

PROFESSIONAL CONSULTANT SERVICES AGREEMENT

SIEMENS INDUSTRY, INC.

Generator Modeling for RERC and Springs Power Plants

THIS PROFESSIONAL CONSULTANT SERVICES AGREEMENT ("Agreement") is made and entered into this _____ day of _____, 2021 ("Effective Date"), by and between the CITY OF RIVERSIDE, a California charter city and municipal corporation ("City"), and SIEMENS INDUSTRY, INC., a Delaware corporation authorized to do business in California ("Consultant").

1. **Scope of Services.** City agrees to retain and does hereby retain Consultant and Consultant agrees to provide the services more particularly described in Exhibit "A," "Scope of Services" ("Services"), attached hereto and incorporated herein by reference, in conjunction with Generator Modeling for RERC and Springs Power Plants ("Project").

2. **Term.** This Agreement shall be effective on the date first written above and shall remain in effect until March 22, 2022, unless otherwise terminated pursuant to the provisions herein.

3. **Compensation/Payment.** Consultant shall perform the Services under this Agreement for the total sum not to exceed Two Hundred Eleven Thousand Eight Hundred Four Dollars (\$211,804.00), payable in accordance with the terms set forth in Exhibit "B." Said payment shall be made in accordance with City's usual accounting procedures upon receipt and approval of an itemized invoice setting forth the services performed. The invoices shall be delivered to City at the address set forth in Section 4 hereof.

4. **Notices.** Any notices required to be given, hereunder shall be in writing and shall be personally served or given by mail. Any notice given by mail shall be deemed given when deposited in the United States Mail, certified and postage prepaid, addressed to the party to be served as follows:

To City

Riverside Public Utilities
City of Riverside
Attn: James Perez
3750 University Avenue, Suite 300
Riverside, CA 92501

To Consultant

Siemens Industry, Inc.
Attn: George Zhou
1000 Deerfield Parkway
Buffalo Grove, IL 60089-4513

5. **Prevailing Wage.** If applicable, Consultant and all subcontractors are required to pay the general prevailing wage rates of per diem wages and overtime and holiday wages determined by the Director of the Department of Industrial Relations under Section 1720 et seq. of the California Labor Code and implemented by Resolution No. 13346 of the City Council of the City of Riverside. The Director's determination is available on-line at www.dir.ca.gov/dlsr/DPreWageDetermination.htm and is referred to and made a part hereof; the wage rates therein ascertained, determined, and specified are referred to and made a part hereof as though fully set forth herein.

6. **Contract Administration.** A designee of the City will be appointed in writing by the City Manager or Department Director to administer this Agreement on behalf of City and shall be referred to herein as Contract Administrator.

7. **Standard of Performance.** While performing the Services, Consultant shall exercise the reasonable professional care and skill customarily exercised by reputable members of Consultant's profession practicing in the Metropolitan Southern California Area, and shall use reasonable diligence and best judgment while exercising its professional skill and expertise.

8. **Personnel.** Consultant shall furnish all personnel necessary to perform the Services and shall be responsible for their performance and compensation. Consultant recognizes that the qualifications and experience of the personnel to be used are vital to professional and timely completion of the Services. The key personnel listed in Exhibit "C" attached hereto and incorporated herein by this reference and assigned to perform portions of the Services shall remain assigned through completion of the Services, unless otherwise mutually agreed by the parties in writing, or caused by hardship or resignation in which case substitutes shall be subject to City approval.

9. **Assignment and Subcontracting.** Neither party shall assign any right, interest, or obligation in or under this Agreement to any other entity without prior written consent of the other party. In any event, no assignment shall be made unless the assignee expressly assumes the obligations of assignor under this Agreement, in a writing satisfactory to the parties. Consultant acknowledges that any assignment may, at the City's sole discretion, require City Manager and/or City Council approval. Consultant shall not subcontract any portion of the work required by this Agreement without prior written approval by the responsible City Contract Administrator. Subcontracts, if any, shall contain a provision making them subject to all provisions stipulated in this Agreement, including without limitation, the insurance obligations set forth in Section 12. The Consultant acknowledges and agrees that the City is an intended beneficiary of any work performed by any subcontractor for purposes of establishing a duty of care between any subcontractor and the City.

10. **Independent Contractor.** In the performance of this Agreement, Consultant, and Consultant's employees, subcontractors and agents, shall act in an independent capacity as independent contractors, and not as officers or employees of the City of Riverside. Consultant acknowledges and agrees that the City has no obligation to pay or withhold state or federal taxes or to provide workers' compensation or unemployment insurance to Consultant, or to Consultant's employees, subcontractors and agents. Consultant, as an independent contractor, shall be responsible for any and all taxes that apply to Consultant as an employer.

11. Indemnification.

11.1 Design Professional Defined. For purposes of this Agreement, "Design Professional" includes the following:

- A. An individual licensed as an architect pursuant to Chapter 3 (commencing with Section 5500) of Division 3 of the Business and Professions Code, and a business entity offering architectural services in accordance with that chapter.
- B. An individual licensed as a landscape architect pursuant to Chapter 3.5 (commencing with Section 5615) of Division 3 of the Business and Professions Code, and a business entity offering landscape architectural services in accordance with that chapter.
- C. An individual registered as a professional engineer pursuant to Chapter 7 (commencing with Section 6700) of Division 3 of the Business and Professions Code, and a business entity offering professional engineering services in accordance with that chapter.
- D. An individual licensed as a professional land surveyor pursuant to Chapter 15 (commencing with Section 8700) of Division 3 of the Business and Professions Code, and a business entity offering professional land surveying services in accordance with that chapter.

11.2 Defense Obligation For Design Professional Liability. Consultant agrees, at its cost and expense, to promptly defend the City, and the City's employees, officers, managers, agents and council members (collectively the "Parties to be Defended") from and against any and all claims, allegations, lawsuits, arbitration proceedings, administrative proceedings, regulatory proceedings, or other legal proceedings to the extent the same arise out of, pertain to, or relate to the negligence, recklessness or willful misconduct of Consultant, or anyone employed by or working under the Consultant or for services rendered to the Consultant in the performance of the Agreement, notwithstanding that the City may have benefited from its work or services and whether or not caused in part by the negligence of an Indemnified Party. Consultant agrees to provide this defense immediately upon written notice from the City, and with well qualified, adequately insured and experienced legal counsel acceptable to City. Consultant will reimburse City for reasonable defense costs for claims arising out of Consultant's professional negligence based on the percentage of Consultant's liability. This obligation to defend as set forth herein is binding on the successors, assigns and heirs of Consultant and shall survive the termination of Consultant's Services under this Agreement.

11.3 Indemnity For Design Professional Liability. When the law establishes a professional standard of care for Consultant's services, to the fullest extent permitted by law, Consultant shall indemnify, protect and hold harmless the City and the City's employees, officers, managers, agents, and Council Members ("Indemnified Parties") from and against any and all claim for damage, charge, lawsuit, action, judicial, administrative, regulatory or arbitration proceeding, damage, cost, expense (including counsel and expert fees), judgment, civil fines and penalties,

liabilities or losses of any kind or nature whatsoever to the extent the same arise out of, pertain to, or relate to the negligence, recklessness or willful misconduct of Consultant, or anyone employed by or working under the Consultant or for services rendered to the Consultant in the performance of the Agreement, notwithstanding that the City may have benefited from its work or services and whether or not caused in part by the negligence of an Indemnified Party.

11.4 Defense Obligation For Other Than Design Professional Liability.

Consultant agrees, at its cost and expense, to promptly defend the City, and the City's employees, officers, managers, agents and council members (collectively the "Parties to be Defended") from and against any and all claims, allegations, lawsuits, arbitration proceedings, administrative proceedings, regulatory proceedings, or other legal proceedings which arise out of, or relate to, or are in any way connected with: 1) the Services, work, activities, operations, or duties of the Consultant, or of anyone employed by or working under the Consultant, or 2) any breach of the Agreement by the Consultant. This duty to defend shall apply whether or not such claims, allegations, lawsuits or proceedings have merit or are meritless, or which involve claims or allegations that any or all of the Parties to be Defended were actively, passively, or concurrently negligent, or which otherwise assert that the Parties to be Defended are responsible, in whole or in part, for any loss, damage or injury. Consultant agrees to provide this defense immediately upon written notice from the City, and with well qualified, adequately insured and experienced legal counsel acceptable to City. This obligation to defend as set forth herein is binding on the successors, assigns and heirs of Consultant and shall survive the termination of Consultant's Services under this Agreement.

11.5 Indemnity For Other Than Design Professional Liability. Except as to the sole negligence or willful misconduct of the City, Consultant agrees to indemnify, protect and hold harmless the Indemnified Parties from and against any claim for damage, charge, lawsuit, action, judicial, administrative, regulatory or arbitration proceeding, damage, cost, expense (including counsel and expert fees), judgment, civil fine and penalties, liabilities or losses of any kind or nature whatsoever whether actual, threatened or alleged, which arise out of, pertain to, or relate to, or are a consequence of, or are attributable to, or are in any manner connected with the performance of the Services, work, activities, operations or duties of the Consultant, or anyone employed by or working under the Consultant or for services rendered to Consultant in the performance of this Agreement, notwithstanding that the City may have benefited from its work or services. This indemnification provision shall apply to any acts, omissions, negligence, recklessness, or willful misconduct, whether active or passive, on the part of the Consultant or anyone employed or working under the Consultant.

12. Insurance.

12.1 General Provisions. Prior to the City's execution of this Agreement, Consultant shall provide satisfactory evidence of, and shall thereafter maintain during the term of this Agreement, such insurance policies and coverages in the types, limits, forms and ratings required herein. The rating and required insurance policies and coverages may be modified in writing by the City's Risk Manager or City Attorney, or a designee, unless such modification is prohibited by law.

12.1.1 Limitations. These minimum amounts of coverage shall not constitute any limitation or cap on Consultant's indemnification obligations under Section 11 hereof.

12.1.2 Ratings. Any insurance policy or coverage provided by Consultant or subcontractors as required by this Agreement shall be deemed inadequate and a material breach of this Agreement, unless such policy or coverage is issued by insurance companies authorized to transact insurance business in the State of California with a policy holder's rating of A or higher and a Financial Class of VII or higher.

12.1.3 Cancellation. The policies shall not be canceled unless thirty (30) days' prior written notification of intended cancellation has been given to City by certified or registered mail, postage prepaid.

12.1.4 Adequacy. The City, its officers, employees and agents make no representation that the types or limits of insurance specified to be carried by Consultant pursuant to this Agreement are adequate to protect Consultant. If Consultant believes that any required insurance coverage is inadequate, Consultant will obtain such additional insurance coverage as Consultant deems adequate, at Consultant's sole expense.

12.2 Workers' Compensation Insurance. By executing this Agreement, Consultant certifies that Consultant is aware of and will comply with Section 3700 of the Labor Code of the State of California requiring every employer to be insured against liability for workers' compensation, or to undertake self-insurance before commencing any of the work. Consultant shall carry the insurance or provide for self-insurance required by California law to protect said Consultant from claims under the Workers' Compensation Act. Prior to City's execution of this Agreement, Consultant shall file with City either 1) a certificate of insurance showing that such insurance is in effect, or that Consultant is self-insured for such coverage, or 2) a certified statement that Consultant has no employees, and acknowledging that if Consultant does employ any person, the necessary certificate of insurance will immediately be filed with City. Any certificate filed with City shall provide that City will be given ten (10) days' prior written notice before modification or cancellation thereof.

12.3 Commercial General Liability and Automobile Insurance. Prior to City's execution of this Agreement, Consultant shall obtain, and shall thereafter maintain during the term of this Agreement, commercial general liability insurance and automobile liability insurance as required to insure Consultant against damages for personal injury, including accidental death, as well as from claims for property damage, which may arise from or which may concern operations by anyone directly or indirectly employed by, connected with, or acting for or on behalf of Consultant. The City, and its officers, employees and agents, shall be named as additional insureds under the Consultant's insurance policies.

12.3.1 Consultant's commercial general liability insurance policy shall cover both bodily injury (including death) and property damage (including, but not limited to, premises operations liability, products-completed operations liability, independent contractor's liability, personal injury liability, and contractual liability) in an amount not less than \$1,000,000 per occurrence and a general aggregate limit in the amount of not less than \$2,000,000.

12.3.2 Consultant's automobile liability policy shall cover both bodily injury and property damage in an amount not less than \$1,000,000 per occurrence and an aggregate limit of not less than \$1,000,000. All of Consultant's automobile and/or commercial general liability

insurance policies shall cover all vehicles used in connection with Consultant's performance of this Agreement, which vehicles shall include, but are not limited to, Consultant owned vehicles, Consultant leased vehicles, Consultant's employee vehicles, non-Consultant owned vehicles and hired vehicles.

12.3.3 Prior to City's execution of this Agreement, copies of insurance policies or original certificates along with additional insured endorsements acceptable to the City evidencing the coverage required by this Agreement, for both commercial general and automobile liability insurance, shall be filed with City and shall include the City and its officers, employees and agents, as additional insureds. Said policies shall be in the usual form of commercial general and automobile liability insurance policies, but shall include the following provisions:

It is agreed that the City of Riverside, and its officers, employees and agents, are added as additional insureds under this policy, solely for work done by and on behalf of the named insured for the City of Riverside.

12.3.4 The insurance policy or policies shall also comply with the following provisions:

- a. The policy shall be endorsed to waive any right of subrogation against the City and its sub-consultants, employees, officers and agents for services performed under this Agreement.
- b. If the policy is written on a claims made basis, the certificate should so specify and the policy must continue in force for one year after completion of the services. The retroactive date of coverage must also be listed.
- c. The policy shall specify that the insurance provided by Consultant will be considered primary and not contributory to any other insurance available to the City and Endorsement No. CG 20010413 shall be provided to the City.

12.4 **Errors and Omissions Insurance.** Prior to City's execution of this Agreement, Consultant shall obtain, and shall thereafter maintain during the term of this Agreement, errors and omissions professional liability insurance in the minimum amount of \$1,000,000 to protect the City from claims resulting from the Consultant's activities.

12.5 **Subcontractors' Insurance.** Consultant shall require all of its subcontractors to carry insurance, in an amount sufficient to cover the risk of injury, damage or loss that may be caused by the subcontractors' scope of work and activities provided in furtherance of this Agreement, including, but without limitation, the following coverages: Workers Compensation, Commercial General Liability, Errors and Omissions, and Automobile liability. Upon City's request, Consultant shall provide City with satisfactory evidence that Subcontractors have obtained insurance policies and coverages required by this section.

13. **Business Tax.** Consultant understands that the Services performed under this Agreement constitutes doing business in the City of Riverside, and Consultant agrees that Consultant will register for and pay a business tax pursuant to Chapter 5.04 of the Riverside Municipal Code and keep such tax certificate current during the term of this Agreement.

14. **Time of Essence.** Time is of the essence for each and every provision of this Agreement.

15. **City's Right to Employ Other Consultants.** City reserves the right to employ other Consultants in connection with the Project. If the City is required to employ another consultant to complete Consultant's work, due to the failure of the Consultant to perform, or due to the breach of any of the provisions of this Agreement, the City reserves the right to seek reimbursement from Consultant.

16. **Accounting Records.** Consultant shall maintain complete and accurate records with respect to costs incurred under this Agreement. All such records shall be clearly identifiable. Consultant shall allow a representative of City during normal business hours to examine, audit, and make transcripts or copies of such records and any other documents created pursuant to this Agreement. Consultant shall allow inspection of all work, data, documents, proceedings, and activities related to the Agreement for a period of three (3) years from the date of final payment under this Agreement.

17. **Confidentiality.** All ideas, memoranda, specifications, plans, procedures, drawings, descriptions, computer program data, input record data, written information, and other materials either created by or provided to Consultant in connection with the performance of this Agreement shall be held confidential by Consultant, except as otherwise directed by City's Contract Administrator. Nothing furnished to Consultant which is otherwise known to the Consultant or is generally known, or has become known, to the related industry shall be deemed confidential. Consultant shall not use City's name or insignia, photographs of the Project, or any publicity pertaining to the Services or the Project in any magazine, trade paper, newspaper, television or radio production, website, or other similar medium without the prior written consent of the City.

18. **Ownership of Documents.** All reports, maps, drawings and other contract deliverables prepared under this Agreement by Consultant shall be and remain the property of City. Consultant shall not release to others information furnished by City without prior express written approval of City.

19. **Copyrights.** Consultant agrees that any work prepared for City which is eligible for copyright protection in the United States or elsewhere shall be a work made for hire. If any such work is deemed for any reason not to be a work made for hire, Consultant assigns all right, title and interest in the copyright in such work, and all extensions and renewals thereof, to City, and agrees to provide all assistance reasonably requested by City in the establishment, preservation and enforcement of its copyright in such work, such assistance to be provided at City's expense but without any additional compensation to Consultant. Consultant agrees to waive all moral rights relating to the work developed or produced, including without limitation any and all rights of identification of authorship and any and all rights of approval, restriction or limitation on use or subsequent modifications.

20. **Conflict of Interest.** Consultant, for itself and on behalf of the individuals listed in Exhibit "C," represents and warrants that by the execution of this Agreement, they have no interest, present or contemplated, in the Project affected by the above-described Services. Consultant further warrants that neither Consultant, nor the individuals listed in Exhibit "C" have any real property, business interests or income interests that will be affected by this project or, alternatively, that Consultant will file with the City an affidavit disclosing any such interest.

21. **Solicitation.** Consultant warrants that Consultant has not employed or retained any person or agency to solicit or secure this Agreement, nor has it entered into any agreement or understanding for a commission, percentage, brokerage, or contingent fee to be paid to secure this Agreement. For breach of this warranty, City shall have the right to terminate this Agreement without liability and pay Consultant only for the value of work Consultant has actually performed, or, in its sole discretion, to deduct from the Agreement price or otherwise recover from Consultant the full amount of such commission, percentage, brokerage or commission fee. The remedies specified in this section shall be in addition to and not in lieu of those remedies otherwise specified in this Agreement.

22. **General Compliance With Laws.** Consultant shall keep fully informed of federal, state and local laws and ordinances and regulations which in any manner affect those employed by Consultant, or in any way affect the performance of services by Consultant pursuant to this Agreement. Consultant shall at all times observe and comply with all such laws, ordinances and regulations, and shall be solely responsible for any failure to comply with all applicable laws, ordinances and regulations. Consultant represents and warrants that Consultant has obtained all necessary licenses to perform the Scope of Services and that such licenses are in good standing. Consultant further represents and warrants that the services provided herein shall conform to all ordinances, policies and practices of the City of Riverside.

23. **Waiver.** No action or failure to act by the City shall constitute a waiver of any right or duty afforded City under this Agreement, nor shall any such action or failure to act constitute approval of or acquiescence in any breach thereunder, except as may be specifically, provided in this Agreement or as may be otherwise agreed in writing.

24. **Amendments.** This Agreement may be modified or amended only by a written agreement and/or change order executed by the Consultant and City.

25. **Termination.** City, by notifying Consultant in writing, shall have the right to terminate any or all of Consultant's services and work covered by this Agreement at any time. In the event of such termination, Consultant may submit Consultant's final written statement of the amount of Consultant's services as of the date of such termination based upon the ratio that the work completed bears to the total work required to make the report complete, subject to the City's rights under Sections 15 and 26 hereof. In ascertaining the work actually rendered through the termination date, City shall consider completed work, work in progress and complete and incomplete reports and other documents only after delivered to City.

25.1 Other than as stated below, City shall give Consultant thirty (30) days' prior written notice prior to termination.

25.2 City may terminate this Agreement upon fifteen (15) days' written notice to Consultant, in the event:

25.2.1 Consultant substantially fails to perform or materially breaches the Agreement; or

25.2.2 City decides to abandon or postpone the Project.

26. **Offsets.** Consultant acknowledges and agrees that with respect to any business tax or penalties thereon, utility charges, invoiced fee or other debt which Consultant owes or may owe to the City, City reserves the right to withhold and offset said amounts from payments or refunds or reimbursements owed by City to Consultant. Notice of such withholding and offset, shall promptly be given to Consultant by City in writing. In the event of a dispute as to the amount owed or whether such amount is owed to the City, City will hold such disputed amount until either the appropriate appeal process has been completed or until the dispute has been resolved.

27. **Successors and Assigns.** This Agreement shall be binding upon City and its successors and assigns, and upon Consultant and its permitted successors and assigns, and shall not be assigned by Consultant, either in whole or in part, except as otherwise provided in paragraph 9 of this Agreement.

28. **Venue.** Any action at law or in equity brought by either of the parties hereto for the purpose of enforcing a right or rights provided for by this Agreement shall be tried in the Superior Court, County of Riverside, State of California, and the parties hereby waive all provisions of law providing for a change of venue in such proceedings to any other county. In the event either party hereto shall bring suit to enforce any term of this Agreement or to recover any damages for and on account of the breach of any term or condition of this Agreement, it is mutually agreed that each party will bear their own attorney's fees and costs.

29. **Nondiscrimination.** During Consultant's performance of this Agreement, Consultant shall not discriminate on the grounds of race, religious creed, color, national origin, ancestry, age, physical disability, mental disability, medical condition, including the medical condition of Acquired Immune Deficiency Syndrome (AIDS) or any condition related thereto, marital status, sex, genetic information, gender, gender identity, gender expression, or sexual orientation, military and veteran status, in the selection and retention of employees and subcontractors and the procurement of materials and equipment, except as provided in Section 12940 of the California Government Code. Further, Consultant agrees to conform to the requirements of the Americans with Disabilities Act in the performance of this Agreement.

30. **Severability.** Each provision, term, condition, covenant and/or restriction, in whole and in part, of this Agreement shall be considered severable. In the event any provision, term, condition, covenant and/or restriction, in whole and/or in part, of this Agreement is declared invalid, unconstitutional, or void for any reason, such provision or part thereof shall be severed from this Agreement and shall not affect any other provision, term, condition, covenant and/or restriction of this Agreement, and the remainder of the Agreement shall continue in full force and effect.

31. **Authority.** The individuals executing this Agreement and the instruments referenced herein on behalf of Consultant each represent and warrant that they have the legal power, right and actual authority to bind Consultant to the terms and conditions hereof and thereof.

32. **Entire Agreement.** This Agreement constitutes the final, complete, and exclusive statement of the terms of the agreement between the parties pertaining to the subject matter of this Agreement, and supersedes all prior and contemporaneous understandings or agreements of the parties. Neither party has been induced to enter into this Agreement by and neither party is relying on, any representation or warranty outside those expressly set forth in this Agreement.

33. **Interpretation.** City and Consultant acknowledge and agree that this Agreement is the product of mutual arms-length negotiations and accordingly, the rule of construction, which provides that the ambiguities in a document shall be construed against the drafter of that document, shall have no application to the interpretation and enforcement of this Agreement.

33.1 Titles and captions are for convenience of reference only and do not define, describe or limit the scope or the intent of the Agreement or any of its terms. Reference to section numbers, are to sections in the Agreement unless expressly stated otherwise.

33.2 This Agreement shall be governed by and construed in accordance with the laws of the State of California in effect at the time of the execution of this Agreement.

33.3 In the event of a conflict between the body of this Agreement and Exhibit "A" - Scope of Services hereto, the terms contained in Exhibit "A" shall be controlling.

34. **Exhibits.** The following exhibits attached hereto are incorporated herein to this Agreement by this reference:

- Exhibit "A" - Scope of Services
- Exhibit "B" - Compensation
- Exhibit "C" - Key Personnel

IN WITNESS WHEREOF, City and Consultant have caused this Agreement to be duly executed the day and year first above written.

CITY OF RIVERSIDE, a California
charter city and municipal corporation

By: _____
City Manager

Attest: _____
City Clerk

Certified as to Availability of Funds:

By: _____
Chief Financial Officer

Approved as to Form:

By: Susan D. Wilson
Assistant City Attorney

SIEMENS INDUSTRY, INC.,
a Delaware corporation authorized to do
business in California

By: _____
KEN GEISLER

[Printed Name]
HEAD OF SEGMENT
[Title]

By: _____
KRISHANT SIVANESAN
[Printed Name]
SEGMENT CONTROLLER
[Title]

EXHIBIT "A"
SCOPE OF SERVICES

Siemens PTI Proposal Number P127-21

***Generator Modeling for RERC and
Springs Power Plants***

Prepared for

City of Riverside

Submitted by:
George Zhou
Principal Consultant

Rev. 1
June 9, 2021

Siemens Industry, Inc.
Siemens Power Technologies International
4000 East Third Avenue - Suite 400
Foster City, CA 94404 USA
Tel: +1 (408) 239-7825
www.siemens.com/power-technologies

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SIEMENS

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Section

1

Cover Letter

Riley James
City of Riverside
3901 Orange St,
Riverside, CA 92501

Dear Riley,

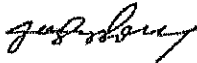
Siemens Industry, Inc., Siemens Power Technologies International (Siemens PTI) is pleased to offer the scope of work outlined in this document to meet the requirements of the City of Redding RFP No. 2089 for CAISO Generator Modeling for RERC and Springs Power Plants services. Siemens PTI understands that RPU needs to provide updated power flow and dynamic stability modes for its natural gas generating units to the CAISO and SCE.

In response to this need, Siemens PTI is offering to collect relevant data from various sources including manufactures, conduct onsite testing, perform model validation, fill out the CAISO generator model data forms, and submit all required documentation to CAISO on behalf of RPU. As a result of these services, RPU will also receive the required updated data and reports in a format suitable for inclusion in a submission to the Transmission Planner.

Siemens PTI is an ideal choice to provide these services as a result of our extensive experience in performing generator model validation and related NERC compliance services..

Siemens PTI is willing to negotiate the terms as outlined in the Sample Terms and Conditions and has provided our suggested exceptions to the terms in Section 9 of our response. For questions about our response, please contact me at george.zhou@siemens.com or via phone at 1-650-772-2283. We look forward to the opportunity to partner with RPU on this important project.

Best regards,



George Zhou
Principal Consultant

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Statement of Understanding and Approach

2.1 Our Understanding of the RFP

Pursuant to Section 24.8.2 of the CAISO's Tariff and Section 10 of the CAISO's BPM for the TPP, The City of Riverside Public Utilities (RPU) has received a joint data request from the CAISO and SCE to provide updated power flow and dynamic stability models for its natural gas generating units located at the Riverside Energy Resource Center (RERC) and Springs Power Plant. There are two sets of identical units at RERC and four identical units at Springs.

Unit 1 and Unit 2 at RERC are gas turbine generators with GE Mark 6e turbine governor controllers and Brush Prismatic A30 excitation system with Basler PSS100 power system stabilizer. Unit 3 and Unit 4 at RERC are gas turbine generators with some type of GE controller and GE EX2100 voltage regulators. All four units at Springs are gas turbine generators using GE Mark 6 controllers and Basler SSR analog excitation systems.

RPU's participating generators are identified in the Category 2 generator modeling classification in Section 10.1.1. of the BPM for TPP. These generators need CAISO's generator modeling validation for the following requirements:

- **Steady-State Electrical Characteristics and Operating Parameters**

Steady state data includes power flow model data in PSLF .epc format and other related data and diagrams such as generator real and reactive power capability data (MOD-025 testing required).

- **Dynamic Data**

Dynamic data includes model data for generators, excitation systems, turbine governor controls, and power system stabilizers (PSS) in PSLF .dyd format (MOD-026 and MOD-027 testing required).

- **Short Circuit Data**

Short circuit data includes generator positive, negative, zero sequence data and grounding data.

- **Coordination of Generating Unit, Voltage Regulating Controls, and Protection**

Generator voltage protection settings, excitation control limiters, and reactive capability data will need to be collected and their coordination verified (PRC-019 requirements).

- **Generator Frequency and Voltage Protective Relay Settings**
Generator frequency and voltage protective relay settings will need to be collected and verified so that the generator will not trip in the "no-trip zone" (PRC-024).
- **Electromagnetic (EMT) Model Data**
Not all synchronous generating units are required to submit EMT model data. According to the latest "Resource Category and Phase All Participating Resource IDs" posted on the CAISO website on October 19, RPU is required to submit EMT models for the four units at RERC and four units (one aggregated resource ID) at Springs.
- **Geomagnetic Disturbance Data**
Earth resistivity and main transformer data are required.

Siemens Industry, Inc., Siemens Power Technologies International (Siemens PTI) is pleased to respond to RPU's RFP No. 2089 CAISO Generator Modeling for RERC and Springs Power Plants.

2.2 Approach and Scope

Our approach is to collaborate with RPU to collect relevant data from various sources including manufactures, conduct onsite testing, perform model validation, and fill out the CAISO generator model data forms. The onsite testing for MOD-025, MOD-026, and MOD-027 and other onsite data collection activities will be conducted by our subcontractor Nimbus. Below is the description of each required task.

2.2.1 Project Initiation and Preparation

2.2.1.1 Project Kickoff Meeting

Siemens PTI and Nimbus will have a kickoff conference call with RPU to achieve the following objectives:

- Review and refine the scope of work
- Establish communication channels and points of contact between Tacoma Power and Siemens PTI.
- Review data request.

2.2.1.2 Data Collection

Siemens PTI will gather the following and other necessary data before the start of generator testing at each site.

- Existing power flow model and parameters
- Existing dynamic models and parameters
- Plant one-line diagrams
- Generator step-up transformer nameplate data
- Nameplate data and information for generator, excitation system, turbine governor, and power system stabilizer (PSS) (if applicable)
- OEM manuals of governor, excitation system, and power system stabilizer
- Additional data related to PRC-019 and PRC-024, such as field over/under-excitation limiter, generator/GSU volts per hertz limiter, time vs. field current curves, frequency

and voltage protective relay timer and trip settings, etc. Further details will be provided before the kickoff conference call

- Multi-mass PSCAD model of the turbine from its manufacture
- Data related to geomagnetic disturbance modeling

2.2.1.3 Test plan

A detailed test procedure will be prepared before field work at each site. This procedure shall detail the site work with the intent of providing adequate information to RPU's generator operations department. All parties involved shall be in mutual agreement of the test plan at least one week prior to the scheduled test.

2.2.2 Onsite Testing

Nimbus will work with RPU's personnel at each plant to execute the test procedure. The following tests will be conducted.

OFFLINE TESTS:

- Open circuit saturation test
- Offline AVR step response test
- Offline governor step response test

ONLINE TESTS:

Steady state measurements of the generator at various loads and reactive power output

- Online AVR step response test with and without PSS enabled
- Online governor step response test if applicable
- Generator current interruption test
- Load rejection test

2.2.3 MOD-025, MOD-026, and MOD-027 Model Verification

Siemens PTI will create a small system including the generator, excitation system, governor control, and PSS models in PSLF and use existing power flow and dynamic model data as a starting point in dynamic simulations. Only WECC approved dynamic models will be used.

The field tests will be simulated and applicable variables such as terminal voltages, real power, reactive power will be monitored. The response from the simulation will be compared with the field test response. Appropriate model parameters will be adjusted to fit model responses with observed test responses. This will be an iterative process and typically requires the use of our engineering judgment, experience in modeling similar equipment, and knowledge with transient stability analyses.

The outcome will include a power flow model and dynamic models for the generator, excitation system, governor control, and PSS PSLF.

2.2.4 PRC-019 and PRC-024 Data Analysis and Assessment

Siemens PTI will analyze the measured generator capability data, the limits and relay settings of applicable controls and protection relays that have been verified/documented onsite. The outcome of this analysis will include an assessment of compliance with the standards and documentation of evidence.

For PRC-024 compliance assessment, Siemens PTI will use the frequency and voltage relay settings to create LHVRT and LHFRT stability models and perform stability simulations to demonstrate whether or not the generating units will trip within the "no trip zone" in PRC-024 Attachment 1. Siemens PTI will also show the relay model settings verification plot found in the CAISO model data form Attachment A, Generating Facility Data.

If there are V/Hz relays at the plant's POI substation, a separate plot using the associated relay curve against the voltage verification plot will be developed at an additional cost if requested by RPU.

2.2.5 Electromagnetic (EMT) Model Data

Siemens PTI will develop an EMT Sub-Synchronous Resonance (SSR) model in PSCAD software as per CAISO BPM sections 10.1.3.5 requirements. To do this, a multi mass PSCAD model of the turbine from its manufacturer is required.

2.2.6 Geomagnetic Disturbance (GMD) Data

- Siemens PTI will develop the GMD data in PSLF as required in NERC Reliability Standard TPL-007-02. The required information is below:
- Transformer test report and name plate data including connection type (phasor connection), core type, DC resistance, K-Factor, GIC blocking device if applicable or if it does contain the blocking device please provide the blocking device type (e.g., resistive or capacitive) and DC resistance in ohms/phase.
- Substation number
- Latitude/Longitude for buses
- Any RPU owned POI tie line DC resistance

Siemens PTI will take the GMD data above and create PSLF GMD data set for the GMD edit tables. If GMD data is not available, Siemens PTI will use generic or typical data.

2.2.7 Technical Report

Siemens PTI will provide a technical report for each site after completion of the associated testing, model verification, and the PRC standards related analysis.

The report will document the assumptions, approaches, results, final models and parameters, and necessary test data. The report will include graphical comparisons of the test results and simulated results. An assessment on compliance will also be included (compliant, not compliant, or recommended changes, etc.).

2.2.8 CAISO Generator Model Data Form Completion

Using validated model data, test reports, and other collected information, Siemens PTI will fill out the CAISO generator model data forms for all required generators for RPU (CAISO Resource IDs: RVSIDE_6_RERCU1, RVSIDE_6_RERCU2, RVSIDE_6_RERCU3, RVSIDE_6_RERCU4, and RVSIDE_6_SPRING) and provide necessary supplementary information and submit these forms to CAISO on behalf of RPU.

2.3 Deliverables

Siemens PTI will deliver the following to RPU:

- Generator testing and model validation reports in PDF
- Generator model data files in PSLF (.epc for power flow data and .dyd for dynamic data)
- CAISO's generator data forms related to CAISO BPM for TPP
- Technical support on CAISO data form clarification or deficiency resolution via electronic communication

2.4 Organization and Staffing

Siemens PTI has assembled an experienced team for this assignment for RPU.

Dr. George Zhou will be the project manager and technical lead responsible for overall execution of the project. He will lead the Siemens PTI team and the subcontractor Nimbus.

Siemens PTI team consists of the following members: Dr. Wenchun Zhu, Mr. Kenneth Wilson, Dr. Morteza Saralloo, Mr. Zuwa Oriakhi, and Mr. Rohit Ramesh Kumar, who will perform model verification through dynamic simulations in PSLF.

Nimbus team includes Mr. Jonathan Denman who will perform onsite testing and data collection.

An experience summary for each team member is included in the Company Personnel section and team member resumes are also included in Appendix A.

2.5 Schedule and Milestones

Siemens PTI expects to complete the project in eight (8) weeks from the date of notice to proceed after an agreement is executed.

Table 2-1 shows the proposed schedule for Scenario 1 and Table 2-2 for Scenario 2 and 3. There are two milestones during this project.

Milestone 1 – Completion of test reports.

Milestone 2 – Completion of CAISO data forms.

Upon completion of each milestone, Siemens PTI will submit electronically a status report to RPU for review and we request a response within five (5) business days to ensure the project is on schedule. If there are any anticipated issues causing potential delays, Siemens PTI will communicate promptly with RPU to try to minimize the impact on schedule.

Figure 2-1 is a Gantt Chart for Scenario 1 and Figure 2-2 for Scenario 2 and 3.

Table 2-1 Scenario 1 Schedule

Task	Start Date	End Date	Duration (Days)
Kickoff and Data Collection	6/30	7/7	8
Onsite Testing	7/12	7/30	19
Test Report (Milestone 1)	7/19	8/13	26
RPU Review	8/16	8/20	5
CAISO Data Form (Milestone 2)	8/20	8/25	6

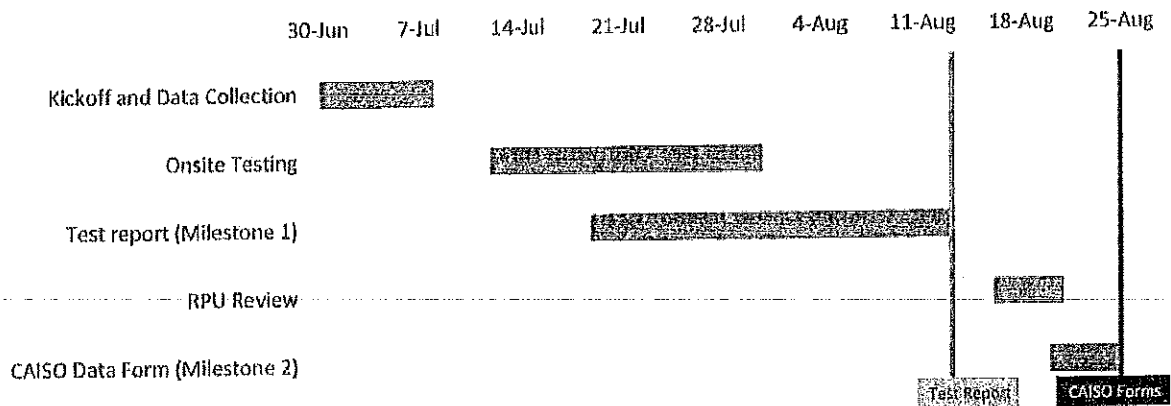


Figure 2-1: Scenario 1: Schedule Gantt Chart

Table 2-2 Scenario 2 & 3 Schedule

Task	Start Date	End Date	Duration (Days)
Kickoff and Data Collection	6/30	7/7	8
Onsite Testing	7/12	7/16	5
Test report (Milestone 1)	7/19	8/10	22
RPU Review	8/11	8/17	6
CAISO Data Form (Milestone 2)	8/18	8/25	8

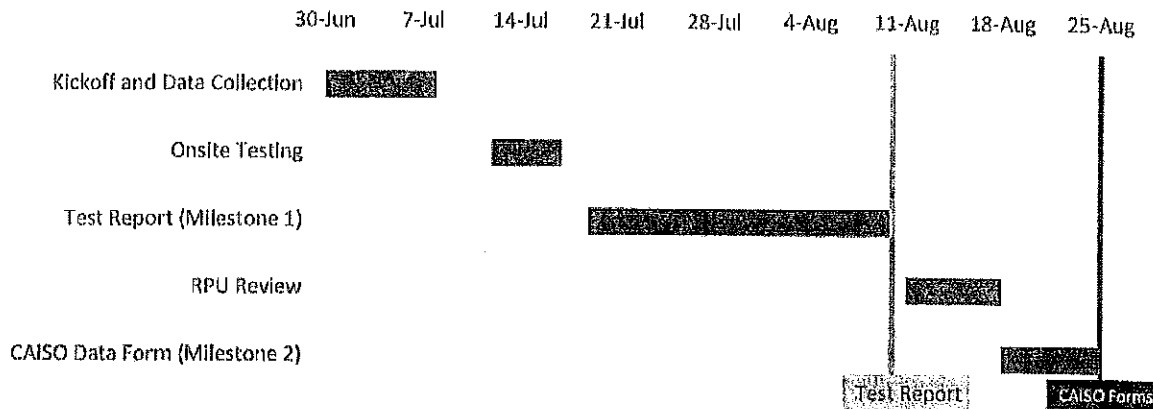


Figure 2-2: Scenario 2 and 3 Schedule Gantt Chart

After discussions on June 7, 2021, the City of Riverside and Siemens agreed on the following preliminary schedule:

- Reach mutual agreement on the terms and conditions – June 11, 2021
- Obtain approval from the City of Riverside Board for this project – August 9, 2021
- Sign contract and issue a purchase order to Siemens – August 16, 2021
- Perform onsite testing – August 23-27, 2021
- Submit model data forms to CAISO – October 1, 2021

Section**3**

Company Information

Siemens PTI Power Systems Consulting counts on a staff of over 30 skilled consultants in the U.S. and Canada. The skill set of our staff covers multiple areas of expertise related to all aspects of power system analysis, equipment functional specification, design, economics and finances applied to power systems, and new and evolving environments for energy markets.

Of our consultants, 13 are Registered Professional Engineers in the U.S. or Canada. Our consultants are active in over 20 IEEE, IEC, WECC and NERC Working Groups and Task Forces. Throughout our nearly 50-year history, our consultants have published or presented over 870 technical papers in journals and technical conferences.

Below, please find the pertinent requested information per the RFP instructions.

Company	Siemens Industry, Inc. Siemens Power Technologies International
Address	4000 East Third Avenue - Suite 400 Foster City, CA 94404 USA www.siemens.com/power-technologies
Organization Type	Corporation
Project Contact	George Zhou, Principal Consultant Email: george.zhou@siemens.com Phone: (650)772-2283
Authorized Personnel	Bernardo Fernandes, Head of Siemens PTI-US Email: bernardo.fernandes@siemens.com Phone: (518) 698-9558
Litigations	Siemens Industry, Inc., a subsidiary member of Siemens Corporation, is a multi-billion dollar company involved in wide ranging construction projects. As such Siemens Industry, Inc. has been involved in miscellaneous litigation (e.g., collection of fees, workers' compensation, etc.) arising out of its business, none of which are of a material nature, individually or collectively, as to adversely impact its ability to completely and satisfactorily perform any of its projects.

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Section

4

Company Personnel

Siemens PTI proposes to assign Principal Consultant, Dr. George Zhou as the project manager for this assignment. Dr. Zhou is well-qualified for this role with over 30 years of industry experience in power system modeling and analysis, with a focus on generator model validation NERC compliance consulting services. He will be responsible for assuming quality and timeliness of the work product, as well as coordination with the City. Dr. Zhou will receive additional support from project team members included in this section. Below are short bios of the key team members assigned to this project. The full resumes can be found in Appendix A.

George Zhou, PhD – Principal Consultant – (650) 772-2283 or george.zhou@siemens.com

Dr. Zhou has three decades of experience working in power system engineering, both in industry and in academia. His extensive experience includes power system analysis, transmission planning, grid operations, and software development, as well as research and teaching. He has managed and performed many projects including transmission expansion planning studies, generation and load interconnection studies, system modeling, system reliability assessment, and probabilistic risk assessment. He is also experienced in SCADA/EMS software design and development. Dr. Zhou joined Siemens PTI in 2008 and has been conducting power system studies, power system modeling, and regulatory compliance assessments - developing engineering solutions for the power industry. Dr. Zhou is a licensed Professional Engineer in California (Certificate No. E18491).

Wenchun Zhu, PhD – Principal Consultant – (650) 772-2289 or wenchun.zhu@siemens.com

Dr. Zhu has served the power industry for over 28 years with an emphasis on power system equipment modeling, transmission system analysis and planning, and NERC MOD-025, MOD-026, and MOD-027 compliance studies. At Siemens PTI, Dr. Zhu routinely manages consulting projects and serves as a key technical lead for large and small clients. Prior to joining Siemens PTI in 2012, Dr. Zhu worked extensively in transmission planning for a utility in Wisconsin, including performing power flow, transfer capability, dynamic stability, short circuit, under-frequency load shedding, voltage stability, motor start, and economic analyses. She also successfully represented the company's transmission projects in the planning and approval processes of an ISO in the Midwest. Dr. Zhu gained wide-ranging experience working with regional planning entities and actively contributed to regional planning processes. Dr. Zhu has gained extensive experience in power system software development and application, and particularly in-depth knowledge of dynamic modeling, via her prior consulting tenure with General Electric. Dr. Zhu has also worked for a wind farm developer and owner for nearly two years, during which she interacted with several ISOs and Transmission Providers in various regions of the U.S. for integration of wind generation.

Morteza Sarailoo, PhD – Senior Consultant – (518) 386-9694 or morteza.sarailoo@siemens.com

Dr. Sarailoo has more than 7 years experiences in control systems and power systems, with specialties in operation and planning of power systems. He has received his master and bachelor degrees in the fields of control systems and power systems, respectively. He has a Ph.D. in electrical engineering from State University of New York at Binghamton, specialized in power systems stability analysis and control. He worked as a member of Southwest Power pool's (SPP) Operations Planning team and New York Independent System Operator's (NYISO) Operation Engineering team. He is an expert in power flow analysis and power systems dynamics, including analysis, modeling, and control. Dr. Sarailoo has published 17 peer-reviewed conference articles, and 13 peer-reviewed journal articles. He is a member of the IEEE and active in some of the IEEE working groups.

Zuwa Oriakhi – Consultant – (650) 436-8307 or osazuwa.oriakhi@siemens.com

Mr. Oriakhi is skilled in power system modeling and analysis, energy management control/optimization techniques, and embedded systems design and control. His skills include dynamic and electromagnetic transient model development and Python® automation. Prior to joining Siemens PTI, Mr. Oriakhi was with a power flow control technology company, where he performed transmission studies to determine optimal location for device deployment. His work there included power flow, dynamic stability, post-transient, and electromagnetic transient analyses. His experience also includes troubleshooting of power plant equipment, including sensors, transformers, motor control units, and hydraulic and pneumatic system components. Since joining Siemens PTI, Mr. Oriakhi has been performing generator interconnection studies, including steady state and dynamic analyses.

Rohit Ramesh Kumar – Consultant – rohit.ramesh_kumar@siemens.com

Mr. Rohit received his bachelor's degree in 2016 from Indian Institute of Technology, Mandi and subsequently worked at a start-up (India) where he led the Power Electronics team. He designed and implemented a working prototype of a single-phase grid tied solar inverter. He came to the U.S. in 2017 to pursue Master's in Power Systems and graduated from Arizona State University in 2020. He completed two internships in the US, one as a Grid Interconnection Engineer at First Solar and the second one as a Research Intern with the Business, Architecture and Technology team at ISO New England.

Kenneth Wilson – Senior Staff Consultant – (385) 231-4611 or kennethwilson@siemens.com

Mr. Wilson has worked in the electric utility industry for over 45 years performing transmission planning studies, production cost modeling studies, and frequency response analysis. Since joining Siemens PTI, Mr. Wilson has managed and performed many projects including transmission planning studies, generation interconnection studies, generator stability model validation analysis, and compliance with ISO (including CAISO) and region generation interconnection requirements. Prior to working for Siemens PTI, Mr. Wilson gained extensive experience in the power industry having worked for WECC and electric utilities in Colorado and Utah. This experience includes performing transmission planning studies, rate studies, load forecasting, operating re-serve studies, and system operating studies. Mr. Wilson has extensive experience in power system regulation including FERC filings, NERC and WECC Reliability Standards.

4.1 Subcontractor: Nimbus Power Engineers

For this project, Nimbus Power Engineers (Nimbus) will perform all onsite data collection and testing. Nimbus is a commercial energy generation consultancy, with over 10 years of experience. Contributing a breadth of knowledge in the energy sector, Nimbus offers support in the areas of design, commissioning and troubleshooting, and model validation testing for most types of power generation systems.

Jonathan Denman of Nimbus has spent eight enjoyable years in the power generation industry. He has faced a variety of challenges that have made him familiar with the hydroelectric power plant as a whole. While working with a local utility company, Jonathan realized he has the particular skill of performing design work, as well as tuning excitation systems and supplementary exciter controls, such as Power System Stabilizers (PSS). Prior to working in the utility industry, Jonathan worked at a Power Semiconductor manufacturer designing Spice models of Power Mosfets and IGBT transistors. Later he continued modeling electrical apparatuses such as synchronous generators, exciters and governor systems. Jonathan Denman received his BSEE at Oregon State University June 2008

Siemens PTI and Nimbus have worked on various projects on generator testing and model validation for the last five years.

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Experience and References

5.1 Overview

Siemens PTI's Power System Consulting is an industry leading power system studies group that provides solutions on transmission and distribution planning to the power industry. Siemens PTI has performed planning studies for both transmission and distribution voltage levels, generation interconnection studies, wind integration and storage interconnection studies for transmission and distribution systems across the globe. These studies include steady-state, stability, dynamic and production costs analyses.

The Siemens PTI PSC group provides expertise in the following areas:

Steady State Analysis	Dynamic Analysis	Transmission Planning and Integrated Planning	Energy Market Analysis	System Operations Analysis
<ul style="list-style-type: none"> Feasibility Studies Thermal Impact Voltage Impact Short Circuit Impact Power Transfers Impact Available Transmission Capacity Limitations on Level of Renewable Penetrations 	<ul style="list-style-type: none"> Low Voltage Ride Through (LVRT) Capacity High Voltage Ride Through (LVRT) Capacity Reactive Power Requirements Voltage Stability Voltage Recovery Transient Stability Small Signal Stability 	<ul style="list-style-type: none"> Short and Long-Term Transmission Expansion Plans Cost-Benefit Analysis Risk Mitigation and Transmission Expansion and Resource Integration Staging to meet Renewable Integration Targets 	<ul style="list-style-type: none"> Production Costs Congestion Impact Market Revenue Assessments Adjusted Production Cost Emissions Profile Locational Marginal Price Resource Planning Value for Transmission Optimal Long Term Capacity Expansion Plans 	<ul style="list-style-type: none"> Intermittent Resource Analysis Modeling for Curtailment and Deliverability Ancillary Services Evaluation Remedial Action Schemes Protection and Control

5.2 Corporate References

Siemens PTI offers the following clients as references for this project.

Organization:	Scout Clean Energy LLC
Address:	5775 Flatiron Parkway, Suite 120 Boulder, CO 80301
Name and Title of Contact:	Brian Gregory, Manager Development Engineering
Telephone Number of Contact:	(720) 617-6990; Brian@scoutcleanenergy.com
Services Provided	Generation model data review.

Project Description: Siemens PTI performed generation model data review for a renewable resource plant and completed CAISO generation facility data sheets per CAISO BMP for TPP requirements for a wind power plant.

Experience and References

Organization:	Gainesville Regional Utilities
Address:	301 SE 4th Avenue, Gainesville, FL 32601
Name and Title of Contact:	Eric Nelhaus
Telephone Number of Contact:	(352) 393-6120; NelhausEW@gru.com>
Services Provided	Siemens PTI performed Generator Field Testing and Model Validation, consistent with NERC MOD-025, MOD-026, and MOD-027

Project Description: Siemens PTI performed Generator Field Testing and Model Validation, consistent with NERC MOD-025, MOD-026, and MOD-027.

Organization:	Bucksport Generation
Address:	30 Generation Lane, Bucksport ME. 04416
Name and Title of Contact:	Drew Robertson
Telephone Number of Contact:	207-469-1229; drewr@buckgen.com
Services Provided	NERC Compliance; Simulation Model Development; Stability/Transient Stability

Project Description: Siemens PTI conducted a MOD-026, MOD-027 model validation for the gas turbine unit G4 of Bucksport Generation LLC. The task included two steps: field testing and model analysis and validation. Field testing was completed by Nimbus, Siemens' subcontractor. Siemens PTI performed model analysis and validation.

Organization:	Brea Power Facility
Address:	1935 Valencia Avenue, Brea CA 92823 United States
Name and Title of Contact:	Emily Jacks, Operations and Maintenance Manager
Telephone Number of Contact:	(714) 337 4107; edlenergy.com
Services Provided	Brea Cogeneration Plant MOD 025, PRC 19 and 24 compliance support

Project Description: Nimbus performed onsite testing for MOD 025 compliance work and acquisition relay settings. Supported the development of compliance reporting.

Organization:	Eugene Water and Electric Board
Address:	500 E 4th Ave, Eugene, OR 97401
Name and Title of Contact:	Janelle Stefanich, Generation Engineering Associate II
Telephone Number of Contact:	(541) 685-7531; janelle.stefanich@eweb.org
Services Provided	International Paper Springfield Oregon, Eugene Water and Electric Board (EWEB) MOD-025 PRC 19 and 24 compliance reporting MOD

Project Description: Nimbus performed onsite testing for MOD 025 compliance work and acquisition of relay settings. Provided published reporting to meet regulatory compliance.

5.3 Additional Experience

- Onsite testing and model validation for five PJM wind farms to comply with NERC MOD-025, MOD-026 and MOD-027.
- Onsite testing and model validation for a hydro generating unit in Washington for compliance with NERC standards MOD-025, MOD-026 and MOD-027.
- Onsite testing and model validation for two solar plants in California for compliance with NERC standards MOD-025, MOD-026 and MOD-027.
- Model validation for a wind farm in Minnesota for NERC MOD-025, MOD-026 and MOD-027 compliance.
- Model validation for units of a combined cycle plant in New Hampshire for NERC MOD-025, MOD-026 and MOD-027 compliance. Performed by Siemens PTI in June 2016.
- Onsite testing and model validation for multiple thermal units at a facility in Texas to demonstrate compliance with NERC standards MOD-025, MOD-026 and MOD-027.
- Siemens PTI assembled voltage and frequency relay protection (PRC-024) dynamic simulation models for many proposed solar and wind farms assisting clients' generator interconnection requests in various states in U.S.

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Section

6

Evidence of Insurance

Please see attached sample Certificate of Insurance, as a large Corporation, Siemens does not foresee any issues in complying to the insurance requirements.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
10/06/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER MARSH USA, INC. 445 SOUTH STREET MORRISTOWN, NJ 07960-6454		CONTACT NAME: Kevin Mashavejian PHONE (A/C, No, Ext): 212-345-7115 E-MAIL: kevin.mashavejian@marsh.com ADDRESS:		FAX (A/C, No):
INSURED SIEMENS INDUSTRY, INC. 1000 DEERFIELD PARKWAY BUFFALO GROVE, IL 60089-4513		INSURER(S) AFFORDING COVERAGE		
CN102147003-SII-2021 SII		INSURER A: HDI Global Insurance Company		NAIC # 41343
		INSURER B: Travelers Property Casualty Co. of America		25674
		INSURER C: The Travelers Indemnity Company		25658
		INSURER D:		
		INSURER E:		
		INSURER F:		

COVERAGES

CERTIFICATE NUMBER:

NYC-008961152-47

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			GLD1101-12	10/01/2020	10/01/2021	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 100,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 10,000,000 PRODUCTS - COMP/OP AGG \$ INCL
B	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input checked="" type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY			TC2J-CAP-7440L34A-TIL-20	10/01/2020	10/01/2021	COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ N/A BODILY INJURY (Per accident) \$ N/A PROPERTY DAMAGE (Per accident) \$ N/A
	<input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input type="checkbox"/> RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N	N/A	UB-8P83929A-20-51-K (AOS) UB-8P79233A-20-51-R(AZ, MA, OR, WI)	10/01/2020 10/01/2020	10/01/2021 10/01/2021	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
EVIDENCE OF COVERAGE

CERTIFICATE HOLDER

CANCELLATION

SIEMENS INDUSTRY, INC. 1000 DEERFIELD PARKWAY BUFFALO GROVE, IL 60089-4513	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE of Marsh USA Inc. Manashi Mukherjee <i>Manashi Mukherjee</i>

Section

7

Pricing

Per the RFP instructions, Siemens PTI presents below our proposed cost for each scenario. These cost estimates are on a fixed price basis for the scope and schedule of the proposed work. However, additional cost may be incurred due to any schedule changes by the City of Riverside or any factors beyond Siemens PTI's control.

Reporting	
Units	TPP BPM Reporting Costs
RERC 1	\$1,715
RERC 2	\$1,715
RERC 3	\$1,715
RERC 4	\$1,715
Springs	\$1,715
CAISO Report Deficiency Resolution	\$7,048
Total (Shall Match Planet Bids Line Items Total)	\$15,624

Scenario 1 – Costs to provide up to 8 tests	
Units	Generator Power Testing, Data Collection, Modeling Costs
RERC 1	\$23,315
RERC 2	\$23,315
RERC 3	\$23,315
RERC 4	\$23,315
Springs	\$93,260
Site Visit	\$9,660
Total (Shall Match Planet Bids Line Items Total)	\$196,180

Scenario 2 – Costs to provide 1 test at each facility	
Units	Generator Power Testing, Data Collection, Modeling Costs
One RERC Unit	\$37,907
Springs	\$37,907
Site Visit	\$3,150
Total (Shall Match Planet Bids Line Items Total)	\$78,964

Scenario 3 – Costs to provide 2 RERC and 1 Springs Test	
Units	Generator Power Testing, Data Collection, Modeling Costs
RERC 1 or RERC 2	\$34,169
RERC 3 or RERC 4	\$34,169
Springs	\$34,169
Site Visit	\$3,255
Total (Shall Match Planet Bids Line Items Total)	\$105,763

Section

8

Disclosures

Please see attached Exhibit C

The Company shall complete the following questionnaire:

1. Has the Company, any officer of the Company, or any employee of the Company who has proprietary interest in the Company, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or safety regulation?

Yes _____ No X

If the answer is yes, explain the circumstances in the following space.

2. Has the Company, any officer of the Company, or any employee of the Company who has proprietary interest in the Company, ever had any administrative proceedings, claims, lawsuits, or other exposures pending against the Company?

Yes _____ No X

If the answer is yes, explain the circumstances in the following space.

Contract Terms and Conditions

Siemens requests that the following provisions be added to the RFP Exhibit B Sample Professional Services.

- 1) NOTWITHSTANDING ANYTHING IN THIS AGREEMENT TO THE CONTRARY, EXCEPT FOR CLAIMS ARISING FROM PERSONAL INJURY, INCLUDING DEATH OR DAMAGE TO THIRD PARTY PROPERTY, CONSULTANT IS NOT LIABLE, WHETHER BASED IN CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, INDEMNITY OR ANY OTHER LEGAL OR EQUITABLE THEORY, FOR: LOSS OF USE, REVENUE, SAVINGS, PROFIT, INTEREST, GOODWILL OR OPPORTUNITY, COSTS OF CAPITAL, COSTS OF REPLACEMENT OR SUBSTITUTE USE OR PERFORMANCE, LOSS OF INFORMATION AND DATA, LOSS OF POWER, VOLTAGE IRREGULARITIES OR FREQUENCY FLUCTUATION, CLAIMS ARISING FROM CITY'S THIRD PARTY CONTRACTS, OR FOR ANY TYPE OF INDIRECT, SPECIAL, LIQUIDATED, PUNITIVE, EXEMPLARY, COLLATERAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR FOR ANY OTHER LOSS OR COST OF A SIMILAR TYPE.

EXCEPT FOR CLAIMS ARISING FROM PERSONAL INJURY, INCLUDING DEATH OR DAMAGE TO THIRD PARTY PROPERTY, CONSULTANT'S MAXIMUM LIABILITY UNDER THIS AGREEMENT IS THE ACTUAL PURCHASE PRICE RECEIVED BY CONSULTANT FOR THE PRODUCT THAT GAVE RISE TO THE CLAIM.

EXCEPT FOR CLAIMS ARISING FROM PERSONAL INJURY, INCLUDING DEATH OR DAMAGE TO THIRD PARTY PROPERTY, CITY AGREES THAT THE EXCLUSIONS AND LIMITATIONS IN THIS ARTICLE WILL PREVAIL OVER ANY CONFLICTING TERMS AND CONDITIONS IN THIS AGREEMENT AND MUST BE GIVEN FULL FORCE AND EFFECT, WHETHER OR NOT ANY OR ALL SUCH REMEDIES ARE DETERMINED TO HAVE FAILED OF THEIR ESSENTIAL PURPOSE. THESE LIMITATIONS OF LIABILITY ARE EFFECTIVE EVEN IF CONSULTANT HAS BEEN ADVISED BY CITY OF THE POSSIBILITY OF SUCH DAMAGES. THE WAIVERS AND DISCLAIMERS OF LIABILITY, RELEASES FROM LIABILITY AND LIMITATIONS ON LIABILITY EXPRESSED IN THIS ARTICLE EXTEND TO CONSULTANT'S AFFILIATES, PARTNERS, PRINCIPALS, SHAREHOLDERS, DIRECTORS, OFFICERS, EMPLOYEES, SUPPLIERS, AGENTS, AND SUCCESSORS AND ASSIGNS.

- 2) If Consultant's performance is delayed by any cause beyond its reasonable control (regardless of whether the cause was foreseeable), including without limitation acts of God, strikes, labor shortage or disturbance, fire, accident, war or civil disturbance, delays of carriers, cyber-attacks, terrorist attacks, failure of normal sources of supply, or acts or

Inaction of government, Consultant's time of performance will be extended by a period equal to the length of the delay plus any consequences of the delay. Consultant will notify City within a reasonable time after becoming aware of any such delay. Consultant agrees that the exclusions and limitations in this article will not prevail over any conflicting terms and conditions in this agreement if Consultant fails to timely perform under this Agreement due to causes within Consultant's reasonable control and delay is not attributable to the actions of City or any third party and such delay results in City being penalized by CAISO and/or SCE for failure to provide updated power flow and dynamic stability modes for its natural gas generating units to the CAISO and SCE.

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Project Team Resumes

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PTI Consulting

George Zhou

Principal Consultant



Career Highlights

Dr. Zhou has three decades of experience working in power system engineering, both in industry and in academia. His extensive experience includes power system analysis, transmission planning, grid operations, and software development, as well as research and teaching. He has managed and performed many projects including transmission expansion planning studies, generation and load interconnection studies, system modeling, system reliability assessment, and probabilistic risk assessment. He is also experienced in SCADA/EMS software design and development. Dr. Zhou joined Siemens PTI in 2008 and has been conducting power system studies, power system modeling, and regulatory compliance assessments – developing engineering solutions for the power industry. Dr. Zhou is also an instructor with Siemens Power

Academy for power flow and dynamic courses.

Experience

Prior to joining Siemens PTI, Dr. Zhou spent five years with the Electric Power Research Institute (EPRI) in Palo Alto, CA. While at EPRI, he managed and implemented transmission consulting service projects in planning and operations for electric utilities worldwide. He also managed and developed software tools for the power industry. These tools included those for power flow analysis, system dynamic analysis, system modeling, and probabilistic reliability assessment. He also developed and taught a number of courses on HVDC and FACTS technologies for power system engineers.

Prior to his tenure with EPRI, Dr. Zhou worked for Open Systems International (OSI), a real time control system vendor based in Minneapolis, MN. He led software development in many of the real time applications offered by OSI, including power flow, contingency analysis, load forecast, available transfer capability calculations, unit commitment, economic dispatch, and automatic generation control. He also provided customer training on these applications.

Dr. Zhou also has first-hand utility experience in power system planning and operations in the US and internationally. He has worked for Pacific Gas and Electric Company in San Francisco, CA; Idaho Power Company in Boise, ID; and Northeast China Electric Power Company in Shenyang, Liaoning, China. While with these utilities, Dr. Zhou conducted generation and load interconnection studies and transmission planning studies, provided technical support and training in transmission system operations, performed energy management system implementation, and supported regulatory compliance requirements, among his other duties. The majority of the generation interconnection projects under his study were of wind or solar and interconnected to transmission or distribution systems.

Dr. Zhou's academic experience includes research and teaching at Iowa State University, Ames, IA; University of Porto, Porto, Portugal; and Tianjin University, Tianjin, China.

Areas of Expertise

- Power System Planning Studies
- Power System Operating Studies
- Power System Model Development
- Generation/Load Interconnection Studies
- Generator Testing and Model Validation
- NERC Compliance Assessment
- Steady State Analysis
- Dynamic Analysis (Transient Stability, Voltage Stability, Small Signal Stability)
- Short Circuit Studies
- Electromagnetic Transient Studies
- FACTS Technology Applications
- DER and Energy Storage Modeling and Studies
- SCADA/EMS Software Design and Development
- Education and Training
- Project Management

Education

- PhD, Electrical Engineering, Iowa State University, Ames, Iowa, USA, 1998
- PhD, Electrical Engineering, Tianjin University, Tianjin, China, 1992
- MS, Electrical Engineering, Tianjin University, Tianjin, China, 1988
- BS, Electrical Engineering, Tianjin University, Tianjin, China, 1985

Professional Certifications

- Registered Professional Engineer (PE) in California
- Former NERC-certified System Operator

Professional Memberships

- Senior Member of the IEEE and its Power & Energy Society

Languages

- English
- Chinese

Publications

1. "ComEd's Elmhurst SVCs: Challenges and Opportunities," in *Proc. of IEEE PES T&D Conference and Exhibition*, New Orleans, LA, April 2010 (many co-authors).
2. "Maximizing Transmission System Loadability," EPRI Technical Report 1011322, EPRI, Palo Alto, CA, December 2004.
3. "Synchronous Machine Parameter Derivation Program," EPRI Solutions Technical Report, EPRI Solutions, Palo Alto, CA, September 2002.
4. "Feasibility and Scoping Study of Transmission System Support for NPC Luzon Transmission System," EPRI Solutions Technical Report, EPRI Solutions, Palo Alto, CA, December 2001.
5. "On-line Visualization of Security Boundaries Using Neural Networks with Feature Selection," *International Journal of Engineering Intelligent Systems*, December 1999 (co-authors: V. Van Acker, S. Wang, M. A. Mitchell, and J. D. McCalley).
6. "Composite Security Boundary Visualization," *IEEE Transactions on Power Systems*, May 1999 (co-author: J. D. McCalley).
7. "Security Assessment Feature Selection Using Genetic Algorithm and Neural Networks," *IEEE Transactions on Evolutionary Computation*, 1999 (co-authors: M. A. Mitchell, Q. Zhao, and J. D. McCalley).
8. "Power System Security Boundary Visualization Using Neural Networks," *International Journal of Neurocomputing*, December 1998 (co-authors: J. D. McCalley and V. Van Acker).
9. "Power System Security Assessment Using Neural Networks," International Symposium on Bulk Power Systems Dynamics and Control – IV Restructuring, Santorini, Greece, August 1998 (co-authors: J. D. McCalley, V. Van Acker, M. A. Mitchell, V. Vittal, S. Wang, and J. A. Pecos Lopes).
10. "Composite Security Boundary Visualization," The 35th Annual Power Affiliate Reports, Electric Power Research Center, Iowa State University, Ames, Iowa, May 1998 (co-author: J. D. McCalley).
11. "Power System Security Margin Prediction Using Radial Basis Function Networks," in *Proceedings of the 29th North American Power Symposium*, Laramie, WY, October 1997 (co-authors: J. D. McCalley and V. Honavar).

12. "A Genetic-based Feature Selection Applied to Neural Networks for Security Boundary Visualization," The 34th Annual Power Affiliate Reports, Electric Power Research Center, Iowa State University, Ames, Iowa, May 1997 (co-author: J. D. McCalley).
13. "Data Generation Using Automated Security Assessment for Neural Network Training," in *Proceedings of the 29th North American Power Symposium*, Laramie, WY, October 1997 (co-authors: V. Van Acker, S. Wang, J. D. McCalley, and M. A. Mitchell).
14. "Security Boundary Visualization for Systems Operation," *IEEE Transactions on Power Systems*, May 1997 (co-authors: J. D. McCalley, S. Wang, Q. Zhao, R. T. Treinen, and A. D. Papalexopoulos).
15. "An Algorithm to Determine the Composite Security Boundary for Power System Operations," 1996 Midwest Conference on Electrical Engineering, Ames, IA, April 1996 (co-authors: J. D. McCalley, S. Wang, and Q. Zhao).
16. "An Expert System for Switching Operation Planning in a Dispatch Center," *International Journal of Engineering Intelligent Systems*, June 1994 (co-authors: Y. Sun, and W. Zhu).
17. "A Neural Network Approach to Power System Fault Diagnosis," 1993 IEEE Region Ten Conference on Computer, Communication, Control, and Power Engineering, Beijing, China, October 1993.
18. "Fault Diagnosis for Large-Scale Power Systems via Hierarchical Distributed Neural Networks," *Journal of Systems Engineering*, June 1992 (co-author: Y. Sun).
19. "A Combined Gradient Learning Algorithm for Multilayered Neural Networks," 1991 International Conference on Industrial Electronics, Control, and Instrumentation, Kobe, Japan, October 1991 (co-author: Y. Sun).
20. "A Conjugate Gradient Based Backpropagation Learning Algorithm For Multilayer Feedforward Neural Networks," in *Proceedings of the Third National Conference on Machine Learning*, Mudanjiang, China, July 1991 (co-author: Y. Sun)



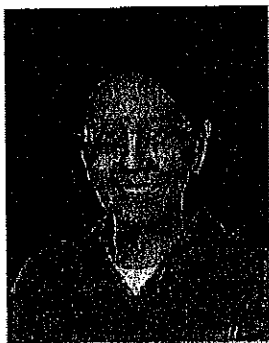
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PTI Consulting

Wenchun Zhu

Principal Consultant



Career Highlights

Dr. Zhu has served the power industry for over 28 years with an emphasis on power system equipment modeling, transmission system analysis and planning, and NERC MOD-025, MOD-026, and MOD-027 compliance studies. At Siemens PTI, Dr. Zhu routinely manages consulting projects and serves as a key technical lead for large and small clients. Prior to joining Siemens PTI in 2012, Dr. Zhu worked extensively in transmission planning for a utility in Wisconsin, including performing power flow, transfer capability, dynamic stability, short circuit, under-frequency load shedding, voltage stability, motor start, and economic analyses. She also successfully represented the company's transmission projects in the planning and approval processes of an ISO in the Midwest. Dr. Zhu gained wide-ranging experience working with regional planning entities and actively contributed to regional planning processes. Dr. Zhu has gained extensive experience in power system software development and application, and particularly in-depth knowledge of dynamic modeling, via her prior consulting tenure with General Electric. Dr. Zhu has also worked for a wind farm developer and owner for nearly two years, during which she interacted with several ISOs and Transmission Providers in various regions of the US for integration of wind generation.

Experience

Since joining Siemens PTI, Dr. Zhu has managed and conducted many power system studies. Dr. Zhu has been heavily involved in a series of generation deliverability analyses, which are an integral part of the generation interconnection process of an ISO in California. During the past several years, she has managed and executed multiple MOD-025, MOD-026, and MOD-027 model validation projects for multiple renewable and thermal units. She has served in the role of project manager/technical lead for a series of renewable generation interconnection studies including power flow, short circuit, transient/dynamic and EMT studies in the past couple of years. She has performed TPL compliance studies for a client in Missouri, created comprehensive Python® automation tools, and performed extensive transient/dynamic stability studies related to FERC Order 754 for a client in Texas. Dr. Zhu has developed a

customized master power plant controller dynamic model, customized energy storage dynamic model, and a complex multi-terminal HVDC model in PSS®E for different clients. She has developed complex HVDC and SVC user-written dynamic study models that simulate installed equipment using GE PSLF. Additionally, she has performed an LNG plant interconnection study for a client in Canada, performed CIP-14 compliance reviews for clients in Nebraska and Arizona, and performed FERC Order 1000 transmission planning studies that resulted in proposals of transmission reinforcement packages for a region in New York, among other consulting studies. Dr. Zhu has received several Siemens YouAnswered awards for her excellent work on a number of consulting projects. Dr. Zhu is also an instructor for Siemens Power Academy.

siemens.com/power-technologies/consulting

Prior to joining Siemens PTI, Dr. Zhu held a supervisory position with Wind Capital Group, headquartered in St. Louis, Missouri, for nearly two years. Her main responsibility was to ensure interconnections of the company's proposed wind projects progressed through the ISO, RTO, and Transmission Provider's interconnection processes in a reliable yet least cost fashion for the company. She also supported equipment procurement and wind farm engineering design.

Prior to her tenure with Wind Capital Group, Dr. Zhu held positions of increasing responsibility over seven and half years with American Transmission Company in Wisconsin. While there Dr. Zhu managed and executed many transmission planning or operational support studies including power flow, transfer capability, dynamic stability, short circuit, under-frequency load shedding, voltage stability, motor start, and economic studies. While serving in the representative role for the company, Dr. Zhu was actively involved in and contributed to the transmission planning process of the Midwest ISO and the transmission assessment

processes of two NERC Regional Entities: Midwest Reliability Organization and ReliabilityFirst. Dr. Zhu was the elected Chairperson for the Transmission Assessment Sub-committee and the elected Chairperson for the Scenario Assessment Task Force of the Midwest Reliability Organization.

Prior to her years with American Transmission Company, Dr. Zhu held Application Engineer and Senior Engineer positions over more than eight years with the General Electric Company, Power System Engineering Consulting Department. While there Dr. Zhu worked extensively on power system software development with an emphasis on stability modeling. She also provided software training classes and taught power system analysis courses. She worked with the WECC Modeling and Validation Working Group on stability modeling issues.

During earlier years of her career, Dr. Zhu extensively used ATP/EMTP for transient analysis and MATLAB for mathematical analysis.

Areas of Expertise

- Power System Expansion Planning
- Stability User-Defined Model Development
- MOD-026, MOD-027 Model Validation
- HVDC, SVC, STATCOM Applications
- Steady State Analysis (Power Flow, Contingency Analysis)
- Transfer Capability Analysis
- Short Circuit Analysis
- Dynamic Stability Analysis
- Solar Plant Modeling for Load Flow and Dynamic Studies
- Wind Farm Modeling for Load Flow and Dynamic Studies
- Python® Programming
- Voltage Stability Analysis
- Transient Analysis using ATP/EMTP
- Economic Analysis

Education

- PhD, Electrical Power Engineering, Electrical and Computer Engineering Department, Oregon State University, Corvallis, Oregon, 1994
- Master, Electrical Power Systems and Automation, Tsinghua University, Beijing, China, 1990
- Bachelor, Tsinghua University, Beijing, China, 1988

Professional Certifications

- Registered Professional Engineer (PE) in Wisconsin

Professional Memberships

- Member of the IEEE and its Power & Energy Society

Languages

- English
- Chinese

Publications

1. "Evaluating Dynamic Reactive Support Options for Minnesota's North Shore," presented at the 2018 Minnesota Power Systems Conference (MIPSYCON), Saint Paul Center, MN, November 2018 (co-authors: C. Winter and D. Brown).
2. "HVDC Macrogrid Modeling for Power-flow and Transient Stability Studies in North American Continental-level Interconnections," *CSEE Journal of Power and Energy Systems*, vol. 3, no. 4, December 2017 (co-authors: M. A. Elizondo, N. Mohan, J. O'Brien, Q. Huang, D. Orser, W. Hess, H. Brown, J. Feltes, D. Chandrashekhara, Y. V. Makarov, D. Osborn, H. Kirkham, D. Duebner, and Z. Huang).
3. "An Interim Dynamic Induction Motor Model for Stability Studies in the WSCC," *IEEE Trans. on Power Systems*, vol. 17, issue 4, pp. 1108-1115, November 2002 (co-authors: L. Pereira, D. Kosterev, P. Mackin, D. Davies, and J. Undrill).
4. "Screening for HVDC Core Saturation Instability," *IEEE Trans. on Power Delivery*, PE-123-PWRD-0-08-1998, vol. 15, issue 4, pp. 1291-1297, October 2000 (co-authors: T. Hasegawa, Y. Oue, J. Matsushita, K. Tomiyama, S. Ihara, R. Walling, and E. Practico).

5. "Analysis and Control of Power System Oscillations," CIGRE publication, Task Force 07 of Advisory Group 01 of Study Committee 38, section 4.8, 4.9, 1996.
6. "Hopf Bifurcations in a SMIB Power System with SSR," IEEE PES Summer Meeting, Portland, OR, 1995, *IEEE Trans. on Power Systems*, vol. 11, issue 3, pp. 1579-1584 (co-authors: R. R. Mohler, R. Spee, W.A. Mittelstadt, and D. Maratukulam).
7. "An EMTP Study of SSR Mitigation Using the Thyristor Controlled Series Capacitor," IEEE PES Summer Meeting, San Francisco, CA, 1994, *IEEE Trans. on Power Delivery*, vol. 10, issue 3, pp. 1479-1485, July 1995 (co-authors: R. Spee, R. R. Mohler, W. A. Mittelstadt, and D. Maratukulam).
8. "A Bilinear Self-Tuning Controller for Multimachine Transient Stability," IEEE PES Summer Meeting, Vancouver, BC, 1993, paper SP93-082, *IEEE Trans. on Power Systems*, vol. 9, issue 3, pp. 1379-1384, August 1994 (co-authors: V. Rajkumar, R.R. Mohler, R. Spee, W.A. Mittelstadt, and D. Maratukulam).
9. "On the Analysis of Subsynchronous Resonance in Power Systems," in *Proc. of American Power Conference (APC)*, Chicago, IL, April 1994 (co-authors: V. Rajkumar, R. Spee, and R.R. Mohler).
10. "Hopf Bifurcation Analysis for an Electric Power System Experiencing Subsynchronous Resonance," in *Proc. of IEEE Conference on Decision & Control*, Lake Buena Vista, FL, 1994 (co-authors: R. R. Mohler and R. Spee).
11. "Robust Control for Power System Transient Stability," in *Proc. of American Automatic Control Conference*, San Francisco, CA, 1993 (co-authors: W. J. Kolodziej and D. N. Kosterev).
12. "Variable-Structure Control of Flexible AC Transmission Systems," in *Proc. of 31st IEEE Conference on Decision & Control*, Tucson, AZ, 1992 (co-authors: Y. Wang, R. R. Mohler, and R. Spee).
13. "Flexible AC Transmission Systems – Simulation and Control," in *Proc. of Africon*, Ezulwini, Swaziland, 1992 (co-author: R. Spee).



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PTI Consulting

Morteza Sarailoo, PhD

Senior Transmission Planning Consultant



Career Highlights

Dr. Sarailoo has more than 7 years experiences in control systems and power systems, with specialties in operation and planning of power systems. He has received his master and bachelor degrees in the fields of control systems and power systems, respectively. He has a Ph.D. in electrical engineering from State University of New York at Binghamton, specialized in power systems stability analysis and control. He worked as a member of Southwest Power pool's (SPP) Operations Planning team and New York Independent System Operator's (NYISO) Operation Engineering team. He is an expert in power flow analysis and power systems dynamics, including analysis, modeling, and control. Dr. Sarailoo has published 17 peer-reviewed conference articles, and 13 peer-reviewed journal articles. He is a member of the IEEE and active in some of the IEEE working groups.

Experience

Before joining Siemens PTI, Dr. Sarailoo worked at NYISO as Operational Engineer where he was responsible for validating and determining transfer limits for various Interfaces in New York Control Area (NYCA). He also was working at SPP as a member of the operation planning team, where he was responsible for validating and maintaining online dynamic security assessment tools, voltage security assessment and transient security assessment, performing seasonal assessment, voltage support

study, and primary frequency response and inertia study. Dr. Sarailoo has experience with PSS-E, PowerWorld, TARA, DSA Tool, and Python for performing various power system studies.

As a member of Siemens PTI consultant team, Dr. Sarailoo provides technical inputs in the performance of transmission studies and Generator interconnection studies. He is passionate about learning and tackling challenging problems.

Areas of Expertise

- Power system stability analysis
- Dynamic state estimation
- Optimization
- Distributed generation
- Hybrid system
- (Extended) Kalman filter
- Islanding detection
- System Identification and model validation
- Control design
- Oscillation analysis
- Reliability assessment of measurement networks and transmission networks in power system
- Fault diagnosis in the electrical network using the Multiple-Model Filtering (MMF)

Education

- PhD, State University of New York at Binghamton, 2019
- MSc, Babol University of Technology, 2012
- BSc, University of Mazandaran, 2009

Professional Certifications

- Grounding & bonding training

Publications

- M Saralloo, B Rezaie, Z Rahmani, "MLD model of boiler-turbine system based on PWA linearization approach." International Journal of Control Science and Engineering (2012)
- M Saralloo, Z Rahmani, B Rezaie, "Fuzzy sliding mode control for hyper chaotic Chen system." Advances in Electrical and Computer Engineering (2012)
- M Saralloo, Z Rahmani, B Rezaie, "Modeling of three-tank system with nonlinear valves based on hybrid system approach." Journal of control engineering and technology (2013)
- M Saralloo, Z Rahmani, B Rezaie, "Fuzzy Predictive Control of Step-Down DC-DC Converter Based on Hybrid System Approach." International Journal of Intelligent Systems and Applications (2014)
- M Saralloo, Z Rahmani, B Rezaie, "Fuzzy predictive control of a boiler-turbine system based on a hybrid model system." Industrial & Engineering Chemistry Research (2014)
- M Saralloo, B Rezaie, Z Rahmani, "Fuzzy predictive control of three-tank system based on a modeling framework of hybrid systems." Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering (2014)
- M Saralloo, Z Rahmani, B Rezaie, "A novel model predictive control scheme based on bees algorithm in a class of nonlinear systems: Application to a three tank system." Neurocomputing (2015)
- S Akhlaghi, H Sangrody, M Saralloo, M Rezaeiahari, "Efficient Operation of Residential Solar Panels with Determination of the Optimal Tilt Angle and Optimal Intervals Based on Forecasting Model." IET Renewable Power Generation (2017)
- H Sangrody, M Saralloo, N Zhou, N Tran, M Motaleb, E Foruzan, "Weather Forecasting Error in Solar Energy Forecasting." IET Renewable Power Generation (2017)
- M Saralloo, NE Wu, "Cost Effective Upgrade of PMU Networks for Fault-Tolerant Sensing." IEEE Transactions on Power Systems (2017)
- NE Wu, M Saralloo, M Salman, "Transmission fault diagnosis with sensor-localized filter models for complexity reduction." IEEE Transactions on Smart Grid (2017)
- M Saralloo, NE Wu, JS Bay, "Transient stability assessment of large lossy power systems." IET Generation, Transmission & Distribution (2017)
- M Saralloo, NE Wu, JS Bay, "Toward A Spoof-Tolerant PMU Network Architecture." International Journal of Electrical Power & Energy Systems (2019)
- M Saralloo, Z Rahmani, B Rezaie, "Model Predictive Control of Chaotic Chua's System Based on Hybrid Model." 2nd International Conference on Control, Instrumentation, and Automation (2011)
- M Saralloo, M Salman, NE Wu, "Fault diagnosis based on partitioned power system models." Resilience Week (RWS) (2016)
- M Saralloo, NE Wu, "A new pmu placement algorithm to meet a specified synchrophasor availability." Innovative Smart Grid Technologies Conference (ISGT) (2016)
- S Akhlaghi, M Saralloo, A Akhlaghi, A Asghar Ghadimi, "A Novel Hybrid Approach Using SMS and ROCOF for Islanding Detection of Inverter-Based DGs." IEEE Power and Energy Conference at Illinois (PECI) (2017)
- S Akhlaghi, M Saralloo, M Rezaeiahari, H Sangrody, "Study of Sufficient Number of Optimal Tilt Angle Adjustment to Maximize Residential Solar Panels Yield." IEEE Power and Energy Conference at Illinois (PECI) (2017)
- M Salman, M Saralloo, NE Wu, "Performance Analysis of MMF-Based Transmission Network Fault Diagnosis via Randomized Hybrid Simulations." IEEE Power Engineering Society General Meeting (2017)

- Fundamentals of Six-Sigma

Professional Memberships

- Member of the IEEE and its Power & Energy society
- IEEE Eta Kappa Nu (HKN) Electrical Engineering Honor Society

- M Saralloo, S Akhlaghi, M Rezaelahari, H Sangrody, "Residential Solar Panel Performance Improvement based on Optimal Intervals and Optimal Tilt Angle." IEEE Power Engineering Society General Meeting (2017)
- H Sangrody, M Saralloo, S Akhlaghi, M Rezaelahari, E Foruzan, "On the Performance of Forecasting Models in the Presence of Input Uncertainty." North American Power Symposium (NAPS) (2017)
- M Saralloo, NE Wu, "An Algorithm for Resilient Sensor Network Upgrade with Fewest PMUs." Resilience Week (RWS) (2017)
- NE Wu, M Saralloo, M Salman, "An Ellipsoidal Expansion Algorithm for Estimating and Representing Regions of Attraction for Enhanced Resilience of Large Power Systems." Resilience Week (RWS) (2017)
- M Salman, NE Wu, M Saralloo, JS Bay, "Unbalanced Fault Diagnosis in Transmission Networks Using Multiple Model Filters." American Control Conference (ACC) (2018)
- H Sangrody, N Zhou, S Tutun, B Khorramdel, M Motaleb, M Saralloo, "Long term forecasting using machine learning methods." Power and Energy Conference at Illinois (PECI) (2018)
- M Saralloo, NE Wu, JS Bay, "Resilient PMU Network Design in the Face of GPS Spoofing Attacks." IEEE Innovative Smart Grid Technologies Conference (ISGT) (2019)
- M Saralloo, NE Wu, JS Bay, "SA-Based PMU Network Upgrade for Detectability of GPS Spoofing Attacks." IEEE Power Engineering Society General Meeting (2019)
- NE Wu, J Montague, DV Ornam, M Saralloo, JS Bay, "Queueing Network Realization of an Epidemiological Model for Efficient Evaluation of Computer Transmitted Infections." 21st IFAC World Congress 2020
- M Saralloo, NE Wu, "Maximum Tolerance to Load Uncertainty of a Multiple-Model-Based Topology Detector." IEEE Power Engineering Society General Meeting 2020
- M Saralloo, NE Wu, "From Static to Dynamic Observability for a Multiple-Model Filter Based fault Diagnosis Approach." IEEE Power Engineering Society General Meeting 2021

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SIEMENS

PTI Consulting

Kenneth Wilson

Senior Staff Consultant



Career Highlights

Mr. Wilson has worked in the electric utility industry for 40 years performing transmission reliability studies, production cost modeling studies, and frequency response analysis. His experience also includes performing rate studies, load forecasting, operating reserve studies, fault studies, and automatic time error control performance studies, and transmission and generation operating studies. He has negotiated transmission and power sales agreements. Mr. Wilson has extensive experience in power system regulation including writing FERC filings, developing NERC and Regional Reliability Standards, and working on various committees of a state public utility commission and NERC.

Experience

Prior to joining Siemens PTI in 2016, Mr. Wilson was with Western Electricity Coordinating Council (WECC) for over 18 years. There Mr. Wilson worked in performing technical analysis and system evaluation as NERC implemented the Bulk Electric System definition and performing project management in the development of a software tool called the BESnet application. In addition, Mr. Wilson served on WECC's Reliability Subcommittee, the Minimum Operating Reliability Work Group, a number of Regional Reliability Criteria and Standard drafting teams, and the NERC Version 0 Standard Drafting Team, the WECC Technical Studies Subcommittee, and the WECC Reliability Management Task Force. As a member of these groups Mr. Wilson performed technical analysis and studies in Balancing Authority control performance, transmission ratings (both SOL and IROL), generation frequency response, operating reserve requirements, automatic voltage regulator operation, power system stabilizer operation and post transient system analysis.

Prior to WECC, Mr. Wilson worked for two cooperatives where he performed market analysis for generation resources additions (IRPs), power purchase and sale agreements, and high voltage transmission projects including analysis for capacitor and reactor additions. Mr. Wilson performed technical analysis that resulted in the development of retail and wholesale rates (including pro-forma transmission tariffs), transmission projects, and generation capital expenditures. His project management experience includes developing and recommending budgets for system marketing and transmission projects, developing transmission policies, leading a financial team that analyzed debt restructuring including the evaluation of power sales markets, resource and transmission purchase opportunities, and wholesale rate designs. Mr. Wilson has conducted production cost studies, load forecast studies, power flow, transient analysis, post transient analysis, and operating limit transmission studies.

Areas of expertise

- Power System Expansion planning
- Steady State analysis
- Dynamic Simulation study
- Simulation Model development
- Bulk Power system reliability assessment
- Substation Reliability evaluation
- Optimal Thermal unit commitment
- Hydro-thermal scheduling
- Load Forecasting

Education

- Master of Engineering Degree, Electrical Engineering, University of Colorado, Boulder, Colorado, December 1983
- Bachelor of Science Degree, Electrical Engineering, Brigham Young University, Provo, Utah, June 1977, Power System Option

Professional Memberships

- Member of the National Society of Professional Engineers

Publications

1. "BES Inclusion Guideline" approved by WECC, July 16, 2014, (co-authors: Reliability Subcommittee WECC).
2. "Variable Generation Stability Study Results" presented to WECC's Transmission Expansion Planning Policy Committee, July 16, 2013, (co-authors: Reliability Subcommittee WECC).
3. "Consolidation of NERC and Control ACEs -- Using the Same ACE for Control and NERC Reporting," presented FERC in support WECC Project WECC-0068, April 18, 2012, (co-authors: Project WECC-0068 Standard Drafting Team).

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Consultant



Career Highlights

Mr. Oriakhi is skilled in power system modeling and analysis, energy management control/optimization techniques, and embedded systems design and control. His skills include dynamic and electromagnetic transient model development and Python® automation. Prior to joining Siemens PTI, Mr. Oriakhi was with a power flow control technology company, where he performed transmission studies to determine optimal location for device deployment. His work there included power flow, dynamic stability, post-transient, and electromagnetic transient analyses. His experience also includes troubleshooting of power plant equipment, including sensors, transformers, motor control units, and hydraulic and pneumatic system components. Since joining Siemens PTI, Mr. Oriakhi has been performing generator interconnection studies, including steady state and

dynamic analyses.

Experience

Prior to joining Siemens PTI in 2019, Mr. Oriakhi was with Smart Wires Inc. in San Francisco, CA. While there he performed transmission studies on large utility transmission networks in the US and Europe, to determine optimal locations for power flow control device deployment. He developed detailed dynamic and electromagnetic transient models of Smart Wires' devices for use in transmission planning software including PSS®E, PSLF, and MATLAB. He developed Python code for the graphical visualization of unique system characteristics in transmission networks, as well as for the execution of PowerWorld functions needed for performing specialized transmission studies.

Mr. Oriakhi earned his Master of Engineering from the University of California at Berkeley in 2018. His graduate

experience included development of an EV charge station controller that minimized charging cost, while considering the daily electricity price profile and intermittent availability of the EV. Additionally, he employed methods in stochastic dynamic programming with vehicle availability modeled as a Markov decision process.

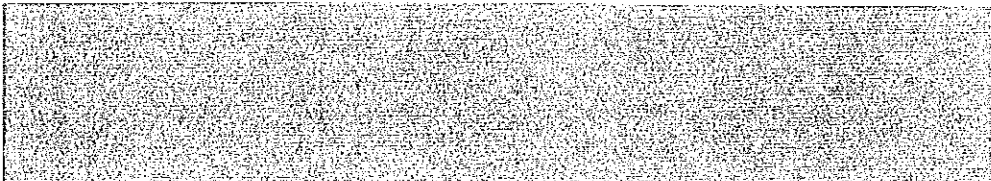
During his undergraduate studies, Mr. Oriakhi designed and implemented an accurate and responsive solar PV tracking system driven by two servo motors and which employed a perturb and observe algorithm for tracking irradiation. He also interned with PHRC Power Plant and Utilities, in Port Harcourt, Nigeria, where he performed troubleshooting of in-field sensors/transmitters, transformers, motors, motor control units, as well as hydraulic and pneumatic system components.

Areas of Expertise

- Power Flow Analysis
- Dynamic Stability Analysis
- Post-Transient Analysis
- Electromagnetic Transient Analysis
- Generator Interconnection Studies
- Energy Management Control/Optimization Techniques
- Embedded Systems Design and Control
- Python Automation

Education

- MEng, Civil Systems Engineering, University of California at Berkeley, Berkeley, CA, 2018
- BEng, Electrical Power Systems Engineering, Federal University of Technology, Owerri, Imo, Nigeria, 2014



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PTI Consulting

Rohit Ramesh Kumar

Consultant



Career Highlights

Mr. Rohit received his bachelor's degree in 2016 from Indian Institute of Technology, Mandi and subsequently worked at a start-up (India) where he led the Power Electronics team. He designed and implemented a working prototype of a single-phase grid tied solar inverter. He came to the US in 2017 to pursue Master's in Power Systems and graduated from Arizona State University in 2020. He completed two internships in the US, one as a Grid Interconnection Engineer at First Solar and the second one as a Research Intern with the Business, Architecture and Technology team at ISO New England.

Experience

Mr. Rohit has a strong Power Electronics background with emphasis on various controller algorithms involved in the inverter block. He has implemented an EMT analysis of a single-phase PV inverter in Simulink and made a working prototype of the entire hardware in a lab. From his two internship tenures, he has gained experience in key areas of

PV plant modelling and controller tuning in PSS®E & PSLF. At ISO New England he learnt how the online stability studies will be implemented in the Bulk Power System and made significant contribution in matching the online stability studies with the conventional results for a set of generators.

Areas of Expertise

- Dynamic Analysis of Power Systems
- Dynamic Simulations
- Controller Tuning
- EMT analysis
- PV plant modelling
- DC-DC converters
- DC-AC inverters

Education

- MSE, Arizona State University, Tempe, AZ, 2020
- BE, Indian Institute of Technology, Mandi, India, 2016



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EXHIBIT "B"
COMPENSATION

Section

7

Pricing

Per the RFP instructions, Siemens PTI presents below our proposed cost for each scenario. These cost estimates are on a fixed price basis for the scope and schedule of the proposed work. However, additional cost may be incurred due to any schedule changes by the City of Riverside or any factors beyond Siemens PTI's control.

Reporting	
Units	TPP BPM Reporting Costs
RERC 1	\$1,715
RERC 2	\$1,715
RERC 3	\$1,715
RERC 4	\$1,715
Springs	\$1,715
CAISO Report Deficiency Resolution	\$7,048
Total (Shall Match Planet Bids Line Items Total)	\$15,624

Scenario 1 – Costs to provide up to 8 tests	
Units	Generator Power Testing, Data Collection, Modeling Costs
RERC 1	\$23,315
RERC 2	\$23,315
RERC 3	\$23,315
RERC 4	\$23,315
Springs	\$93,260
Site Visit	\$9,660
Total (Shall Match Planet Bids Line Items Total)	\$196,180

Scenario 2 – Costs to provide 1 test at each facility	
Units	Generator Power Testing, Data Collection, Modeling Costs
One RERC Unit	\$37,907
Springs	\$37,907
Site Visit	\$3,150
Total (Shall Match Planet Bids Line Items Total)	\$78,964

Scenario 3 – Costs to provide 2 RERC and 1 Springs Test	
Units	Generator Power Testing, Data Collection, Modeling Costs
RERC 1 or RERC 2	\$34,169
RERC 3 or RERC 4	\$34,169
Springs	\$34,169
Site Visit	\$3,255
Total (Shall Match Planet Bids Line Items Total)	\$105,763

EXHIBIT "C"
KEY PERSONNEL

None specified.

**ACKNOWLEDGEMENT OF
APPOINTED SIGNATURE AUTHORITY FROM
SIEMENS INDUSTRY, INC.
SMART INFRASTRUCTURE
DIGITAL GRID BUSINESS UNIT**

- A. Effective the 1st of November, 2020, we, the undersigned, Rafael Ozaki (Head of RC-US SI DG) and Sabrina Wecking, (Senior Director Finance RC-US SI DG) of the Smart Infrastructure, Digital Grid Business Unit of Siemens Industry, Inc. (the "Corporation") a corporation duly organized and existing under the laws of the State of Delaware, by virtue of the authority vested by the Board of Directors and in accordance with the By-Laws of the Corporation and the laws of said State, do hereby acknowledge that the following individuals are hereby authorized to sign or countersign and otherwise execute in the name, or on behalf of the Corporation, any bids, proposals, bonds, releases and waivers of liens, and any certificates, affidavits, or ancillary documents in connection therewith; any licensing qualification or registration filings, returns, certifications or questionnaires; any contracts, leases, agreements, guarantees and any certificates, affidavits, or ancillary documents in connection therewith, up to and including a transactional limit of indicated in the table below; and any releases, compromises or settlements in connection with claims or disputes arising out of any such transaction.

<u>Business Segment</u>	<u>Transaction Limit</u>	<u>Business Operations Position</u>	<u>Finance/Central Support Function Position</u>
Grid Control (GC)	\$2.5M	Randy Horn Head of Segment	Hubert Mensah Segment Controller
Software (SW)	\$1.0M	Ken Geisler Head of Segment	Krishant Sivanesan Segment Controller
Energy Automation (EA)	N/A	Head of RC-US SI DG	Senior Director Finance RC-US SI DG

- B. We further acknowledge that each of the signatures of the persons referred to in paragraph A are binding upon the Corporation.
- D. We further acknowledge that any document shall require the signature of two (2) of the above Authorized Signatories, one each from Business Operations and from Finance/Central Support Functions, whom shall have the requisite signature authority to be legally binding upon the Corporation.
- E. We further acknowledge individuals shall ensure that appropriate processes and reviews of such documents has occurred, including but not limited to, the Company's "Limits of Authority" process.
- F. We further acknowledge that each of the persons referred to in paragraph A herein is authorized to delegate such person's authority hereunder to additional members of his or her management team up to the limit of established therein, **provided that such delegation is in written form signed by the delegator and filed with the Legal Department.**
- G. We further acknowledge that the Secretary or an Assistant Secretary of the Corporation is authorized to issue certifications attesting to the incumbency, authority and status of any of the persons referred to in this resolution.
- H. Those persons who currently hold the positions described hereinabove are as indicated.

IN WITNESS WHEREOF, we have hereunto subscribed our names and affixed the corporate seal of the said Corporation, as of the 1st day of November 2020.



Digitally signed by
Ozaki Rafael da Silva
Date: 2020.11.12
21:03:40 -05'00'

Rafael Ozaki
Head of Business Unit
Siemens Industry, Inc.
Digital Grid

**Wecking
Sabrina**

Digitally signed by Wecking Sabrina
DN: cn=Wecking Sabrina, o=Siemens,
email=sabrina.wecking@siemens.com
Date: 2020.11.12 11:01:04 -0800

Sabrina Wecking
Senior Director Finance
Siemens Industry, Inc.
Digital Grid