

The background of the entire page is a photograph of an industrial facility, likely an LNG plant, at night. The facility is illuminated with warm yellow lights, creating a stark contrast against the dark blue twilight sky. In the foreground, there are large, dark, cylindrical storage tanks with complex piping and scaffolding structures. The overall scene conveys a sense of industrial scale and operational complexity.

LNG FIELD DEVELOPMENT AND FACILITY CAPABILITIES

From design and engineering to project management, HGA experts combine industry-leading field services to design optimal LNG facilities.





Regardless of your LNG project scale, complexity, or operational dynamics, HGA has a unique mix of talent to help you from conceptual planning, FEED, EPCM, and pipeline field services for greenfield or brownfield LNG projects. HGA's LNG services provide the project expertise and processes to improve efficiency and infrastructure development to help clients accelerate time to first gas and increase the probability of success with your LNG project. HGA has more than 100 consultants and project managers with extensive LNG experience to help support infrastructure and component engineering, construction management, and integrity to improve LNG plant development. Our integrated solutions help you minimize uncertainty, mitigate risk and increase your chances of success of your LNG project.

HOW WE CAN HELP WITH PROJECT MANAGEMENT CONSULTANCY ACTIVITIES

When LNG projects are hindered by inefficient processes or organizational barriers, HGA consultants can help. HGA Project Management Consulting (PMC) and Owner's Representative experts provide innovative solutions to solve complex technical issues and meet your specific project goals. Your company can trust in a proactive partnership with HGA owner's representative experts to manage and streamline complex LNG projects with tailored, integrated solutions. HGA project managers provide a single point of contact to perform due diligence when developing and recommending solutions that help you minimize uncertainty and assess the risk of an LNG facility as it relates to project scoping and investment decisions.

During the construction phase, our project management team utilize our VistaTrak™ decision support solution to analyze hundreds of construction-development metrics, so they know what's happening on site, all the time. Our VistaTRAK decision support solution reduces production and construction costs and improves operations. This system puts quality control in the hands of the owners and operators, providing peace-of-mind throughout the project lifecycle.

VistaTRAK dashboards connect data from engineering, procurement, and construction on a web-based platform, allowing you to visualize and analyze up-to-date operations. VistaTrak's objective is to facilitate a decision-making process that delivers projects that are technically and environmentally sound, affordable, and completed on schedule. Utilizing the VistaTRAK analysis system, our project management team ensure LNG projects are delivered on-time, on-budget, and on schedule.

Areas of Specialty Expertise:

- Owner's team staff augmentation
- Ensure that project phases meet established scope, schedule, cost, and quality parameters
- Optimize resources, reporting requirements, contracts, and procurement
- Leverage VistaTRAK Decision Support System
- Coordinate and manage construction completion, pre-commissioning, commissioning and LNG plant start-up



- Interpretation and integration of all data types into one comprehensive system
- Contractor evaluation and selection due-diligence
- Regulatory compliance
- Strategic planning/decision support
- External stakeholder management
- Economic development strategies

HOW WE CAN HELP WITH ENGINEERING DESIGN ACTIVITIES

Regardless of your LNG project scale or complexity, HGA engineers collaborate with you to develop, implement, and design a customized solution for your project. HGA engineering has extensive experience in civil, electrical, mechanical, piping and structural engineering. Our expertise in LNG engineering comes with experience and local knowledge, helping to achieve your project requirements, in terms of function, constructability, sustainability, and safety.

Additionally, our engineering experts can support pre-FEED and conceptual activities. In addition to front-end engineering design, HGA can coordinate evaluation studies, and detailed engineering—our engineering teams utilize the latest technology in computer-aided drafting and design/analysis programs to generate scenarios and



improve LNG facility design. These tools, combined with our extensive design and procedures, greatly enhance the optimum layout of your facility.

HGA engineering teams offer complete services to help clients explore all options, risks and investment options with tailored, integrated solutions. Our staff provides the expertise and understanding you need to get a job completed—on time and on budget.

Engineering services for LNG:

- Preliminary Engineering and Final Design
- Civil, Mechanical, Process, Piping, Electrical
- Process and Piping
- Feasibility Studies
- Alignment sheets
- Engineering analysis for LNG facilities
- Engineering analysis for pipelines
- Site improvement engineering

HOW WE CAN HELP WITH FIELD DEVELOPMENT ACTIVITIES

Throughout the development of LNG facilities, we provide turnkey services to support a variety of civil engineering, construction, and

infrastructure mapping needs to help develop reliable, efficient LNG pipeline projects. HGA utilizes the latest in geodetic technology and data management software to assist in everything you need to evaluate pipeline routings. Our experts assist with mapping and design, advanced material tracking, regulatory compliance, and unique solutions that transcend industry challenges. Our team collaborates with yours to deliver project consistency with on-site management, oversee facility needs, focus on comprehensive decision support and reporting, and deliver precise, detailed 3D technology design. Building on HGA's industry-leading pipeline capabilities, we evaluate potential approaches for achieving project goals, help identify ideal technical personnel, and then deliver the project on time, on budget.

We are a group of seasoned industry professionals who understand the importance of quality and pay close attention to detail for all Right-of-Way (ROW) projects. We combine our skill sets with the full range of services, expertise, and rare insight to identify owners, title research and negotiating with landowners. Clients choose HGA for our collaborative style, integrity, and thoroughness at identifying potential ROW problems.

We provide innovative and cost-effective survey and mapping services to meet your project needs, including:

- GIS Mapping and Consulting
- Centerline Routing
- Preliminary and As-Built Surveys
- LIDAR topographic mapping and positioning
- GPS Horizontal & Vertical Control
- Facility As-Built
- Boundary Surveys
- Construction Layout
- ALTA/ACSM Land Title Surveys
- UAV (Drone) Certified
- Aerial imagery and positioning

DELIVERING SUCCESS AND CREATING VALUE FOR OUR CUSTOMERS THROUGH EPCM SOLUTIONS

We are a group of seasoned industry professionals who understand the importance of engineering and construction quality support for LNG

OUR TRACK RECORD:

NextDecade's Rio Grande LNG Project

HGA was contracted for project management, engineering, surveying, land services, project controls and cost estimating for the FEED services for NextDecade's Rio Grande LNG export project. HGA managed the massive pipeline expansion planning of 130 miles of dual 42-in. diameter natural gas pipe along with multiple compression and metering facilities to bring natural gas from the Permian Basin and Eagle Ford shale to the Port of Brownsville via the related Rio Bravo Pipeline.

Freeport LNG

Freeport LNG contracted HGA to provide engineering and design, rights of way services (ROW), and FERC filing support for their proposed Train 4 – 42-in. pipeline project located on Quintana Island, near Freeport, Texas. The scope of work included providing a proposed centerline with and a corresponding constructability review. Once the route was approved, HGA provided ROW agents to contact the impacted landowners to obtain permission for FLNG's environmental consultant to survey. Using this survey data, HGA created GIS-based preliminary alignments with the proposed workspace to allow the environmental consultant to calculate the various environmental impacts. Other FERC filing support included preliminary HDD designs and site-specific drawings.

Upon completion of the FERC filing, FLNG requested HGA to provide detailed engineering and land acquisitions services for the project. The team then provided land agents to obtain civil survey permission, the creation of acquisition plats and conducted landowner negotiations. This effort included detailed alignment sheets and fabrication drawings for all above ground facilities. Another key component of HGA's excellent detailed engineering performance was the 10% TIC cost estimate that HGA provided for the project.

G2, LNG

HGA served as the owner's representative for G2's LNG \$11 billion LNG export project in Cameron Parish, Louisiana, by overseeing EPC contractor work, project controls – cost control/planning, and coordinating stakeholder interfaces. HGA also facilitated the pre-FEED engineering work. The project also included providing the gas supply pipeline design services. HGA also has a principal on the G2 management team.



Commonwealth

HGA was chosen for ROW services for supporting the initial routing of a new 30-in. diameter natural gas pipeline to be located in Cameron Parish Louisiana to bring natural gas from major transmission pipelines to the proposed LNG terminal. HGA assisted with aerial photography via UAV along with GIS information to provide pictures and map books for the FERC process.

Tellurian, Inc. (Driftwood LNG)

Driftwood LNG contracted HGA to provide engineering and surveying services for access improvements to their new facility near Carlyss, LA. These improvements included reconstruction of a parish road to accommodate construction traffic, construction of a new road to be used by local traffic, and expansion of a state highway. This project was critical to the overall LNG project because it had to be completed prior to construction beginning on the LNG plant. HGA produced right-of-way drawings and documents that were required for land acquisition. HGA also aided in environmental permitting efforts required by the US Army Corps of Engineers. Roadway design had to meet standards of the local municipality and the Louisiana Department of Transportation and Development (DOTD). Utility relocation had to be coordinated with multiple utility companies prior to construction. HGA provided construction admin and inspection for the entire construction duration. HGA produced project closeout information required for acceptance of the roadways by the DOTD and local municipality.



pipeline projects. Our HGA construction management services ensure that project scope requirements are met and completed on time. HGA construction management team will collaborate with you and be your valued partner to achieve program goals regardless of the complexity of the project. From concept to implementation to project delivery, project management is one of the key pillars to a successful construction project. Our construction managers are exceptional project managers, handpicked to provide seamless integration between all stages of the construction process. Additionally, our construction experts possess the engineering and construction experience to provide real-world, cost-effective solutions to the everyday challenges throughout the construction process from start to finish.

Construction management expert services:

- Contracting strategies
- Inspection and construction management
- As-built data
- Construction specifications
- Utilities, offsites, and infrastructure (OSBL)

UNDERSTANDING CUSTOMER LNG CHALLENGES

Our LNG experts have conducted numerous LNG projects, adding valuable insight that has helped optimize the technical scope, capital cost, schedule and execution plans of small scale to multi-billion-dollar mega LNG projects. With extensive experience in overcoming complex LNG challenges, our approach has helped clients to improve operations,

including tight schedules, remote locations, and unique or innovative environmental or technological considerations.

The HGA portfolio of LNG services offers a unique combination of engineering expertise, program management experts, construction management, proprietary technology, and expert industry insights to optimize your LNG project at every stage. With years of experience, we provide cohesive engineering, procurement and construction management services that meet your needs.

About us

Over the past two decades, HGA has built an unrivaled culture by listening to our clients, leveraging our experience and delivering on our commitments to an extensive portfolio of customers throughout the chemical industry. We seek long-term partnerships with our clients. Today, we serve multi-national corporations and many private industrial companies and have a proven track record managing, cost-driven projects. Everything we do is grounded on our core values of building long-term customer relationships by listening to our clients. Our combination of resources enables us to deliver high-quality engineering designs and deliver objective information to increase the efficiency of your LNG assets and maximize your existing asset.

For more information on how HGA can help you with your next petrochemical project, contact your HGA representative, email information@hga-llc.com or visit www.hga-llc.com.

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