



PROPOSAL

RFP 22-1 – Docket No. R-36226, Louisiana Public Service Commission, ex parte. In re: *“Evaluation of Louisiana's electric grid regarding status, maintenance, and whether there is more that could have been done and can be done to benefit Louisiana customers.”*

Critical Technologies Consulting, LLC

Innovative Ideas for Shaping the Future
February 2, 2022

Critical Technologies Consulting, LLC

Kathryn H. Bowman
Executive Counsel
Louisiana Public Service Commission
602 North Fifth Street (Galvez Bldg)
P.O. Box 91154
Baton Rouge, Louisiana 70821-9154

February 2, 2022

Dear Ms. Bowman,

We are pleased to submit this Proposal to the Louisiana Public Service Commission for Independent Engineering consulting services related to RFP 22-1 Docket No. R-36226, Louisiana Public Service Commission, ex parte. In re: *“Evaluation of Louisiana’s electric grid regarding status, maintenance, and whether there is more that could have been done and can be done to benefit Louisiana customers.”*

Critical Technologies Consulting, LLC, (CTC) with our main office located in Mesa, Arizona, and satellite offices in Massachusetts, New Jersey, and Kentucky is registered as a small woman-owned business that specializes in consulting and independent engineering, procurement, and construction management (EPC) consulting in energy and power projects. We are made up of a group of highly specialized professionals with extensive credentials. As a team, CTC personnel have worked together on numerous projects over the past 35 years as you will see in our proposal. We have the knowledge, experience and understanding of the issues, design challenges, appropriate costs, installation methods, and operational and maintenance issues which are being addressed in this Docket.

Our expertise and experience working with a variety of clients and our extensive Consulting, Engineering/Procurement, Construction Management, and Operations and maintenance experience with numerous energy projects ensures we will deliver the best value for this assignment.

Sincerely,

Ben Hill, President
Critical Technologies Consulting, LLC.

Critical Technologies

Consulting, LLC

Innovative Ideas for Shaping the Future

**Consulting, Engineering, Procurement, Construction
Management, Due Diligence, and Risk Management**



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PROPOSAL

EXECUTIVE SUMMARY

CTC is pleased to present our response to the recent RFP 22-1 Docket No. R-36226, Louisiana Public Service Commission, ex parte. In re: *“Evaluation of Louisiana’s electric grid regarding status, maintenance, and whether there is more that could have been done and can be done to benefit Louisiana customers.”*

We have included in this proposal a Scope of Representation, a proposed Action Plan, and a discussion of the anticipated Approach to supporting the Commission Staff in this matter. We also include the experience and qualifications of our team, a preliminary list of deliverables, our proposed rate schedule and an estimate of the costs based on the scope of work and potential schedule for the assignment.

CTC brings to the Staff a team of highly experienced personnel with the necessary technical, utility, and regulatory expertise and backgrounds to provide real value to the Commission.

The CTC team’s experience consists of a broad range of technical, industrial, and commercial related expertise involving utilities, independent transmission developers/operators, independent power producers, Independent System Operators (ISOs), PSCs, and other federal and state government agencies throughout the US which are directly applicable to the needs and the issues involved in this Docket. CTC dedicated and accomplished team, includes individuals with backgrounds and experience in providing solutions to challenges such as:

- Conducting technical due diligences and working with utilities and independent power producers and transmission and distribution operators, investment bankers, regulatory entities, financial analysts, and lawyers in project financing transactions where CTC personnel conducted independent technical, commercial, and environmental evaluations for the financiers and owners/operators in major generation and transmission and distribution projects located throughout the US.
- Working with regulatory personnel and economists at various PSCs and ISOs for the technical and schedule due diligence review of transmission, distribution, and generation projects.
- Preparing papers and white papers for private and government clients involving the use of microgrids and intermediate grids as a means of adding resilience to the transport of the electricity in transmission and distribution facilities to provide more reliability and sustainability and safety for the customers.
- Conducting independent technical and operational reviews for the DOE’s new design projects of long transmission lines funded by the DOE Loan Guarantee Program.
- Evaluating as independent engineers of the interconnections and transmission and distribution of power in the US and international locations such as Chile, Brazil, Guatemala, Mexico, Peru, and others.



The CTC team will assist the Staff and bring the CTC team's experience collaboratively in the design and independent reviews of utility transmission towers and other systems and equipment involved in the safe and reliable transmission of electric power. CTC will bring forth its expertise in emergency planning, strategically locating restoration centers with appropriate inventories to provide restoration of the electric services as quickly as it is reasonable. This is important since the safety, reliability, and resilience of the transmission grid systems are really tested in extreme weather events such as those which recently occurred in Louisiana. It is expected that these events will continue in larger frequency and strength into the future.

We include in this proposal materials which describe our expertise and qualifications, along with a narrative that describes our anticipated approach to supporting the Commission Staff in this matter. We do not have any conflicts of interest that would impair our ability to provide these services to the Commission and we are free to do so.

INTRODUCTION

This proposal addresses the Request for Proposals ("RFP"), RFP 22-1 Docket No. R-36226 for an independent engineering consultant issued by the Louisiana Public Service Commission on December 14, 2021.

The Louisiana Public Service Commission ("Commission" or "LPSC"), in accordance with the requirements of the LPSC General Order dated November 10, 2014, regarding the selection of contract employees (the "Contract Order"), issues this Request for Proposals ("RFP") seeking an independent engineering consultant who will assist Commission Staff (Staff) in the evaluation of Louisiana's transmission grid regarding status, maintenance, and whether more could have been done, or could be done, to benefit Louisiana customers.

This docket was initiated by an unopposed directive from Chairman Greene at the Commission's November 17, 2021, B&E, which stated:

"I direct Staff to open a docket and take all necessary action, including but not limited to the hiring of an independent engineering firm, to assess the status and maintenance of the transmission grid serving Louisiana, as well as investigate whether certain storm costs could have been avoided with more preemptive maintenance of the transmission grid throughout the state, and to provide recommendations to the Commission that would benefit Louisiana customers in reliability, decreased load pockets, and access to resources outside our load zone."

Specifically, some Louisiana consumers have also expressed concerns and issues involving aging utility transmission towers/structures and supporting systems such as substations, poles, and unmaintained wires, as well as difficulties in reaching resolutions when an issue in their community involves utility equipment. Utilities themselves have demonstrated areas of potential improvement in communication, coordination, and overall collaboration regarding utility transmission and distribution grid maintenance.



The tasks involved to achieve the Commission goals for this Docket have risen in importance given the increase in the strength and frequency of extreme weather events in Louisiana over the past 10 years.

Critical Technologies Consulting (CTC) is pleased to submit its proposal to the Louisiana Public Service Commission to assist its Staff to assess the status and maintenance of the transmission grid serving Louisiana, as well as to investigate whether certain storm costs could have been avoided with more preemptive maintenance of the transmission grid throughout the state, and to provide recommendations to the Commission that would benefit Louisiana customers in safety, reliability, resiliency, sustainability, decreased load pockets, and access to resources outside the Louisiana load zone. CTC will assist the Staff in examining the options available and areas that may affect the sustainability, reliability, safety, and resilience of Louisiana's Electric Utility Transmission Grid.

SCOPE OF REPRESENTATION

CTC will be assisting Commission in-house Staff (Legal, Utilities, and Auditing Divisions), and outside counsel in:

- The drafting, review, and potential follow-up to data requests issued to jurisdictional electric utilities.
- Analyzing information/data received from jurisdictional electric utilities regarding each utility's respective maintenance plan(s) regarding transmission systems; CTC will evaluate existing programs and plans, and potential future ones, given the recent history of extreme weather events and the "lessons learned" by the jurisdictional electric utilities.
- Conducting independent research and analysis on methods where reliability, accountability, and sustainability of Louisiana's transmission grid can be improved, if any; CTC will evaluate present available research in the industry on the best-in-kind methods of programmatically operating and maintaining transmissions systems both under normal and emergency conditions.
- Assisting in drafting requests for information/comments to stakeholders; reviewing and analyzing comments filed by all parties.
- Participating in technical conferences; conducting site visits, as deemed necessary.
- Participating in meetings with stakeholders, jurisdictional utilities, and Commissioners, as deemed necessary.
- Preparing technical analysis as requested by Staff.
- Assisting with the drafting of a Staff recommendation, including the possibility of rules; defending, participating, and testifying regarding any proposed recommendations and rules.



- CTC will provide recommendations to Staff which will promote the increased safety, reliability, accountability, and sustainability of the electric transmission grid in Louisiana.
- Ensuring that any rules and regulations issued by the Commission conform with the national regulatory standard for regulated utilities; and attending any B&E Sessions as needed.

CTC will see that scope of work meets the following goals for the Louisiana transmission system:

1. Requiring jurisdictional electric utilities to have policies and programs in place that ensure the proper maintenance of all the equipment and towers associated with the transmission system.
2. Implement policies to promote the use of alternative solutions to reliably, safely and cost effectively transmit power depending on cost-benefit analysis to ratepayers.
3. Ensure that all regulated utilities have in place vegetation management and resilience policies that would increase the resiliency of the transmission system in Louisiana.
4. Improve communication between transmission towers owners and any other authorized users of the transmission towers/structures.
5. Establish timelines for the removal and replacement of old transmission towers/structures which have exceeded their lifetimes.
6. Require or incentivize transmission towers/structures owners to collaborate on selecting a single party for the removal and replacement of transmission towers/structures.
7. Other policies that would advance the safety, reliability, accountability, resiliency, and sustainability of the electric transmission grid in Louisiana.

PERIOD OF REPRESENTATION

The time-period estimated to complete the Scope of Representation is approximately 12 months.

PROPOSED PLAN OF ACTION

The Proposed Plan of Action to assist Staff is broken into various **Tasks** shown below using the Scope of Representation and scope of work presented in the Request for Proposals RFP 22-1 Docket No. R-36226.

A **Kick-off session** will be held with Staff to meet and greet the key personnel, identify key roles and responsibilities, agree on the various aspects and Task definitions of this assignment,



review prior work accomplished by the Commission's Staff, and the expected schedule of activities.

The Definitions of the **Tasks** are as follows:

1. **Review** the briefings, reports and documents which have been prepared up to this point by Staff.
2. **Set up coordination with Staff** so as not to cover points or issues already well covered by Staff and discuss and prioritize those issues or points the Staff wants assistance from CTC.
3. **Review documentation** submitted by jurisdictional electric utilities and other stakeholders participating in this Docket No. R-36226.
4. **Conduct an independent due diligence** review and analysis of policies, procedures, and data from jurisdictional electric utilities relative to their transmission systems and what has been accomplished thus far in addressing the issues covered by this Docket including present status and implementation of maintenance programs, lessons learned from recent extreme events, as well as investigating whether certain storm costs could have been avoided with more preemptive maintenance processes and programs of the transmission grid systems throughout the state.

CTC will provide recommendations to the Staff and the Commission that would benefit Louisiana customers in safety, reliability, sustainability, and resiliency resulting in decreased load pockets, and access to resources outside the Louisiana load zone.

5. **The CTC team jointly with the Staff will prepare Document Requests** (DR's) for Information and Clarification (using a spreadsheet DR system) and issue these to the jurisdictional electric utilities responsible for the responses, with the dates when they are to be received by Staff. CTC will be preparing, reviewing, and responding with Staff to data requests. As CTC conducts the Document Requests and its independent evaluations of the information and data available, the CTC team will:
 - A. Determine what operations and maintenance policies are presently in place that ensure the proper maintenance of the transmission system to improve in safety, reliability, sustainability, and resilience of the transmission systems in Louisiana.
 - B. Determine what policies or programs are in place or need to be in place to determine whether certain storm costs (costs or damages) could have been avoided with more preemptive maintenance of the transmission grid throughout the state, and to provide recommendations to the Staff and Commission that would benefit Louisiana customers in safety, reliability, decreased load pockets, and access to resources outside the load zones.

These policies, if not available, will be discussed in a collaborative manner among the Staff, CTC, Staff appointed outside counsel, and the jurisdictional electric utilities prior to developing recommendations for implementation.



- C. Ensure that all regulated electric transmission entities have in place maintenance management policies that would increase the resiliency of the transmission system in Louisiana.
 - D. Identify that these electric regulated entities have transmission tower/structures Management Programs which:
 - a. **Show** improvement in communications to entities involved in managing the consequence of extreme weather events.
 - b. **Show** the establishment of schedules for the removal and replacement of abandoned or stranded transmission towers/structures as they age.
 - c. **Require** or incentivize transmission systems owners/operators to collaborate on selecting entities for the design, removal and replacement of transmission equipment as needed over time.
 - E. Demonstrate other policies and potential processes to electric regulated entities that would advance the safety, reliability, accountability, resilience, and sustainability of the electric transmission grid in Louisiana.

CTC will discuss the potential policies and processes in a collaborative basis among the regulated transmission entities, and the Staff prior to providing recommendations to the Commission.
 - F. CTC will also review what policies or processes are being utilized by similar regulated entities in other states, particularly looking at those entities which have responsibilities relative to extreme weather conditions like those experienced by Louisiana.
 - G. A summary report (power point format) will be issued identifying the documents reviewed, the status/results of the DRs and the preliminary conclusions based on the documents and responses received. This report will be reviewed with the Staff before issuance.
- 6. **CTC will review** comments filed by any party; participating in technical conferences; conducting site visits; preparing technical analysis, as requested by Staff.
 - 7. **CTC will assist the Staff in reviewing all the responses** to the DRs from the regulated entities and assist in the examination of options. CTC will also review policies, procedures, and data from other jurisdictions — both nearby states and federal — relative to utility transmission systems facing similar extreme weather events as in Louisiana.
 - 8. **Develop conclusions** from the due diligence reviews conducted to achieve the objectives of the Commission, and assist with the drafting of Staff recommendations, including potential rules and regulations. A summary report (power point format) will be issued for discussion with the Staff to identify the key issues which need attention for the policies, rules and regulations which may need to be drafted. This report may guide the CTC team and Staff as to the drafting of these potential policies and any further actions which may need to be taken by Staff and/or Commission.



9. **As requested by Staff, CTC will** defend, participate, and testify on any proposed rules while seeing that any rules and regulations issued by the Commission conform with national regulatory standards for regulated utilities. Select CTC experts will attend and testify at the Commission's Business and Executive Sessions as needed. This task will be further identified and approved by Staff once CTC jointly with Staff determine what are the specific issues the CTC team will be called upon to defend, participate and testify on.
10. **CTC will act as a catalyst to hold collaborative discussions** and see that “The Infrastructure Investment and Jobs Act, DIVISION D—ENERGY”, is being evaluated by regulated entities and other stakeholders to obtain funding for the work necessary to achieve the resiliency and reliability the LPSC has as major objectives for the transmission systems in Louisiana. This Act has specific provisions addressing transmission and distribution systems and providing funding to enhance reliability and resilience of these systems under climate change conditions. The outline of this Act’s pertinent provisions is shown in Appendix C.
11. **Confirm that Action Plans** are developed and will be implemented by the regulated entities to meet the recommended policies resulting from this independent **review**. A summary report will be issued providing the information CTC has on hand demonstrating that the jurisdictional electric utilities will proceed to implement the recommended policies. The DR mechanism will be used to request such information.
12. **Recommend audit plans to be developed with Staff** to confirm that these policies and processes are properly implemented by the jurisdictional electric utilities over the time frame agreed. CTC will issue an audit template and review it with Staff for their comments and approval.

CTC recognizes Staff is also soliciting outside counsel in RFP 22-3 for the legal aspects of the issues described in this RFP (RFP-22-1). CTC commits to work hand-in-hand with the Legal Firm selected by the Staff.

DELIVERABLE PRODUCTS

CTC will develop reports and documentation as requested by Staff.

There are reports CTC has presently identified as part of its proposed Action Plan for use to communicate with Staff and jointly develop strategies and plans to support the Commission on this Docket. These reports will be issued in power point format and are as follows:

Task # 4 Report:

A summary report will be issued identifying the documents reviewed, the status/results of the DRs and the preliminary conclusions based on the documents and responses received. This report will be reviewed with the Staff and comments discussed and resolved.



Task # 7 Report:

A summary report will be issued for discussion with the Staff to identify the key issues which need attention for the policies, procedures, rules and regulations which may need to be drafted. This report may guide the CTC team and Staff as to the drafting of these potential policies which fulfill the Commission's objectives for this Docket and any further actions which may need to be taken by Staff and/or Commission. Special emphasis will be placed on storm costs which could have been avoided with more planned/programmatic preemptive maintenance of the transmission grid throughout the state, and to provide recommendations to the Commission that would benefit Louisiana customers in safety, reliability, resilience, decreased load pockets, and access to resources outside our load zone.

Task # 8 Report:

This involves the preparation, review, and issuance to Staff of reports and/or testimony as agreed with Staff.

Task # 10 Report:

A summary report will be issued describing the information CTC has received demonstrating that the regulated entities will proceed to implement the recommended policies and practices. The DR mechanism will be used to request such information.

Task # 11 Template:

CTC will issue an audit template and review it with Staff for their comments and approval to confirm that the policies and processes are properly implemented over the time frame agreed with the regulated entities.

APPROACH TO THE ASSIGNMENT

The Commission's directive initiating this rulemaking was for Staff to investigate, supported by independent engineering consultants, the various issues and potential optional solutions while working collaboratively with utilities and other interested stakeholders. The ultimate goal is to develop practices, procedures, rules and policies that will ensure that Louisiana has a sustainable, reliable, and safe electric utility transmission grid.

The tasks needed to achieve the Commission's goals for this Docket have risen in importance given the increase in strength and frequency of extreme weather events in southern Louisiana over the past 10 years.

The CTC team proposed approach is to work closely with Staff and Staff assigned legal team and collaboratively meet with the appropriate electric jurisdictional electric utilities and other designated participants in this Docket to:

- Reinforce its importance since the economic future and safety of the customers of electric utilities of Louisiana depend on what is agreed to be done during operations and maintenance and in preparation for disruptive/extreme event occurrences affecting the



transmission grid system equipment and associated equipment and subsystems. This effort should also include the planning and ultimate execution of restoration programs for the transmission, which is so critical to get the power to residential, commercial, and industrial customers. Preemptive maintenance processes will be considered to minimize recurring costs of restorations under extreme weather events.

- Develop a collaborative spirit among the parties to obtain the consensus needed to move to the next steps of identifying and developing processes, policies, and regulations that would advance the safety, reliability, resilience, accountability, and sustainability of the Louisiana electric transmission grid.
- Meet and participate with other stakeholders as directed by Staff.
- Examine various options pertaining to transmission grid system maintenance, and all areas that may affect the reliability, sustainability, and safety of Louisiana's electric utility transmission grid.
- Physical or video conference meetings are expected to be held with the participants under this Docket.

CTC will concentrate on the identification of prudent proactive solutions based on the available technical research and guidance from EPRI, FERC, NERC, DOE Laboratories, and other institutions affecting the design of transmission grid systems and their operation.

These solutions will be evaluated with the existing plans and processes the regulated entities in Louisiana have in place to identify options to provide the needed safety, reliability, sustainability, and resilience of the distribution system.

CTC will approach this assignment in a very focused and diligent manner working closely with Staff to see that what is accomplished by CTC is what is needed to achieve the objectives of the Commission under this Docket No. R-36226. All tasks will be discussed with Staff and approved by Staff prior to CTC proceeding to accomplish them.

CTC will assign a very seasoned Project Manager to lead this assignment and bring forth the combined independent consulting engineering capabilities of CTC. The CTC team will work as an integrated team with Staff sharing concepts, processes investigations, opinions and most importantly developing processes and policies which will achieve the Commission's goals and objectives.

Various CTC personnel will be brought the assignment as needed by the issues and topics to be covered. In the "Estimated Cost" section, we provide an estimate of the time for the personnel by "Task" identified in Section 4, the Proposed Plan of Action.

The Infrastructure Investment and Jobs Act DIVISION D—ENERGY should be evaluated by the jurisdictional electric utilities to obtain full or partial funding to accomplish the resilience and reliability the LPSC expects to have for the transmission systems in Louisiana.

Appendix D includes the CVs of our very experienced and qualified professionals who may be assigned as needed to assist the Commission Staff as engineering consultants and experts in their fields. We have included a resume for each key staff member and consultant who may be assigned to work on this Docket, including names, education, and professional experience.



CTC reserves its ability to supplement its team, if necessary, and with approval of Commission Staff, to provide the Commission with the very best service on this Docket.

As Project Director (Senior Executive Consultant), we have selected Mr. Albert Ferrer. Mr. Ferrer has an extensive background in the energy sector and in performing due diligence assignments, analysis, emergency management, studies, oversight of major energy projects, and brings a tremendous amount of organizational experience and expertise to this assigned docket. Mr. Ferrer will be assisted by other CTC key personnel as well as other staff members necessary for the success of meeting the commissions objectives for this docket.

CONFLICTS OF INTEREST

CTC and its personnel do not have any conflicts of interest concerning this Docket scope of representation and none of the CTC personnel have any work with any of the potential utilities and entities subject to the Louisiana Public Service Commission (LPSC) regulatory responsibilities.

CTC personnel have worked in the past for various utilities, public service commission staffs, ISOs, IPPs, regulatory bodies and other entities in the power and oil and gas fields as part of their employment history with other companies in the past. Their resumes indicate that kind of experience.

CTC currently represents the Louisiana Public Service Commission, Arkansas Public Service Commission, and the Public Utility Commission of New Orleans in the evaluation of the prudence of the decisions by Entergy during the operations and outages at the Grand Gulf Nuclear facility. A detailed report of technical deficiencies at Grand Gulf as well as a detailed Prudence review and written as well as oral testimony are being performed.

Additionally, CTC represents the Louisiana Public Service Commission in Docket No. R-35394 related to a “Proceeding to Examine Options Pertaining to Pole Viability, Pole Attachments, and all Areas that may Affect the Reliability and Sustainability of Louisiana’s Electric Utility Distribution Grid”

These assignments are not considered as a conflict of interest.

CTC RESUME AND QUALIFICATIONS

The CTC team has the requisite knowledge of the topics involving this Docket and discussed in the RFP 22-1, in addition to those provided in the Commission’s General Order dated November 10, 2014. CTC has been pre-qualified by the Commission to receive this RFP under Docket No. R-36226.



CTC has assembled a very experienced and qualified team of personnel with the requisite knowledge, of the topics covered in the RFP's Scope of Representation and the proposed Action Plan to achieve the Commission's strategic objectives under this Docket.

The CTC team personnel are qualified to assist Staff in evaluating maintenance programs in transmission systems, conducting research and analysis as outlined above, answer questions with respect to all the issues addressed in the RFP 22-1, and are qualified to render testimony at a technical conference and/or B&E regarding the same.

In addition, the CTC team has the requisite knowledge of:

- 1) Public interest criteria for approval and monitoring of electric transmission facilities.
- 2) Construction, design and operation and maintenance of transmission facilities.
- 3) NERC, SERC, SPP, MISO, IEEE, EPRI, and any other applicable standards associated with bulk electric transmission facilities to be located in the State of Louisiana.
- 4) Environmental criteria associated with the design and construction of bulk electric transmission facilities.
- 5) At a minimum, CTC has familiarity with cost allocation methodologies for the allocation of investment and expenses among affiliates and utilities, including the relationship of a parent company to its subsidiary operating companies, the transfer of investment and costs among affiliates and utilities, and the provision of services among affiliates and utilities.

CTC will be able to provide technical advice regarding industry standards and widely accepted industry practices regarding transmission grids, and maintenance thereof, as outlined above. CTC understands that Staff will give consideration for experience and knowledge of transmission system standards, as well as utility regulation and cost allocation methodologies.

The CTC team has consulting personnel who are licensed engineers and in good standing with applicable engineering licensing and certification boards.

More specifically, the team assembled by CTC for this assignment, are experienced professionals in multidisciplinary areas specifically applicable to the needs specified in this Docket including:

- Engineering and design, procurement, construction of all aspects of electric transmission and distribution including:
 - Switchyards, substations, grids and microgrids, energy storage and utilizing lines at various voltages including 500 kV down to 4 kV.
 - Transmission towers and structural support systems made of wood, composites, reinforced concrete, and steel.
 - Renewable and other generation supply types.
 - Emergency planning and restoration planning for various disruptive events.
 - Drone inspection systems.
- Project Technical/Financial Transactions.



- Asset Acquisitions.
- Program Designs.
- Program Management and Operations and Maintenance Management.
- Engineering, Procurement and Construction Management from generation plants to transmission and distribution systems at various locations throughout the country.
- Independent technology evaluations including distributed systems, advancing resilience in transmission and distribution systems, climate change minimization, advanced thermal and renewable technologies and other technologies involving decarbonization such as the use of hydrogen with natural gas, etc.
- Independent evaluations of transmission and distribution systems for acquisition by confidential clients (in Louisiana).
- Commercial and regulatory evaluation of new technology developments.
- Emergency plans and restoration programs development involving disruptive events at renewable, fossil, and nuclear power stations.
- Development of resiliency plans and programs.

The CTC team professional experience consists of a combined expertise of:

- Our team has an average of 35 years of experience of working in the engineering field involving engineering, procurement, construction, and operations and maintenance services to electric utilities from generation to transmission, distribution to interconnection to residential, commercial, and industrial customers and the management of such services.
- Bringing the potential of over 40 personnel with a variety of specialized expertise in the areas important to the issues on this Docket No. R-36226.
- Since the mid-1980s, CTC personnel have worked in over 300 projects involving independent engineering services and consulting to a variety of clients, from utilities, lenders, investors, operators, DOE, PSC staffs, local regulatory agencies, and many other clients in various states such as Arkansas, Louisiana, Georgia, Texas, Florida, Mississippi, Alabama, Missouri, Massachusetts, NY, Connecticut, Maine, New Hampshire, Virginia, California, Arizona, New Mexico, North and South Carolina, Utah, and other states and international locations.

Successfully utilizing the strengths, talents, and expertise of our seasoned professionals, we provide customized, innovative, high quality and customer focused consulting services to the Staff. Our professionals have the industry expertise and knowledge closely following technical, managerial, and business market trends in the Power industry covering transmission and distribution and generation systems.



RECENT ASSIGNMENTS

Client	Description	Location
Louisiana Public Service Commission Staff	Proceeding to Examine Options Pertaining to Pole Viability, Pole Attachments, and all Areas that may Affect the Reliability and Sustainability of Louisiana’s Electric Utility Distribution Grid	State of Louisiana
Stone Pigman (Representing LPSC) Denton (representing CNO) Stinson, LLP (representing APSC)	Technical reviews/reports/testimony related to the Grand Gulf Nuclear Power Plant imprudence case before FERC.	Grand Gulf Nuclear Power Plant Louisiana Arkansas City of New Orleans
Mississippi Public Service Commission Staff (MPUS)	Conducted Independent Engineering due diligence on the new 600 MW Integrated Gasification Combined Cycle (IGCC) – including the technical and commercial viability, cost, schedule, engineering, and construction monitoring, including 7 switchyard modifications and 150 miles of new Transmission poles and cabling.	Kemper Project Meridian, MS
Banking Lenders Group (Mizuho)	Independent engineering of a 1000 Liters/second desalination plant including 100 miles of 36” in-ground piping and 75 miles of Transmission poles and cables.	Antofagasta Chile
Enbridge Project	500kV GIS/GIL Transmission Project. The project scope included conducting an independent technical evaluation and fatal flaws analysis, technology review and a risk assessment for this 500kV transmission project which consists of the engineering-procurement-construction of three 500kV GIS switching stations, 30-miles of 500kV overhead transmission line and 3-miles of double-circuit underground Gas Insulated 500kV transmission line installed in a tunnel.	California
Florida Public Service Commission and FP&L	Conducted a detailed technical and commercial independent engineering due diligence and provided written reports and testimony on the prudence of FP&L in the implementation of various upgrades of the FP&L nuclear power plants and transmission systems to accommodate these upgrades	St Lucie and Turkey Point and switchyards and substations
Mississippi Public Service Commission Staff (MPUS)	Independent Engineering services and monitoring of the installation of a flue gas desulfurization system for (2) 500 MW Coal Fired Units – Cost, Schedule, Risk Management, and Construction Monitoring.	Plant Daniel Mississippi
Independent System Operator (ISO) New England	Conducted independent evaluations of the technical quality, costs, and schedules of projects in the ISO que to determine if they can meet the schedules agreed with the ISO	New England States



Client	Description	Location
US Department of Energy Loan Guarantee Program	Participated in independent engineering assignments in over 15 transmission and renewable energy projects under the US DOE Loan Guarantee projects. Provided detailed IE reports on each project with an evaluation of the new technologies involved including commercial viability, assessment of the scoping, construction contracts and cost and schedules and risk management of each project. Conducted construction monitoring over these projects after financial close.	Various States in the US including Nevada, Arizona, Texas, California, etc.
Office of Arkansas Attorney General	Review for Prudence of actions and expenditures during forced outages for potential adjustment of customer rates for the Public Service Commission/AG Office.	Grand Gulf Nuclear Power Plant Arkansas Mississippi
AEI Energy El Arrayan	115 MW Wind Farm (50 Units) Acting as Independent Engineer representing the Lenders in reviews of the ongoing project and in approval of financial disbursements by the Lenders monthly. This also included 20 miles of new roadways and 45 miles of new transmission and distribution poles and cabling with 3 new switchyards.	La Serena, Chile
Georgia Public Service Commission Staff	Representing the Public Service Commissioners and the Ratepayers of the State of Georgia, CTC is responsible for the overall monitoring of the construction, financial, cost and schedule adherence, project progress, and providing twice yearly written and oral testimony in GPSC Hearings.	Vogtle Nuclear Power Plant Units 3&4 (New Construction)
PacifiCorp/ Rocky Mountain Power	Red-Butte 345kV Transmission Line Scope included design for this ~200-mile Greenfield transmission line with towers through the mountains of UT and the (2) remote substation expansions including the addition of a series capacitor.	Red-Butte, Utah
X24, 69kV Transmission and Distribution Reconducting & Refurbishment Project	Preparation of Scope Documents and Construction Documents. Engineered structure modifications and replacement structures in accordance with client, regional, and NESC standards. Analysis for various aspects of the transmission line using PLS-CADD. Calculated insulator swing and integrated it into the structure work list to determine where insulator swing issues existed and how much weight needed to be added to meet swing tolerance. Provided field support during construction.	Mass to Vermont
Y25, 69kV Line Reconducting Project	Preparation of scope document. Preparation of Construction Document. Conducted field inspections. Engineered structure modifications and replacement structures in accordance with client, regional and NESC standards. Analysis using PLS-CADD. Created spreadsheet to calculate insulator swing and the amount of weight to add to each conductor to eliminate uplift and to ensure an insulator swing of less than 30 degrees under user defined conditions.	Mass to Vermont



Client	Description	Location
Ticonderoga-Republic, Republic-Whitehall, 115kV Refurbishment Project, NY	Line refurbishment of (112) mile long transmission line primarily made up of wood pole structures. Environmental issues and excessively long spans were some of the challenges associated with this project as this line runs through the Adirondack Mountains of upstate NY. Preparation of Construction Document. Conducted field inspections. Engineered structure modifications and replacement structures in accordance with client, regional and NESC standards. Analysis for various aspects of the transmission line using PLS-CADD.	Ticonderoga, NY
Private Investor	Conducted an independent technical evaluation and condition assessment of the transmission and distribution assets of a utility in Louisiana for potential lease or acquisition	Louisiana
AEI Energy and Lenders Jaguar Energy Guatemala	300 MW CFB Coal Project, Acting as Independent Engineer representing the Lenders in reviews of the ongoing project and in approval of financial disbursements by the Lenders monthly, including 70 miles of transmission and distribution poles and cabling.	Antigua, Guatemala
AEI Energy Fenix Project	520 MW Combined Cycle Project Acting as Independent Engineer representing the Lenders in reviews of the ongoing project and in approval of financial disbursements by the Lenders on a monthly basis including 66 miles of Transmission and Distribution poles and cabling and 1000 feet of outfall piping.	Lima, Peru
U.S. Department of Energy (DOE) Loan Guarantee Program	716 MW Integrated Gasification Combined Cycle (IGCC) – Cost, Schedule, Engineering and Construction Evaluation.	Taylorville, IL
US Department of Energy (DOE) Loan Guarantee Program	South Texas Nuclear Power Project Units 3 and 4 – Preparation of an Independent Project Review and Analysis including Preparation of the Cost and Construction of the project.	Bay City, TX
LS Power	Two 600 MW Long Leaf Energy Project – Basic Design Development.	Georgia
City Public Service	4 LM6000 Combined Cycle units. Owner Engineer.	Texas
Rochester Gas & Electric	300 MW Coal Fired Power Plant – CFB Boiler Based Expansion.	New York
Reunion Power	35 MW and 45 MW Biomass Power Project FEED Study.	Ludlow, VT
Unistar	Independent technical and commercial review of the 1600 MW Gen 3+ Nuclear Power Project.	Calvert Cliffs, MD



Client	Description	Location
Department of Energy	Oversight of the removal of the 440 Building, Nuclear Weapons Plant at Rocky Flats Environmental Technology Site	Rocky Flats, CO
Department of Energy	Complete Cost Estimate – Title I, Engineering Phase for the Accelerator Production of Tritium (APT) Project.	Los Alamos, NM Aiken, SC
Department of Energy	MFFF – Independent Evaluation of Project Construction Costs for Savannah River.	Aiken, SC

ESTIMATE OF COSTS

CTC presents below the schedule of hourly rates to be used for the services to be provided. Our standard hourly rates per hour normally vary per consultant from \$150.00/hour to \$395.00/hour, however, we have discounted our fees for the commission such that they range from \$120.00/hour to \$265.00/hour as shown below:

Rate Schedule for 2022:

Position	Standard Rate	Discounted Rate
Senior Executive Consultant	\$395	\$265
Executive Consultant	\$370	\$230
Senior Consultant	\$285	\$190
Consultant	\$200	\$165
Senior Specialist	\$250	\$190
Specialist	\$225	\$165
Research and Management	\$150	\$135
Analyst	\$135	\$120
Expenses	Actual Cost	Actual Cost

For this assignment CTC has developed a cost estimate of \$249,710 for the services and we have included four (4) trips to the Commission offices or other sites for a cost of \$2000 per trip or \$8,000 in expenses. Total assignment cost \$257,710

CONCLUSIONS

Recent articles in technical and non-technical journals are concluding that extreme weather events are going to continue to happen in larger frequency and strength which necessitate careful proactive operations and maintenance planning and management, hardened designs,



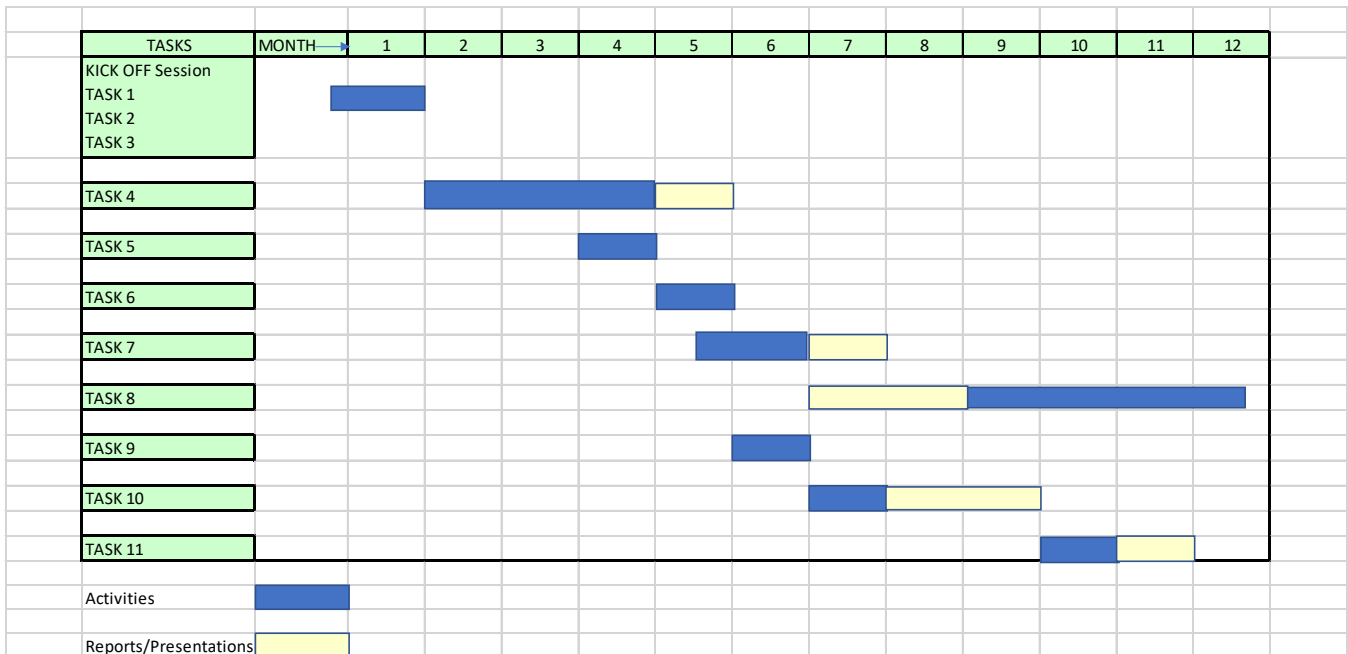
emergency programs and restorative innovative programs to provide safety, reliability, and resilience to the Louisiana distribution grid.

The CTC team believes that it is well qualified to provide the Staff with the independent engineering expertise, innovation, codes and standards knowledge, utility knowledge, emergency planning and restorative management knowledge needed to assist Staff in examining options pertaining to pole viability, pole attachments, and all areas that may affect the reliability and sustainability of Louisiana's electric utility distribution grid.

CTC key team members are experienced in participating in cases involving public utility regulation, including the presentation of direct testimony, reports and recommendations, assistance in developing cross examination of witnesses, and the analysis of comments and exceptions to proposed recommendations.

Collectively, the CTC professionals possess a full understanding and ability to assist Commission Staff in reviewing the issues related to this Docket. Indeed, the combination of our team members' educational backgrounds, achievements, specific expertise, and prior experience best positions us to provide the LPSC and Staff with the most innovative, extensive, and comprehensive consulting services to assist Staff in achieving the goals and objectives of the Commission for this Docket No. R-36226.

PROPOSED SCHEDULE – BY TASK





APPENDICES

- A. Issues/Questions to be sent to Utilities as Document Requests (DR's)
- B. Detailed Breakdown of Costs (Spreadsheet)
- C. Summary Outline only _ Infrastructure Investment and Jobs Act – Division D Entergy
- D. Key Personnel Resumes



APPENDIX A

Typical Issues/Questions to be sent to Utilities as Document Requests (DR's)

1. Provide the following documents (if not provided before to the Staff):
 - a. **Maintenance Programs (it could consist of various documents)** for the transmission systems including towers, poles, wires, substations, switchyards, interconnections, transmission and pole attachments, SCADA systems, local and regional communication systems, maintenance programs and vegetation management, local weather forecasting equipment, storage systems, etc. necessary for the adequate planning, forecasting, normal operations, emergency plans and restoration management involving the transmission systems in your territory
 - b. **Design Criteria documents** relative to the design of transmission systems and their components such as towers, poles, wires, substations, pole transformers, communication systems and other items listed in the above request about Maintenance Programs
 - c. **Maintenance Programs for the transmission systems feeding the transmission systems** for compatibility, safety, reliability, sustainability, resilience, and survivability (under extreme events) of such systems
 - d. **Management Programs** for interfaces covering information exchanges, personnel and equipment supplies with regulatory bodies, National Guard, local government officials (specifically with State and local Emergency Response Teams), news media to keep their customers informed about safety and what the utility is accomplishing under normal operations and in response to extreme weather events
 - e. **Restoration Programs descriptions for different levels of damage or area locations** across their territories commencing with the least damaged potential to the most damaged potential (closer to the sea for hurricanes) to see that restoration of electric services are accomplished in a reasonably expeditious manner
 - f. **Procedures, policies, specifications, around poles, use of different materials such as wood, steel, concrete, ceramic and composites, etc.**
 - g. **Descriptions of the “lessons learned”** from prior recent extreme weather events and how these have affected the examination of options pertaining to pole viability, pole attachments, and all areas that may affect the reliability and sustainability of Louisiana's electric utility transmission grid
2. **Provide the regulated entities' policies and processes relative to the implementation of distributed generation and use of microgrids in transmission systems** including utilization of energy storage systems, renewable and thermal generation, geographic location of strategic response teams with sufficient critical equipment and commodities to provide adequate response times.
3. **Other documentation the Staff and CTC require** to achieve the Commission's goals and objectives under this Docket



APPENDIX B

Detailed Breakdown of Costs

	Senior /Executive			Specialist			Technical			Research & Management		
	Average			Average			Average			Average		
Task	HRS	Rate	Total	HRS	Rate	Total	HRS	Rate	Total	HRS	Rate	Total
1a	2	\$265	\$530	2	\$190	\$380		\$160	\$0	2	\$135	\$270
1	20	\$265	\$5,300	5	\$190	\$950	5	\$160	\$800		\$135	\$0
2	0	\$265	\$0		\$190	\$0		\$160	\$0	0	\$135	\$0
3	12	\$265	\$3,180	5	\$190	\$950	5	\$160	\$800	5	\$135	\$675
4	105	\$265	\$27,825	72	\$190	\$13,680	40	\$160	\$6,400	32	\$135	\$4,320
4A	4	\$265	\$1,060		\$190	\$0		\$160	\$0		\$135	\$0
4B	4	\$265	\$1,060		\$190	\$0		\$160	\$0		\$135	\$0
4C	4	\$265	\$1,060		\$190	\$0		\$160	\$0		\$135	\$0
4D	4	\$265	\$1,060		\$190	\$0		\$160	\$0		\$135	\$0
4Da	2	\$265	\$530		\$190	\$0		\$160	\$0		\$135	\$0
4Db	2	\$265	\$530		\$190	\$0		\$160	\$0		\$135	\$0
4Dc	2	\$265	\$530		\$190	\$0		\$160	\$0		\$135	\$0
4E	20	\$265	\$5,300		\$190	\$0		\$160	\$0		\$135	\$0
4F	20	\$265	\$5,300		\$190	\$0		\$160	\$0		\$135	\$0
5	40	\$265	\$10,600	30	\$190	\$5,700	30	\$160	\$4,800		\$135	\$0
6	40	\$265	\$10,600		\$190	\$0		\$160	\$0		\$135	\$0
7	48	\$265	\$12,720	16	\$190	\$3,040	16	\$160	\$2,560		\$135	\$0
8	50	\$265	\$13,250		\$190	\$0		\$160	\$0		\$135	\$0
9	10	\$265	\$2,650		\$190	\$0		\$160	\$0		\$135	\$0
10	20	\$265	\$5,300		\$190	\$0		\$160	\$0		\$135	\$0
11	40	\$265	\$10,600		\$190	\$0		\$160	\$0		\$135	\$0
Rpt 4	50	\$265	\$13,250	30	\$190	\$5,700		\$160	\$0		\$135	\$0
Rpt 7	50	\$265	\$13,250	30	\$190	\$5,700		\$160	\$0		\$135	\$0
Rpt 8	40	\$250	\$10,000			\$0			\$0			\$0
Rpt 10	100	\$250	\$25,000			\$0			\$0			\$0
Rpt 11	50	\$250	\$12,500			\$0			\$0			\$0
	739		\$192,985	190		\$36,100	96		\$15,360	39		\$5,265
Total all Task Work										\$249,710		
Expenses = Four (4) Trips at \$2000/Trip = \$8,000										\$8,000		
TOTAL ESTIMATED COST										\$257,710		



APPENDIX C

Summary Outline only - Infrastructure Investment and Jobs Act – Division D Energy

The following are “excerpts” from the Infrastructure Investment and Jobs Act:

Infrastructure Investment and Jobs Act

DIVISION D ENERGY

TITLE I--GRID INFRASTRUCTURE AND RESILIENCY

Subtitle A--Grid Infrastructure Resilience and Reliability

SEC. 40101. PREVENTING OUTAGES AND ENHANCING THE RESILIENCE OF THE ELECTRIC GRID.

(a) Definitions.--In this section:

(1) Disruptive event.--The term “disruptive event” means an event in which operations of the electric grid are disrupted, preventively shut off, or cannot operate safely due to extreme weather, wildfire, or a natural disaster.

(2) Eligible entity.--The term “eligible entity” means--

(A) an electric grid operator;

(B) an electricity storage operator;

(C) an electricity generator;

(D) a transmission owner or operator;

(E) a distribution provider;

(F) a fuel supplier; and

(G) any other relevant entity, as determined by the Secretary.

(B) Requirement.--As a condition of receiving a grant under the program, an eligible entity shall submit to the Secretary, as part of the application of the eligible entity submitted under subparagraph (A), a report detailing past, current, and future efforts by the eligible entity to reduce the likelihood and consequences of disruptive events.



(d) Grants to States and Indian Tribes.--

(1) In general.--The Secretary, in accordance with this subsection, may make grants under the program to States and Indian Tribes, which each State or Indian Tribe may use to award grants to eligible entities.

(5) Priority.--In making grants to eligible entities using funds made available to the applicable State or Indian Tribe under the program, the State or Indian Tribe shall give priority to projects that, in the determination of the State or Indian Tribe, will generate the greatest community benefit (whether rural or urban) in reducing the likelihood and consequences of disruptive events.

(e) Use of Grants.--

(1) In general.--A grant awarded to an eligible entity under the program may be used for activities, technologies, equipment, and hardening measures to reduce the likelihood and consequences of disruptive events, including--

(A) weatherization technologies and equipment;

(B) fire-resistant technologies and fire prevention systems;

(C) monitoring and control technologies;

(D) the undergrounding of electrical equipment;

(E) utility pole management;

(F) the relocation of power lines or the reconductoring of power lines with low-sag, advanced conductors;

(G) vegetation and fuel-load management;

(H) the use or construction of distributed energy resources for enhancing system adaptive capacity during disruptive events, including--

(i) microgrids; and

(ii) battery-storage subcomponents;

(I) adaptive protection technologies;

(J) advanced modeling technologies;

(K) hardening of power lines, facilities, substations, of other systems; and

(L) the replacement of old overhead conductors and underground cables.



SEC. 40103. ELECTRIC GRID RELIABILITY AND RESILIENCE RESEARCH, DEVELOPMENT, AND DEMONSTRATION.

(a) Definition of Federal Financial Assistance.--In this section, the term "Federal financial assistance" has the meaning given the term in section 200.1 of title 2, Code of Federal Regulations.

(b) Energy Infrastructure Federal Financial Assistance Program.--

(2) Establishment.--Not later than 180 days after the date of enactment of this Act, the Secretary shall establish a program, to be known as the "Program Upgrading Our Electric Grid and Ensuring Reliability and Resiliency", to provide, on a competitive basis, Federal financial assistance to eligible entities to carry out the purpose described in paragraph (3).

(3) Purpose.--The purpose of the program is to coordinate and collaborate with electric sector owners and operators--

(A) to demonstrate innovative approaches to transmission, storage, and distribution infrastructure to harden and enhance resilience and reliability; and

(B) to demonstrate new approaches to enhance regional grid resilience, implemented through States by public and rural electric cooperative entities on a cost-shared basis.

(b) Authorization of Appropriations.--There is authorized to be appropriated to the Secretary to carry out the Smart Grid Investment Matching Grant Program established under section 1306(a) of the Energy Independence and Security Act of 2007 (42 U.S.C. 17386(a)) \$3,000,000,000 for fiscal year 2022, to remain available through September 30, 2026.



APPENDIX D

Key Personnel Detailed Resumes



Ben Hill
President/Senior Executive Consultant

Education

Bachelor of Science, Business Management – Stony Brook University

Certificate in Construction Project Management: University of Florida

Career Highlights

As an Executive Consultant for Construction and Project Management in the Power market, provided all construction and project related activities as well as Owner Engineering, Independent Engineering, and Construction Management Services.

Provided Construction and Project Consulting Services in the power arena including IGCC, coal, nuclear, gas, and renewables. Typical activities included overall project management, pre-construction studies such as labor analysis, cost studies and analysis, economic impacts, construction development of plans and procedures, nuclear plant outage coordination, project layout and reviews of conceptual designs, constructability reviews and preparation of bid documents. Performed post-construction claims mitigation and analysis to determine prudence of performance. Also performed acquisition due-diligence studies.

Prior Project Experience
(Partial Listing)

❖ **Louisiana PSC; Arkansas PSC, City of New Orleans Commission – Grand Gulf Prudence Review**

Represent the Louisiana Public Service Commission, Arkansas Public Service Commission and the Public Utility Commission of New Orleans in evaluation of the prudence decisions by Entergy during the operations and outages at the Grand Gulf Nuclear facility. A detailed report of technical deficiencies at Grand Gulf as well as a detailed Prudence review and written as well as oral testimony is being performed.

❖ **Georgia Public Service Commission – Vogtle Nuclear Construction Project**



CTC, through its subsidiary Vogtle Monitoring Group (VMG) is providing expert witness testimony, on-site construction monitoring, and evaluating services as well as reviewing and evaluating the reasonableness of the costs in an ongoing basis at the Vogtle Nuclear Power Plant Unit 3 and 4 Project for the Georgia Public Service Commission Staff.

- ❖ **Mississippi Public Utility Staff (MPUS), 582 MW Integrated Gasification Combined Cycle (IGCC) Facility, Meridian, MS**
Represent the MPU Staff and Citizens of the State of Mississippi, monitoring the engineering, procurement, and construction activities by the project participants to assure compliance with their execution plan, budget, and timeframe approved by the MPU Staff. Recently performed detailed cost and schedule reviews/analysis for prudence relative to a Motion submittal by the Owner to the MPUS to increase the approved recoverable budget for the project. Also monitor ongoing construction, engineering, and procurement activities to assure they were within industry standards and methods.
- ❖ **Braunig Peaking Turbines Project**, Owner Engineer for a 200 MW peaking facility for City Public Service in San Antonio, Texas. Performed all Pre-Project development activities, ie Development and Review of Design Criteria, preparation of Bid Document for Major Equipment as well as the EPC Contractor, Evaluation of Potential Bidders, which included visiting Reference Plants to determine Contractor capabilities and detailed review of the execution schedule and monitoring of progress. Performed sequence of construction analysis, approval of execution plans, monitoring construction progress as owner engineer, Claims Mitigation analysis, and final close out of the project.
- ❖ **AEI Energy – Jaguar Project** – 300 MW CFB Coal Plant Antigua, Guatemala- Performed all Independent Engineers reviews, reports and studies necessary to represent the Lenders in the design, construction, and operation of the facility.
- ❖ **AEI Energy – El Arrayan Project** – 115 MW Wind Farm (50 Units) La Serena, Chile- Performed all Independent Engineers reviews, reports and studies necessary to represent the Lenders in the design, construction, and operation of the facility.
- ❖ **AEI Energy – Fenix Project** – 520 MW Combined Cycle Plant, Lima, Peru - Performed all Independent Engineers reviews, reports and studies necessary to represent the Lenders in the design,



construction, and operation of the facility.

- ❖ **Wolverine Clean Energy Venture**, 600 MW greenfield coal project Owner Engineer Construction Representative. Performed contractor analysis, traffic study, economic impact study for the community, major equipment layout and sequence of construction, and execution plans, schedule monitoring for successful completion.

- ❖ **Starwood Solar One Project**, 290MW Concentrated Solar Facility Performed a detailed Labor and Productivity Study and detailed sequence of construction due to extremely restricted site. Proposed methods of construction contracting, prepared construction execution plans, and performed a detailed sequencing of component deliveries and assembly at the offsite facility, as well as the on-site installation process. Due to restricted site conditions, the detailed site assembly process, component and material deliveries, site assembly and final installation were all critical to schedule achievement.

- ❖ **Imperial Valley Project**, 300 MW CSP Electric Generation Facility Performed a detailed Due Diligence for International Power America (IPA) to determine viability and credibility of the project. Performed analysis of the sequence of construction, including detailed review of the proposed automated on-site fabrication facility and sequencing of product delivery and assembly.

- ❖ **Kennecott Utah Copper Project**, 250 MW Phased Upgrade Power Project - Performed a detailed Labor and Productivity Study for the Greater Northern Utah Area. Evaluated various locations for specific equipment selections, sequenced the construction process, as this was an extremely restricted site, and performed preliminary schedule and detailed cost study.

- ❖ **Taylorville Energy Center**, 716MW Integrated Gasification Combined Cycle (IGCC) facility Performed Independent Engineering and Construction analysis services for the Department of Energy Loan Guarantee Program to determine the viability and achievability of the execution of this project. Project execution, cost analysis, potential site analysis of conditions, and procurement of components were all reviewed for achievability and applicability. (The project was later canceled prior to the start of construction.)



- ❖ **South Texas Nuclear Project, Units 3 and 4** Performed Independent Engineering and analysis services for the Department of Energy Loan Guarantee Program to determine the viability and achievability of the execution of this project. Performed Construction Management oversight services for the project. Project Execution, detailed cost analysis, and procurement of components, as well as site conditions, were reviewed for achievability. (The project was later canceled prior to the start of construction.)
- ❖ **Florida Power and Light** - Performed a detailed review of “decisions” relative to the EPU uprates at the Turkey Point Nuclear Plant and Saint Lucie Nuclear Power Plant to determine prudence of major decisions prior to presentation to the Public Service Commission for rate increase approval. Also performed detailed reviews of the EPU Uprate plans for both outages at each site.
- ❖ **Calvert Cliffs Nuclear Project, Unit 3 & 4** - Performed Independent Engineering and analysis services for the Department of Energy Loan Guarantee Program to determine the viability and achievability of the execution of this project. Performed Construction Management oversight services for the project. Project execution, cost analysis, and procurement of components as well as site conditions, were reviewed for achievability.
- ❖ **Rocky Flats Engineers and Constructors, LLC (Stone & Webster).** As Vice President, responsibilities included the overall management of the Design/Build, Firm Fixed Price, and Unit Rate contracts. This included the oversight of design and construction efforts of major modifications to existing facilities as well as demolition, removal of nuclear waste materials, and characterization of many major buildings and components. This was for the Department of Energy at the Rocky Flats Environmental Technology site. This contract included over 400 task orders ranging in value from a few thousand dollars to over 50 million dollars. The majority of these task orders, were performed on a Firm Fixed price basis and were competitively bid. The total value of this contract was approximately \$350 million. Held a “Q” Clearance.
- ❖ **Browns Ferry Nuclear Plant.** As Superintendent of Construction, I served as the Shift Site Manager, responsibilities included the overall site management to support the successful restart of Browns Ferry Unit 3. Management included all field supervision,



work plan writers, field engineering, cost and scheduling, interface with design engineering group and Senior Site Representative. Later, responsibilities included oversight of the Maintenance and Modification activities. Also, responsible for Outage Coordination for refueling outages and detailed planning and implementation for all major upgrades to the facility.

- ❖ **Quad Cities Nuclear Station.** As Chief Construction Supervisor – Mechanical, served as a work plan writer.

- ❖ **Clinton Nuclear Power Station.** As Chief Construction Supervisor Mechanical, responsibilities included management of all Mechanical Department activities including corrective maintenance to plant components and modifications to various plant systems as well as the detailed planning and execution of Clinton’s Maintenance Outages.
On special assignment to Illinois Power Company, responsibilities included coordination of all pre-outage, outage, and post-outage activities. Position required an extensive amount of interface with all Illinois Power departments. Major pre-outage efforts included the development of execution schedules, manpower requirements, and mobilization. Major outage efforts involved coordination of all activities including status and tracking of all work as well as continued interface with owner personnel. Post-outage requirements involved the formulation of the Outage Critique.

- ❖ **River Bend Nuclear Station.** As Senior Construction Supervisor – Mechanical, responsibilities included installation of all ductwork, equipment, and seismic supports for the HVAC systems in all Category I, safety-related areas of the plant. Included the direct supervision of the fabrication, installation, testing, and successful completion of the systems.

- ❖ **Shoreham Nuclear Power Station.** As Construction Engineer, responsibilities included coordinating activities of structural steel contractor for the installation of the CO2 Fire Protection System. Duties were to identify and solve technical problems associated with the above-named contractors; check and validate contractors’ claims for back-charges and progress payments; monitor schedule and progress of same contractors; initiate work directives to contractors or work to be performed outside scope to assure that all specifications are met; and all other duties assigned by the Structural Supervisor.



Albert Ferrer
Sr. Executive Consultant/ Project Director

Education

Executive Development Program, Northeastern University

Global Institute for Leadership Development Program

MS Nuclear Engineering, New York University

BS Mechanical Engineering, Manhattan College

Career Highlights

Executive Vice President of Consulting Services with over 40 years of professional experience in the US and international power industry. Al Ferrer is responsible for business development and marketing of all the power consulting services Critical Technologies Consulting provides to its clients including Owner's Engineering, Independent Engineering, due diligence, acquisition services, power plant performance improvement, CO2 strategies, operational risk management, air emissions control retrofits, upgrades and life extension, covering nuclear, coal, gas and combined cycle, biomass, geothermal, IGCC, circulating fluid bed, renewables such as solar, wind and biomass, and other power plant generation technologies.

He worked for Stone & Webster most of his career with his last position serving as Senior Vice President and Managing Director. He worked for Burns and Roe as VP of the Consulting Division and brought the Consulting Division from 8 personnel to 85 personnel when he left. He has directed and executed work in the US, Canada, Chile, Brazil, Mexico, Malaysia, Indonesia, Thailand, Japan, and Korea. He holds a BS in Mechanical Engineering and an MS in Nuclear Engineering and has participated in Executive Management Educational Programs.

Prior Project Experience
(Partial Listing)

- ❖ **New England ISO CONE** Directed the New England ISO CONE analysis and the technical, cost and schedule of the projects in the que and execution of the work for ISO New England and Concentric Energy Advisors.
- ❖ **Transmission and Distribution Facilities, B Capital Partners, Louisiana** Project Director in charge of a Due Diligence Review of the electrical transmission and distribution systems of a



confidential municipal utility to assist B Capital in presenting a proposal to operate and manage these systems.

- ❖ **Conducted for the Mississippi PSC an Independent Engineering due diligence and construction monitoring** on the new 600 MW Integrated Gasification Combined Cycle (IGCC) – including the technical and commercial viability, cost, schedule, engineering, and construction monitoring, including 7 switchyard modifications and 150 miles of new Transmission poles and cabling.
- ❖ **Conducted for the Florida PSC and FP&L an independent detailed technical and commercial engineering due diligence** and provided written reports and testimony on the prudence of FP&L in the implementation of various upgrades of the FP&L nuclear power plants and associated transmission systems to accommodate these upgrades.
- ❖ **Participated and directed independent engineering assignments** for the US-DOE over 15 transmission and renewable energy projects under the US DOE Loan Guarantee projects. Provided detailed IE reports on each project with an evaluation of the new technologies involved including commercial viability, assessment of the scoping, construction contracts and cost and schedules, operations, and risk management of each project. Conducted construction monitoring over these projects after financial close.
- ❖ **El Campesino and Octopus Regas Terminal and 600MW Combined Cycle Projects, Santiago, Chile – Consortium of Banks: SG, CA, MUFG & DNB – Joint Project by EDF, Chenier & Biobio Genera** Program Director for Independent Due Diligence on a gas-to-wire project including an LNG FSRU and terminal, subsea and onshore pipeline, H Class Single Shaft CCGT and about 140 miles of transmission and distribution lines. Conducted a detailed technical due diligence of the project Financial Model analyzing project profitability and developing a wide spectrum of sensitivity scenarios. Included due diligence on the Chilean pipelines and compressor stations.
- ❖ Mississippi Public Utility Staff (MPUS), 582 MW Integrated Gasification Combined Cycle (IGCC) Facility, Meridian, MS Represent the MPU Staff and Citizens of the State of Mississippi, monitoring the engineering, procurement, and construction activities by the project participants to assure compliance with



their execution plan, budget, and timeframe approved by the MPU Staff. Recently performed detailed cost and schedule reviews/analysis for prudency relative to a Motion submittal by the Owner to the MPUS to increase the approved recoverable budget for the project. Also monitor ongoing construction, engineering, and procurement activities to assure they were within industry standards and methods.

- ❖ **Los Guindos Due Diligence, GE Capital, Chile:** Project Director for a technical due diligence for a refinancing transaction of an existing GE 9E 135 MW gas turbine and the non-recourse financing of an GE 9E 135 MW. Due diligence reviews of all project agreements, contractual risk assessments and the financial model. Assisted the Natixis, MUFG and SMBC banks in the EPC contract negotiation until the issuance of the execution copy of the contract.
- ❖ **Minera Spence Project, Mizuho, Chile (Ongoing)** Project Director for the construction monitoring phase. Currently in charge of the Due Diligence Review for MUFG (Mizuho). The project consists of designing a desalination plant to take the ocean water and desalinate it to a certain grade to then send it to Spence Mine. The mine will have a nominal treatment capacity of 95,000-100,000t/d. The desalination plant will supply approximately 800l/s desalinated water to be used in the industrial processes, as well as a 154km pipeline and electrical distribution lines and pumping system, and a 4,000m³ storage tank.
- ❖ **Pesqueria power plant re-financing, Techgen, Mexico:** Project Director for review of a re-financing of a 1GW combined cycle gas turbine project in Mexico for Credit Agricole Bank. The transaction is a syndicated loan refinancing that involves 10 commercial intranational banks.
- ❖ **Gas-to-Power Project Development, ExxonMobil LNG Executives, USA** Headed a three-day capacity building workshop for eight members of the global LNG ExxonMobil executives. The objective of the workshop was to educate the teams on the gas-to-power model from a project financing and development point of view. The workshop included the basis of non-recourse financing and its application to global gas to power projects including all project agreement, financing agreement and project structuring.
- ❖ **CHP La Plata Acquisition Due Diligence, YPF S.A. Argentina** Project Director for a technical due diligence of an acquisition of a



100 MW combined heat and power plant in the La Plata refinery in Argentina. Besides the technical aspects, advised the CEO of YPF S.A. on the key risk aspects of the acquisition and how to quantitatively incorporate this risk in the acquisition final price.

- ❖ **YPF/GE Fast Power Project, Citi Bank, Credit Suisse and Export Development Canada, Argentina** Project Director for a technical due diligence of two power plants, a 266 MW 9FA.04 unit plant located in the province of Tucuman, and a 108 MW LMS100 unit plant in Neuquén. The due diligence was conducted during an advanced stage of engineering and construction. The extent to which facilities and services were shared with existing operating facilities resulted in contractual complexity. Review of all project agreements including the EPC, CSA, AMA, LLA, and the PPA for both plants. Define project risks especially as the plant is integrated in existing complexes and will share to a larger extent existing facilities. The project reached financial close and represents the first international project financing in Argentina in more than 15 years.
- ❖ **Project Aconcagua Acquisition Due Diligence, YPF S.A., Argentina** Project Director for a technical due diligence over a large fleet of power generation plants owned by YPF EE to incorporate a partner with up to 50% of the company, while maintaining co-control. The fleet included co-generation, small and large CCGT, open cycle and aero-derivatives, solar, wind and Biomass. Review of detailed plans for the projects under development producing a risk matrix and a paper of recommendations for YPF EE to consider.
- ❖ **1,500 MW Porto de Sergipe I Gas-to-Power Project, IFC and IIC, Brazil** Project Director for a technical due diligence of a 1,500 MW gas to power including a 7HA.02 CCGT, 170,000 m³ FSRU and a submerged soft yoke (SSY) mooring system. Onshore and offshore technical due diligence. Review of all project agreements including the EPC, O&M, CSA, EPCI, BBC, OSA and the PPA producing a consistency matrix and advising all lenders on the project overall risks. Contingency sizing for the project using probabilistic analysis and montecarlo simulation. Review of the financial model. Negotiation on behalf of the lenders with GE to introduce 25 amendments to the EPC contracts. Scope included the undersea and overland pipelines due diligence.
- ❖ **Abengoa El Norte III Acquisition Due Diligence, acquisition and execution, Macquarie Capital, Mexico.** Project Director for



a technical due diligence for atypical and unusual acquisition of a partially constructed power plant that was owned by Abengoa before bankruptcy. Review of the PPA and the financial model. Consistency analysis with the remaining project agreements. Probabilistic availability and reliability model. Risk analysis conducted. Developed the final schedule to build the facility

- ❖ **Coal-to-Urea Market and Techno-Economic Feasibility Study, Navajo Transitional Energy Company (NTEC), Arizona** Directing the Consulting assignment with the Navajo Nation concerning coal to liquids and coal to power Phase 1 activities. Phase 2 activities include the market study for the coal to liquids project (ammonia-urea) they are considering. The outcomes and reporting to be provided to the US department of Energy for assessment to provide sovereign loan guarantees.
- ❖ **Pio Pico Energy Center, San Diego, CA, GE Capital** Program Director for this merger and acquisition technical advisor project conducting a full Due Diligence on a three-unit simple cycle peaking facility.
- ❖ **Gas-to-Power Plant (GTPP) and LNG Import Terminal, Panama, MKM/Gorgeous Partners** Provided advisory work on project structuring, lenders key requirements, techno-financial aspects required for project success. Analysis included technology evaluation, LNG procurement, offshore terminal optioneering and key pre-requisites to be considered for profitability enhancements.
- ❖ **South African Gas to Power** Provided consulting services to the South African Gas-to-Power Project with Intergen.
- ❖ **Wisconsin Light and Power** Expert Witness for the Wisconsin Light and Power case involving Project Estimates for a Confidential Project which was settled out of court as a result of my testimony.
- ❖ **Confidential Client** Executed due diligence for an 1800MW Combined Cycle plant near Manchester, UK for a US client (hedge fund) this included the critical flaw analysis prior to the Capacity Auction.



Constantinos (Dinos) Nicolaou
Exec VP/Executive Consultant

Education

Master of Business Administration – University of Puget Sound, Tacoma, Washington

Bachelor of Science, Economics and Accounting – Staten Island College (CUNY)

Career Highlights

Mr. Nicolaou has over 38 years' experience in project controls and construction planning and scheduling for engineering, construction, start up and outage projects, within both home and field offices, for major energy projects. His background encompasses IGCC, nuclear and fossil generating stations, with extensive hands-on experience in the use of PRIMAVERA and several other scheduling tools.

Prior Project Experience

(Partial Listing)

- ❖ **Louisiana PSC; Arkansas PSC, City of New Orleans Commission – Grand Gulf Prudence Review**
Represent the Louisiana Public Service Commission, Arkansas Public Service Commission and the Public Utility Commission of New Orleans in evaluation of the prudence decisions by Entergy during the operations and outages at the Grand Gulf Nuclear facility. A detailed report of technical deficiencies at Grand Gulf as well as a detailed Prudence review and written as oral testimony is being performed.
- ❖ **Georgia Public Service Commission – Vogtle Nuclear Construction Project**
CTC, through its subsidiary Vogtle Monitoring Group (VMG) is providing expert witness testimony, on-site construction monitoring, and evaluating services as well as reviewing and evaluating the reasonableness of the costs in an ongoing basis at the Vogtle Nuclear Power Plant Unit 3 and 4 Project for the Georgia Public Service Commission Staff.
- ❖ **Mississippi Public Utility Staff (MPSC) 600 MW Integrated Gasification Combined Cycle (IGCC) Facility, Meridian, MS -**
Represent the MPU Staff and Citizens of the State of Mississippi, performing an Independent Review and providing comments regarding the Project Schedule prepared by Southern Company and



KBR. Attend regular meetings with MPUS and Southern Company Staffs in order to reconcile variances in the Project Schedule.

Participate in site construction inspections in order to validate work progress and labor productivity to measure against the Project Schedule. Advise MPUS staff of any issues.

- ❖ **Taylorville Energy Center**, 716MW Integrated Gasification Combined Cycle (IGCC) Facility - Performed Independent Review and provided comments regarding the Project Schedule prepared by the KBMD team. Prepared the Project Schedule section of the detailed report issued to the U.S. Department of Energy (DOE) for the DOE's evaluation of the project for the Loan Guarantee Program. (The project was later canceled prior to the start of construction.)
- ❖ **South Texas Nuclear Project, Units 3 and 4** – Prepared an Independent Project Schedule Review and Analysis for the U.S. Department of Energy Loan Guarantee Program. Attended meetings on a regular basis with the Project Team to discuss findings. Prepared the Project Schedule section of the detailed report issued to the DOE. (The project was later canceled prior to the start of construction.)
- ❖ **MNPC (Malaysia) and EGAT (Thailand) Feasibility Study** - Project Controls Manager responsible for developing baseline cost and schedule, establishing performance measurement system and monthly reporting on an Integrated Resource loaded schedule.
- ❖ **Pennsylvania Power and Light (PPL) U.S. EPR Bell Bend Project** - Lead Scheduler
- ❖ **MNES US-APWR Project** - Lead Scheduler for the EPC level II schedule. Validated both cost and schedule including declared critical paths.
- ❖ **Calvert Cliffs EPR Project** - Lead Scheduler in an Independent Engineer DOE-sponsored review of the Calvert Cliffs project's EPC Level II schedule, including interviews and meetings with Bechtel and Unistar.
- ❖ **Westinghouse AP1000** - Lead Scheduler in the External Independent Review of the Westinghouse AP1000 Nuclear Power



Plant. This level III EPC Integrated Project Schedule had over 65,000 activities, was Engineering resource loaded, and included a series of interviews with Westinghouse.

- ❖ **Indian Point NPP, Units 2 and 3, New York** – Served as Engineer for several refueling outages, starting in 1998. Responsible for project schedule and cost control, including development of detailed level II and III Primavera schedules, collection and control of all labor, and material costs, weekly monitoring of project outage work.
- ❖ **Served as Lead Scheduler on the Burns and Roe Independent Review Team of the U.S. Department of Energy (DOE)**-sponsored programs which included Independent Cost Estimates (ICE) and External Independent Reviews (EIR) for the following:
 - The Columbus Closure EIR Project – Columbus, Ohio
 - Yucca Mountain EIR - Las Vegas, Nevada (Baseline, CD-1 and ICE)
 - The Mound (MEMPH) Closure – Dayton, Ohio (PRS 66 and total Project EIR)
 - The Neutrinos Project (NuMI) at Fermi Lab in Illinois
 - The Hanford Project Clean-up EIR in Washington
 - The Oak Ridge Cleanup EIR in Tennessee
 - Review of National Ignition Facility (NIF), at DOE's Lawrence Livermore National Lab in California
 - The EIR of Sandia's MESA Project - Albuquerque New Mexico
- ❖ **Vogtle Nuclear Power Station** - Responsible for project controls assignments including all phases of schedule development, maintenance and reporting for the plant. Prepared schedules involving engineering, construction, pre-operations, startup and testing, pre- fueling, and refueling outages. Also used Project/2 scheduling system and maintained overall database.
- ❖ **Brookhaven Graphite Research Reactor Project** - Responsible for the development of integrated project schedules, WBS, cost plans, and performance reports required for decommissioning.
- ❖ **Yucca Mountain Project** - Responsible for the review of integrated schedules, cost plans and cost performance reports. Also prepared External Independent Reviews on this project.
- ❖ **La Salle Nuclear Power Station** - Responsible for providing overall



supervision establishment of scheduling and cost control required

- ❖ **WPPS Nuclear Project Units 3 and 5** - Responsible for engineering, construction interface, and project controls coordination.



Michael Tomadakis, PE

Senior Executive Consultant

Education

MS, Electrical Engineering, Worcester Polytechnic Institute (WPI)

Power Engineering Management (WPI)

BS, Electrical Engineering, Wentworth Institute of Technology (WIT)

Emerging Leaders 24-month program + 2-weeks immersive training in London

Registrations:

Professional Engineer: MA #49228, 2011 TX #119633, 2015

Awards:

Mott MacDonald Technology and Innovation Award, First Place for Development of Integrated 3D Technologies

Career Highlights

Considerable experience in leadership, operations, management, project management, engineering, design, team building, and business development. Guiding, mentoring, and aspiring leaders in a holistic manner, considering all facets of business. Implements training and process development, mentors aspiring leaders, and sets the team standard for professionalism and excellence.

He has managed transmission (OH and UG), substation and distribution projects from 12kV to 500kV AC and up to +/- 600kV DC. He has considerable experience with wind and solar collector systems and works closely with developers, utilities, and ISO's (NYISO, ISONE, PJM, CAISO). He has solid technical skills, strong business acumen and excellent written/verbal communication skills. He has an aptitude for engineering, project management, and problem solving for even the seemingly most impossible of situations.

Prior Project Experience (Partial Listing)

- ❖ **CleanLine Energy's 700-mile +/- 600kV DC Plains and Eastern Project, OK, AR, TN:** As Project Manager, facilitated Engineer and EPC Planning services for design, permitting, ROW acquisition



and the Department of Energy's NEPA process. Presented at several open house forums to educate the public about the project.

- ❖ **PacifiCorp/Rocky Mountain Power**, Sigurd to Red-Butte 345kV Transmission Line, UT: Project Manager. Project Scope included the conceptual design for this ~200mile Greenfield transmission line through the mountains of UT and the (2) remote substation expansions including the addition of a series capacitor. Responsibilities included geotech data acquisition, ROW acquisition support including preparation of legal exhibits, Access Road design, BLM and National Forrest technical support including giving presentations, RFQ preparation and Evaluation of the OEM and EPC contractors, and more. This project was culturally, environmentally and geographically challenging.
- ❖ **Enbridge 500kV GIS/GIL Transmission Project, CA** Technical lead, primary author and director of this due-diligence project. The project scope included conducting fatal flaws analysis, technology review and a risk assessment for this 500kV transmission project which consists of the engineering-procurement-construction of three 500kV GIS switching stations, 30-miles of 500kV overhead transmission line and 3-miles of double-circuit underground Gas Insulated 500kV transmission line installed in a tunnel.
- ❖ **TNMP TNP1/Twin-Oaks 345kV Substation, TX** Project Manager for the Engineering, Construction, and Testing/Commissioning associated with the replacement of (11) 345kV breakers in two different stations. The intent was to replace the existing single-pole, live tank breakers and free-standing CT's with new dead-tank units. This project is particularly challenging due to the extremely aggressive construction/testing schedule and close coordination with the Power Plants to ensure no interruption of production.
- ❖ **WETT OE Contract, TX** Project Manager for this Owner's Engineer contract with Wind Energy Transmission of Texas (WETT), a Texas electrical transmission utility and CREZ player. Responsibilities include managing of engineering/design resources, scoping tasks, estimating and developing task orders, developing, maintaining schedule and budget, and ensuring a high degree of quality in deliverables.
- ❖ **Spicewood 138/15kV Substation, TX** Construction Project Manager responsible for the materials/equipment procurement and construction associated with this refurbishment project. The scope of this project entails the complete removal and rebuilding



of two substation bays including all structural steel, breakers, switches, AC/DC cable, control and communications cable, foundations, two power transformers, and all other miscellaneous apparatus associated with this refurbishment project.

- ❖ **HTLS Transmission Conductor Assessment and Design Specification, Ireland** Project Manager and Lead Engineer responsible for the schedule, budget, resource management associated with the technical assessment of various HTLS (High Temperature Low Sag) conductors on the market today ultimately delivering our client an assessment report with our recommendations on which HTLS conductor is best suited for their needs of up-rating existing transmission lines while reusing existing facilities. Developed a standard specification for our client outlining the criteria, deliverables, and installation methods associated with reconductoring with the recommended HTLS conductor.
- ❖ **110kV Cauteen Bay Conductor Rating, Ireland** Project Manager and Lead Engineer tasked with analyzing a proposed conductor design to verify that it would meet the required 2500A steady state current carrying capacity. A complete report was submitted outlining the findings of the analysis and recommendations based on said findings. Created steel specification to be sent out to bid to various manufacturers based on the strain-bus design tensions and calculated structure loads per appropriate weather cases. Calculated short circuit forces acting on the strain bus and gantry support structures per IEC 865-1.
- ❖ **Boggeragh 110kV Transmission Line, EirGrid, Ireland** Project manager and Lead Engineer responsible for the schedule, budget, and resource management associated with the owner's engineering support services that required reviewing the 110kV transmission line PLS-CADD design and construction drawings/documents including Plan and Profile drawings and Sag Charts. Design had to conform to the National Normative Aspects (NNA) for Ireland as well as EirGrid's specifications
- ❖ **Garvagh 110kV Transmission Line, EirGrid, Ireland** Project manager and Lead Engineer responsible for the schedule, budget, and resource management associated with the owner's engineering support services that required reviewing the 110kV transmission line PLS-CADD design and construction drawings/documents including Plan and Profile drawings and Sag



Charts. Design had to conform to the National Normative Aspects (NNA) for Ireland as well as EirGrid's specifications.

- ❖ **Sabiya 138kV GIS to AIS switchyard, Kuwait** Responsible for completing the physical design within the allotted scope, schedule and budget for the GIS to AIS riser and yard. Primarily responsible for the GIS-AIS riser design/drawings & physical design/drawings for the AIS yard including the Bill of Materials. Worked closely with the client and project team to deliver on within the allotted budget and schedule.
- ❖ **Barking C 132kV Substation, National Grid, UK** Responsible for creating a detailed scale model of an existing 132kV AIS indoor substation in 3D. Upon completion of the detailed existing model, design modifications from Mott MacDonald's Brighton (UK) office were implemented into the 3D model to determine feasibility of the proposed modifications and to develop detailed drawings to facilitate the future replacement of some of the AIS equipment with GIS equipment in several bays.
- ❖ **Ivanpah 115kV Transmission Lines, CA** Project Manager and Lead Engineer responsible for the detailed design of several new overhead and underground 115kV transmission lines that will support a new solar power facility in California. Work directly with the EPC contractor to optimize the design and overall project cost. Work with the cable manufacturer to maximize efficiency of the underground transmission line cables and overall design. Set and monitor project budget, maintain project schedule and responsible for project invoicing.
- ❖ **Duley Rd. 230kV Substation, NY** Responsible for the detailed design and on-site support through construction/commissioning of a greenfield 230/34.5kV substation for a windfarm. Scope consisted of a 3-breaker 230kV ring bus and 34.5kV collection feeders.
- ❖ **Ryan Rd. 230kV Substation, NY** Responsible for the detailed design and on-site support through construction/commissioning of a greenfield 230/34.5kV substation for a windfarm. Scope consisted of a 230kV breaker and a half bay addition and 34.5kV collection feeders.
- ❖ **Wethersfield 230kV Switchyard, NY** Responsible for the timely completion and management of resources to aid in the production of the following: power one-line, general arrangement



design/drawings, physical design/drawings, grounding grid design & study per IEEE-80, lightning protection design & study per IEEE-998, Bill of Materials, control building layout/design, conduit schedule, cable schedule and lighting design. All designs had to meet NEC and NESC standards. All designs and drawings had to conform to client standards. Worked closely with client and contractors throughout the design-build process. This was a new construction site that had to adhere to bulk power requirements for primary and secondary protection schemes, guidelines and criteria.

- ❖ **Altona Wind-Park Collector System, NY** Lead engineer supporting the engineering, design and construction of 34.5kV collector systems. Supplied on-site construction management/support for these projects. Worked closely with client throughout the process. Successfully designed low resistivity turbine grounding system in highly resistive soil location. Conducted load flow and short circuit analysis of collector branches using SKM. Conducted cable sizing calculations. Designed support structures for overhead cable per NESC loading and overload criteria.
- ❖ **Chateaugay Wind-Park Collector System, NY** Lead engineer supporting the engineering, design and construction of 34.5kV collector systems. Supplied on-site construction management/support for these projects. Worked closely with client throughout the process. Successfully designed low resistivity turbine grounding system in highly resistive soil location. Conducted load flow and short circuit analysis of collector branches using SKM. Conducted cable sizing calculations. Designed support structures for overhead cable per NESC loading and overload criteria.
- ❖ **NYISO Consulting Service Agreement**, Various Tasks: Working with ISO, developers and regional utilities to facilitate obtaining IA, LGIA and PPA for entities that wish to interconnect into the power grid. Tasks include conceptual design, feasibility analysis, scheduling, cost estimating, design review and other miscellaneous tasks.
- ❖ **Calpine Sutter 230kV UG Transmission Line, USA:** Project Manager / Lead Engineer responsible for preliminary design, cost estimates, feasibility and study report for several options to connect the Sutter 600MW power plant in California to a new 230/500kV substation on the PG&E 500kV network. Worked with



the client to optimize the various scenarios to their needs and took various technologies and approaches into consideration such as HPFF and solid dielectric technologies and means/methods of installation as the location of installation is in a flood-zone and rice farms that are submerged in water.

- ❖ **CPV Valley 345kV Interconnection, NY** Project Manager and Lead Engineer responsible for the schedule, budget and technical design/advisory associated with preliminary design and owners engineering services to accommodate an interconnection of a combined-cycle power plant into an existing bulk power 345kV transmission line. The ultimate design yielded a six breaker AIS ring at the power plant, a one mile UG transmission line, and a four breaker GIS switchyard inside a metal building which is intended to create a looped connection with the exiting 345kV line. Michael supported the client through the SIS phase to obtain an LGIA working with the NYISO and the interconnecting utilities.
- ❖ **Longview 500kV Transmission Line Design, USA** Owners Engineer responsible for reviewing the designs/drawings associated with the 500kV transmission line and switchyard design. Responsible for checking transmission associated designs, drawings and bill of materials for the EPC contractor.
- ❖ **Q169, 115kV Reconductoring/Refurbishment Project using ACSS, MA** Project Manager & Lead Engineer. Line Reconductoring Project, install 795 ACSS Condor to uprate the existing line without replacing supporting structures. Preparation of scope document. Preparation of Construction Document. Conducted field inspections. Engineered structure modifications and replacement structures in accordance with client, regional and NESC standards. Analysis for various aspects of the transmission line using PLS-CADD. Determined location of two new load break switches. Prepared steel specs for both switches including the calculations for loading trees. Designed 110 ft single pole three way load break switch in a landfill near a marsh anchored to a concrete capped pile foundation. Designed caisson foundations for 22 structures in a marsh.
- ❖ **Lockport-Mortimer 113 & 114, 115kV Refurbishment Project, NY** Project Manager & Lead Engineer. Line refurbishment of two parallel (56) mile long transmission lines primarily made up of steel lattice structures. Preparation of Construction Document. Conducted field inspections. Engineered structure modifications and replacement structures in accordance with client, regional



and NESC standards. Analysis for various aspects of the transmission line using PLS-CADD.

- ❖ **Ticonderoga-Republic, Republic-Whitehall, 115kV Refurbishment Project, NY** Project Manager & Lead Engineer. Line refurbishment of (112) mile long transmission line primarily made up of wood pole structures. Environmental issues and excessively long spans were some of the challenges associated with this project as this line runs through the Adirondack Mountains of upstate NY. Preparation of Construction Document. Conducted field inspections. Engineered structure modifications and replacement structures in accordance with client, regional and NESC standards. Analysis for various aspects of the transmission line using PLS-CADD.

- ❖ **Y25, 69kV Line Reconductoring, MA/VT** Project Manager & Lead Engineer. Reconductoring Project, MA & VT. Preparation of scope document. Preparation of Construction Document. Conducted field inspections. Engineered structure modifications and replacement structures in accordance with client, regional and NESC standards. Analysis using PLS-CADD. Created spreadsheet to calculate insulator swing and the amount of weight to add to each conductor to eliminate uplift and to ensure an insulator swing of less than 30 degrees under user defined conditions.

- ❖ **X24, 69kV Reconductoring/Refurbishment Project** Project Manager & Lead Engineer. Preparation of Scope Documents and Construction Documents. Engineered structure modifications and replacement structures in accordance with client, regional, and NESC standards. Analysis for various aspects of the transmission line using PLS-CADD. Created a spreadsheet that calculated insulator swing and integrated it into the structure work list to determine where insulator swing issues existed and how much weight needed to be added to meet swing tolerance. Provided field support during construction.

- ❖ **National Grid 301 and 326 Lines, 345kV Line Refurbishment** Detailed engineering and Design associated with a major refurbishment effort of a twenty-five mile and fifteen mile 345kV transmission line. Scope included development of construction drawings and construction package. Line and engineered structure modifications and replacement structures in



accordance with client, regional, and NESC standards. Analysis using PLS-CADD.

- ❖ **Cape Cod Canal 345kV Line Relocation, MA** Preliminary Engineering and Design to evaluate the feasibility of this line relocation option. Preparation of preliminary design drawings for proposed structure types and plan & profile drawings. Preparation of construction cost estimates for the proposed line relocation. Design had to meet client, regional, and NESC standards. Analysis using PLS-CADD.
- ❖ **National Grid, 345kV River Crossing** Project Manager & Lead Engineer Improved clearance of two parallel 345kV transmission lines over the Oneida River in New York. Located and designed new structures and foundations for 130-foot steel pole structures to cross the 1100-foot space across the Oneida River. Improved Lightning Protection for the crossing was considered as part of the design. Line and engineered structure modifications and replacement structures in accordance with client, regional, NESC and ACOE standards. Analysis using PLS-CADD.
- ❖ **Porter-Rotterdam 30, 230kV Refurbishment Project, NY** Preparation of Scope Documents and Construction Documents associated with the refurbishment of (75) mile long transmission line. Engineered structure modifications and replacement structures in accordance with client, regional, and NESC standards. Analysis using PLS-CADD.
- ❖ **Porter-Rotterdam 31, 230kV Refurbishment Project, NY** Preparation of Scope Documents and Construction Documents associated with the refurbishment of (75) mile long transmission line. Engineered structure modifications and replacement structures in accordance with client, regional, and NESC standards. Analysis using PLS-CADD.
- ❖ **S171N and S171S, 115kV Line Refurbishment and Shieldwire Addition Project, RI** Lead Engineer. Preparation of scope document. Preparation of Construction Document. Conducted field inspections, engineering of structure modifications and replacement structures in accordance with client, regional and NESC standards. Analysis for various aspects of the transmission line using PLS-CADD.



- ❖ **Tacoma Light and Power, Tacoma River Crossing** Created a program using MATLAB to conduct Aeolian vibration analysis on the 5800-foot span crossing the Tacoma River.

- ❖ **Tri-Lakes Reliability Project, NY** Compared the benefits and setbacks of overhead construction vs. underground construction of a new line-segment in the Adirondack region of NY. Conducted research into the benefits and setbacks of using EPR or XLPE dielectric cables for use in the underground application. Aided in the study to determine most reliable structure construction for overhead lines in this region.



REGINALD S. GAGLIARDO
Vice President/Executive Consultant

Education

Bachelor of Science in Electrical Engineering, New Jersey Institute of Technology

MIT Sloan Executive Education - Managing Technical Professionals and Organizations.

Numerous Burns and Roe, POWER Engineers and industry professional development courses.

Professional Registrations

Registered Professional Engineer (Retired) in New York, New Jersey and a number of other states.

Professional Affiliations and Industry Participation

American Nuclear Society; Institute of Electrical and Electronics Engineers (Senior and Life Member)

Fiatech - Member of the Board of Advisors and Conference Planning Committee for this industry consortium that provided leadership in the development, demonstration, and deployment of fully integrated and automated technologies for capital construction projects.

Construction Industry Institute - Member, and later Chair, of the Fully Integrated and Automated Project Process (FIAPP) Steering Team.

Construction Industry Institute - Member of the Academic Advisory Council to provide liaison between the construction industry and academia and to develop recommendations for CII research.

New Jersey Institute of Technology – Member of the Advisory Board for the development of the College of Computing Sciences.

Career Highlights

Extensive technical and project management experience in providing engineering services for nuclear and non-nuclear power generating stations and federal projects.

- Senior-level positions for the leadership, direction and development of engineering, procurement, construction, project controls, quality assurance and information technology divisions.



- Business unit direction and leadership for management, marketing, sales and technical execution of projects for commercial nuclear and special purpose facilities.
- Strategy planning, development and implementation.
- Special assignments and initiatives for CEO and Executive Management.
- Contributions to industry initiatives to improve productivity, competitiveness and technology.

Prior Project Experience (Partial Listing)

- ❖ **POWER ENGINEERS** (acquired Burns and Roe in June 2014)
Vice President, Nuclear Services and Advanced Technology

Responsible for the leadership, direction and operation of the Nuclear Services and Advanced Technology business unit from strategy selection through business development and project delivery. Provided direction and leadership for marketing, project management, engineering, project controls, procurement, consulting, and construction support services. Developed operational, financial and organizational initiatives to achieve performance targets. Projects ranged from: nuclear feasibility studies for international Clients; to consulting for advanced nuclear designs; to modifications and retrofits for operating power plants and government facilities.

- ❖ **BURNS AND ROE ENTERPRISES**
Senior Vice President, Nuclear Services and Advanced Technology

Responsibilities were the same as POWER Engineers position above.

Senior Vice President, Corporate Resources & Technology

Responsible for the leadership, direction and management of multiple technical divisions, including Engineering & Design, Construction Services, Supply Management, Project Controls, Quality Assurance and Information Technology Services. Primary duties included: effective support to and oversight of the technical aspects of projects; assurance of the quality of work; performance of work to budgets and schedules; training and development of personnel; improvement of work processes, standards and procedures; support to business development initiatives; and



implementation of information technology and computer-aided applications.

As part of this assignment, led the effort to upgrade the company's Quality Assurance Plan and the associated project and technical procedures. Led the successful corporate initiative to obtain the company's **N-Stamp (ASME Boiler and Pressure Vessel Code Section III)**.

Served as the Burns and Roe representative on the **Board of Governors of the Uranium Disposition Services, LLC** for the design, construction and start-up of the Depleted Uranium Hexafluoride Projects in Ohio and Kentucky for the U. S. Department of Energy.

Served on the "Proof of Concept" Review Team to provide recommendations regarding the types of facilities that should be advanced for the **Yucca Mountain Project** for the U. S. Department of Energy.

Vice President/Director, Engineering

Responsible for the leadership, technical direction, supervision and administration of engineering and design work for fossil fueled, nuclear and waste-to-energy power generating plants and other industrial and special purpose facilities. Primary areas included management and development of engineering personnel, preparation of project technical documents as well as the overall assignment and coordination of engineering and design for all projects. In addition, duties included the development of in-house training programs, technical specifications and standards, engineering practices and procedures, and computer-aided engineering applications. Provided oversight of branch office engineering functions and consolidated two separate multi-discipline engineering divisions into one combined division to serve multiple market sectors and business units resulting in greater flexibility and better utilization. For the first part of this period, also held co-position of Chief Electrical Engineer.

Chief Electrical Engineer

Responsible for the technical direction, supervision and administration of electrical engineering and electrical design work for power generating plants, both fossil and nuclear, and other industrial facilities. Duties included engineering quality and productivity, development of project design criteria, one line diagrams, building and equipment layouts, equipment sizing, specification and selection, design and installation documents, calculations and the overall coordination of electrical engineering



and design efforts for all projects. In addition, responsibilities included the development of in-house training programs, technical specifications and standards, recommended engineering practices and computer-aided engineering applications.

During this period, undertook special assignment at the request of TVA management to review, improve and strengthen the TVA **Project Management Program** for the modification and upgrade program at the **Browns Ferry Nuclear Plant**.

Manager, Nuclear Plant Services

Responsible for the overall leadership, direction, technical supervision and management of assigned projects, project managers and engineering staff. Duties included the direction and coordination of engineering and design services, procurement support, construction support, and budgets and schedules. Also, responsible for Client satisfaction, liaison and responsiveness, development of new business, and fulfillment of contractual requirements. Projects involved modification and upgrade of operating nuclear power plants, including the Recovery Program for Three Mile Island Unit 2. Plants involved Pressurized Water and Boiling Water Reactors and included Three Mile Island Lessons Learned, 10CFR50 Appendix R Fire Protection Program, NRC-mandated and other plant betterment modifications. Progressed through the positions of Project Engineer and Project Manager.

Competitively bid, obtained and executed over multiple years a **Preferred Engineering Services Contract** for GPU Nuclear's **Oyster Creek Nuclear Generating Station** and developed numerous engineering packages to implement regulatory requirements, including Appendix R, and other improvement modifications.

Group Supervisor, Electrical Engineering

Responsible for the technical direction and supervision of electrical engineering and design work for new and operating nuclear power plants. Duties included: development of project criteria, technical specifications and calculations; planning and scheduling; coordination with other engineering disciplines; and liaison with the Client, vendor, and field support personnel.

Following the accident on March 28, 1979, was deeply involved in the **Three Mile Island Unit 2 Recovery Program** both at the site and the home office. Served as the electrical supervisor for the electrical post-accident modifications and in various project management capacities as well as being the cognizant engineer for a number of the modifications. Duties included management and



direction of the site and home office electrical groups, system design, equipment specification and selection, Client and NRC liaison, and construction support.

Senior Electrical Engineer

Responsible for the electrical interface with the nuclear steam supply system vendor; DC and AC distribution systems; heat tracing and freeze protection systems; local control boards; solid state component controls (first nuclear use); multiplexing; specifications; calculations; electrical separation criteria; instrumentation shielding and grounding criteria; and development of electrical documents.

Electrical Design Squad Leader

Responsible for the supervision and performance of electrical control wiring design for nuclear power plants; development of schedules and budgets; and interface with Client, vendor, and site personnel.



DONALD GRACE, PE
Senior Consultant

Education and Certifications

Master of Business Administration, Project Management
Harvard Graduate School of Business (Awarded Fellowship to Attend)

Bachelor of Science in Marine Engineering and Mathematics
United States Naval Academy (Graduated Cum Laude)

**US Naval Polaris Missile Officer School, US Naval Submarine School,
US Naval Nuclear Power School, and US Naval Scuba Diver School**

Professional Engineer (Pennsylvania), Power Generation

Career Highlights

- Over 45 years of hands on technical, management and executive experience with all phases of the Plant Life Cycle (design, licensing, construction, start-up and testing, commissioning, operations and decommissioning). Also, highly experienced in performing economic analyses of projects, facilities, and processes.
- Development of New Facilities – Seventeen years of experience with a major U.S. Architectural Engineering firm, Burns and Roe Enterprises (BREI), in the positions of Project Engineering Manager, Project Manager, Executive Consultant, and President of a company formed by BREI, AREVA and Duratek. Nearly all of these experiences entailed First of a Kind (FOAK) projects which involved new Nuclear Power Plant Projects and FOAK Chemical Process Projects.
- Directing Major Project, Independent Reviews - As an employee of BREI, contracted by the Department of Energy (DOE) to assemble project review teams which I then directed to provide independent project management reviews of multi-billion-dollar DOE projects. Nearly all of the projects were



FOAK, and the reviews were total scope reviews (i.e., reviewed ability to achieve technical objectives, within the forecast costs and schedules). Subsequently, and as an independent consultant, was contracted by DOE to work as the technical lead working as part of DOE teams that reviewed and certified DOE contractors Earned Value Management Systems. Reviews per the 32 criteria of ANSI Standard 748.

- Upgrades to Operational Facilities – Seventeen years of experience with General Public Utilities (GPU) in designing, constructing new or modified systems, testing, training plant operators and turning systems over to plant operations. Also, worked with the Nuclear Regulatory Commission (NRC) and state environmental agencies in support of the nuclear and fossil plant licensing and permitting activities.
- Economic and Costing Studies: Performed many such studies, examples of which include developing a return of investment model for the DOE Waste Management Office, computing asset value for an existing operating power plant, computing component costs of power plants generating electricity, computing component costs of fabricating nuclear fuel (did this for Westinghouse).
- Skilled Communicator: Highly experienced in analyzing and presenting complex technical and economic issues to executive levels of various government agencies (e.g., US Nuclear Regulatory Commission, US Department of Energy, Thai Government, and International Atomic Energy Agency), and responding to questions in articulate and professional manner.

Prior and Current Project Experiences (A Partial Listing)

- **Louisiana PSC; Arkansas PSC, City of New Orleans Commission – Grand Gulf Prudence Review**
Represent the Louisiana Public Service Commission, Arkansas Public Service Commission and the Public Utility Commission of New Orleans in evaluation of the prudence decisions by Entergy during the operations and outages at the Grand Gulf Nuclear facility. A detailed report of technical deficiencies at Grand Gulf as well as a detailed Prudence review and written as oral testimony is being performed.
- **Georgia Public Service Commission – Vogtle Nuclear Construction Project**



CTC, through its subsidiary Vogtle Monitoring Group (VMG) is providing expert witness testimony, on-site construction monitoring, and evaluating services as well as reviewing and evaluating the reasonableness of the costs in an ongoing basis at the Vogtle Nuclear Power Plant Unit 3 and 4 Project for the Georgia Public Service Commission Staff.

- **BREI, GPU, and Independent Executive Consultant project experiences have included:**

- President of a company created from merging personnel from BREI, Duratek (a nuclear waste management company), and AREVA (a fabricator of nuclear fuel), and contracted to the DOE to design, construct, and operate facilities for disposing of depleted uranium hexafluoride (a by-product of the uranium enrichment process). Project entailed utilizing a patented, FOAK chemical process for taking uranium hexafluoride (UF₆) gas and converting it to Uranium Oxide (UO_x) with usable Hydrofluoric Acid (HF) as a by-product. Two full scale facilities were designed, have been constructed, and are functioning at the Paducah, KY and Portsmouth, OH uranium enrichment facilities.
- Director of a Nuclear Power Feasibility Study conducted for the nationalized electric utility of Thailand (EGAT) and the Thai government. Study entailed evaluation of commercially available Nuclear Power Plant alternatives, estimates of their capital costs, operating costs, and forecasts of their bus bar costs (in terms of Levelized Cost of Electricity); plant licensing/construction/start-up schedules all leading to licensed plant operations; evaluation of nuclear safety issues and risks; and approach to educating and training of personnel. Study entailed evaluation of various commercially available nuclear plant types (i.e., a Boiling Water Reactor, as proposed by Japan/ Hitachi; and four separate types of Pressurized Water Reactors, as proposed by (1) Toshiba/Westinghouse, (2) Japan/ Mitsubishi, (3) France/ AREVA, and (4) Korea/ KEPCO. Also involved economic studies of alternative electrical energy sources.
- Executive Consultant / Director of DOE Project Independent Reviews: The DOE, in pursuit of improved management practices, established an office independent of those managing major DOE projects (i.e., established the Office of Engineering and Construction Management). They then contracted with BREI and others to perform full scope (i.e., technical, cost and schedule) reviews of its projects. All major projects (i.e., larger dollar values) were assigned to BREI, and I assembled the required personnel expertise and directed all of these reviews. Example projects (most of which are FOAK) that were reviewed include the following:



- **Yucca Mountain Project:** This is the highly political project of the first facility to permanently store High Level Wastes (from both DOE facilities, and mostly Spent Nuclear Fuel from operating nuclear plants). Included in this effort was the first project Life Cycle Cost Estimate.
- **The National Ignition Facility at Lawrence Livermore Laboratory:** This project consists of 192 high energy pulse laser beams, all fired at the same time at a target the size of a bee-bee. Its purpose is to do research regarding fusion reactions in support of predicting the performance of fusion weapons as they age. The facility is now operational, but actual costs greatly exceeded the budget and schedule, and it is still not functioning at the desired level.
- **The Mixed Oxide Fuel Facility (MOX Facility) at the Savannah River Site.** This project is based on a French technology and its purpose is to take plutonium from excess nuclear weapons and combine plutonium oxide with uranium oxide to make fuel for commercial nuclear reactors.
- **The Neutrino Project at Argonne National Laboratory:** This project consists of an accelerator located at Argonne (in the Chicago area) shooting neutrinos through the earth's crust to a target located in a mine shaft in Minnesota, to study the properties of neutrinos.
- **Numerous Site Cleanup Projects:** During the cold war many of the materials for nuclear weapons were developed via reactors and other facilities, and with the primary criteria being schedule, environmental controls (although somewhat effective) were not nearly as strict as they are today. As a result, there are numerous "legacy wastes" in need of treatment and / or disposal. Cleanup projects reviewed include: (a) Fernald, (b) Rocky Flats, (c) Mound, (d) Oak Ridge, (e) Brookhaven National Laboratory, (f) the Nevada Test Site, (g) Pantex, (h) the Savannah River site, (i) the Hanford Site, and (j) Idaho National Laboratory.
- **Director for the Oyster Creek Nuclear Power Plant Safety and Reliability Upgrade Program:** Valued at over one billion dollars (in current year dollars). Work over a roughly 10 year period included nearly 100 separate projects which were largely the result of Three Mile Island Lessons Learned, NRC Appendix R (fire protection related requirements), required upgrades to the Torus (i.e., part of the containment), and plant reliability projects. Efforts resulted in keeping oldest publicly financed U.S. Nuclear Power Plant operational (has been operating since December 1969).



- Project Engineering Manager for the Modular High Temperature Gas Cooled Reactor First-of-a-Kind Project. Contracted to the DOE, the objectives of this FOAK project were to produce tritium in support of U.S. Department of Defense missions, and to demonstrate a new commercial reactor technology.
- Project Operations Manager for the Accelerator Production of Tritium Project: This was another DOE contracted FOAK project whose mission was also to produce tritium in support of DOD missions. Project was valued at three billion dollars.
- Served as the first utility elected Chairman of the Boiling Water Reactor Owners' Group (BWROG), and in working with GE, other nuclear industry groups, and the BWR owners developed generic design upgrades to address NRC identified safety issues.
- Served as on-site manager during completion of construction and demonstration testing of a FOAK proof of concept chemical process for disposing of chemical weapons.
- Worked as a team with Cost Plus Consulting, a certified Appraiser, and legal-council, to develop Fitzpatrick Nuclear Station asset values. Working through legal-council, the ultimate client consists of local municipality taxing authorities, with their objective being to receive favorable and fair taxing of the facilities within their jurisdiction. Early in my career, I worked in the GPU Plant Licensing Group, and worked with legal-council, state and federal environmental groups, the Nuclear Regulatory Commission and nuclear and fossil plant personnel to develop, implement and maintain acceptable liquid discharge permits (i.e., National Pollution Discharge Elimination System; NPDES permits) and air emissions permits.
- Also, early in my career I worked within the Comptroller's Office and performed economic analysis of the various elements of a power plants costs (i.e, Fixed, Variable, Fuel, and Recovery of Capital Costs). This was done for fossil and nuclear plants. Also, worked with coal fired plant personnel to develop and implement Corrective Maintenance and Preventative Maintenance Programs.
- US Navy, Nuclear Plant Operations Experience: Five years as a submarine naval officer in the U.S. Nuclear Navy as a nuclear trained and qualified Engineering Officer of the Watch (equivalent to a commercially licensed Nuclear Plant Senior Reactor Operator). Also served as Weapons Officer



responsible for operational readiness of Polaris-missile and torpedo weapons systems.

Positions Held

- US Navy: Served as a naval officer aboard submarines for 5 years following graduation from the US Naval Academy. Positions included engineering department head, weapons officer, and stood watches as Officer of Watch and Engineering Officer of the Watch. Retired from service as a Lieutenant, Sr. Grade (O-3).
- General Public Utilities: In 17 years held positions of increasing responsibility, several of which are summarized below (and for which the roles and responsibilities are also described):
 - Lead Licensing Engineer: Responsible for licensing and permitting activities for a pressurized water reactor nuclear plant and several coal fired plants.
 - Senior Analyst, working for the Comptroller: Analyzed the component costs of the company's generating plants. Also, did efficiency studies of how plant outages were conducted, and working with fossil plant personnel developed and implemented corrective maintenance and preventative maintenance program.
 - Project Engineering Manager: Responsible primarily for Electrical and Instrumentation & Controls Upgrades to a Boiling Water Reactor (BWR) Nuclear Plant.
 - Director, Engineering Projects: Responsible for all major projects (both capital, and O&M) for a BWR Nuclear Plant. Also, responsible for developing, prioritizing, and managing the over-all capital budget.
- Burns & Roe Enterprises, Inc (BREI): In 17 years with BREI positions of increasing responsibility, several of which are summarized below.
 - BREI Site Manager (working at Aberdeen Proving Grounds, for proof of concept testing of a new method of treating/ disposing of Chemical Weapons).
 - Project Engineering Manager (for the Modular High Temperature Gas Cooled Reactor (MHTGR) Project).
 - BREI Site Manager (working with Booz Allen Hamilton, in support of the DOE Office of Waste Management, in Germantown, Md.)



- Project Operations Manager (for the Accelerator Production of Tritium Project).
- Project Manager and Executive Consultant (for the Independent Project Management Reviews of Major DOE Projects)
- Director, Thailand Nuclear Feasibility Study
- President & Project Manager, Uranium Disposition Services, Inc.
- Management Consulting Services: For 11 of the past 13 years have had my own consulting company, and have served in various capacities either on my own (Grace Management Consulting Services, LLC) or as part of Cost Plus Consulting, LLC or Critical Technologies Consulting, LLC on many assignments, some of which are summarized below:
 - Executive Consultant
 - Worked in support of a General Electric (GE) proposal to the DOE: The effort resulted in the award of a contract to the GE team to pursue fuel reprocessing studies in support of the Global Nuclear Energy Partnership initiative of the U.S. Government.
 - Worked under contract to NuScale in support of their development of a “Small Modular Reactor” proposal to the DOE: The effort has resulted in NuScale having been awarded a contract to further pursue the effort.
 - Worked under contract to the DOE, functioned as part of a team of personnel reviewing and certifying major DOE contractors Earned Value Management Systems against the criteria of ANSI Std 748
 - More recently completed working with Cost Plus in support of providing a bottoms-up estimate of what it would cost today to build the Fitzpatrick Nuclear Plant. Also, developed a report of that same cost, based on the forecast cost and schedules of other US Nuclear Plants under construction.
 - Currently working with Critical Technologies Consulting as follows:
 - Independently monitoring for the Vogtle Nuclear Plant construction effort, offering Testimony for Prudence every 6 months throughout the construction phase of the project.



- Prudency of Operations Review of Grand Gulf Nuclear Station (contracted to the Louisiana PSC, Arkansas PSC, and the City of New Orleans Commission.)
- Independent Monitor for the Kemper Integrated Gasification and Combined Cycle Project (contracted to the Mississippi Public Utility Staff).
- Prudency of Operations Review of Grand Gulf Nuclear Station (contracted to the Arkansas Attorney General).



**Donald E. Cecich
Senior Consultant**

Education and Certifications

MBA, Santa Clara University, 1978

BS, Mechanical Engineering, University of Nevada, 1973

Professional memberships:

Northeast Energy and Commerce Association

American Society of Mechanical Engineers

**Treasurer/CFO of The Writers' Room of Boston, Inc. (a 501(c)(3)
Non-Profit Organization) since 1993**

Career Highlights

With over 40 years' experience, Don Cecich possesses proven skills in domestic and international industrial and power project development, management, marketing/business development, due diligence and sales experience with large multinational corporations, mid-sized private firms, and small entrepreneurial businesses. His experience includes combined-cycle, simple-cycle, cogeneration, coal, geothermal, steam turbine generator, transmission and distribution, industrial, and energy conservation projects. Don worked for the General Electric Company for more than 12 years, holding positions in GE's gas turbine, medium steam turbine, and large steam turbine divisions. He joined Parsons Brinckerhoff (PB) after serving as vice president of a New England firm specializing in energy efficiency/demand-side management, inside-the-fence cogeneration and water conservation projects. He joined Mott MacDonald after working for Parsons Brinckerhoff for more than 20 years as Vice President, US Industrial and Energy Services. He has been with Critical Technologies Consulting for the past 4 years performing due Diligence and Independent Engineering assignments. This wide-range of experience has allowed him to adapt to the now-changing, power generation and power delivery/transmission and distribution market conditions.

**Prior and Current Project Experiences
(A Partial Listing)**

- **Special Projects – Net-Zero, Carbon Capture and Hydrogen-Fuelled Combustion Turbine Generator Studies and Project Development:**



Working with GE, Mitsubishi and Siemens to understand their ability to burn a blend of methane and hydrogen in existing and newly manufactured combustion turbine generators (CTGs) with the goal of burning 100% hydrogen down the road in new units as hydrogen production gears up to support demand. Discussing their product line capabilities, combustion technology development and testing, and production plans for their H and J Class Frame CTGs and aero-derivative CTGs. Developing an understanding of blending methane and hydrogen gas and transportation issues in methane gas pipelines, CTG firing temperatures issues, the additional NO_x generation and impact on SCR emissions control system catalysts and on BOP equipment. Also discussing carbon capture options offered by each manufacturer.

- **ExxonMobil – Principal in charge on the following ExxonMobil projects:**

GPX Golden Pass LNG Export Black Start Study, Sabine, TX: Feasibility study to evaluate utilizing the existing seven (7) 3.9 MW emergency diesel generators to Black Start one combustion turbine and the steam turbine generator followed by a complete re-start of the LNG facility in the event of a major power outage in the area. The GPX facility includes three liquefaction trains each consisting of 2 x GE 7EA mechanical drive turbines, 2 x compressors, 2 x 25 MW helper motors, 2 x supplementary fired HRSGs, 1 x 100 MW steam turbine generator, 1 x ACC, and BOP and auxiliary equipment. The total facility power generation capability is 300 MW, which is all used in the LNG process. The facility is connected to the grid and is normally a net importer or power.

Also provided estimates equipment site plans to add small combustion turbines to separately provide Black start capability with tie ins to the plants 34 kV electrical distribution system. Finally prepared an estimate to add a new 8.6-mile 230 kV transmission line to the LNG liquefaction facility as an additional option for Black Start. The cost estimate included the tap at the LDC, right-of-way acquisition, poles, conductors, installation and tie in at the Plants substation.

- **Permian Basin Gas-to-Power Project, XTO Energy, NM:** Concept evaluation to develop options and costs that addresses the company's power needs to support the planned development of oil and gas production. Included evaluation of existing transmission and distribution system to supply power to several hundred individual jack-pumps, each requiring 250 to 300 kW for operation. The focus was on determining ways to supply power to drilling rigs via truck mounted gas turbines (GE TM 2500s) or reciprocating engines in remote areas. The concept addresses flexibility, reliability, portability of generating equipment, delivery, and operation and maintenance and tie into the distribution system to



determine where truck mounted gas turbines should be strategically located for easy installation and later relocation.

- **Permian Basin Gas-to-Power Project, XTO Energy, NM:** Scoping/feasibility studies, Pre-FEED and FEED for a 500 MW Mitsubishi H-100 4x1 Cogeneration project providing power and thermal energy for a Central Delivery Point (CDP) processing facility. Feasibility studies, Pre-FEED and FEED for two different sites. Stressed modularization of equipment. Supported the high-voltage electrical interconnection with Xcel and MISO. Initial studies included evaluation of performance, emissions, and CAPEX for GE's LM6000 and Mitsubishi's H-25 combustion turbine generators.
- **GPX Golden Pass LNG Export, Sabine, TX:** The LNG Export facility includes three liquefaction trains each consisting of two GE 7EA mechanical drive turbines, two compressors, two 25 MW helper motors, two supplementary fired HRSGs, one 100 MW steam turbine generator, one ACC, and BOP and auxiliary equipment. Provided MISO interconnect support and NERC compliance program services. Advised on Qualified Facility status of the plant. Also, OE review of Chiyoda's LNG liquification train equipment specifications.
- **Guyana Gas-to-Power Project:** 200 MW Gas-fired reciprocating engine plant. Scoping study to determine the optimum combination of 8.6 MW and/or 17.6 MW gas-fired reciprocating engines to install. The project interfaces with the NGL facility and the onshore landing of the gas pipeline to the NGL process facility. Developed site plan options, CAPEX, prepared a transportation study, and evaluated Guyana's local transmission and distribution system's capability to accept power from the plant.
- **Vietnam Blue Whale Gas-to-Power, CA Vaoi Xanh Project, Hanoi, Vietnam:** Owner's Engineer overseeing the 4 x 1000 MW CCGT projects being built by third party EPC contractors. The CCGT projects will burn all the gas produced from offshore wells and must be commercially available simultaneously with the start of natural gas production.
- **LNG to Power Project Development Workshops, Houston, TX:** Conducted two (2) LNG to Power workshops on how to develop 1,000 MW+ CCGT plants to act as the anchor to pull through ExxonMobil's world-wide LNG sales.
- **Golden Pass LNG Import Project, Chiyoda Corporation, TX:** Principal in Charge – The Joint Venture consisting of Chiyoda International Corporation, CB&I LLC and Zachry Industrial, Inc. ("CCZJV-GPX"), has been awarded the contract by Golden Pass Products, LLC ("Client") for the



engineering, procurement, construction (EPC) and commissioning of the Golden Pass LNG Export Project at Sabine Pass, Texas, USA (“GPX Project”). Provided engineering support services to complete 10 electrical system studies for the liquefaction generation equipment 230 kV interconnection to Entergy and the MISO Grid.

- **Port Authority of New York and New Jersey, JFK Airport 100 MW Cogeneration Plant Relocation and Refurbishment Study:** Project Manager to develop a site-wide energy strategy for the JFK International Airport, considering future KIAC/CHRP operations, renewable energy, evaluation of the existing electric distribution system within the airport and supporting the airport, and interaction with external utility providers in the context of the long-term JFK Redevelopment Master Plan. The Master Plan serves to guide JFK Airport’s redevelopment and provide related program planning and project support services, which included expert professional planning, architectural, engineering, constructability and estimating services, program support, and business case analyses.
- **Minera Spence Sea Water RO Desalination Project for a Copper Mine, Chile:** Project Manager at kick-off for the project representing the owner for a 1,000-liters per second reverse osmosis desalination plant, including a seawater intake tower, concentrate outfall pipeline, a 154-km 36-inch diameter carbon steel water pipeline to transport the water to the Minera Spence mine at an elevation of 1,652 meters. The conveyance system consists of three pumping stations and 75 miles of electric transmission lines that supply power to the desalination plant and power the pumps along the pipeline. Evaluated power supply substation from the local utility and the distribution system to three pumping stations.
- **Bayonne Energy Center, Macquarie Infrastructure Corporation (MIC) Power:** Principal in Charge responsible for development, permitting and EPC Contractor selection of the 120 MW 2x Siemens Trent 60s with SCR/CO emissions controls addition to the existing 2 x Trent 60 peaking plant. Included a three-winding 13.8 kV/345 kV GSU and the tie-in to an existing 345 kV transmission line for power export.
- **MIC Power (Macquarie Infrastructure Corporation), Project Orion, Bayonne, NJ:** Principal in Charge for the development of a 1,000 MW 2x1 gas/oil-fired GE 7HA.02 combined cycle facility at the International-Matex Tank Terminal (IMTT) in Bayonne, NJ. IMTT is owned by MIC.



- **MIC Power, Gilmerton Energy Center, VA:** Principal in Charge for project development and permitting of two (2) 1x1, single-shaft, gas/oil-fired GE 7HA.02 1,250 MW combined cycle facility at the IMTT in Chesapeake, VA.
- **Hess Corporation, Woodbridge, NJ:** Project Manager on a 2x1 multi-shaft 685 MW combined cycle plant at Hess' Newark, NJ Terminal. Provided project development support, preliminary design during permitting and was responsible for obtaining all project permits. Prepared power island specifications and supported negotiations with GE for the 7FA.05 combustion turbine generators, HRSGs, and steam turbine generator. Prepared the Engineer, Procure, Construct (EPC) RFP to provide detailed design/engineering of the plant, and procure the balance of plant (BOP) and auxiliary equipment, erect, install, construct, paint, check-out, commission, start-up, test, train, and transfer to Hess a completed operational plant.

Project included grey water cooling tower makeup system, tie-in to the Transco natural gas pipeline, gas metering station, 18 kV/345 kV substation and a 4.6-mile underground 345 kV transmission line from the plant to PSE&G's Essex Substation tie-in.

- **Large International Oil Company Confidential Client:** Project Manager for Scoping Studies and preliminary FEED for several 1,000 MW+ projects located in the US, Canada, UK, Middle East and Pacific Rim. Responsible for preliminary design, site plans, power block drawings, CAPEX and OPEX for various simple cycle, combined cycle and cogeneration projects including desalination. Projects included switchyards, substations, long distance high-voltage transmission lines, and AC to DC to AC conversion.
- **Due Diligence for Acquisition of Coal and Gas-fired Generation Plants:** Confidential Client, USA: Project manager to perform an independent assessment of coal and gas-fired generation assets at several US electric generation stations. The stations included one 1600 MW station with three (3) coal and one (1) oil fired unit; a 745 MW station with three (3) coal and one (1) oil fired unit; a 495 MW station with three gas-fired combined cycle units; and thirteen hydro-electric stations. Based on review and analysis of data and site visits, provided condition assessments of assets, evaluations of CAPEX, OPEX, overhaul maintenance costs, decommissioning costs and evaluated environmental compliance record.
- **ExxonMobil – Principal in charge on the following ExxonMobil projects:**
 - Golden Pass, Sabine, TX: Screening study to convert this existing LNG import facility to a LNG liquefaction export facility.



- Ft. McMurray, Alberta, Canada: Study and preparation of a CAPEX to add a GE 7EA combustion turbine generator with a HRSG to the facility.
- South Hook, Wales, UK: Feasibility study and Pre-FEED to add a 400 MW combined cycle with modifications to the existing submerged combustion vaporizers (SCVs) to accept steam turbine condensate for regasification of the LNG. The power island includes a 1x1 multi-shaft GE 9FA combined cycle with a hybrid dry/wet cooling tower. Both the LNG facility and the power plant were dispatchable on a merchant plant basis independent of each other. Included evaluation and cost estimated of a new transmission line to export power.
- Braintree Electric Light Department (BELD), Thomas A. Watson Generating Station, Braintree, MA: Project manager during proposal through contract negotiations and NTP on a dual fuel gas/ULSD-fired 2 x 60 MW Rolls Royce Trent 60 simple-cycle combustion turbines with SCR/CO emissions control systems. Joint venture with an EPC contractor to provide project engineering and engineering support during construction through start-up and commissioning. Managed the EPC team selection and during proposal to provide the preliminary engineering needed to win the project.
- Lake Road Generating Station, British Gas North America (BGNA), Killingly, CT: Project Manager on a 1x1 multi-shaft 411 MW “G” Class combined cycle plant. Provided project development support and preliminary design during permitting and prepared power island functional specifications and supporting negotiations with Mitsubishi for the M501G gas turbine, heat recovery steam generator (HRSG) and steam turbine generator, substation modifications to connection to the grid. Prepared an engineer-procure-construct (EPC) request for proposal (RFP) for an EPC contractor to design/engineer the plant, and procure the balance of plant (BOP) and auxiliary equipment, to erect, install, construct, paint, check-out, commission, start-up, test, train, and transfer to BGNA a completed operational plant.
- **Massachusetts Municipal Wholesale Electric Company (MMWEC), Ludlow, MA:** Project Manager on a 1x1 multi-shaft 280 MW “F” Class combined cycle plant. Supported project development and preliminary design during permitting and prepared power island specifications including gas turbine, HRSG, axial exhaust steam turbine generator and air-cooled condenser. Also prepared RFP for an EPC contractor to design/engineer the plant and procure the balance of plant (BOP) and auxiliary equipment, to erect, install, construct, paint, check-out, commission, start-up, test, train, and transfer to MMWEC a completed operational plant.



- **Fortistar Peabody LLC—99 MW Peaking Power Plant, Peabody, Massachusetts:** Project manager on this project including site development, environmental remediation of the site, and permitting. The project consisted of one Alstom GT11N2 combustion turbine generator and a SCR exhaust system fired on natural gas and No. 2 fuel oil, fuel oil storage and the interconnection to National Grid's 115 kV transmission line. The Project required preparation of a site remediation plan with TRC due to it being the home of a leather tannery at the turn of the century. Commercial operation has been postponed with the project on hold.
- **Due Diligence for Acquisition Confidential Client, Japan:** Project Manager to perform independent assessments of InterGen's international electrical generation assets. Teams from the U.S., U.K. and Australia visited 12 combined cycle and coal-fired plant sites in Mexico, Europe and Australia. Managed the due diligence efforts covering the two (2) combined cycle plants located in Mexico. The first was a 320 MW gas fired CCGT power plant in Mexicali, Mexico using SWPC 501 FD technology. The second was a 600 MW gas fired CCGT power plant in Guanajuato, Mexico using General Electric 7FA technology. Based on review and analysis of data and site visits, provided condition assessments of assets, evaluations of capital, operating and overhaul maintenance costs, and evaluated environmental compliance record.
- **South Norwalk Electric Works (SNEW)--22.8 MW GE TM2500 Temporary Peaking Power Plant, South Norwalk, Connecticut:** Project manager during project development and permitting. The project consisted of one (1) GE TM2500 (trailer mounted) aero-derivative combustion turbine generator fired on natural gas and No. 2 fuel oil, fuel oil storage, extension of SNEW's existing 27.6 kV switchyard, a 13.8/27.6 kV step-up transformer (used), and interconnection to the switchyard. With equipment immediately available for rental from GE, it took 11 weeks from full release for engineering to the plant achieving commercial operation.
- **PPL Wallingford Energy Plant, LCC (PPL Global) 250 MW Peaking Plant, Wallingford, Connecticut:** Project manager during project development and preliminary design, and then owner's engineer during procurement and construction of a \$160 million 250-MW simple-cycle peaking plant. Over 7,500 cubic yard of coal ash had to be removed from the site to an out of state landfill and the site remediated. Successfully managed the project through the Wallingford Town Council, Boards and Commissions; the Connecticut Siting Council; and the Connecticut Department of Environmental Protection permitting processes to obtain construction and operating air, water use, and wastewater discharge



permits. This project was initially planned to be a \$220 million, 540 MW combined cycle merchant plant and presented several unique challenges regarding noise and cooling tower fog and plume. The site was very small—12.5 acres (5 hectares)—and was the home of an existing 21.5 MW coal converted to oil-fired power plant. A large residential neighborhood lies directly across the street from the plant. State guidelines set a 59-dBA nighttime noise limit at the site boundary.

The unique design proposed met the noise requirements, aesthetically improved the existing site, and eliminated 100 percent of cooling tower fog and 98 percent of cooling tower plume, during the months that a plume might occur. For economic reasons, the client scaled back the project to 5 x LM6000 GE aero-derivative Sprint gas turbines. An 80-foot (24-meter) sound wall was utilized. The plant can be remotely dispatched from the client's headquarters located in Allentown, Pennsylvania. The air permit requirements (2.5 ppm NO_x and 6 ppm ammonia slip), which is requiring extensive modifications to the SCR. All five GE gas turbines have met their emission and performance guarantees. The client has also elected to add anti-icing systems to all five units so that they can be dispatched on a year-round basis. The project also included modifications to Wallingford Electric's existing substation to add a 5-breaker ring bus and a new 1-mile, double-circuit, 115 kV transmission line and tap. Conducted negotiations for the right-of-way for the new transmission line.



Christopher Hill
Senior Specialist

Education

Warren University

Bachelor's Degree: Management of Information Systems

Microsoft Corp

Microsoft Certified Systems Administrator – Windows 2000, XP, Windows 7, Windows 10

Comptia

A+ Certified

Net+ Certified

Server+ Certified

Career Highlights

Business and Information Technology Executive with 26 years of experience in multiple industries. Excellent record of creating tangible benefits in large organizations. Areas of specialty are system configuration, resource utilization, process design, waste identification and elimination, and security and identity management. Highly effective in roles requiring project planning, scope analysis, communications, and deployment. CIO for independent construction monitoring service and consulting firm.

- 24 years of experience in Information Technology Management in various industries: Industrial Construction, Aviation, Mill/Manufacturing, and big-box retail.
- 6 complete Life-cycle SAP implementations involving SAP R/3, APO, CRM, SCEM 5.0, BW and NetWeaver.
- 20 years of experience in Fortune 500 Companies.
- Bilingual: English and Spanish
- Six Sigma Yellow Belt, Change Acceleration Process (CAP) Certification, Facilitation certified

SELECTED CAREER ACHIEVEMENTS

• **As Chief Information / Information Security Officer: Critical Technologies Consulting LLC.** - Planned, sourced, developed, and implemented total information and business suite solution. Leveraged SaaS and PaaS opportunities to reduce IT and infrastructure costs by 20% from 2016 to 2021.

• **As Business Analyst Lead / Subject Matter Expert (Warehouse: IM/MM): International Paper** - directed activities in the analysis, design,



testing, training, and implementation of warehouse management (MM/SD/IM) solution in SAP ECC. Responsible for identifying business requirements & enhancements, cost/benefit analysis, project planning & deployment, and developing a 5-year strategic road map for IM and warehouse management team.

- **As Project Manager (IM/MM/SD): Honeywell** - designed, planned, and launched a Material Resource Planning (MRP) initiative to support the Global Supply Chain cost reduction objective for Honeywell Aircraft Landing Systems (SAP ECC6.0). **International Paper** – Led business process design, testing, training, and deployment readiness for Enterprise Identity Management system replacement (replaced Oracle Identity Management with SailPoint). **Critical Technologies Consulting** – Total responsibility for design, build, testing, deployment of cloud-based project document repository system for major construction projects. Designed, analyzed, and implemented corporate technical infrastructure (Microsoft Azure AD, Exchange, Office 365)

- **As SAP Configuration and Security Manager: International Paper** - directed multiple implementations of SAP R/3 including total system upgrade from SAP R/3 4.7c to SAP ECC 6.0. Responsibilities included configuration design and implementation across multiple SAP systems (R/3, APO, SCEM, and Sap Netweaver) for multiple business process areas including Transportation and Logistics, S&D, Inventory Management, and Warehouse Management.

- **As Site Support and Administration Supervisor: Stone & Webster** - responsible for all support staff (procurement and subcontracting, cost & accounting, Information Technology, Document Control, and Safety) on a 250-million-dollar Heat Recovery Steam Generator project. Designed and implemented electronic document control system for engineering, quality, and safety records (estimated savings \$150,000.00). Directed 15+ resources in materials management and procurement/subcontracting activities supporting construction and engineering.

Prior Project Experience (Partial Listing)

Critical Technologies Consulting LLC in Mesa, Az

Chief Information / Information Security Officer – June 2015 to Present
Responsible for complete technical set up including infrastructure, communications, and storage. Responsibilities included:

- Manage domain acquisition, SaaS/PaaS utilization, communications, and hardware & software procurement for all projects.
- Established data integrity and business continuity standards (including disaster recovery practices) for corporate and project sites.



- Coordinated and remotely controlled operating system upgrades from Windows 7 to Windows 10 with zero lost time.
- Provide 24/7 remote support assistance for all contracted clients

International Paper, Corporate Headquarters in Memphis, Tennessee

COE Sr. Process Steward - Security – May 2014 to Present

Responsible for managing security / access management, enterprise security controls processes, job role design, Sarbanes-Oxley compliance, and identifying Oracle Identity Management enhancements. Responsibilities included:

- Manage and approve all activity and job role changes including Sarbanes-Oxley compliance, segregation of duties, Role repository management, Change Management, testing, training, and documentation.
- Responsible for user management processes of all IP Global Supply Chain/Business users including manufacturing mills, all distribution network facilities, centrally based business users, and Executive Leadership.
- Responsible for security management process assessments and improvements across the Global supply chain operating model facilities and corporate headquarters
- Responsible for design of security solution for EMEA and Global Cellulose Fiber deployments (2017 and 2018)
- Responsible for design of security standards for new Omega Replace project (2018-2019)
- Responsible for business process and role design for Enterprise Identity and Access Management system deployment (SailPoint)

International Paper, Corporate Headquarters in Memphis, Tennessee

SAP Global Supply Chain (Warehouse and Transportation) Configuration and Security Lead – October 2005 to May 2014

Responsible for managing design, configuration and change management in a multiple version/release implementation of SAP R/3 Responsibilities included:

- Managed and performed all configuration and security changes for Warehouse/Logistics team across R/3, ECC6, APO, and SCEM, to support sustain activities. Coordinated all development work in relation to Warehouse/Logistics team in ECC6.
- Managed all change control processes in six (6) Life-cycle implementations in SAP R/3 4.7c and ECC 6.0 for Deliver Warehouse/Logistics team, including total system upgrade from SAP 4.7c to SAP ECC 6.0



- Designed and led implementation of warehouse support organization and COE training program.
- Designed, tested, and implemented external portal access model for 3PL and non-internal employee users.
- Responsible for security upgrade design and implementation from SAP R/3 4.7c to ECC 6.0.
- Led Disaster Recovery and Business Continuity plan security and access designs.
- Received three “Key Driver Award” for outstanding leadership contributions to overall SAP implementation – (2014, 2015,2017).

Honeywell-ALS Corporation, Aircraft R&O Facility in Memphis, Tennessee

Logistics Manager (Procurement/Materials/Shipping) & Subject Matter Expert (MRP & MM) - October 2002 to October 2005

Responsible for design, configuration, and deployment of the SAP Solution (Project investment \$12 million). Responsibilities included:

- Responsible for Material Resource planning execution for 5000-part manufacturing facility utilizing the Glovia ERP system.
- Led design, testing, and implementation of Inventory Management solution including Global MRP strategy.
- Designed, created, tested, and implemented complete security architecture for all Global Supply Chain and finance activities.
- Directed efforts for “big-bang” S&D module SAP implementation: Project planning, technical build, GAP resolution, system test definition and execution, cutover planning, and go-live activities.
- Key contributor for build, test, and implementation of global MRP and centralized procurement solution for new SAP system.

Shaw - Stone & Webster, MintFarm HRSG Project at Longview, Washington

Site Support and Administration Supervisor – July 2001 to August 2002

Responsible for directing 20+ resources in support of a \$250 Million Power Generation Project. Responsibilities included:

- Managed field support operations staff including Procurement & Subcontracts, Cost and Accounting, Materials, Safety, Information Technology and Administration teams.
- Managed 55,000 sq. ft. Warehouse, “lay down” yard and pipe fabrication shop on-site.
- Designed and implemented a global records management system for engineering and quality documentation (Est. \$150,000.00 savings for life of project – 1 year 2 months).
- Expanded current financial reporting system to include interfaces with sub-contractors and vendors systems to improve financial reporting and accuracy.



Shaw - Stone & Webster, Centralia WFGD Project at Centralia, Washington
Site Administration Supervisor - November 1999 to July 2001

Responsible for processes and personnel in Warehouse, Procurement, and
Construction/Engineering/Quality Documentation.

- Managed 30,000 sq.ft. warehouse, lay down yard and pipe fabrication shop on-site.
- Managed MRO procurement team to support construction activities.
- Managed Records Management and Controls team on site



Jason Martineau Consultant

Education

Bachelor of Science in Electrical Engineering, Arizona State University

Certified Instructor for Instrumentation and Controls.

NCCER assessor for Electrical and Instrumentation.

Prior Project Experience (Partial Listing)

❖ Hidalgo, Orla, Tx MarkWest Energy

As the E/I technician in a Cryogenic gas processing plant, responsible for all electrical maintenance including 4160V switchgear and motors, 480 V switchgear and motors, and all electrical problems. Calibrate and maintain all instrumentation including pressure transmitters, level transmitters, temperature transmitters, control valves and pressure switches. Trouble shoot Allen-Bradley PLC 5000 and use Wonderware to interface with the operators.

❖ Cholla Power Plant, Joseph City, Arizona
Arizona Public Service Co.

As an Electrical, Instrument and Controls Specialist, Journeyman, responsible for the following functions and duties:

1. Performed repairs, modifications, calibrations, and preventive maintenance on pneumatic, digital, analog, programmable, and other auxiliary equipment. Performed repairs on controls systems for turbine generator, burner management, coal handling, scrubbers, wastewater process, ash handling, EPA monitor/controls, chemical controls, sample systems, waste byproduct process and associated equipment. Works on solid state utility wide controls equipment, computers, microprocessors, and communications equipment.
2. Troubleshoot instrumentation systems, loops, and basic equipment to the component using appropriate test equipment.



3. Perform print corrections by revising drawing or makes new drawings for submission to be drafted.
4. Tune complete control loops.
5. Maintain detailed work reports.
6. Maintain interface with operations and other crafts.
7. Calibration of PH controls and instrumentation.
8. Maintenance, troubleshoot and repair of 480 and 4160 breakers.
9. Have worked with Allen-Bradley, ABB Bailey, Wonderware and some Honeywell control equipment.
10. Have used composer and wintools programming for Bailey. Also some MODICOM.
11. Use CITEC for pc interface with such programs.

❖ Four Corners Power Plant, Fruitland, New Mexico
Arizona Public Service Co.

As an Electrical, Instrument and Controls Specialist Apprentice in the Maintenance and Modification department at the Four Corners Coal Fired Power Plant Facility, responsible for the same functions and duties as mentioned above. Worked daily with experienced journeyman and was responsible to perform the functions described above.



Tara Jenkins
Research and Management
Education

UNIVERSITY OF MEMPHIS – Memphis, TN Graduated August 2017

- *Bachelor of Business Administration (BBA), Accountancy*
- *Graduated Magna Cum Laude*

Career Highlights

Highly motivated and proactive professional accountant with over 15 years of experience in accountancy and bookkeeping. Proficient in bookkeeping and project coordination. Confident in communication skills including negotiation and presentation; attentive to details, organized and process-minded. Continually seeks process improvements and operational efficiency including time-management and technology skills. Proficient with MS Office (Word, Excel, Outlook, PowerPoint), SharePoint, Sage (Peachtree) and QuickBooks. Comprehensive knowledge of accounting and auditing principles, payables/receivables, payroll functions, general ledger postings, invoicing, as well as account reconciliations. Driven to succeed and to help businesses be more confident through consulting and collaboration.

Prior Project Experience
(Partial Listing)

JENKINS BK, LLC, *Owner/CEO* — Worldwide

- Performance of CFO & fullscale bookkeeping services for multiple small/medium size businesses.
- Analyze budget vs. actual spending and forecast probabilities
ROCKER 7 FARMS, INC, *Accountant/Office Manager*—Buckeye, AZ
- Managed all Accounting and Bookkeeping functions of the business
Journal entries, preparation of monthly financial statements and analysis
- Performance of all payroll functions
- Reconcile bank and credit card accounts for multiple entities
- Identify and implement improvements to streamline processes and increase efficiency and productivity

K2 SHARE, LLC, *Assistant to CFO and HR Director* – College Station, TX



Critical Technologies Consulting, LLC.

- Generated 50+ reports weekly for controller, HR director, and all Chief Executives

ALLIANCE OB/GYN SPECIALISTS, PLLC, *Office Manager/Accountant* – Denton, TX

- Managed 15+ employees and 3 physicians
- Performed all accountant & bookkeeping functions for the company
- Oversaw 2 smaller entities
- Compiled 20+ pages of actionable, comprehensive monthly reports for owners, including daily tracking, profit and loss, physician's personal and office budgets; set goals and made recommendations based on report findings
- Directly responsible for accounts payable, accounts receivable, payroll, credentialing, hiring, firing, and steady patient flow
- Trained new employees for all office positions



Rosalie Mannarino, CPA
Specialist/Analyst

Education

RUTGERS UNIVERSITY, Rutgers Business School, New Brunswick, NJ
Master of Accountancy, GPA: 3.75, Cum Laude
Bachelor of Science in Accounting, GPA: 3.6

CERTIFICATIONS

Certified Public Accountant, State of New York

TECHNOLOGY

Skills: Lacerte, EasyAcct, Microsoft Excel, Microsoft Word, Microsoft PowerPoint and Oracle

Career Highlights

As a Certified Public Accountant, she has counseled Clients in various industries with a focus on implementing Financial Management and Controls Development Strategies in the power industry. She has been part of CTC's successful team in the support of detailed analysis, modeling, and reporting actual cost associated with capital expenditures on major projects in which CTC is under Contract. Her years at **PricewaterhouseCooper LLP, New York, NY** coupled with her Power industry experience enables her as a unique asset to CTC in the Nuclear Power arena.

Prior Project Experience
(Partial Listing)

- ❖ **Critical Technologies Consulting, LLC (CTC)** Financial Advisor/Specialist.

Provide expert Earned Value Measurement expertise on Actual Cost of Work Performed (ACWP) by

- Reviewing monthly expenditures on various Projects CTC has been engaged over the years, inspect books and expenditures.
- Review budgets and identify variances to the cost estimates.
- Review variance analysis based on disbursements made as compared to estimated disbursements from the previous forecasting.



- Review appropriate financial statements to determine financial health of sub-contractors to develop both cost and schedule risks associated with the projects under review.
- Validate cash flow requirements to support the projects various subcontractors/ Companies are committed to in order to determine reasonableness of escrow accounts and that disbursements are accurately made to the various sub-contractors and or vendors.

❖ **AMC Networks, New York, NY**

- Implemented processes that reduced manual inputs, thereby minimizing human error and creating efficiencies
- Prepared monthly journal entries, including accounting for revenue and programming content, as well as balance sheet and income statement accounts
- Reviewed journal entries and account analysis prepared by senior accountant including resolving open reconciling items
- Reviewed payments to ensure proper general ledger coding, proper approval levels and adequacy of the supporting documentation
- Responsible for preparation of quarterly reporting package schedules for internal and external reporting purposes
- Responsible for interaction with operations, AMC Networks finance, legal, tax and third parties to ensure complete understanding of complex nature of the relationships and the appropriate accounting for these transactions
- Reviewed residual calculations on a quarterly basis to ensure the correct amount is being reported
- Reviewed the cash procedures at the IFC Center, identified areas of potential exposure, and collaborated with the team to remediate our findings

❖ **PricewaterhouseCoopers LLP, New York, NY**

Senior Auditor, Senior Associate, Investment Management

- Lead various teams to financial audits of top 500 major company clients. The auditing process included accuracy of reporting, appropriateness of inclusion of all disbursements in accordance to GAAP.
- Audits lead to interfacing with high level management interaction, questionnaire and the art of discovery and eventual resolution.
- Designed/executed planning and substantive procedures for various types of clients in the Asset Management Practice,



including mutual funds, asset management companies and employee benefit plans

- Researched and evaluated technical accounting policies and audit issues to ensure that financial statements are prepared in accordance with U.S. Generally Accepted Accounting Principles
- Demonstrated management and leadership skills as a senior by planning and organizing an audit engagement to be in compliance with applicable standards, coordinating with managers, partners, client contacts, and internal specialist groups, and supervising and reviewing the work of others
- Managed engagement teams, project economics and trained/supervised staff on each client engagement

❖ **Wine So Fine & Liquors, Inc., Staten Island, NY**

Partner/Accountant

- Evaluated financial health of a possible acquisition and filed payroll tax, sales tax and corporate tax returns
- Developed/administered budgets and ensured prompt payment of all bills and made weekly deposits