

# Nuclear and Industry Energy



gai consultants

A photograph of a nuclear power plant at night. Three large, illuminated cooling towers are the central focus, with steam rising from them. The plant's complex structure, including various pipes and buildings, is visible in the foreground and background, all lit up against a dark night sky.

Transforming  
Ideas for the  
Energy We Use

[gaiconsultants.com/energy](http://gaiconsultants.com/energy)

## Nuclear and Industry

### Focused on Your Goals

When Congress passed the Clean Air Act in 1970, nuclear energy supplied just one percent of America's electricity. Today 99 reactors in 30 states provide nearly 20 percent of America's electrical power, replacing fossil-fueled plants. Nuclear energy is growing and GAI is well-positioned to grow along with it.

GAI has offices operating throughout the Midwest and along the eastern coast of the United States, placing our resources within close proximity to over 83 percent of the U.S. operating nuclear fleet. This proximity enables us to provide clients with selfless support through staff augmentation or through technical services on distinct projects. We provide piping, mechanical, electrical, and structural support to clients, as well as siting, seismic, and environmental consulting.

Having worked extensively in the nuclear industry, GAI understands the strict requirements of quality and reliability required to maintain your facilities.

Your goals are important. And if it's important to you, it's important to us.



**“** GAI is very responsive and meets all deadlines. The project team all deserve accolades for the work they do.”

– Confidential  
15-year Client



We believe our clients have important goals and we make those goals our own.

### **What Distinguishes GAI**

- Nuclear energy professionals that often augment clients' staff as necessary to support design while maintaining schedules
- Managers who have worked in the industry and bring an owner's perspective to GAI—maintaining the high level of quality required on nuclear projects
- Clients that have worked with GAI since our founding in 1958—trusted relationships that speak to GAI's reliability and commitment to our clients' goals
- A company truly invested in improving clients' competitiveness

## Nuclear and Industry Services

### Survey and Site Layout

- Deed research and ROW
- Site layout and access road design
- Electric transmission and interconnection design

### Environmental

- Wetland and stream delineation
- Agency consultations
- Rare, threatened, and endangered species consultations
- Cultural resources
- National Pollutant Discharge Elimination System permitting
- Water encroachment and floodplain permitting
- Erosion and sedimentation control plans
- Grading plans and access roads
- GIS, CADD, and Microstation (maps, drawings)
- Post-construction stormwater management plans
- Noise monitoring
- Phase I environmental site assessments

### Structural Engineering

- Structural module finite element modeling and design
- Structure, foundation, and seismic analysis and design
- Vibration and fatigue analysis
- Concrete embedment, penetration, and anchor design
- Concrete wall and composite steel – concrete floor design
- Design reviews per ACI 349-01 and AISC N690-94
- Structural steel framing and platform design
- Precast concrete panel and attachment design
- Site construction support
- Engineer's construction cost estimates
- Engineering change request reviews and resolutions
- Radiation shield design
- Licensing reviews and design compliance support
- NRC audits and licensing amendment request support

### Software Capabilities

- ANSYS
- GT Strudl
- LS-DYNA
- SHAKE
- EERA

## **Electrical Engineering**

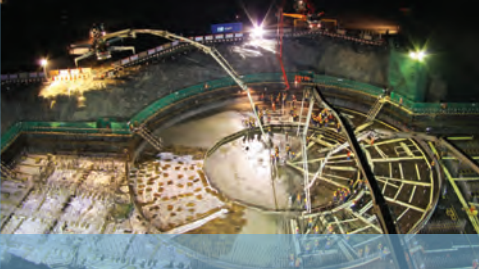
- High-, medium-, and low-voltage electrical system design and analysis
- Control system and instrumentation design
- Electrical load flow and balancing studies
- Building security and access system design
- Testing and calibration procedures
- Short circuit analysis
- Evaluation of equipment ratings
- Arc flash hazard analysis, labeling, and training
- Ground grid design and analysis
- Switching transient analysis
- Protective devices coordination study
- Lighting design
- AC and DC substation design, layout, equipment specification, and construction management
- Motor control systems and equipment design/specification
- Emergency backup power systems and uninterruptible power supply specification

## **Mechanical Engineering**

- Piping system layout and design
- Pressure vessel design and evaluation
- Finite element analysis
- Pump selection and application engineering
- Heat exchanger design and application engineering
- Material and heat balances
- Combustion and process engineering
- Pipe stress analysis
- Vibration analysis

## **Procurement Engineering and Program Management**

GAI can serve as an owner's engineer, overseeing projects from concept to completion. We provide specification review, manage bidding activities, and coordinate vendor services.



## Connect with Our Experts

### **David Bevilacqua**

Assistant VP, Nuclear and Industry  
Energy Business Unit

T 412.399.5442

[d.bevilacqua@gaiconsultants.com](mailto:d.bevilacqua@gaiconsultants.com)

### **About GAI Consultants, Inc.**

Transforming ideas into reality<sup>®</sup> since 1958, GAI is an employee-owned engineering, planning, and environmental consulting firm providing local expertise to worldwide clients in the energy, transportation, development, government, and industrial markets.



[gaiconsultants.com](http://gaiconsultants.com)