MITSUBISHI ELECTRIC POWER PRODUCTS, INC.
POWER SYSTEMS ENGINEERING SERVICES
530 KEYSTONE DRIVE
WARRENDALE, PA 15086, U.S.A.
Phone: (724) 778-5111 FAX: (724) 778-5149
Home Page: www.meppi.com

September 3, 2024

Kimberly N. O'Brian
Kathryn H. Bowman
Louisiana Public Service Commission
602 North Fifth Street (Galvez Building) (70802)
P.O. Box 91154
Baton Rouge, Louisiana 70821-9154

Re: RFP 24-08

Docket No. TBD, Entergy Louisiana, LLC, ex parte. Request for Proposals for Long-Term Developmental Combined-Cycle Combustion Turbine Resources

Dear Kimberly and Kathryn:

Please find enclosed Mitsubishi Electric Power Products, Inc. (MEPPI) proposal to act as an outside consultant and assist the Louisiana Public Service Commission (LPSC) with docket TBD. MEPPI offers a total budget of $160,000, including fees and direct costs (expenses).

MEPPI is qualified for this role. MEPPI has extensive experience in the electric utility sector and has worked with LPSC staff on another docket (I-36503).

There are no actual or potential conflicts of interest for MEPPI in performing the obligations in this RFP.

Sincerely,

Nick Tenza

Nicholas Tenza

Consulting Director

T: (724) 831-9206, Nicholas.Tenza@meppi.com

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Mitsubishi Electric Power Products, Inc. (MEPPI)

Proposal to the Louisiana Public Service Commission

In Response to RFP 24-08

Docket No. TBD, Entergy Louisiana, LLC, ex parte. In re: Request for Proposals for Long-Term Developmental Combined-Cycle Combustion Turbine Resources

TO: Kimberly N. O'Brian
Kathryn H. Bowman
Louisiana Public Service Commission
602 North Fifth Street (Galvez Building) (70802)
P.O. Box 91154
Baton Rouge, Louisiana 70821-9154

FROM: Henry Morrow
CC: Nicholas Tenza
DATE: September 3, 2024

.

MEPPI Contact Person: Henry Morrow ***MEPPI Approver: Nicholas Tenza***

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Contents

COMPANY EXECUTIVE SUMMARY

Mitsubishi Electric Power Products, Inc. (MEPPI) is submitting this proposal in response to the Louisiana Public Service Commission RFP request for an outside consultant for RFP 24-08 Docket No. TBD, Entergy Louisiana, LLC, titled "Request for Proposals for Long-Term Developmental Combined-Cycle Combustion Turbine Resources," and is willing to support the Louisiana Public Service Commission Staff ("Commission" and "Staff") in its review of the bidding process and any certification hearings that result.

Entergy notified the Commission that it would issue an RFP to develop a combined-cycle plant. The issuance of the RFP complies with the Commission's Market-Based Mechanisms General Order (MBM Order). The Commission released an RFP seeking a consultant to assist with reviewing the Entergy RFP and possibly the certification proceeding(s) that could result from the RFP. MEPPI can help the Commission with the RFP and potential certification proceedings for a fee not to exceed $160,000. The total includes the RFP and potential certification proceedings.

MEPPI QUALIFICATIONS

MEPPI is qualified to assist the Commission based on our familiarity with the certification proceeding(s), experience on a previous Commission docket, and work completed for public service commissions in other states:

1) Commission's 1983 General Order

   The 1983 General Order requires that new electric power capacity be in the public's best interest. The utility can demonstrate this by showing cost savings and reliability with the new contract or construction. MEPPI staff have decades of experience reviewing and developing integrated resource plans (IRPs) submitted to Louisiana, Florida, and Montana commissions. The IRP reveals the least-cost utility portfolio to meet the cost and reliability constraints.

2) The Commission's Rules and Orders about the RFP process

   MEPPI is familiar with the April 10, 2002, General Order, which established a structure for evaluating proposals for generating capacity based on Market-Based Mechanisms (MBM) and that an RFP process be followed.

3) Consultant for Louisiana Public Service Commission docket I-36503

   MEPPI assisted Staff in reviewing the utility IRP, which included determining whether the plan was in the public interest.

4) Consultant for Montana Public Service Commission docket 2022.11.102, FIL-7138

   MEPPI evaluated the utility's use of the production cost software in developing its IRP. The work involved analyzing how the utility modeled the markets and policy issues, including the Western Energy Imbalance Market (WEIM), Southwest Power Pool (SPP), Midcontinent Independent System Operator (MISO), Western Resource Adequacy Program (WRAP), and the Inflation Reduction Act (IRA). MEPPI provided opinions on the impact of the utility's transmission assumptions on the IRP.

5) Consultant for the Independent System Operator New England (ISO-NE)

   MEPPI works as a consultant to the ISO-NE. The work involves interconnection and transmission studies.

6) Policies related to Energy Efficiency and Distributed Generation and their applicability to resource planning

   MEPPI staff have decades of experience using production cost modeling software to evaluate the least-cost combinations of energy efficiency, distributed generation, and other supply-side options in resource planning.

7) Policies related to Transmission and their applicability to resource planning

   MEPPI staff have experience with the transmission planning process in several ISOs/RTOs, namely MISO, ISO-NE, PJM, SPP, and ERCOT. This experience includes using the planning software used in evaluating transmission projects.

8) Principles associated with resource acquisitions, including but not limited to whether or not a particular resource meets the utility's need for power and whether the considered resources can meet those needs.

   MEPPI has extensive experience using production cost modeling software to evaluate intermittent solar, battery, and wind resources to meet utility needs. The software was used to support filed IRPs in several states.

9) Whether or not a resource will provide reliable service at the lowest reasonable cost

   MEPPI has used several different production cost modeling software to determine the least cost resource based on the lowest Present Value of Revenue Requirements (PVRR) metric

10) Resource planning methods to improve the efficiency and reliability of a utility's power supply operations and whether the utility is making use of any such methods

MEPPI staff participate in ISO/RTO working groups that evaluate reliability based on the loss of load probability and have used production cost modeling software to assess efficiency and reliability.

11) Public interest criteria for approval and monitoring of electric generating facility projects

MEPPI staff is familiar with the siting and permitting process for electric generating plants and participates in ISO/RTO regional working groups that work with community groups and stakeholders.

12) MISO tariffs, rules, and planning processes generally

MEPPI is familiar with the MISO Transmission Expansion Plan (MTEP) and has completed several studies there. Team members participate in several MISO working groups and know the tariffs and rules.

MEPPI offers various technical analysis and consulting services to position organizations to meet grid planning and operation objectives. Our consulting experience includes resource interconnection studies, including feasibility and system impact studies of offshore wind, inverter-based resources, battery energy storage systems, and conventional generation units, performed on behalf of regional transmission organizations (RTOs), namely MISO, ISO-NE, PJM, SPP, and ERCOT. Economic analysis and studies are needed to determine congestion and curtailment of offshore wind units, and production cost simulations are required to assess revenue and capacity factors of prospective generation resources. We also specialize in integrating advanced technologies such as FACTS and HVDC, including custom model development, system controls, harmonic stability, and other specialized controls and interaction phenomena, along with their performance in the grid with traditional generation and equipment, including synchronous condensers. We are well positioned for such consulting endeavors, further supported by decades of expertise in power flow, stability, and electromagnetic transients and related analysis in the integration of traditional grid equipment (circuit breakers, transformers, reactors, capacitors, and other line, cable, and substation related equipment) and protective equipment (such as surge arresters and protective circuit breaker characteristics) in addition to the integration of inverter-based resources.

We bring unique knowledge of industry standards, guidelines, specifications, design, manufacturing, testing, validation, commissioning, simulation, and field performance to our consulting initiatives. We are an unbiased third-party consultant with all the physical and cyber security protocols in place to ensure data is protected and handled securely. Given our expertise, organization, and structure, we are frequently contracted by Mitsubishi Electric and other OEMs, investor-owned utilities, independent system operators, developers, and other commercial/industrial institutions.

WORK PLAN

Two tasks have been identified: the RFP process and the potential certification process. The RFP process is estimated to take eight months, and the potential certification proceeding(s) is 10-12 months. The total time for the work would be between 8 and 20 months. The two sections of the work plan are detailed in Tables 1 and 2.

Table 1 RFP Task List

Task	Details
Review the Entergy self-build option at the Nelson site	Review MISO interconnection costs, gas pipeline costs, capital costs associated with engineering procurement construction (EPC), VOM costs, and combined cycle configuration.
Review Entergy's self-build option in the Amite South planning region.	Review MISO interconnection costs, gas pipeline costs, capital costs associated with engineering procurement construction (EPC), VOM costs, and combined cycle configuration.
Review responses to RFP.	Review MISO interconnection costs, gas pipeline costs, capital costs associated with engineering procurement construction (EPC), VOM costs, and combined cycle configuration.
Review production cost results of bids.	Review bid production cost results over the contract's life to determine the lowest cost bid or combination of bids.
Attend technical and bidders' conferences.	Review and provide a summary to Staff regarding bidder concerns, details about the process, and meeting details relevant to the integrity of the process.

Review of and comment on draft documents	Provide Staff with comments regarding the contents of draft documents, including missing or incomplete data.
Coordinate with the independent monitor.	Attend meetings, documents, and communication with the independent monitor.
Attend informal meetings	Provide Staff with comments regarding any details about the RFP process, questions, or concerns.
Prepare report upon RFP completion.	Provide Staff with a report that summarizes the RFP process. Include opinions about the process of meeting the MBM Order and General Order.
Review RFP responses to MISO Resource Adequacy.	Review the RFP bid's ability to meet capacity requirements for MISO.
Review MISO future resource build-out used.	Review and provide comments on the MISO future used for bid evaluation. The review will include the capacity in the queue assumed, fuel prices, and resource buildout in MISO South.

Table 2 Certification Proceeding

Task	Details
Review certification application(s)	Review the certification application that resulted from the RFP. The effort will include comments and opinions to Staff.
Review Testimony	Provide opinions and comments to Staff.
Review and develop exhibits.	Produce exhibits requested by Staff, review exhibits, and provide comments.
Assist with data requests.	Write documents requesting data, review data, and summarize data requests for Staff.
Analyze data responses	Review data responses, provide opinions, and develop documents for Staff.
Participate in formal status conferences.	Prepare documents from formal status conferences for Staff and provide opinions.
Participate in pre-trial conferences.	Prepare documents from pre-trial conferences for Staff and provide opinions.
Deposition participation	Prepare documents for depositions and provide depositions of opinions.
Hearing Participation	Attend hearings and provide documents for Staff.

Rebuttal testimony	Review rebuttal testimony and provide questions and responses for Staff.
Direct and cross-answering testimony	Provide testimony regarding opinions and findings.
Pre-filed testimony	Provide pre-filed testimony regarding opinions and findings.
Assist in trial preparation.	Provide documents for Staff for trial, include opinions and results of data review.
Review potential stipulation terms.	Review potential stipulation terms, provide opinions, and develop documentation for Staff
Brief sheets and orders of the Commission	Review brief sheets and orders of the Commission, provide opinions, and develop documentation for Staff
Informal conference calls, meetings, and conferences with Commission and Staff	Preparation and attendance of informal meetings
B&E meeting preparation and attendance	Attend Business and Executive Session meetings, develop documentation for Staff

TOTAL BUDGET TO SUPPORT STAFF IN REVIEW OF RFP AND IRP

MEPPI will provide the scope of services in this proposal for a total budget of, at most, $160,000, comprising $157,500 for consulting services and $2,500 for expenses. The hourly rate for professional services is shown in Appendix B.

KEY PROJECT STAFF

Henry Morrow, Principal Systems Studies Engineer, focuses on Integrated Resource Planning, responding to RFPs, asset evaluation, market price forecasting, capacity expansion, resource adequacy, ISO/RTO market design, and economic assessment of power purchase agreements.

Before joining MEPPI, Mr. Morrow spent 14 years working in the resource planning group at Duke Energy, preparing filings to the Florida Public Service Commission (FPSC) for cost recovery. The responsibilities included responding to Staff questions, completing production cost modeling results, preparing team members for direct testimony, and completing the filed Ten-Year Site Plan (TYSP). He also provided testimony support to the FPSC while working at Seminole Electric Cooperative, Inc. as a Senior Engineer.

Sercan Teleke, Principal Engineer, Dr. Sercan Teleke joined the Mitsubishi Electric Power Products, Inc. (MEPPI) Power Systems Engineering Division in August 2020. With over 15 years of electrical engineering experience, he is an expert in energy storage, solar photovoltaic (PV) systems, microgrids, renewable energy integration, power electronic applications to power systems, and power system design and analysis. Before joining MEPPI, he was responsible for leading the microgrid consulting and feasibility study efforts at Eaton which included developing preliminary/conceptual designs for microgrids, developing technical specifications for microgrid components, including solar PV systems, battery energy storage systems (BESS), microturbines, reciprocating engines, and dynamic rotary uninterruptible power supply (UPS), and performing hardware-in-the-loop (HIL) testing for microgrids using RTDS. He is a Professional Engineer (P.E.) licensed in California and Maine. Dr. Teleke is a patent holder in the microgrid control space. He has published more than twenty articles and technical papers in refereed journals and conference proceedings, with most of his papers focused on renewable energy and microgrids. He is a senior member of IEEE and IEEE Power and Energy Society.

Kiran Deshamouni, Principal Engineer, joined the Mitsubishi Electric Power Products, Inc. (MEPPI) Power Systems Engineering Division in December 2022. Kiran Deshamouni specializes in Distribution Planning, Distribution Automation, Distribution Protection studies, Reliability Studies, DER Interconnection Studies, EV Impact Studies, and lightning surge analyses. These analyses use various software, including CYME, CYMTCC, Synergi Electric, Windmil, EMTP, and PSCAD.

Mohamad Kanbari, Engineer III, joined Mitsubishi Electric Power Products, Inc. (MEPPI) in June 2023 with over seven years of utility experience in distribution planning, interconnection, and asset management. In these roles, Mohamad developed expertise in the interconnection of customers and generators and the safe and reliable operation of the electric grid. Since joining MEPPI's Power Systems Engineering Division (PSED), Mohamad has worked closely with utility T&D planning teams, managing a distribution load projections database and review process.

OTHER PRINCIPALS AVAILABLE IN ADVISORY ROLE

David E. Roop is a vice president at MEPPI and has performed on-site field testing and calibration studies toward NERC MOD (Model) testing to verify renewable generating plant dynamic models and data. He also has experience conducting/preparing test plan development, plant personnel coordination, field testing, and dynamic model validation work related to MOD-025, MOD-026, and MOD-027 verification testing for wind farms at both the plant and individual turbine levels.

Nicholas Tenza is a consulting director at MEPPI and has over 13 years of experience in the power system field. He specializes in power factor & stability analysis and generation interconnections.

He is involved with generator testing, specifically for NERC MOD 26 and MOD 27. He has combined experience with on-site testing and in-depth knowledge of dynamic modeling. He has experience developing test plans with the customer, supporting on-site testing, optimizing the model parameters for dynamic simulations, and creating comprehensive reports.

Adam R. Sparacino is a consulting director at MEPPI and has led and contributed to insulation coordination analyses, electromagnetic transient analyses, frequency scan analyses, and analyses related to the specification, design, and performance verification of power electronics equipment for transmission systems. These analyses use a variety of software, including electromagnetic transient (EMTP-RV, PSCAD/EMTDC), dynamic performance (PSS/E, PSLF), short-circuit (ASPEN), and factory acceptance/simulator testing (RSCAD, RTDS).

Adam W. Gerstnecker is a managing principal consultant at MEPPI and has led efforts to perform stability, power flow, and electromagnetic transient analyses. He has also conducted large-scale stability studies for TPL compliance and generation retirement and operational stability studies to assess power system voltage and angular instability and evaluate system reinforcements.

Chad D Mazurek, P.E is consulting director at MEPPI and has performed numerous steady-state studies at the transmission level, including NERC TPL compliance, short-term and long-term transmission planning, summer/winter peak operating studies, minimum "must-run" generation and generator interconnection. He has served as a Subject Matter Expert (SME) during a NERC compliance audit. Chad has several years of experience in electromagnetic transient studies (EMT) and leads DER interconnection studies.

ADHERENCE TO ANTI-TRUST AND COLLUSION LAWS

MEPPI is committed to the highest standards of business ethics and legal compliance. This commitment encompasses our relationships with customers, suppliers, competitors, and each other as employees at every level of the organization. MEPPI requires strict observance of and compliance with the letter and spirit of all laws governing the conduct of the company's businesses. MEPPI's employees are expected to have a general knowledge of the laws and regulations that apply to their work.

MEPPI requires all employees to complete annual "Business Ethics and Legal Compliance Policy" and "Anti-bribery Policy" training. These policies also impose a higher standard of ethical conduct than mere compliance with the law. MEPPI employees must exercise the highest degree of honesty and integrity in all their dealings with others.

AVOIDING CONFLICTS OF INTEREST

MEPPI requires all employees to complete the annual "Conflict of Interest Policy" and "Competitor Contact Policy. "

LIST OF REFERENCES

Listed below are references for the MEPPI team that will be supporting.

Will Rosquist
Regulatory Division Administrator
Montana Public Service Commission
(406) 444-6359
Wrosquist@mt.gov
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Robert Mc Murry
Director of Integrated Resource Planning, Duke Energy Corporation
(980) 373-7899
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Al McBride
Director | Transmission Services & Resource Qualification
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Bhaskar Ray
VP of Interconnection & Development Engineering l Development
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Tim McDuffie
Senior Business Development Engineer, Smarter Grid Solutions
Vice President of Engineering, California Commercial Energy 2014-2019
Party to many CPUC Working Groups including Rule 21
(661) 310-6486
tmcduffie@smartergridsolutions.com
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Vishal Patel
Principal Manager - Integrated System Analysis
Southern California Edison (SCE)
vishal.patel@sce.com
www.sce.com

CONTACT INFORMATION

For further details, questions, and clarifications, contact:

Henry Morrow
Principal Systems Studies Engineer
Power Systems Engineering Division (PSED)
Mitsubishi Electric Power Products, Inc.
530 Keystone Drive, Warrendale, PA 15086
E-mail: Henry.Morrow@meppi.com
Phone: 724-742-3497

COMPANY REPRESENTATIVE

Nicholas Tenza
09/03/2024
Consulting Director, PSED
724-831-9206
Nicholas.Tenza@meppi.com
www.meppi.com

COMPANY CREDIT INFORMATION

Name of Company: Mitsubishi Electric Power Products, Inc.

Address: Thorn Hill Industrial Park
530 Keystone Drive
Warrendale, PA 15086

Phone: 724-778-5111
724-778-5146-facsimile

Business Commenced: December 1985

DNBI Number: 15-374-7456

Number of Employees (MEPPI): Office-486
Field: 66
Shop: 304

Number of Employees (PSED): Office- 95

Principals: Tricia Breeger- President & CEO
Susan Renda- Vice President, Human Resources
David Roop - Vice President, Power Systems Engineering Group

APPENDIX A RESUMES

APPENDIX A
RESUMES

HENRY MORROW

Mitsubishi Electric Power Products, Inc.
Principal Engineer, Power Systems Engineering Division

EXPERIENCE

Mr. Morrow focuses on production cost studies for utilities, developers, cities, and states. He has worked in utilities' resource planning departments for over two decades, performing studies to support the integrated resource planning (IRP) process, cost recovery, and need determination.

He has performed generation capacity expansion studies to determine the least-cost IRP plan given input constraints: renewable energy goals, CO2 reduction targets, energy efficiency mandates, capital costs, fuel price forecasts, emerging technology trends such as hybrid solar storage, non-capital fixed costs, and other costs related to the cost of electricity.

He has supported direct testimony and filings of staff members while employed by several utilities and consulting firms. While employed at Duke Energy as a Lead Engineer for 14 years, he supported filings and testimony before the Florida Public Service Commission regarding the Commission IRP requirement, the Ten-Year Site Plan. He worked on several Staff requests related to the many Duke Energy filings, including providing data in the form of Present Value Revenue Requirement (PVRR) and annual cost data. While employed as a Senior Consultant at Daymark Energy Advisors, he supported the consultants responsible for the firm's many state regulatory organizations.

While employed as a Senior Planning Engineer at Seminole Electric Cooperative, Inc., he performed production cost modeling studies to evaluate power purchase agreements, economic evaluations of plant modifications, capacity additions, and completing the filed IRP.

EDUCATION:

Master of Business Administration ***2012***
- Florida State University, Tallahassee FL

Bachelor of Science in Electrical Engineering ***1996***
- California State University Sacramento, Sacramento CA

PROFESSIONAL SOCIETY ACTIVITIES

Member IEEE, for Power and Energy Society

DAVID E. ROOP
Mitsubishi Electric Power Products, Inc. Vice-President, Power Systems Engineering Division

EXPERIENCE
David has been with MEPPI PSED since July 2013. Before joining MEPPI, he worked two summers as an intern on the team.

David has conducted electromagnetic transient analysis using PSCAD, EMTP-RV, and ATP to simulate phenomena associated with transient recovery voltages, lightning, switching surges, and insulation coordination. He has performed analyses that implemented applicable IEEE and ANSI standards. He has also performed load flow and stability work using Siemens Power Technologies' PSS/E and GE Positive Sequence Load Flow (PSLF) simulation software for generation interconnection studies, power factors, dynamic stability, and steady-state analysis.

While with MEPPI, David worked in Japan for an extended period with MELCO (2.5 years), MEPPI's parent company. His primary activities were focused on power electronics, including Static VAR Compensator (SVC), Modular Multi-Level Converter based Static Synchronous Compensator (MMC-STATCOM), Hybrid (SVC+STATCOM), as well as Voltage Source Converter (VSC) based MMC-HVDC efforts. His focuses included SVC/STATCOM/HVDC system design, specification development, transient and dynamic analyses, control performance studies, feedback controller tuning, harmonic filter design, harmonic impedance and resonance analyses, main equipment specification, multi-device control interaction, integration with renewable resources (e.g., such as wind and solar), and Real-Time Digital Simulation (RTDS).

David has performed on-site field testing and calibration studies toward NERC (North American Electric Reliability Corporation) MOD (Model) testing to verify renewable generating plant dynamic models and data. Test plan development, plant personnel coordination, field testing, and dynamic model validation work related to MOD-025 (Real/Reactive Power Capability), MOD-026 (Plant Volt-Var Control), and MOD-027 (Active Power/Frequency Control) verification testing was conducted for wind farms at both the plant and individual turbine level.

David has conducted load flow and stability analysis using PSS/E and PSLF software for transmission line sizing, generation interconnection, and retirement, renewable plant feasibility/design and integration of energy storage, evaluating load ability limits using PV/QV, short-circuit, power factor, steady-state, and dynamic stability analysis.

Based on his increasing experience in power electronics research and development, studies, design, and equipment application, David's interests are in providing innovation in these areas.
David looks to drive technology in both the software and hardware domains to support these efforts, including expanding upon the state-of-the-art use of RTDS in power system applications beyond the research domain.

David looks forward to developing these efforts both domestically in the United States and internationally, where he has already spearheaded efforts for MEPPI in Europe, Latin America, Asia, and Australia. He also has aspirations of pursuing graduate work and his doctoral degree consistent with his efforts here.

EDUCATION

Bachelors of Science in Electrical Engineering - 2013
- Virginia Polytechnic Institute and State University

Bachelors of Science in Physics– 2013
- Radford University

PROFESSIONAL SOCIENTY ACTIVITIES

- Member of the NERC PPMVTF (Power Plant Modeling and Verification Task Force) and IRPTF (Inverter-Based Resource Performance Task Force) initiatives.
- Member of the WECC (Western Electricity Coordinating Council) MVWG (Model Validation Working Group) and Contributor to the HVDCTF (High Voltage Direct Current Task Force) on VSC-HVDC Generic Dynamic Model Development.
- Member of the Mitsubishi Electric Co. (Japan) Working Group on MMC-HVDC Protection and Control Development.
- IEEE PES, PELS, and IAS
- CIGRE

AWARDS

- Certified Engineering-In-Training by the VA State Board of Engineers
- Third Place IEEE IAS Myron Zucker
  Undergraduate Student Design Contest, 2012

NICHOLAS TENZA
Mitsubishi Electric Power Products, Inc.
Consulting Director, Power Systems Engineering Division

EXPERIENCE

Nicholas has been with MEPPI PSED since May 2010. Before joining MEPPI, he worked for the team as a summer intern. Nicholas conducts various studies using Siemens Power Technologies' PSS/E power system simulation program. He has experience performing studies on power factor & stability analysis and generation interconnections. Those inquiries have focused on wind and solar generation interconnections, SVC/STATCOM, and large-scale stability for compliance with TPL standards. In addition to PTI's PSS/E software, Nicholas has experience with the GE Positive Sequence Load Flow (PSLF) for power system load flow and stability analysis, including assessing power systems to determine voltage instability and evaluate different system reinforcements. He also performs composite load modeling-related studies and determines the effects of induction motor stalling on the power system.

Nick is also involved with generator testing, specifically for NERC MOD 26 and MOD 27. Combining on-site testing and in-depth knowledge of dynamic modeling, he can provide dynamic modeling data that operators of electrical transmission systems can use in large-scale simulations. He has experience in developing test plans with the customer, supporting on-site testing, optimizing the model parameters for dynamic simulations, and creating comprehensive reports.

Additionally, he has developed transient models using ATP, EMTP, EMTP-RV, and PSCAD to simulate the phenomena associated with transient recovery voltages, including switching surge analysis. He has performed analyses using applicable IEEE and ANSI standards.

EDUCATION

Bachelor of Science in Electrical Engineering - 2010
- University of Pittsburgh

PROFESSIONAL SOCIETY ACTIVITIES

- Member of the IEEE and Power Engineering Society (PES)

ADAM R. SPARACINO
Mitsubishi Electric Power Products, Inc.
Consulting Director, Power Systems Engineering Division

EXPERIENCE

Adam joined Mitsubishi Electric Power Products, Inc. (MEPPI) in 2013 and currently leads consulting efforts within MEPPI's Power Systems Engineering Division (PSED). Prior to joining MEPPI, Adam graduated with a MSEE in Electric Power Engineering from the University of Pittsburgh. Adam's expertise includes substation insulation coordination, dynamic modeling of power electronic devices (e.g., inverter-based resources [IBRs], Flexible AC Transmissions Systems [FACTS], and HVDC), analysis of systems with high penetrations of power electronic devices, and harmonic performance evaluation. Adam has led pre-specification, design, system impact studies, material modification determination (MMD) studies, factory acceptance testing, commissioning testing, and root cause analysis for both traditional power system equipment (transformers, circuit breakers, cables, overhead lines, etc.) and power electronic devices. In addition to performing these services for utilities and system operators, Adam has performed these tasks on behalf of MEPPI for Static Var Compensator (SVC) and Static Synchronous Compensator (STATCOM) product lines for projects interconnected at voltage levels between 100 kV and 765 kV.

Adam is an adjunct professor at the University of Pittsburgh where he teaches a course on Power System Transients and is an active member of the NERC Inverter-Based Resource Performance Subcommittee (IRPS) where he provides guidance to the electric power industry on modeling and simulation requirements for power electronic devices.

EDUCATION

Master of Science in Electrical Engineering – 2012
- University of Pittsburgh

Bachelor of Science in Electrical Engineering – 2011
- University of Pittsburgh

PROFESSIONAL SOCIETY ACTIVITIES

- Member of IEEE
- IEEE: Power & Engineering Society (PES)
- IEEE: Power Electronics Society (PELS)
- Member of NERC Inverter-Based Resource Performance Task Force (IRPTF)
- Member of CIGRE

SELECTED JOURNAL ARTICLES

- Grainger, B.M.; Reed, G.F.; Sparacino, A.R.; Lewis, P.T., "Power Electronics for Grid- Scale Energy Storage," Proceedings of the IEEE, vol.102, no.6, pp.1000,1013, June 2014
- Reed, G.F., Grainger, B.M., Sparacino, A.R., Mao, Z.H., "Ship to Grid: Medium Voltage DC Concepts in Theory and Practice," IEEE Power & Energy Magazine, Volume 10, No. 6, pp. 70-79, November/December 2012.
- Reed, G.F, Grainger, B. M, Sparacino, A.R., Taylor, E.J., Korytowski, M.J., Mao, Z.H., "Medium Voltage DC Technology Developments, Applications, and Trends," CIGRE 2012

Grid of the Future Symposium, Kanas City, MO, October 2012.
- Sparacino, A., Grainger, B., Kerestes, R., Reed, G.F., "Design and Simulation of a DC Electric Vehicle Charging Station Connected to a Medium Voltage DC Infrastructure," IEEE Energy Conversion Congress and Exposition, Raleigh NC, September 2012.
- Sparacino, A., Reed, G.F., Kerestes, R., Grainger, B., Smith, Z., "Survey of Battery Energy Storage Systems and Modeling Techniques," IEEE PES General Meeting, San Diego CA, July 2012.
- Kerestes, R., Reed, G. F.., Sparacino, A. "Economic Analysis of Grid Level Energy Storage for the Application of Load Leveling," IEEE PES General Meeting, San Diego CA, July 2012.

ADAM W. GERSTNECKER
Mitsubishi Electric Power Products, Inc.
Managing Principal Consultant, Power Systems Engineering Division

EXPERIENCE

Adam joined MEPPI PSED in August 2011 after working for PSED as a summer intern. He has lead and performed stability analysis, power flow analysis, and electromagnetic transient analysis. Adam has performed stability analysis using PSS/E and PSLF software for system impact studies for generation interconnections and SVC installations. He has also performed large scale stability studies for TPL compliance and generation retirement, and operational stability studies to assess power system voltage and angular instability and evaluate system reinforcements. Additionally, Adam has performed electromagnetic studies using EMTP, EMTP-RV, and PSCAD, examining transients caused by switching lines, cables, transformers, SVC's, capacitor banks and reactors, as well as lightning and fault clearing events to evaluate insulation strengths, including reference to applicable ANSI and IEEE standards, and equipment application design and experience.

EDUCATION

Bachelor of Science in Electrical Engineering – 2011
- Youngstown State University

PROFESSIONAL AFFILIATIONS

- IEEE
- IEEE Power Engineering Society (PES)

CHAD D. MAZUREK, P.E.
Mitsubishi Electric Power Products, Inc.
Consulting Director, Power Systems Engineering Division

EXPERIENCE

Chad has been with MEPPI PSED since August 2018 and has a collective nine years of experience in power system studies. Before joining MEPPI, he spent nearly seven years at Black & Veatch as a lead electrical engineer in their Power System Studies group and two years at Associated Electric Cooperative, Inc. (AECI) as a transmission planning engineer. Chad specializes in steady-state, transient stability, and electromagnetic transient studies at the transmission and distribution level.

Chad has performed numerous steady-state studies at the transmission level, including NERC TPL compliance, short-term and long-term transmission planning, summer/winter peak operating studies, minimum "must-run" generation, and generator interconnection. He has served as a subject matter expert (SME) during a NERC compliance audit, specifically regarding the NERC TPL and FAC standards. His experience as the technical administrator of the generation interconnection studies queue at AECI has given him authority over the FERC Pro Forma Large Generator Interconnection (LGIA) process. Chad has also performed transient stability studies such as NERC TPL compliance, model validation, and material modification studies for numerous clients.

Chad has several years of experience in electromagnetic transient studies (EMT) and has performed work on transmission line energization (determining Minimum Approach Distance for OSHA standards), capacitor bank switching, transformer energization, transient recovery voltage (TRV), coupled line resonance (induced voltage), single-pole switching, and black start studies.

At the distribution level, Chad has experience performing hosting capacity and interconnection studies for Distributed Energy Resources (DER). The scope of these studies has included steady-state analysis (thermal overloads, reverse power flow, and voltage violations), time-series analysis (voltage flicker, regulator range, and tap cycling), and power quality (harmonics). In addition, he has traveled overseas to train distribution engineers on these principles in a workshop environment.

Chad also has a strong background in object-oriented programming and has authored numerous Python scripts to interface with and automate PSS/E and post-process results. He is proficient with the following software suits used in power system studies: PSS/E, PSS/MUST, PSCAD, PSLF, E-TRAN, CYMDIST, Synergi, PSS SINCAL, ETAP, and ASPEN. Chad is a licensed professional engineer in the State of Kansas.

EDUCATION

Bachelor of Science in Electrical Engineering, Power System Analysis and Design - 2009
- Kansas State University

PROFESSIONAL TRAINING

- Siemens Power System PSS®E Trainings: PSSC_550: Dynamic Simulation using PSS®E
- CYME International: Distribution Analysis and Time-Series Analysis

SERCAN TELEKE
Mitsubishi Electric Power Products, Inc.
Principal Engineer, Power Systems Engineering Division

EXPERIENCE

Sercan Teleke joined the Mitsubishi Electric Power Products, Inc. (MEPPI) Power Systems Engineering Division in August 2020. He is an expert in energy storage, solar photovoltaic (PV) systems, microgrids, renewable energy integration, power electronic applications to power systems, and power system design and analysis. He is a Professional Engineer (P.E.) licensed in California. His professional career includes consulting experience, interacting with various electric utility companies and renewable energy developers across North America, and manufacturing experience.

Dr. Teleke began his professional career as an Engineer for Quanta Technology in Raleigh, North Carolina. After working there for three months, he was promoted to Senior Engineer in April 2010. During his tenure, he worked on numerous projects to address the challenges of smart grid implementation, renewable energy integration, and electricity infrastructure faced by various electric utility companies in North America. His responsibilities included performing transmission system design, planning, and analysis, assessing the impact of renewable energy sources on distribution and transmission systems, and proposing solutions to mitigate intermittency of renewable energy sources.

In May 2011, Dr. Teleke joined Coda Energy in Los Angeles, California. He worked there as a Grid Interface Engineer at first and then promoted to Senior Systems Engineer in June 2012. He was responsible for developing Lithium-Ion battery energy storage systems from concept to manufacturing. In this role, his tasks included developing requirements and control algorithms for the system master controller to achieve the highest system efficiency and reliability, defining high-level system architecture, and contributing to designing and testing bidirectional DC to DC converters utilizing IGBTs.

Dr. Teleke joined Black & Veatch as a Renewable Energy Engineer in March 2013. In this role, he worked on numerous projects to address energy storage and solar PV integration challenges that various electric utility companies and renewable energy developers face worldwide. His responsibilities were acting as an independent/owner's engineer for energy storage developers and performing due diligence with a focus on technology, electrical design, and power conversion systems, developing engineering, procurement, and construction technical specifications, capital cost estimates, providing bid review and support, and developing conceptual design for off-grid microgrids and technical specifications for microgrid components including solar PV system, battery energy storage system, diesel generator, and microgrid controller.

Dr. Teleke joined Eaton as a Senior Specialist in December 2015. His primary focus was to perform feasibility studies for microgrids and renewable energy projects there. In this role, his tasks included acting as an in-house expert to resolve unique engineering challenges of microgrids and evaluate the feasibility of non-traditional grid solutions to improve grid resiliency and reliability, developing preliminary/conceptual designs for microgrids and technical specifications for microgrid components, including solar PV system, battery energy storage system (BESS), microturbines, reciprocating engines, and dynamic rotary uninterruptible power supply (UPS).

EDUCATION

Doctor of Philosophy in Electrical Engineering - December 2009
- North Carolina State University (NCSU), Raleigh, North Carolina

Master of Science in Electric Power Engineering - November 2006
- Chalmers University of Technology, Gothenburg, Sweden

Bachelor of Science in Electrical and Electronics Engineering - June 2005
- Middle East Technical University (METU), Ankara, Turkey

PROFESSIONAL SOCIETY ACTIVITIES

- Senior Member of the IEEE and Power and Energy Society (PES)
- Member of EPRI Energy Storage Integration Council (ESIC)
- Registered Professional Engineer in California

PATENTS

Qiang Fu and Sercan Teleke, "Predictive Grid Control Methods, Apparatus and Computer Program Products." Pending.

SELECTED JOURNAL ARTICLES

- "Rule Based Control of Battery Energy Storage for Dispatching Intermittent Renewable Sources," IEEE Transactions on Sustainable Energy, October 2010
- "Enhanced Control of Voltage Source Converters for DC Shipboard Power Systems," Naval Engineers Journal, November 2010
- "Optimal Control of Battery Energy Storage for Wind Farm Dispatching," IEEE Transactions on Energy Conversion, September 2010
- "Control Strategies for Battery Energy Storage for Wind Farm Dispatching," IEEE Transactions on Energy Conversion, September 2009
- "Dispatching of Wind Farms Using Battery Energy Storage," Int. Journal of Power Electronics, Vol. 1, No. 2, 2008

KIRAN DESHAMOUNI

Mitsubishi Electric Power Products, Inc.
Principal Engineer, Power Systems Engineering Division

EXPERIENCE

Kiran Deshamouni joined the Mitsubishi Electric Power Products, Inc. (MEPPI) Power Systems Engineering Division in December 2022. Kiran Deshamouni specializes in Distribution Planning, Distribution Automation, Distribution Protection studies, Reliability Studies, DER Interconnection Studies, EV Impact Studies, and lightning surge analyses. These analyses use various software, including CYME, CYMTCC, Synergi Electric, Windmil, EMTP, and PSCAD.

Before joining MEPPI, Kiran spent nearly 6 years as a Senior Consultant in the Distribution group in 1898 (Part of Burns and McDonnell). Her primary focus was to perform Reliability Improvement studies, providing solutions to improve the system's overall performance. She worked on the feeder level and system level investment plan, which focuses on upgrading distribution infrastructure across the power grid to decrease the number and length of power outages experienced by customers.

Kiran spent nearly five years at The Structure group (Now Part of Accenture), where she worked on various projects involving Distribution Planning, Distribution Automation, and Volt VAr optimization. She also worked at El Paso El Paso Electric for a year, performing engineering studies, resource planning, and economic and statistical studies for EPE's system.

EDUCATION

Master of Science, Electrical Engineering (Power Systems)
New Mexico State University, Las Cruces, NM

Master of Science, Industrial Engineering
New Mexico State University, Las Cruces, NM

Bachelor of Technology, Electrical and Electronics Engineering
Jawaharlal Nehru Technological University, Telangana, India

MOHAMAD KANBARI
Mitsubishi Electric Power Products, Inc.
Engineer III, Power Systems Engineering Division

EDUCATION

Bachelor of Science in Energy Engineering - May 2016
Pennsylvania State University, University Park

APPENDIX B BILLING RATES

APPENDIX B
Billing Rates

Member	Billing Rate ($/hr.)
Consulting Director	315
Managing Principal Consultant	290
Principal Engineer	265
Senior Engineer	240
Engineer III	225
Engineer II	210
Engineer I	190