Request for Proposal: Controlled System Separation Feasibility Study

I. INTRODUCTION

A. Overview

The New York Independent System Operator ("NYISO") is requesting proposals for professional services from interested firms to perform a study to determine the feasibility of implementing controlled system separation schemes within the New York Control Area ("NYCA"), enhanced through the use of dynamic data sources.

This is an open Request for Proposal ("RFP") and all entities that have suitable qualifications to perform, and are interested in performing, the work described herein are encouraged to respond. Small businesses, minority-owned, and women-owned businesses are encouraged to apply and other businesses submitting a proposal are encouraged to consider responding with a proposal that is joint, in collaboration with small businesses, minority-owned, and women-owned businesses.

This project is funded, in part, with federal grant funding awarded to the NYISO pursuant to the American Recovery and Reinvestment Act of 2009 ("ARRA"). By submitting a proposal in response to this RFP, the bidder affirms that it is ready, willing and at all times able, and that it shall comply with all ARRA requirements.

This RFP should not be interpreted as an offer or a contract (implicit, explicit, or implied) nor does it imply any form of an agreement with bidders. Additionally, the costs of bid preparation are not considered an allowable reimbursable expense under the terms of this RFP. The NYISO is in no way bound, or otherwise committed, to award a contract based on this solicitation. The NYISO reserves the right to amend, withdraw, or cancel this RFP or to reject any and all bids or offers at any time if it is in the NYISO’s best interest to take such action.

Proposals are due by 2 pm prevailing Eastern Time on October 21, 2010.

B. Company Background

The NYISO (www.nyiso.com) is a New York not-for-profit corporation and IRS Section 501(c)(3) tax-exempt corporation established in 1999 to facilitate the restructuring of New York State’s electric industry. Based in New York’s Capital Region, the NYISO administers the State’s wholesale energy, ancillary services, and capacity markets; operates the NYCA bulk electric system; and plans for the future electricity needs of the state.

C. Project Background

Power systems are being operated closer to security limits than before in order to meet the requirements of rapidly growing electricity markets. As a result, there is a higher probability that unexpected tripping of system elements may cause cascading outages or inter-area oscillations in the power system. These conditions could potentially lead to unintentional system separation, creating unsustainable electric islands resulting in large-area power outages.
When system separation is unavoidable, a control system that separates the electric power system in a controlled manner (e.g., performed by automatic separation schemes controllable by the system operator) can generally form electric islands with a better chance of surviving if in each formed island, imbalance of generation and load and instability of generators are avoided. Meanwhile, an under-frequency load shedding (“UFLS”) program can arrest frequency decline within each island.

Recent studies performed by the Northeast Power Coordinating Council (“NPCC”) Working Group on Inter-Area Dynamics Analysis (SS-38) have identified the modifications to the UFLS program required to arrest frequency decline within sub-areas or islands within the NPCC. The concept assumes that the system will form islands automatically, although at present there is no protection system within the NPCC or NYCA that performs controlled separation. The NYISO, in conjunction with the Defensive Strategies Working Group (“DSWG”) of the New York State Reliability Council (“NYSRC”), has been working on ways to mitigate the impact of major disturbances in the NYCA.

Over the next three years, the NYISO will work with New York’s transmission-owning electric utilities (the “New York Transmission Owners”) to deploy a synchronized phasor measurement network to provide the platform for monitoring of dynamic behavior of the New York State Transmission System. The New York Transmission Owners are Central Hudson Gas and Electric Corporation, Consolidated Edison Company of New York, Inc., Long Island Power Authority, National Grid, Power Authority of the State of New York, New York State Electric and Gas Corporation, Orange and Rockland Utilities, Inc., and Rochester Gas and Electric Corporation. The focus of this Controlled System Separation Feasibility Study will be to build upon prior analyses of controlled system separation in the NYCA to determine the feasibility for implementing such protection schemes, enhanced through the network of dynamic data sources being deployed throughout the NYCA.

II. SCOPE OF WORK AND DELIVERABLES

The objective of this project is to assess the feasibility of implementing dynamic data-enhanced controlled system separation schemes for the NYCA.

The vendor will perform both analytical and simulation studies in accordance with the following requirements:

1. Build upon Prior Controlled System Separation Research

   A significant amount of analysis has been conducted in the area of controlled system separation by EPRI, NYISO, NYSRC, and NPCC. The feasibility study conducted through this scope of work should build upon prior work in this domain. The vendor’s review should include, among other documents, existing NYCA defensive strategies and related study results, including, but not limited to, the NYISO and NPCC 2003 blackout study reports as well as meeting materials from the NYSRC DSWG. The NYISO will provide copies of existing NYCA defensive strategies, meeting materials from DSWG, and NPCC 2003 blackout study reports.

   The vendor will analyze system data provided by the NYISO, pursuant to the
confidentiality provisions in the project contract, which data includes, but is not limited to, system power-flow data, dynamic data, a critical contingency list, and security criteria.

The review of dynamic data should provide adequate consideration to existing protective relays at backbone network locations, special protection schemes, and adjustment of the models for the time frame of the study as well as the UFLS program, in order to credibly simulate system behaviors in pre-separation stages and early stages of system separation.

All tools, data, and software used to perform the analyses are subject to the prior approval of the NYISO.

2. Identify Criteria for Triggering System Separation

The vendor will develop criteria and appropriate real-time control/protection algorithm(s) that are able to determine the need for separation and the interface(s) where separation should occur. The developed criteria and algorithm(s) should utilize real-time dynamic data and may be deployed at the control center for the purpose of online oscillation monitoring and enabling/disabling the separation function. The study should consider predetermined “fixed” interfaces and explore the feasibility of determining floating or “adaptive” interfaces so as to minimize loss of load due to generation/load imbalances.

3. Identify Potential Separation Points

The vendor shall identify potential interfaces for system separation. It is expected that coherent generation groups, which can be identified offline, as well as typical power-flow profiles will be utilized. The separation points should provide for the isolation of each coherent generation group while minimizing generation/load imbalance. The power flow profiles considered in the analysis should include a range of demand levels, generation dispatch patterns, import/export scenarios, and other critical system conditions including post-contingency conditions in accordance with NYSRC design criteria contingencies and extreme contingencies. The possibility for “adaptive” separation points should also be considered in the study.

4. Recommend Locations for Dynamic Data Sources

The proposed controlled separation schemes will utilize available sources of dynamic data (e.g., digital recorders, digital fault recorders, digital relays, digital transient recorders, sequence of events recorders, phasor measurement units, etc.) to monitor generator oscillation online and determine the timing of controlled separation. Existing dynamic data sources and those being deployed in the New York transmission system over the next three years through the DOE Smart Grid Investment Grant project will be utilized where possible. The vendor will also perform a study to determine additional locations of dynamic data sources to improve performance of the scheme. The study should also consider locations in systems bordering the NYCA. Existing locations of dynamic data sources within the NYCA will be provided by the NYISO.

5. Identify Timing for Controlled System Separation

Once the need of separation is determined, the timing of separation will be the point in the out of step cycle when the actual command to separate is triggered. The vendor will
develop the criteria for determining the right timing to trigger separation in order to minimize the stresses on the system and minimize the potential for equipment damage. The developed criteria may be embedded into separation devices that are installed at potential separation points and can be coordinated using real-time dynamic data sources. The vendor should also reference NPCC Directory #7, “Special Protection Systems”, and give consideration to coordinating controlled separation with existing special protection systems in NYCA.

6. Coordinate System Separation with UFLS Program and Other Remedial Actions

The vendor, in conjunction with the NYISO project team, will perform a preliminary validation of the proposed controlled separation schemes through scenario analyses, varying system conditions and originating events. Should the controlled separation schemes demonstrate potential for feasible operation, the study will proceed with the additional validation testing outlined below. Should this preliminary validation demonstrate the infeasibility of the controlled system separation schemes, the project team may propose additional developmental work or terminate further work.

The vendor will validate the controlled separation schemes by dynamic simulations and study how to coordinate it with the UFLS program and other remedial actions. The study will focus on separation schemes for two time frames; (i) Historical: August 14, 2003, and (ii) future: 2015. The appropriate dynamic database will be provided by NYISO.

The study should validate the dependability of developed schemes for a variety of other potential major disturbances originating outside of the NYCA. These will include uncleared faults and multiple outages outside all boundaries of the NYCA. This should include sensitivities for pre contingency variations in generation and load.

The study should validate the dependability of the developed schemes for the most severe “beyond triggering criteria events” that may occur within the NYCA, such as the loss of an entire station or right of way.

The study should also validate the operational security of the developed schemes for major “within triggering criteria events” to make sure that separations (misoperations) do not occur for stable situations.

III. DELIVERABLES

Study Report
The vendor shall prepare and deliver to the NYISO a draft Controlled System Separation Feasibility Study Report ("Study Report") that describes (i) the purpose of the study, the approach, and the work performed; (ii) the developed controlled system separation scheme(s); (iii) the manner through which the criteria identified in the Scope of Work were taken into consideration and accommodated; (iv) the recommended locations for dynamic data sources to support the separation scheme(s); and (v) the results of the validation of the separation scheme(s), as prescribed in the Scope of Work.

The NYISO will review the draft Study Report and may recommend changes to the draft Study Report. The vendor shall review and discuss any recommended changes with the NYISO.
vendor shall submit a final version of the Study Report, incorporating the NYISO’s changes, by the agreed-upon date.

All data sets used in analyses conducted through this study and generated by such analyses shall be provided to the NYISO in an electronic format acceptable to the NYISO.

**Training Workshops**

The vendor shall conduct a minimum of three (3) study workshops to explain the findings of its Study Report and facilitate the transfer of the findings to the NYISO and NYISO invitees.

## IV. REQUIRED SUBMISSIONS

The NYISO intends to enter into a contract with only one bidder. Proposals should reflect that any persons or entities with which the winning bidder proposes to collaborate will not be parties to the contract between the NYISO and the winning bidder.

All proposals submitted in response to this RFP must be submitted electronically as a single bid submission and include the following:

1. A company description including the bidder’s relevant experiences and assignments in performing feasibility studies similar to the required services described in this RFP;

2. References, including contact information, from similar past assignments;

3. A summary of the bidder’s understanding of the objectives of the project, a specific, detailed approach for each of the requirements listed in the Scope of Work (referencing by number each of the requirements), the methodology for carrying out the activities and obtaining the expected output, and the level of detail of the expected output;

4. A project work plan setting forth the main activities of the assignment, their content and duration, phasing and interrelations, milestones, and delivery dates of the deliverables. The proposed work plan should be consistent with the technical approach and methodology, and include a full timeline for the whole project indicating when the bidder can begin the project and delivery dates for the deliverables;

5. Bidders should estimate a total budget for the project covering both fees and expenses. Bidders should itemize both (i) fees and expenses, and (ii) time estimates for performing the Scope of Work. The proposed budget for providing these services should include hourly rates, itemized by title, as appropriate. All prices must be valid for the duration of the project. The project budget estimates should be set forth in a separate file, e-mailed with the entire proposal and labeled as “project budget”;

6. Resumes of the personnel who will be assigned to perform the Scope of Work;

7. The results of external quality control reviews;

8. Audited financial data for the last three years, or other reasonable alternatives;

9. A specific description of additional value-added services that the bidder has experience providing during similar assignments;
10. A specific description of work that the bidder, or its subcontractors involved in the proposal, have done or will do for any New York Transmission Owner that could create a conflict of interest and the mechanisms that the bidder would use to mitigate potential conflicts of interest;

11. If utilizing subcontractors, a list of prior experience working with those specific subcontractors;

12. A certification that the bidder and each of the proposed subcontractors, if any, have not been debarred, suspended or are otherwise ineligible for participation in federal assistance programs or activities; and


V. EVALUATION OF SUBMISSION

The NYISO will, at its discretion, award a contract to the bidder whose bid is responsive to the RFP and is most advantageous to the NYISO, including an evaluation of competency and price. The NYISO reserves the right to reject any or all proposals received or waive minor defects, irregularities, or informalities in any or all proposals received.

Minimum Qualifications
All minimum qualifications must be met and demonstrated in order for a proposal to be evaluated. Bidders not meeting and demonstrating compliance with each and every minimum qualification will be eliminated and will not have their proposals evaluated.

- Proposal submitted prior to deadline;
- Proposal responsive to all RFP requirements; and
- Bidder (and any of its subcontractors) have not been suspended or debarred from Federal contracts.

Evaluation Criteria
The NYISO will evaluate each proposal that meets the minimum qualifications based on the following criteria:

- Project team qualifications;
- Client references and past performance;
- Approach to each of the Scope of Work requirements
- Project work plan;
- Timing of delivery of deliverables;
- Extent to which the fee structure, fees and expenses are reasonable, appropriate, and consistent with the Scope of Work, proposed approach, and work plan;
- Creditworthiness of the bidder and any guarantees or other support offered by the bidder to support its creditworthiness;
- Bidder ability to quickly enter into project contract; and
- Participation of small, minority-owned, or women-owned businesses.
VI. CONTRACT AWARD

The form of the project contract to be executed with the vendor is attached as Appendix B. The bidder’s proposal should describe all modifications that the bidder proposes to make to the form project contract. Only those modifications indicated in the bidder’s response to this RFP will be available for discussion or negotiation. The NYISO reserves the right to enter into negotiations with more than one bidder, and to cancel negotiations (and begin discussions with another bidder) if a bidder is unable to enter into the project contract quickly.

VII. INTENT TO BID AND RFP RESPONSE SCHEDULE

1. All recipients of this RFP are requested to return the “Intent to Bid” form, attached as Appendix C, stating their intentions with regards to the RFP. The “Intent to Bid” form should be completed and returned to nyisoprocurement@nyiso.com, by no later than 2 pm Eastern Daylight Time on October 1, 2010.

2. Questions should be e-mailed to nyisoprocurement@nyiso.com by 2 pm Eastern Daylight Time on October 5, 2010.

3. Bidders shall submit proposals by 2 pm Eastern Daylight Time on October 21, 2010 to nyisoprocurement@nyiso.com. No late submissions will be accepted.

VIII. CONTACT INFORMATION

During the RFP process, all correspondence, including general questions regarding the RFP, specific questions pertaining to the form project contract, and the proposal package, should be emailed to:

Marc Rubin
New York Independent System Operator
Email: nyisoprocurement@nyiso.com

All questions and answers will be posted to the NYISO’s website. The NYISO may combine similar inquiries into one question.

We look forward to receiving your bid.

Sincerely,

New York Independent System Operator
Appendix A

Small Businesses, Minority-Owned Firms, and Women’s Business Enterprises

In its effort to use small businesses, minority-owned firms, and women’s business enterprises (SMWBEs), the NYISO encourages these organizations to respond to this RFP and for bidders that do not qualify as one of these organization-types to contact and consider subcontracting with small businesses, minority-owned firms, and women’s business enterprises. The NYISO requires that good faith efforts be taken to consider the use of these organizations. Please initial each of the following statements that represent the efforts your organization has taken to demonstrate its good faith efforts:

________ I/We have delivered appropriate written notice to three available certified SMWBEs for each potential subcontracting or supply category in the Contract and all potential subcontractors or vendors which requested information on the Contract;

________ I/We have made efforts to include SMWBEs in the procurement process and to ensure that businesses are not discriminated against on the basis of race, ethnicity, or gender;

________ I/We have provided all potential subcontractors or vendors with adequate information as to the plans and specifications of this project, information necessary to provide a bid or quote, relevant terms and conditions of any resultant contract, and the last date and time for receipt of price quotations.

________ I/We have actively solicited, through sending letters or initiating personal contact, SMWBEs in all feasible and appropriate categories providing subcontracting opportunities for the contract under consideration.

________ I/We have utilized the services of available community organizations and associations, contractors’ groups, and trade associations known to publicize contracting and procurement opportunities.
Appendix B

Agreement for Smart Grid Grant
Consulting and Technical Services
Appendix C

Intent to Bid Notification Form

INTENT TO BID

October [__], 2010

Marc Rubin
New York Independent System Operator, Inc. (NYISO)
Email: nyisoprocurement@nyiso.com

NYISO RFP - SGIG CONTROLLED SYSTEM SEPARATION FEASIBILITY STUDY

Yes  _________________[Name of Bidder] plans to respond to the referenced RFP by 2:00 PM Eastern Daylight Time on October 21, 2010.

By: ____________________  Date:_______________

No  _________________[Name of Bidder] will not be providing a proposal to the referenced RFP.

By: ____________________  Date:_______________