

**Environmental Monitoring, Evaluation, and Protection (EMEP) Program:
Climate Change Adaptation Research**

**Program Opportunity Notice (PON) 2260
\$3.0 Million Available**

Proposals Due: April 5, 2012 by 5:00 PM Eastern Time*

There is general agreement among the scientific community that anthropogenic activities – primarily the combustion of fossil fuel and deforestation – are changing the global climate. The potential adverse impacts of climate change are significant and far reaching, making climate change a challenging energy-related environmental issue. New York State (NYS) has made a substantial commitment to develop and deploy energy efficient and renewable energy technologies, reduce greenhouse gas (GHG) emissions, and prepare for a changing climate. However, given the potential magnitude of climate change impacts and the complexities associated with implementing multi-disciplinary mitigation and adaptation strategies, many questions and research/information needs exist beyond current technology and policy initiatives.

The NYS Climate Action Plan (CAP) Interim Report (<http://nyclimatechange.us/InterimReport.cfm>) was prepared by state government staff and numerous stakeholders and describes adaptation recommendations for many sectors of the NYS economy, natural ecosystems, and public health. Many of the targeted research areas in this PON were identified during the CAP process.

\$3,000,000 is available through this PON for climate adaptation projects. Individual project awards will not exceed \$300,000. Cost-sharing of at least 25% by proposers is preferred. Leveraging of other research funding is strongly encouraged. In-kind cost-sharing is acceptable.

Proposal Submission: Two (2) compact discs (each including a complete proposal and proposal checklist in PDF format) and one (1) complete paper copy of the proposal with a completed and signed Proposal Checklist attached to the front of the proposal. Proposals must be clearly labeled and submitted to:

Roseanne Viscusi, PON 2260
NYS Energy Research and Development Authority
17 Columbia Circle
Albany, NY 12203-6399

Technical questions regarding this PON should be directed to Amanda Stevens, 518-862-1090 ext. 3325; ads@nyserda.org. For contractual questions, contact Nancy Marucci 518-862-1090 ext. 3335; nsm@nyserda.org.

No communication intended to influence this procurement is permitted except by contacting Amanda Stevens (Designated Contact). Contacting (either directly by a proposer or indirectly through a lobbyist or other person acting on a proposer's behalf) anyone other than this Designated Contact in an attempt to influence the procurement: (1) may result in the proposer being deemed a non-responsible offerer, and (2) may result in the proposer not being awarded a contract.

* **Proposals must be received by NYSERDA on or before 5:00 pm Eastern Time on April 5, 2012.** Late proposals and proposals lacking the appropriate completed and signed Proposal Checklist will be returned. Faxed or e-mailed proposals will not be accepted. Proposals will not be accepted at any other NYSERDA location other than the address above. If changes are made to this PON, notification will be posted on NYSERDA's Web site at www.nyserda.ny.gov.

I. Introduction

Proposals will be considered responsive to this PON if they address important research gaps or information needs related to climate change adaptation in NYS. The targeted research areas identified in this PON were determined through a collaborative process with stakeholders in the NYS CAP and will be given a priority during the evaluation process. Proposers are referred to the NYS CAP Interim Report (<http://nyclimatechange.us/InterimReport.cfm>) for additional information on these research topics. Preferred projects are those that provide data in a form that is usable by policy analysts and policy makers; use research/analytical capabilities in NYS; consist of interdisciplinary teams, including environmental scientists, social scientists, and public policy analysts; and leverage out-of-state, federal, or other resources to address critical environmental issues in NYS. Project Advisory Groups may be established for projects resulting from this PON.

II. Program Requirements - Targeted Research Areas

\$3,000,000 is available for projects. Individual project awards will not exceed \$300,000.

Priority Data Needs or Information Gaps Related to Climate Change Adaptation.

Problem Statement

Climate change adaptation strategies are needed for various sectors of NYS: agriculture, coastal zones, ecosystems, energy/telecommunications, human health, transportation, and water resources. Specific research gaps and information needs were identified during the process of developing adaptation recommendations as part of the NYS CAP process and are identified as priorities for this category of this PON.

Given the potential magnitude of climate change impacts and the complexities associated with implementing multi-disciplinary adaptation policies and strategies, many questions and research or information needs exist beyond those identified in this PON. *Proposals that address other areas of climate change adaptation will also be considered for funding but will not have priority preference, as determined through the proposal evaluation criteria (Section IV).*

Research Focus

Proposed projects should not duplicate regional research already performed but should instead build upon such research and be specific to NYS. Where possible, draw upon recent climate adaptation projects from NYS, including the *ClimAID Integrated Assessment for Effective Climate Change Adaptation in New York State* (<http://www.nyserda.ny.gov/ClimAID>) and the NYS Sea Level Rise Task Force report (www.dec.ny.gov/energy/67778.html).

Proposed projects that focus on one (1) or more of the research needs listed below are preferred. If societal or personal behavior changes will be required to facilitate the proposed research or related adaptation strategy, those changes should be discussed in the proposal.

Agriculture

- A. *Develop new technologies or methods to improve the cooling capacity and efficiency of new and existing livestock facilities in NYS.* Increasing the cooling capacity of livestock facilities is an obvious adaptation strategy to address heat stress in livestock but will bring with it increased expenditures in energy costs. Explore and develop methods to deploy energy-efficient systems in existing facilities and maximize on-farm generation of clean renewable energy to power these systems, as well as guidelines for construction of next generation livestock facilities that integrate energy efficient systems and renewable energy. Provide cost/benefit analyses measured against the potential loss in

milk production due to heat stress.

- B. *Survey existing options and provide cost/benefit analyses for comparison of methods that optimize feed rations to reduce the effects of heat stress on livestock, as well as reduce enteric methane production.* Short-term impacts of heat stress in dairy cows include decreases in feed intake and milk production; long-term effects include higher incidence of lameness and poorer reproductive performance. Modification of feed rations has proved to partially ameliorate heat stress effects in dairy cows. Feed management modifications should take into account current efforts to reduce nitrogen, phosphorus, and enteric methane via the same pathway, to ensure modifications are not at cross purposes. To the extent possible, determine how individual farms may need to evaluate and tailor these changes in feed management to suit their specific needs. Consider development of software that would provide farmers and professional farm planners with a decision-making tool.

Coastal Zones

- A. *Create a Geographic Information Systems (GIS)-based, web-accessible tool for the Hudson estuary (the southern border of Westchester County to the Federal Dam at Troy) to allow government staff and private individuals to generate maps, free of charge, that identify significant natural and infrastructure assets along the shoreline and to facilitate assessment of the vulnerability of these assets and shoreline properties to increased flooding associated with sea level rise and strong storms. The tool must have the following characteristics:*
- Based on Google Maps or other intuitive and publicly accessible interface
 - Based on Digital Elevation Models (DEMs) from Light Detection and Ranging (LiDaR) data provided by the NYS Department of Environmental Conservation (NYSDEC) (1-foot elevation contours for the Hudson River shoreline inland to the 40-foot contour)
 - Must include minimum and maximum sea level rise projections, with and without a rapid ice-melt scenario, as directed by NYSERDA, for the years 2030, 2050, and 2080, and flood-return intervals of 5, 10, 50, 100 and 500 years, including both tributary flooding and storm surge, based on the best and most current information available.

The tool must include the following functionalities:

- Ability for user to overlay existing data layers, including information on infrastructure, natural resources, and socioeconomic data, and the ability for input or upload of local data layers for inclusion in maps and analyses
- Ability for user to download maps created with the tool into an easily accessible format (e.g., jpg, pdf)
- Ability to highlight areas most suitable for tidal wetland migration
- Ability to support evaluation of economic impacts by providing information on value of vulnerable assets and quantification of losses associated with user-selected sea level rise projections
- Ability to produce summary statistics such as damage costs, or number of structures, residents, or critical facilities affected under different storm and sea level rise scenarios
- Ability to list potential adaptation options from a variety of disciplines (engineering, law, land-use planning, etc.) and tailored to specific local conditions (shoreline characteristics, level of urbanization, etc.)

Additional functionalities could include the following:

- Ability to accept uploaded local zoning information and complete a build-out analysis
- Ability to support evaluation of adaptation strategies based on appropriateness or cost effectiveness at specific locations with information on tradeoffs between decisions that protect

natural or human infrastructure, and support comparison of costs and risks among sea level rise and flood scenarios.

In addition, the tool must meet the following criteria:

- The end-products (maps, analysis), source material (data, metadata), and documentation must be made available and downloadable at no cost to the public and to NYS agencies.
- Data must be in a format that can be moved easily among different computing platforms.
- Tool documentation and online help must include plain-language explanations of data limitations and ways the data and the tool should or should not be used.
- Proposals should include a length of time during which the proposer will provide technical support to users of the tool and a long-term plan for maintenance of the tool.

- B. *Apply the Sea Level Affecting Marshes Model (or comparable model) to the entire Long Island South Shore Estuary* to project changes in the boundaries of wetlands and related land categories with sea level rise over the next 100 years. Model runs should include minimum and maximum sea level rise projections, with and without a rapid ice-melt scenario, as directed by NYSERDA, for the years 2030, 2050, and 2080. GIS layers should be created for each projection. Depending on cost and funding availability, the North Shores of Nassau and/or Suffolk Counties may also be funded. Proposals should itemize the budget by region (i.e., Long Island South Shore, North Shore Nassau, North Shore Suffolk).
- C. *Accurately identify the Coastal Erosion Hazard Area (CEHA) lines* in the pilot study areas listed below to allow for effective management of these coastal areas that are subject to coastal storm damage and sea level rise impacts. Historical trends of erosion should be identified; as it is expected these trends will continue to accelerate due to climate change, risk associated with future development in these areas can be minimized.

This project must be executed as a collaborative effort with NYSDEC for all elements of described work. Using Digital Elevation Models (DEMs) and .LAS points from LIDAR provided by NYSDEC (1-foot elevation contours for Long Island), New York City (1-foot elevation contours for New York City) or Federal Emergency Management Agency (FEMA) (2-foot elevation contours for rest of state), identify all natural protective features (NPF) and define their regulatory limits, and identify all existing manmade structures (including erosion-protection structures) and critical infrastructure (e.g., electric, gas, water, transmission/distribution systems, wastewater treatment facilities, rail, piers, etc.). Map products must allow users to distinguish all building footprints (to roughly identify footprint square footage) and NPF characteristics such as vegetation, landward and seaward toe and crest of dune, seaward toe and crest of bluff, beach and mean high water (MHW) line.

The contractor must:

- Create appropriate GIS layers for this information,
- Compile available historical aerial photographs and calculate recession rates as appropriate,
- Determine most landward NPF,
- Based on above data, plot CEHA line in a new GIS layer as defined in 6 NYCRR Part 505,
- Use orthoimagery and field checks to confirm locations of buildings, NPFs and newly plotted CEHA line,
- Assist NYSDEC with public meetings for adoption of the new maps in the communities that are mapped (number of meetings will depend on number of communities that are mapped).

Specific tasks will include:

1. Identify footprints of all existing structures such that each structure's approximate square footage can be identified. Development of inventories of this infrastructure based on existing, publicly available information and potential vulnerabilities to climate change is an important first step to prioritizing protection of existing critical facilities. Place information in a GIS layer.
2. Identify all natural protective features (NPF) as they are defined in 6 NYCRR 505.2, including primary and secondary dunes, bluffs, beaches and nearshore areas. Landward and seaward toes and crests of dunes, seaward toes and crests of bluffs and the mean high water line must be labeled in another GIS layer.
3. Compile available historical aerial imagery and orthoimagery.
4. Calculate shoreline recession rates as appropriate.
5. For areas with an annual shoreline recession rate greater than or equal to 1 foot, identify the structural hazard area (SHA) and label in the GIS layer created for Item #2 above.
6. Determine the most landward NPF.
7. Plot CEHA line in a new GIS layer as defined in 6 NYCRR Part 505.
8. Conduct field checks with NYSDEC personnel to confirm locations of buildings, NPFs and newly identified CEHA line.
9. Geoprocess 400 of the 570 existing CEHA mylar maps.
10. Assist NYSDEC at multiple public meetings by preparing PowerPoint presentations to describe how maps were developed and assisting with responses to questions, both verbally and in writing.

Deliverables will include:

1. Three (3) new GIS layers: structures, NPFs and CEHA line.
2. Copies of historical aerial imagery and orthoimagery used for this project.
3. Calculations for recession rates.
4. 400 Geoprocessed CEHA maps.
5. Attendance at and PowerPoint presentations for each public meeting, including question responses.

Locations for above work in order of priority: (Number of communities mapped will be based on cost/mile to execute described work and availability of funding.)

1. Town of Riverhead, ~ 16 miles
2. Town of Southampton, ~ 14.9 miles
3. Town of Greece, ~ 5.5 miles, includes 1.7 miles of SHA
4. Town of Hamburg, ~ 9.9 miles
5. Village of Asharoken, ~ 3.5 miles
6. County of Richmond, ~15.4 miles
7. Town of Evans, ~ 11.9 miles
8. Town of Wilson, ~ 6.5 miles, includes 6.4 miles of SHA
9. Town of Hamlin, ~ 7.9 miles, includes 6.7 miles of SHA
10. Town of Huntington, ~ 5.6 miles
11. Village of East Hampton, ~ 4 miles
12. Village of Quogue, ~ 2.7 miles
13. City of Glen Cove, ~ 4.5 miles
14. Town of Webster, ~ 13.2 miles, includes 1 mile of SHA

Proposal should include a cost per mile to implement all of the above tasks.

- D. *Assess vulnerability to increased flooding from sea level rise* for the tidally-influenced coast of NYS outside the boundaries of New York City by modeling and mapping the effect of sea level rise on currently mapped floodplains, as shown on FEMA Flood Insurance Rate Maps, for the sea level rise scenarios specified below.

Modeling and mapping will use linear superposition and wave equations to delineate the extent of 100- and 500-year floodplains and Limit of Moderate Wave Action for each sea level rise scenario. The sea level rise scenarios to be used are those adopted by the State Sea Level Rise Task Force, as shown below. A single point within the projected ranges will be selected for each scenario for the modeling and mapping purposes of this project. Depending on cost, a limited number of scenarios may be funded. Consequently, proposals should specify the scenarios included, and budgets should itemize the cost per scenario.

Deliverables will include the following:

1. Maps and associated GIS digital files and depth grids depicting projected extent of 100- and 500-year floodplains and Limit of Moderate Wave Action for each sea level rise scenario.
2. Written report with executive summary, introduction, methods, results, and discussion.

Lower Hudson Valley & Long Island	2020s	2050s	2080s
Sea level rise	2 to 5 in	7 to 12 in	12 to 23 in
Sea level rise with rapid ice melt scenario	5 to 10 in	19 to 29 in	41 to 55 in
Mid-Hudson Valley & Capital Region	2020s	2050s	2080s
Sea level rise	1 to 4 in	5 to 9 in	8 to 18 in
Sea level rise with rapid ice melt scenario	4 to 9 in	17 to 26 in	37 to 50 in

Ecosystems

- A. *Develop a prioritized landscape conservation scheme to enhance climate adaptation for biodiversity in NYS.* One goal in response to a changing climate is to promote the diversity of desirable plants and animals by managing habitats to support shifting ranges, retaining a wide range of habitat types and physical and biological heterogeneity, protecting refugia, preventing establishment of undesirable species, and facilitating adaptation to new conditions. Many visualization and modeling tools exist to support this approach, but synthesizing them into a conceptual framework would enable practitioners to better and more efficiently evaluate options.

A prioritized conservation scheme for climate adaptation in NYS should help answer the following questions:

- Which habitats of NYS are more resilient to climate change?
- Where are potential refugia?
- Will organisms be able to move to and from these places?
- Which areas would contribute to maintaining diversity in light of climate change, and do these areas offer sufficient connectivity for species?

Work should be implemented in three (3) phases to achieve the scheme for adaptation to climate

change. Phase I and Phase II will be used to generate the end product of a climate-change-informed biodiversity conservation strategy in Phase III. Each phase should follow a process that involves definition of objectives, data assembly/creation, layer development, stakeholder involvement, and data dissemination.

Phase I. Create baseline information. This may involve synthesizing existing layers or creating new products that are needed. The objective is to create a clear snapshot of local, regional, and statewide patterns of ecosystem and landscape integrity. This phase should be generalized to include not only wildlife species or plant distributions, but also natural resource features that are key to human needs (surface and ground water resources, agricultural lands, etc.).

Phase II. Adjust the baseline information created in Phase I based on anticipated impacts of climate change. This may include projections about shifts in species due to climate change, but should also consider where and how human populations may shift over the same time span, how demands for water and agricultural resources may change, if and how sea-level rise will impact the region or state, and other key factors.

Phase III. Compare the baseline information generated in Phase I with the climate-change-informed projections generated in Phase II. Evaluate distribution patterns of various species, systems, and meta-communities in order to identify climate-change-induced changes and develop a prioritized conservation scheme for adaptation to climate change in NYS.

In preparing a climate-adapted conservation scheme during Phase III, the impacts of barriers to connectivity and range shifts related to climate change on the long-term viability of key species in NYS should be investigated, and the following questions should be addressed:

- Is there evidence that barriers are negatively impacting species' long-term viability?
- What are the current levels of connectivity among populations, and are they sufficient to maintain viability now and under climate change?
- Is there sufficient connectivity to allow populations to move beyond their existing range?
- What barrier mitigation strategies could be effective in addressing barriers to connectivity in NYS?

Existing projects that could assist in the development of a climate-adapted conservation scheme include the following:

- NYSEDA's "Responding to Climate Change in New York State" (ClimAID) report for detailed spatial climate factors and adaptation recommendations (see: <http://nyserda.ny.gov/Page-Sections/Environmental-Research/EMEP.aspx>)
- Nature Serve vulnerability assessments of >100 species and a modeled statewide diversity layer (New York Natural Heritage), which could be combined into a statewide spatial portfolio of vulnerability
- New York Natural Heritage Program modeling of wildlife habitat connectivity for selected species of conservation need (the "PATHWAYS" project) in the Hudson Valley, in partnership with Cornell University and the NYSDEC Hudson River Estuary Program
- The Nature Conservancy work with partners in the Adirondacks and Tug Hill regions to spatially predict climate change resilience based largely on physical heterogeneity and connectivity
- Connectivity models from multiple projects, including those used in the new state forest management plan
- Statewide freshwater blueprint being developed by The Nature Conservancy and New York Natural Heritage
- Projects funded by the US Fish and Wildlife Service (USFWS) Landscape Conservation Cooperatives to conduct species vulnerability assessments, classify land and water habitats,

and map climate-related connectivity at the Northeast, Appalachian, and Great Lakes regional scales

Energy/Telecommunications

- A. *Develop effective protocols and procedures or a software tool for considering climate change-related risks in decisions to locate, design, and build energy infrastructure*, both to maintain the reliability of existing systems and to meet the future energy needs. Work with industry organizations to survey and assess existing best practices employed by utilities, regulators, and independent power producers regionally, nationally, and internationally for improving resilience to climate change. This evaluation process would examine the appropriateness of strategies and techniques for particular regions in NYS.
- B. *Assess the co-dependency between the telecommunications and energy sectors*, with respect to climate-related vulnerabilities, to help ensure that critical operational elements are not lost due to the interdependency of the systems. Provide recommendations for development and expansion of alternative communication technologies if they promise to increase redundancy and/or reliability, including free-space optics (which transmits data with light rather than physical connections), power line communications (which transmits data over electric power lines), and satellite phones.

Human Health

- A. *Assess the adequacy of existing heat warning systems and potential "cooling center" programs in NYS* to address heat-related health concerns and determine the needs for improving heat warning systems and siting additional cooling centers. Cooling centers can be an essential means of helping people, especially in urban areas, to avoid the possible consequences of extreme heat. Information on the need for additional cooling centers in NYS, how to optimally site the centers, how to provide means for people to access the centers, and how to effectively communicate the health implications of excessive heat and encourage people to use the centers can help to make cooling center programs effective in protecting people's health. The assessment should consider the efficacy of the programs under current climate conditions as well as under the projected climate changes that are likely to occur in the future.
- B. *Identify populations vulnerable to climate variables* (by gender, age, race/ethnicity, income, urban/rural residence, family structure, housing type, educational level and geographic area) using existing information and data for respiratory, cardiovascular, renal, heat-related, cold-related, vector-borne, food-borne, and water-borne diseases in NYS. The NYS Department of Health (NYSDOH) is currently identifying climate thresholds of significance to public health. Assessments should coordinate with relevant NYSDOH efforts, and include the following:
 - Statewide mapping of areas projected to exceed health-related thresholds of climate hazards.
 - Identification and mapping of populations vulnerable to health-related climate hazards
 - Descriptions of regional and urban/rural differences that could assist with establishing a risk assessment framework to identify and prioritize vulnerable areas for adaptation planning.

Transportation

- A. *Model the projected percent increase in rainfall intensity for the 1.5-year, 5-year, 10-year, 50-year, and 100-year 24-hour storm events in different regions of NYS to inform the design of drainage and bridge infrastructure.* In their design of drainage and bridge infrastructure, the NYS Department of Transportation (NYSDOT), NYS Metropolitan Transportation Authority (MTA), Port Authority of New York and New Jersey (PANYNJ), and other transportation entities typically use intensity-duration-frequency (IDF) curves and the 5-, 10-, 50- and 100-year 24-hour storm events. This information allows transportation design engineers to better calculate appropriate design flows for given structures and provide these with a longer service life. For example, drainage and culverts are designed for a service life of 50 years, bridges for 75-100 years; design must incorporate predictive precipitation modeling to properly size culvert and bridge openings to accommodate increased flows and assure adequate service life for transportation drainage and bridge investments.

To date, this information is based on data derived prior to the 1970s, which do not account for climate change. The ClimAID Assessment projects that intense precipitation events (i.e., days with rainfall exceeding 1 inch) in NYS are likely to become more frequent with climate change (www.nyserda.ny.gov/en/Publications/Research-and-Development/Environmental/EMEP-Publications/EMEP-Final-Reports.aspx). Climate change projections for intense precipitation are commonly stated as a range of days for which intense precipitation would increase. The current format of engineering applications must be considered for projections to be incorporated into design criteria.

Research projects should model the projected percent increase in rainfall intensity for the 1.5-year, 5-year, 10-year, 50-year, and 100-year 24-hour storm events in multiple regions of NYS (see, for example, the seven ClimAID regions) for the projected years of 2030, 2050, and 2080. Models should be based on observed data and trends of the last 30 years and incorporate projections under three (3) emission scenarios (e.g., IPCC B1, A1B, and A2 low, medium, and high scenarios). Projects should build upon and not duplicate previous projects. A characterization of uncertainties associated with the downscaling to NYS should be included.

Water Resources

- A. *Determine the effects of projected air and water temperature increases on drinking water quality, drinking water quantity, and water treatment plant operations throughout NYS, based on the most up-to-date climate projections for the state.* This could include a retrospective evaluation of a number of water supplies during warmer and cooler periods of the year to examine differences in relevant parameters associated with temperature differences (e.g., source water quality, treatment plant operations, and distribution of water); comparison of water quality in source water, treatment plant finished water, and distributed water for parameters including, but not limited to, temperature, pH, harmful algae, protozoans, algal toxins, disinfection by-products (DBP), and DBP precursors; evaluation of the treatment costs associated with potential differences in treatment chemicals needed, filter media and power needed for filtration treatment due to warmer temperatures; surveillance of health outcomes in the communities served by these water supplies and effects on aquatic organisms in the context of the changes in water quality.

Any such project should leverage existing work by the Centers for Disease Control and other ongoing work. Uses for the research results would include enhancing existing water quality monitoring efforts and capacity, providing information to assess the costs associated with providing a safe water supply in a warmer environment, and helping water suppliers plan for climate change.

III. Proposal Requirements

Proposals should follow the format below and provide sufficient and succinct information to complete the required descriptions and answer the questions described in the Proposal Evaluation criteria listed in Section IV. The preferred length of each proposal section is shown. **Proposals longer than 15 pages** (not including the Checklist Cover Sheet, Contract Pricing Proposal Forms, one-page letters of commitment, resumes, and other required forms), or using a font smaller than 11 point, may be rejected. The entire proposal should not be excessively long or submitted in an elaborate format, such as including expensive binders or graphics. Unnecessary attachments beyond those sufficient to present a complete, comprehensive, and effective response will not influence the evaluation of the proposal. Each page of the proposal should state the name of the proposer, "PON 2260," and the page number. **Proposers may contact Amanda Stevens, 518-862-1090 ext. 3325 before preparing a proposal to discuss PON goals and proposal requirements.**

Proposals must be received by NYSERDA on or before 5:00 pm Eastern Time on April 5, 2012.

Proposers must submit one (1) electronic copy of the proposal on a standard compact disc and two (2) double-sided paper copies of the proposal. The electronic copy must be in pdf format and must be the exact scanned image of the paper copy, including all relevant forms and signatures. Proposals must be clearly labeled and submitted to Roseanne Viscusi at the address indicated on the first page of this PON. A completed and signed Proposal Checklist must be attached as the front cover of your proposal; one (1) copy of the proposal must contain an original signature. **Late proposals and proposals lacking the appropriate completed and signed Proposal Checklist will be disqualified.** Faxed or e-mailed copies will not be accepted.

Proposals must include:

A. Proposal Checklist Cover Sheet - A signed and completed Proposal Checklist must be attached to the front of the proposal. **Proposals lacking the appropriate completed and signed Proposal Checklist will be returned.**

B. Abstract - Summarize the proposed project and the proposed methods for conducting the project.

C. Usefulness and Value of Project Results - Identify the project goals and major objectives. Explain how the project results will address in a timely manner a targeted research area or another climate change adaptation issue important to NYS. **Maximum coordination with other national and state environmental research/monitoring initiatives is desirable. Explain how the project will make use of other relevant data and coordinate with other research initiatives, where possible, to provide maximum value to NYS.**

D. Soundness of Project Methods - Describe the proposed project methods and overall research design. Briefly explain why the equipment, models, methods, and other aspects of the work are expected to meet objectives. Describe the extent to which chosen methods have been accepted by policy-making organizations, or otherwise demonstrated to be valid.

E. Statement of Work and Schedule - The Statement of Work is the primary contractual document that identifies the work to be performed and outcome to be produced and provides the basis for NYSERDA payment. It is an action document that specifically delineates each step or procedure required to accomplish the project objectives. Therefore, each action should be identified with a description of its objective, who will perform it, how it will be performed, and the anticipated product outcomes.

Task Objectives, Methods, and Deliverables - Proposed Statement of Work tasks should identify specific objectives, methods, and quantifiable and measurable targets that define success of each task and that can be evaluated at project completion. The task descriptions should identify the persons responsible for completing each task and the methods to be used. In addition, include a brief description of general operating procedures, quality control and quality assurance measures, analytical procedures, and statistical analyses to be employed to optimize the quality of the data and project results.

Technology Transfer Plan - Include a task for reporting and information transfer. The following baseline reporting and information transfer work will be required for each project and should be considered in allocating resources for this task:

Baseline reporting and information transfer shall be accomplished through presentations and submission of monthly or quarterly progress reports, a final technical report, and an article for a peer-reviewed journal. (The format of the final report will be determined with concurrence of the NYSERDA project manager.) Principal investigators are strongly encouraged to use a technical editor for all final documents. If requested by NYSERDA, findings to date shall be presented to the Environmental Monitoring, Evaluation, and Protection (EMEP) Program Advisory Group and invited guests at meetings arranged by NYSERDA staff in Albany, NY. Electronic access to project data shall also be provided after appropriate quality assurance.

Additional methods of information transfer and reporting may be proposed for involving pertinent policy makers or regulators and other target audience representatives during the project, and for using the anticipated project results to achieve projected public benefits.

Master Schedule - Complete a schedule showing all major tasks' starting and completion times, in terms of months following project initiation. The schedule should include major milestones and meetings, tests, demonstrations, reports, and other key deliverables.

F. Management Plan and Qualifications

Organizational Chart - Prepare an organizational chart listing all key personnel. Include any subcontractors and other sponsors involved in the project, showing their roles and responsibilities.

Tasking Chart - Prepare a tasking chart, setting forth approximately (in hours or days), the amount of time contributed by each of the key personnel to each task and to the total effort.

Resumes - Identify key project personnel. Submit relevant portions of resumes for all key project personnel, including those of proposed subcontractors. Include education and experience that are relevant to the proposed work.

Related Projects - List related projects that have been undertaken by the proposer and/or subcontractors. For each project, provide a brief summary describing the project's title, scope, funding amount and client contact numbers. NYSERDA may contact listed clients. **(One (1) page)**

G. Contract Pricing Proposal Form - Complete the attached Contract Pricing Proposal Form for the entire project, including any in-kind contributions and other cost-sharing. **The degree of cost-sharing will be considered in the evaluation of proposals.** Cost-sharing of at least 25% is desirable. Leveraging of other research funding is preferable. In-kind cost-sharing is acceptable.

Cost-Sharing - While cost-sharing is not required, a cost-share of at least 25% of the total project cost is preferred. Cost-sharing can be from the proposer, other team members, and other government or private sources. Contributions of direct labor (for which the laborer is paid as an

employee) and purchased materials may be considered "cash" contributions. Unpaid labor, indirect labor, or other general overhead may be considered "in-kind" contributions. NYSERDA will not pay for efforts which have already been undertaken. The proposer or proposing team cannot claim as cost-share any expenses that have already been incurred. If applicable, show the cost-sharing plan in the following format (expand table as needed):

	Cash	In-Kind Contribution	Total
NYSERDA	\$	\$	\$
Proposer	\$	\$	\$
Others (list individually)	\$	\$	\$
Total	\$	\$	\$

Attach supporting documentation to support any indirect (overhead) cost rate(s) included in your proposal as follows:

Describe the basis for the rates proposed (e.g., based on prior-period actual results; based on projections; based on federal government or other independently approved rates).

If rate(s) is approved by an independent organization, such as the federal government, provide a copy of such approval.

If rate(s) is based on estimated costs or prior-period actual results, include calculations to support proposed rate(s). Calculation should provide enough information for NYSERDA to evaluate and confirm that the rate(s) is consistent with generally accepted accounting principles for indirect costs.

NYSERDA reserves the right to audit any indirect rate presented in the proposal and to make adjustment for such difference. Requests for financial statements or other needed financial information may be made if deemed necessary.

H. Letters of Commitment or Support - If you are relying on other organizations or businesses to do work, provide services, data, or equipment, or share in the non-NYSERDA cost, include a letter from those organizations or businesses describing their commitment. **Absence of letters of commitment or support will be interpreted as the proposer lacking those parties' commitment and support.**

I. Procurement Lobbying Requirements - State Finance Law sections 139-j and 139-k
Procurement lobbying requirements contained in State Finance Law sections 139-j and 139-k became effective on January 1, 2006. (Text of the laws is available at: <http://www.ogs.state.ny.us/aboutogs/regulations/advisoryCouncil/StatutoryReferences.html>). In compliance with §139-j and §139-k of the State Finance Law, for proposals submitted in response to this PON that could result in agreements with an annual estimated value in excess of \$15,000, the following additional forms must be completed and filed with proposals: (1) a signed copy of the Proposal Checklist including required certifications under the State Finance Law and (2) a completed Disclosure of Prior Findings of Non-Responsibility form. Failure to include a signed copy of the Proposal Checklist referenced in this PON will disqualify your proposal.

IV. Proposal Evaluation

Proposals that meet Proposal requirements will be reviewed by a Technical Evaluation Panel (TEP) using the Evaluation Criteria below.

A. Technical Evaluation Criteria (listed in order of importance)

Usefulness and Value of Project Results - Does the proposal address one of the Targeted Research areas? How useful would the project results be in validating policies, regulations,

impact assessments, models, or climate change adaptation in NYS? Will the results be available in a timely manner? How well would the project use and integrate other relevant data and coordinate with other research initiatives to provide maximum value to NYS?

Soundness of Project Methods and Research Design /Statement of Work and Schedule -

How suitable are the proposed project methods and overall research design for meeting the project objectives and yielding accepted results? How comprehensive, realistic, and explicit is the Statement of Work with respect to the project objectives and proposal requirements? Are specific measurable targets of success provided where applicable?

Management Plan and Qualifications - How well has the proposer organized a management plan and a project team with the necessary educational, technical, operations, technology transfer, financing, and administrative experience for successfully completing the project? Does the team include partnerships with other research groups? Has the proposer assembled an interdisciplinary team, including environmental scientists, social scientists/public policy analysts, and technologists, as appropriate? How many of the team members are located in NYS?

Communication of Results – Does the reporting and information transfer plan promise to use project results to realize the potential benefits of the project? Has the proposer included review of the draft final report by a technical editor?

Cost Criteria - How justifiable and reasonable are the overall costs compared to the expected usefulness of the project results and the level of effort and duration of the project? How justified and reasonable are the proposer's cost allocations and co-funding contributions (cash, in-kind services, etc.)? To what degree does the proposal include meaningful cost-sharing from other key organizations important for the success of the project?

B. Other Considerations - Projects will be reviewed to determine whether they complement the overall objectives of the **New York Energy \$martSM EMEP** Program and NYSERDA.

We will consider:

- The balance among projects of long- and short-term benefits and risk/reward relationships, and whether similar projects are presently or have been previously funded.
- The general distribution of projects of diverse topics related to program goals.
- The ways in which the proposed project fits with currently funded projects.
- The ease of measuring project success in quantifiable ways.

V. General Conditions

Proprietary Information - Careful consideration should be given before confidential information is submitted to NYSERDA as part of your proposal. Review should include whether it is critical for evaluating a proposal, and whether general, non-confidential information, may be adequate for review purposes. The NYS Freedom of Information Law, Public Officers law, Article 6, provides for public access to information NYSERDA possesses. Public Officers Law, Section 87(2)(d) provides for exceptions to disclosure for records or portions thereof that "are trade secrets or are submitted to an agency by a commercial enterprise or derived from information obtained from a commercial enterprise and which if disclosed would cause substantial injury to the competitive position of the subject enterprise." Information submitted to NYSERDA that the proposer wishes to have treated as proprietary, and confidential trade secret information, should be identified and labeled "Confidential" or "Proprietary" on each page at the time of disclosure. This information should include a written request to accept it from disclosure, including a written statement of the reasons why the information should be excepted. See

Public Officers Law, Section 89(5) and the procedures set forth in 21 NYCRR Part 501 <http://nyserda.ny.gov/~media/Files/About/Contact/NYSERDARegulations.ashx>. However, NYSERDA cannot guarantee the confidentiality of any information submitted.

Omnibus Procurement Act of 1992 - It is the policy of NYS to maximize opportunities for the participation of NYS business enterprises, including minority- and women-owned business enterprises, as bidders, subcontractors, and suppliers on its procurement Agreements.

Information on the availability of NYS subcontractors and suppliers is available from:

Empire State Development
Division For Small Business
30 South Pearl Street
Albany, NY 12245

A directory of certified minority- and women-owned business enterprises is available from:

Empire State Development
Minority and Women's Business Development Division
30 South Pearl Street
Albany, NY 12245

State Finance Law sections 139-j and 139-k - NYSERDA is required to comply with State Finance Law sections 139-j and 139-k. These provisions contain procurement lobbying requirements which can be found at <http://www.ogs.ny.gov/aboutogs/regulations/advisoryCouncil/StatutoryReferences.html>. The attached Proposal Checklist calls for a signature certifying that the proposer will comply with State Finance Law sections 139-j and 139-k and the Disclosure of Prior Findings of Non-responsibility form includes a disclosure statement regarding whether the proposer has been found non-responsible under section 139-j of the State Finance Law within the previous four (4) years.

Tax Law Section 5-a - NYSERDA is required to comply with the provisions of Tax Law Section 5-a, which requires a prospective Contractor, prior to entering an agreement with NYSERDA having a value in excess of \$100,000, to certify to the Department of Taxation and Finance (the "Department") whether the Contractor, its affiliates, its subcontractors and the affiliates of its subcontractors have registered with the Department to collect NYS and local sales and compensating use taxes. The Department has created a form to allow a prospective Contractor to readily make such certification. See, ST-220-TD (available at http://www.tax.ny.gov/pdf/current_forms/st/st220td_fill_in.pdf).

Prior to contracting with NYSERDA, the prospective Contractor must also certify to NYSERDA whether it has filed such certification with the Department. The Department has created a second form that must be completed by a prospective Contractor prior to contacting and filed with NYSERDA. See, ST-220-CA (available at http://www.tax.ny.gov/pdf/2006/killin/st/st220ca_606_fill_in.pdf). The Department has developed guidance for Contractors which is available at <http://www.tax.ny.gov/pdf/publications/sales/pub223.pdf>.

Contract Award - NYSERDA anticipates making multiple awards under this PON. It may award a contract based on initial applications without discussion, or following limited discussion or negotiations. Each offer should be submitted using the most favorable cost and technical terms. NYSERDA may request additional data or material to support applications. NYSERDA will use the Sample Agreement to contract successful proposals. NYSERDA expects to notify proposers in approximately eight (8) weeks from the proposal due date whether or not the proposal has been selected to receive an award.

Annual Metrics Reports - On an annual basis, the Contractor shall submit, to NYSERDA's Project Manager, a prepared analysis and summary of metrics addressing the anticipated energy, environmental and economic benefits that are realized by the project. All estimates shall reference credible sources and estimating procedures, and all assumptions shall be documented. Reporting shall commence the first calendar year after the contract was executed. Reports shall be submitted by January 31st for the previous calendar years activities (i.e. reporting period). Please see Attachment E: Sample Metrics Reporting Guides for the metrics that you will be expected to provide and the reporting duration.

Limitation - This PON does not commit NYSERDA to award a contract, pay any costs incurred in preparing a proposal, or to procure or contract for services or supplies. NYSERDA reserves the right to accept or reject any or all proposals received, to negotiate with all qualified sources, or to cancel in part or in its entirety the PON when it is in NYSERDA's best interest.

Disclosure Requirement - The proposer shall disclose any indictment for any alleged felony, or any conviction for a felony within the past five (5) years, under the laws of the US or any state or territory of the US, and shall describe circumstances for each. When a proposer is an association, partnership, corporation, or other organization, this disclosure requirement includes the organization and its officers, partners, and directors or members of any similarly governing body. If an indictment or conviction should come to the attention of NYSERDA after the award of a contract, NYSERDA may exercise its stop-work right pending further investigation, or terminate the agreement; the Contractor may be subject to penalties for violation of any law which may apply in the particular circumstances. Proposers must also disclose if they have ever been debarred or suspended by any agency of the US Government or the NYS Department of Labor.

VI. Attachments:

- A. Proposal Checklist
- B. Disclosure of Prior Findings of Non-responsibility Form
- C. Contract Pricing Proposal Form and Instructions
- D. Sample Agreement
- E. Sample Metrics Reporting Guide