotte
Durham
Cary (Raleigh)
Raleigh Downtown

Pennsylvania

Philadelphia

South Carolina

Columbia
Rock Hill

Tennessee

Memphis
Nashville

Texas

Austin
College Station
Collin County
Dallas
Fort Worth
Houston
Las Colinas
Lubbock
San Antonio

Utah

Salt Lake City

Virginia

Chesapeake
Northern Virginia
Richmond
Virginia Beach

West Virginia

Huntington

Wisconsin

Madison
Milwaukee

PUERTO RICO³

San Juan

Affiliated Companies

¹Kimley-Horn of Michigan, Inc.

²Kimley-Horn of New York, P.C.

³Kimley-Horn Puerto Rico, LLC

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Biomass, Solar, and Wind

With growing concerns about the depletion and environmental impacts of fossil fuels as well as the nation's desire for energy independence, there is a significant focus on the development of clean, renewable energy sources to meet U.S. energy needs. This focus is coupled with a strong market trend toward the establishment of a new protocol for global energy delivery. Kimley-Horn understands that to successfully deliver the next generation of fuels and energy producing plants, the energy companies of today need a knowledgeable, forward-thinking design team that's committed to their success. Kimley-Horn has assisted clients with projects involving all three of the renewable energy sources that have become such important elements of our nation's energy vision.

Our services include feasibility studies for solar, wind, and biomass energy sources as well as site civil design and permitting of solar plants, wind farms, and biofuel production facilities. Kimley-Horn provides a wide range services on these projects, including:

Site Feasibility/Due Diligence/Development

- Preliminary site layout
- Preliminary site feasibility
- Determine access to power (route analysis and design)
- Permitting/zoning/land use entitlements
- Transportation planning

Electrical/Power Services

- Power distribution design up to 69kV (aerial and underground)
- Electrical utility coordination
- Uninterrupted Power Supply (UPS) system design and integration
- Grounding and bonding systems (standard and unique conditions)
- Reactive power and voltage control
- Low voltage ride-through and system sustainability
- Short circuit analysis
- Grid connected, battery backup integration, and hybrid system design
- Central monitoring, metering, and logging system design
- Solar infrastructure and solar power distribution
- SCADA design
- Balance of System design
- Design of all associated conduit and infrastructure
- Electrical inspection, including electrical calculations voltage drop, conduit fill, fault current, and arch flash analysis and labels

Structural Engineering Services (Rooftop Solar Installations)

- Determine maximum structural dead load
- Determine maximum structural live load rating including wind load

Environmental Services (Ground Mount Solar and Wind Installations)

- Boundary survey
- Preliminary environmental screening
- Critical issues analysis and permitting plan
- Resource assessments (wetlands, etc.)
- Civil Services (Ground Mount Installations)
- Hydrology studies
- Grading & Drainage

Stormwater management/wetland restoration

- Utility crossings
- Site planning and civil design
- Solar array design
- Record drawings
- As-built survey

Renewable Energy

Renewable Energy Experience

Chattanooga Metropolitan Airport Authority, Solar Panel Installation, Phases I and II

Chattanooga, TN

The Chattanooga Metropolitan Airport Authority retained Inman Solar and Kimley-Horn to design and construct fixed ground mount, 2-MW solar photovoltaic panels next to an active runway. This solar field provides power to the local utility grid. The airport is then paid at a contracted rate, reducing its power costs and helping to make the airport approximately 60% energy-independent. The original planning allows for an additional 1-MW solar field to be constructed in the future. Arrangements also were made with the local utility to purchase excess power produced by the solar panels. This project was funded using the FAA program.



Perrin Ranch Wind Farm

Coconino County, AZ

Kimley-Horn provided a broad menu of professional services to this 100-MW wind electric generating facility. The project, which became operational January 2, 2012, consists of 62 G.E. 1.6-MW turbines, 40 miles of access roads and underground collection lines, two substations, 3 miles of transmission lines, and an O&M facility. The project area includes Arizona State Trust Lands and privately held ranch lands. Kimley-Horn's services included designing and permitting for five meteorological towers; management of two survey companies for the surveying of more than 50,000 acres; preparing and processing two Conditional Use Permits with Coconino County P&Z; preparing and processing special land use permits and right-of-way applications through the State Land Department; preliminary and final roadway and connection line design; cost estimating; facility siting; ADOT encroachment permitting; large delivery vehicle turning analysis; public participation plan assistance; decommissioning estimate for bonding; and public agency coordination and public hearing representation.

Oil and Gas Support

- Site civil engineering
- Natural gas pipeline design (distribution and transmission mains)
- Utility system design and modeling
- Horizontal directional drill design
- Pig receiving and launching station design
- Utility conflict resolution
- Route analysis
- Permitting/zoning/land use entitlements
- Geographic Information Systems (GIS)
- Transportation planning
- Water resources
- Water/wastewater
- Cured-in-place pipe
- Pipe bursting
- Roadway/highway design
- Construction management
- Environmental/wetland delineations
- Land surveying and easement preparation
- Due diligence
- Land development
- Construction observation, inspection, and administration services



"Kimley-Horn has been one of our preferred vendors for over two years and continually provides outstanding client service. They look for creative solutions to minimize agency approval steps resulting in better, more efficient projects."

Dusty Anderson
Field Permitting Manager
Chesapeake Energy

Oil and Gas Support Experience

Chesapeake Energy Program

Multiple Cities, Northern TX

Kimley-Horn prepared 130 ALTA Surveys in 90 days on properties in the Barnett Shale for Chesapeake Energy Company over a three-month time frame in 2009. These surveys were located in various cities, mainly Tarrant and Johnson County. Kimley-Horn then prepared feasibility reports for each of the 115 sites for the purpose of identifying which need to be platted, summarizing the platting process for each site and city, and identifying requirements that may be triggered by platting (i.e., infrastructure improvements, drainage studies, impact fees, etc.).

Altogether, Kimley-Horn prepared plats for more than 65 of the sites, with the majority being in Arlington (21) and Fort Worth (19). Many of these included utility and drainage plans and other miscellaneous items required by the cities.

Virginia Natural Gas Route 360 and Robinson Route Gas Pipeline

Hanover and King William Counties, VA

Kimley-Horn provided design, permitting, and construction support services for Virginia Natural Gas' Purina project, including the design of 11 miles of 12-inch natural gas main, 3 miles of 8-inch natural gas main, and multiple horizontal directional drills, including one underneath the Pamunkey River.

The project was completed ahead of the aggressive 6-month design and permitting schedule. Permits acquired included a Nationwide 12 permit with U.S. Army Corps of Engineers, Virginia Marine Resources Commission (VMRC), Hanover and King William Counties, Virginia DOT, and National Pollutant Discharge Elimination System (NPDES) hydrostatic discharge. All design services were provided with no change orders. Additionally, there were no change orders during construction.

Natural Gas Transmission and Distribution

Natural gas is a valuable, nonrenewable resource. It is one of the top sources of energy because it is affordable, abundant, and an American resource. Transporting this clean and efficient fuel to customers is an important goal. Kimley-Horn can provide you with the following services:

- Construction observation, inspection, and administration services
- Environmental assessment and remediation
- Erosion control
- Horizontal directional drill design
- Natural gas pipeline design (distribution and transmission mains)
- Pig receiving and launching station design
- Railroad, DOT, U.S. Army Corps of Engineers, and additional environmental permitting
- Stormwater management design
- Traffic and transportation engineering
- Utility conflict resolution
- Utility system design and modeling
- Wetland delineations

As one of the nation's leading design firms, Kimley-Horn's proactive approach, flexibility, and innovative designs allow natural gas providers to meet critical deadlines. We often serve as extensions of our client's staff, assisting with all facets of projects from corridor studies to construction observation and everything in between.

Natural Gas Transmission and Distribution

Natural Gas Transmission and Distribution Experience

Virginia Natural Gas, Shore Drive Natural Gas Injection Station

Virginia Beach, VA

Within a 1-month duration, Kimley-Horn assisted VNG with the site plan and permitting needed to construct a liquefied natural gas injection station along Shore Drive. The purpose of the station was to supplement the supply of natural gas available to the residents in the northern section of Virginia Beach to adequately accommodate their heating needs during the winter months until construction of the Great Neck transmission line was completed.



Virginia Natural Gas, Basic Construction 8-inch and 4-inch Gas Distribution Mains

New Kent, VA

Kimley-Horn is providing design and permitting services to VNG's basic construction project, which includes the design of 1 mile of 8-inch natural gas main, 0.5 miles of 4-inch natural gas main, and three horizontal directional drills, including one underneath Highway 30/33 and two underneath wetlands. The project includes an aggressive 60-day design and permitting deadline. Kimley-Horn was strategically able to amend an existing VNG active permit with VDOT to construct this project and was able to negotiate a "no permit required" letter from the USACE, VMRC, New Kent Wetlands Board, Virginia Department of Environmental Quality, and New Kent County to facilitate the aggressive schedule to deliver natural gas to basic construction.