



**Sigma** provides technical and management support for the development, design and operation of energy facilities and infrastructure.

**Sigma's** services span the full spectrum from project planning and siting through licensing and permitting, engineering, procurement, construction management, start-up and testing, operator training, operations and maintenance and asset management.

**Sigma** has made its mark in the global utility, industrial, commercial and institutional markets as a leading provider of due diligence technical investigations and advisory services.

## GLOBAL LEADER

Sigma Energy Solutions Inc. (Sigma), a global leader in the energy and engineering services market for over 30 years, offers a wide range of engineering services from its full service offices located in New York, Connecticut and Illinois. These services include Studies and Assessments, Due Diligence Evaluations, Asset Management, O&M Services, Owner's Engineering and full scope Engineering & Design. Its client base includes financial and lending institutions, developers, energy companies and utilities.

Sigma also operates in Queensland, Australia under a separate Australian Incorporation.

## ENGINEERING ADVISORY SERVICES

Sigma's Engineering Advisory Services Group is headquartered in Melville, New York. Its client base numbers more than 300 and its project portfolio spans six continents and a wide spectrum of power generation asset types including waste-to-energy, fossil fuel-fired, hydroelectric, combined cycle, cogeneration, nuclear and renewables, including wind, solar, biomass, and geothermal power. The group has also been actively engaged in projects dealing with electrical transmission and distribution networks, district heating networks, water and wastewater treatment facilities, chemical process facilities, natural gas networks, and infrastructure assets among others.

As an Independent Engineer for Project Feasibility and Due Diligence for over 15 years, with a portfolio spanning more than 350 projects, the Advisory Services Group, is globally regarded as a premier provider of project consulting services.

## WIND ENERGY DUE DILIGENCE SERVICES

Sigma is active in the Global Wind Energy Due Diligence sector in support of project finance, lease transactions, mergers and acquisitions and project feasibility studies and other privatization initiatives and serves as an Independent Engineer for various national and international projects. To this arena, Sigma brings a wealth of experience and an advisory perspective not commonly found in other architect/engineering firms.

Sigma performs engineering due diligence for Wind Power projects by harnessing the experience and knowledge base of numerous wind energy experts and research laboratories to support our clients. The combination of the competencies of the Sigma Team enables Sigma to offer a Total Solution for our clients' wind power initiatives.

## WIND ENERGY DUE DILIGENCE FOCUS



- Siting and permitting, including review of land and building permits
- Wind assessment, including review of meteorological studies and historical wind characteristics
- Turbine selection and procurement, including output projections, cost, warranties and historical operation
- Risk Assessment

- Technical considerations, including balance of plant design, electrical interconnection scheme and equipment, tower design, construction and condition assessment
- Economic model review, including technical and financial baseline assumptions, output and revenue projections, costs for major equipment (turbine, blades, electronics, tower and balance of plant), insurance, sales agreements and rate of return

- Grid interconnection review, including capacity limitations, load flow analysis, voltage controls and system protection
- Construction, including construction contract, schedule and warranties
- O&M program, including fixed and variable costs, incentives/penalties, warranties and capital expenditure projections