

Joe C. Turnage

As a senior executive in competitive power generation companies and as the founder of two successful consulting companies, Dr. Turnage brings 30 years of experience working with companies in the power industry. In this work, Dr. Turnage has been actively involved with almost every aspect of the business: with managing the profit and loss of a portfolio of merchant generating plants; with product and service development and marketing; with managing shared service organizations; with implementing new asset management systems; with managing large construction projects; and with executive-level assessments of organizational performance. His activities have included the formation of business strategy, formulation of organizational structure, and the design of executive information systems for independent power companies, national laboratories and regulated utilities. He has contributed directly to the development of methods for predicting plant performance and for analyzing utility generating system operating strategy. He has managed a large nuclear engineering organization within a utility that was responsible for engineering support and reload licensing for both pressurized and boiling water reactors. He has been actively involved in public policy issues surrounding electric power and utility deregulation.

Experience

2007-Present *Senior Vice President Strategy & Infrastructure, UniStar Nuclear Energy*

In 2007, Constellation announced the creation of UniStar Nuclear Energy, a 50/50 joint venture with Electricité de France. Dr. Turnage was asked to act as Senior Vice President, Strategy and Infrastructure reporting to UniStar's CEO.

2003-2007 *Senior Vice President, Constellation Generating Group (CGG)*

Dr. Turnage's organization exited 2002 ahead of business planning targets. During the first half of 2003, High Desert was completed 70 days ahead of schedule (enabling the plant to contribute \$31.7 mm in earnings before interest and taxes (EBIT) ahead of plan); the "partnership" plants (EWGs and QFs) produced \$35.1 mm in EBIT based on spot market power vs. a plan of \$7.1 mm; and synfuel net income was \$10.1 mm vs. a plan of \$6.3 mm. Dr. Turnage was promoted to Senior Vice President, CGG and asked to take the assignment of leading all MW-based growth for CGG – including initiatives for acquisition, development, renewable energy, and organic growth from the existing fleet. In the second half of 2003, Constellation announced the acquisition of GINNA, a strategic nuclear plant which had been the company's highest acquisition priority.

In 2005, Dr. Turnage was asked to assume a key role in Constellation's long term generation strategy – the deployment of a fleet of at least four advanced nuclear reactors. Since then, he has been involved in influencing political and regulatory policy, in developing a comprehensive business strategy (the UniStar Business Model), and in securing financing and equity partners for the fleet.

2002-2003

Senior Vice President, Constellation Power, Inc.

Reporting to the President of Constellation Generating Group (CGG) Turnage was responsible for the overall strategy and management of the company's QF and EWG generating assets. He was also responsible for the construction of generating assets in Florida, Illinois, Texas and was responsible for the construction of the High Desert project in California.

1997-2002

Senior Vice President, Technical Resources, PG&E National Energy Group

Reported to the CEO of PG&E's National Energy Group and was a member of the Group's Senior Management Council. Responsible for many of the company's technical functions, including engineering, safety and health, environmental affairs, business systems support, and plant operations and maintenance support. Had a key role in EPC negotiations, supporting the deployment of over \$7 billion worth of generating assets and in developing advanced, web-based project management collaboration platforms. He was PG&E's lead in establishing Pantellos – an independent, vertical B-2-B procurement exchange, which was launched in June 2000, with 21 utility members and served as an advisor to the Pantellos Board.

Prior to joining PG&E National Energy Group, Dr. Turnage was actively involved in a number of important organizational decisions that had shaped the company, including the acquisition of the J. Makowski Company in 1994, and the acquisition of New England Electric System's non-nuclear power generation business. In his capacity as an executive consultant, Dr. Turnage contributed to the development of US Generating's regional marketing structure, its integration with U.S. Operating Services Company, and other organizational and strategic initiatives.

1997

President, TENERA Energy, LLC

Responsible for managing the wholly owned consulting subsidiary of a publicly traded company (TENERA, Inc.). Led efforts which resulted in the elimination of non-strategic business lines and the creation of a focused and increasingly profitable enterprise.

1988–1997

Senior Vice President, TENERA, Inc.

Responsible for the Company's strategic consulting activities in supporting utilities as they restructured to compete in an unregulated environment. His client-related experience included the following:

- Assistance to the CEO of a major independent power producer with regard to organizational effectiveness and business strategy.
- Accelerating productivity improvement associated with the post-acquisition integration of a company into the context and performance requirements of the acquiring company.
- Transforming a number of fossil generation stations from a “cost centered” mindset to a “profit and loss centered” way of doing business.
- Designing the strategic planning process for a commercial utility seeking to benefit from deregulation and its position as a low cost provider.
- Assistance in designing and implementing a “Regulatory Performance Improvement Program” to re-establish the credibility of utility senior management with the Nuclear Regulatory Commission.
- Assistance in designing a comprehensive “Safety Management Program” for a large utility which redefined the roles of on site and off site organizations, and supported the successful licensing of such structural changes with NRC.
- Support for diagnosing difficulties and providing solutions dealing with organizational conflict between on site and off site generating plant engineering support functions.
- Support for the design and successful implementation of resource management systems that act as decision support tools in assisting senior management in controlling the scope of plant modifications.
- Clarification of plant configuration management issues. Assessment of the “operational readiness” of a nuclear plant and its support organization in the year prior to receipt of its operating license.
- Performance of strategic consulting and organizational analysis for clients at the executive and board levels.
- Support for corporate strategies in the design and implementation of cultural change programs.

- 1987–1988 *Vice President and Director of Operations*, Risk Control Services Division, International Technology Corporation. Responsible for managing the development and implementation of the organization’s consulting business associated with environmental risk management. This involved monitoring group and division performance against defined standards, defining operational problems threatening achievement of divisional or group goals, and ensuring that these issues were appropriately addressed. The Risk Control Services Division was the most profitable division in the corporation during this time and was acquired by TENERA in 1988.
- 1983–1987 *Principal and Founder, and Executive Vice President*, Delian Corporation. Served on the Board of Directors and was responsible for overall corporate performance in the application of technology to client objectives. International Technology Corporation acquired Delian Corporation in 1987.
- 1982–1983 *Principal and Founder*, Summit Nuclear Resources. Provided consulting services on organizational performance, safety management, analytical plant support, and diagnostic methods to improve technical and managerial performance of operating nuclear power plants.
- 1981–1982 *Vice President*, Management Analysis Company. Responsible for performing diagnostic analyses of utility management in engineering, operations, and licensing.
- 1977–1981 *Director of Nuclear Engineering*, Yankee Atomic Electric Company, Massachusetts. Responsible for activities providing nuclear engineering, safety analysis, and information system support for three generating nuclear power plants and for developing and licensing support capabilities for a fourth plant under construction.
- 1974–1977 *Manager, Technical Resources*, Yankee Atomic Electric Company. Responsible for nuclear engineering methodology development within a nuclear utility context, and for management information system design.
- 1972–1974 *Research Staff Member*, Oak Ridge National Laboratory. Participated in the development of computer codes related to utility generation system simulation and optimization.
- Summer 1970 Natural Resources Defense Council. Provided expertise in areas of energy alternative assessment and coal utilization (as consultant on Energy Policy.)
- Summer 1967 Savannah River office of the Atomic Energy Commission. Worked on isotope production proposals (as an AEC summer employee).
- Summer 1966 Savannah River Laboratory. Worked on data analysis associated with experimental programs in reactor physics (as a summer student trainee).

Education

- Ph.D. Nuclear Engineering (major), Public Policy (minor), Massachusetts Institute of Technology; 1972
- M.S. Nuclear Engineering, (ORAU Special Fellow in Nuclear Science and Engineering), Massachusetts Institute of Technology; 1970
- B.S. Nuclear Engineering (With Distinction), Mississippi State University; 1967
Designated a Distinguished Engineering Fellow by MSU in 2006

Professional Affiliations and Activities

- EPRI – Served as a member for more than five years on EPRI’s Safety and Analysis Task Force. Currently serves as Chairman, Advanced Nuclear Technology Action Planning Committee and as a member of the Nuclear Policy Council
- American Nuclear Society:
 - Former Chairman of the Nuclear Reactor Safety Division Executive Committee
 - Former member of:
 - Board of Directors
 - Executive Committee of Math and Computation Division
 - Executive Committee of Power Division
 - Treasury Sub-Committee of the Board of Directors
- Served as a member of various industry groups seeking to support new nuclear plan deployment, including: NEI New Plant Working Group, EPRI New Plant Task Force, and Utility Advisory Committee - Idaho National Laboratory

Publications

Turnage, Joe C., “Financing the Deployment of the Next Generation of Nuclear Power Plants: One Perspective,” presented to the OECD Steering Committee for Nuclear Energy, April 2006

Turnage, Joe C., “Considerations Regarding Merchant Plant Strategy,” presented at the *PowerMart 99 Conference*, October 1999

Turnage, Joe C., “The Context for Robust Event Evaluations — “A ‘Restructured’ Perspective,” presented at the American Nuclear Society *1998 Utility Working Conference*, August 1998

Turnage, Joe C., “Deregulation and Change,” presented at the *Western Electric Power Institute Conference on Retrofitting and Upgrading System Facilities*, May 1997

Turnage, Joe C., “Organizational Issues Associated With Utility Deregulation,” presented at the American Nuclear Society Topical Meeting, *Deregulation of the U.S. Electric Power Industry*, October 1995.

Turnage, Joe C., “Computational Needs for Nuclear Power Generation: New Possibilities,” *ANS Topical Meeting on Computer Applications for Nuclear Power Plant Operation and Control*, 1985.

Turnage, Joe C., 1982-83, "Nuclear Reactor Safety: The Emergence of Safety Management and the Challenge it Poses," *Nuclear News-Industry Report*.

Turnage, Joe C., "Analytical Support Requirements for Operating Nuclear Power Plants," *ANS Tenth Biennial Topical Conference on Reactor Operating Experience*, August 16-19, 1981.

Turnage, Joe C., (co-author), "Use of Incremental Energy Costs and Loading Order Rules in the ORSIM Procedure for Mid-Range Optimization of Electric Utility Operations," ORNL-TM-4507, Oak Ridge National Laboratory.

Turnage, Joe C., (co-author), "The Oak Ridge System Integration Model (ORSIM) for Optimization of Utility Generating Planning," ORNL-TM-4506, Oak Ridge National Laboratory.

Turnage, Joe C., (co-author), "Applications of a Simulation Model (ORSIM) to Electric Generation Planning in Taiwan, Republic of China," presented at the *Internal Symposium on Nuclear Power Technology and Economics*, Taipei, Republic of China, January 13-20, 1975.

Turnage, Joe C., (co-author), "New Developments Regarding the Use of Simulation Modeling to the Planning of Electricity Supply."

Turnage, Joe C., (co-author), "Exclusive Paths and Difficult Choices: An Analysis of Hard, Soft and Moderate Energy Paths," a White Paper.

Turnage, Joe C., (co-author), "The Nuclear Debate: A Call to Reason," a White Paper.