New York Energy Policy Institute Project

Final Report 09-01
April 2009

New York State Energy Research and Development Authority

NYSERDA

NYSERDA New York State Energy Research and Development Authority

The New York State Energy Research and Development Authority (NYSERDA) is a public benefit corporation created in 1975 by the New York State Legislature.

NYSERDA derives its revenues from an annual assessment levied against sales by New York's electric and gas utilities, from public benefit charges paid by New York rate payers, from voluntary annual contributions by the New York Power Authority and the Long Island Power Authority, and from limited corporate funds.

NYSERDA works with businesses, schools, and municipalities to identify existing technologies and equipment to reduce their energy costs. Its responsibilities include:

- Conducting a multifaceted energy and environmental research and development program to meet New York State's diverse economic needs.
- The **New York Energy $mart**[SM] program provides energy efficiency services, including those directed at the low-income sector, research and development, and environmental protection activities.
- Making energy more affordable for residential and low-income households.
- Helping industries, schools, hospitals, municipalities, not-for-profits, and the residential sector, implement energy-efficiency measures. NYSERDA research projects help the State's businesses and municipalities with their energy and environmental problems.
- Providing objective, credible, and useful energy analysis and planning to guide decisions made by major energy stakeholders in the private and public sectors.
- Since 1990, NYSERDA has developed and brought into use successful innovative, energy-efficient, and environmentally beneficial products, processes, and services.
- Managing the Western New York Nuclear Service Center at West Valley, including: overseeing the State's interests and share of costs at the West Valley Demonstration Project, a federal/State radioactive waste clean-up effort, and managing wastes and maintaining facilities at the shut-down State-Licensed Disposal Area.
- Coordinating the State's activities on energy emergencies and nuclear regulatory matters, and monitoring low-level radioactive waste generation and management in the State.
- Financing energy-related projects, reducing costs for ratepayers.

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New York Energy Policy Institute Project

Final Report

Prepared for

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Energy Research and Development Authority
and
The New York State
Department of Public Service

Albany, NY

Prepared by

James J. Winebrake, PhD
Francis J. Murray, Jr., Esq.
Erin H. Green

Agreement No. 10754

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ABSTRACT

This report explores the establishment of a New York Energy Policy Institute (NYEPI) designed to bring together the knowledge-base and expertise found at New York's public and private institutions of higher education to provide analysis, insights, and guidance to State decision makers on important energy technology and policy issues. This report contains three key elements: (1) a directory of institutions and faculty conducting energy-related research in New York State; (2) an analysis of existing state and federal models that involve the use of academicians to support energy and environmental policy decision making; and, (3) recommendations for establishing an entity such as NYEPI in New York State.

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EXECUTIVE SUMMARY

New York is fortunate to have an impressive set of academic institutions within its borders. Located at these institutions are many faculty members conducting research on issues related to energy technology and policy. These academics span multiple disciplines, including engineering, economics, public policy, environmental science, applied technology, law, business, and sociology. Yet, despite this extensive academic expertise on energy issues, there is currently no coordinated way for State policymakers to tap into this knowledge base and extract information that might assist in decision making.

This project explores one approach to solving this problem: the establishment of the New York Energy Policy Institute (NYEPI). NYEPI aims to bring together the knowledge base and expertise found at New York's public and private institutions of higher education to provide analysis, insights, and guidance to State decision makers on important energy technology and policy issues.

The public benefits of an institute such as NYEPI are many. NYEPI will provide New York with access to a collection of experts spanning a multitude of fields related to energy technology and policy. These experts can offer New York decision makers objective analyses and expertise that would be difficult to achieve with existing private sector, government, or industry groups. By acting as a clearinghouse for state-of-the-art information and analysis on energy technologies and policies, NYEPI will assist in keeping New York decision makers well-informed on the most cutting edge aspects of energy technology and policy.

NYEPI will also complement many of the existing New York State initiatives related to energy and environmental research, including the work being supported by NYSERDA, NYDPS, and NYSTAR, among others. With NYEPI, New York State can potentially set the standard on how states can incorporate the collective resources of their higher education institutions in formulating energy policy that addresses important state-wide issues.

This report summarizes the approach and findings of the NYEPI project, which explored the opportunity, feasibility and possible structure and scope of NYEPI to support the mission and energy policy goals of New York State. This report is divided into several sections. Section 1 presents a directory of institutions and faculty conducting energy-related research in the state. Section 2 examines selective existing state and federal models of entities with goals similar to NYEPI, and the applicability of these models to the needs of New York State energy policy making. Section 3 of this document provides recommendations and discussions for next steps in development of NYEPI.

1 INVENTORY OF ENERGY RESEARCH AT NEW YORK INSTITUTIONS OF HIGHER LEARNING

1.1 Purpose

This section describes the outcomes and findings of the New York Energy Policy Institute (NYEPI) Project Task 1—*Identification and characterization of higher education energy knowledge base in New York State.* Task 1 involved developing an inventory of New York higher education institutions and faculty involved in energy related research and development — including policy, technology, training, and education.

1.2 New York Directory of Energy Research in Higher Education

The primary outcome of Task 1 is the New York Directory of Energy Research in Higher Education (the "Directory"), which includes academic institutions, centers, and faculty involved in energy research. The Directory details center objectives and faculty areas of expertise, and provides contact information to facilitate direct communication between New York decision-makers and academic experts conducting research on energy policy and technologies. The Directory was developed following an extensive search of energy-related research and programs in New York State. The intent is a comprehensive Directory; however considering the wealth of New York's academic resources and the increasing interest in energy issues, we may have neglected to include some faculty and/or programs. Such omissions are entirely unintentional, and serve to emphasize the importance of regularly updating the directory to reflect changes in faculty and programs.

1.2.1 Directory Description

The Directory includes eighteen (18) research centers, several energy-related groups and programs, and over 170 faculty members involved in energy policy or technology research. The Directory is available both in hard copy and electronically (via an Microsoft Excel file); an example set of information is shown in Figure 1.

The Directory contains the following information (letters denote column labels in the MS Excel File):

A. University: Name of university where center/faculty member is located;

B. Center/Department/Program: Name of center, department, or program with which faculty member is associated;

C. Faculty Name: Name of faculty member conducting research (or name of center if row is describing center mission and activities);

D. Title: Title of faculty member when relevant (e.g. Director of Center);

E. Research/Expertise: Description of areas of expertise and research conducted by faculty member or center;

F. Research Type: Type of research/program conducted: policy, technology research & development, energy technology training, or public education;

G. Website: Website providing more information related to center or faculty member;

H. Email: Email address for center/faculty member; and,

I. Phone: Telephone number for center/faculty member.

March 2009Figure 1: New York Directory of Energy Research in Higher Education

	A	B	C	D	E	F	G	H	I
1	University	Center/Department/Program	Faculty Name	Title	Research/Expertise	Research Type	Website	Email	Phone
2									
3	Columbia University	Center for Energy, Marine Tr	Center		CEMTPP performs po	Policy	http://www.cem	energy@columbia.ed	
4	Columbia University	Center for Energy, Marine Transpor	Albert Bressand, PhD	Executive Directo	Energy Policy, markets	Policy	http://www.sipa.co	ab2816@columbia.ed	212-854-7546
5	Columbia University	Center for Energy, Marine Transpor	David Nissen, PhD	Director, Program	Economics of Energy; Inter	Policy	http://www.sipa.co	dn2022@columbia.e	212-854-0604
6	Columbia University	Center for Energy, Marine Transpor	Stephen A. Hammer, PhD	Director, Urban Er	Urban Energy Systems and I	Policy	http://energy.sipa.	sh2185@columbia.ed	212-854-3940
7	Columbia University	Center for Energy, Marine Transpor	Deborah Bleviss		Energy Policy	Policy	http://www.sipa.co	db2558@columbia.e	212-854-3213
8	Columbia University	Center for Energy, Marine Transpor	Louise Burke		Petroleum Markets and Tra	Policy	http://www.sipa.co	lb2556@columbia.ed	212-854-3213
9	Columbia University	Center for Energy, Marine Transpor	AJ Goulding		Electricity Markets	Policy	http://www.sipa.co	ag200@columbia.ed	212-854-3213
10	Columbia University	Center for Energy, Marine Transpor	Antoine M. Halff		Geopolitics of Energy	Policy	http://www.sipa.co	amh140@columbia.e	212-854-3213
11	Columbia University	Center for Energy, Marine Transpor	Adam Hinge		Urban Energy Program	Policy	http://www.cemtpp.org/		
12	Columbia University	Center for Energy, Marine Transpor	Irene King		Petroleum Markets	Policy	http://www.sipa.co	ik2128@columbia.ed	212-854-3213
13	Columbia University	Center for Energy, Marine Transpor	Phillip LaRocco		Energy and Economic Deve	Policy	http://www.sipa.co	pjl2009@columbia.e	212-854-3213
14	Columbia University	Center for Energy, Marine Transpor	Ellen Morris, PhD		Energy and Economic Deve	Policy	http://www.columb	efm2110@columbia.e	212-854-4552
15	Columbia University	Center for Energy, Marine Transpor	Shirley J. Neff		Energy Policy	Policy	http://www.sipa.co	sn2169@columbia.ed	212-854-0604
16	Columbia University	Center for Energy, Marine Transpor	Roy Nersesian		Energy; Marine Transport E	Policy	http://www.sipa.co	rln39@columbia.edu	212-854-0604
17	Columbia University	Center for Energy, Marine Transpor	Neil Quartaro, Esq		Marine Law and Policy	Policy	http://www.sipa.co	nq2114@columbia.ed	212-854-3213
18	Columbia University	Center for Energy, Marine Transpor	Adam L. Shrier		Geopolitics of Energy	Policy	http://www.sipa.co	as2750@columbia.e	212-854-3213
19	Columbia University	Center for Energy, Marine Transpor	Klaus Lackner, PhD		Alternative Energy Resourc	Policy	http://www.seas.co	kl2010@columbia.edu	212-854-0304
20	Columbia University	Center for Energy, Marine Transpor	David Walker, PhD		Earth & Environmental Scie	Policy	https://webcenter.	DWALKER@LDEO.C	845-365-8658
21									
22	Cornell University	Climate Change, Economics,	Group		Energy policy-related r	Policy	http://www.geo.cornell.edu/easte		
23	Cornell University	Climate Change, Economics, and F	Antonio Bento, PhD		Environmental Economics,	Policy	http://aem.cornell.	amb396@cornell.edu	607-255-0626
24	Cornell University	Climate Change, Economics, and F	Timothy Mount, PhD		Electricity Markets; Econor	Policy	http://aem.cornell.	tdm2@cornell.edu	607-255-4512
25	Cornell University	Climate Change, Economics, and F	Gregory Poe, PhD		Environmental Policy, Agric	Policy	http://aem.cornell.	glp2@cornell.edu	607-255-4707
26	Cornell University	Climate Change, Economics, and F	Ke Max Zhang, PhD		Mechanical and Aerospace	Policy	http://www.mae.cc	kz33@cornell.edu	(607) 254-5402
27	Cornell University	Climate Change, Economics, and F	Oliver Gao, PhD		Transportation, Environmer	Policy	http://www.enginee	hg55@cornell.edu	(607)254-8334
28	Cornell University	NYS College of Agriculture & Life S	Larry Walker, PhD		Ethanol Biofuel	Technology	http://www.aben.cc	lpw1@cornell.edu	(607) 255-2478
29									
30	CUNY Bronx Communi	Center for Sustainable Energ	Center		Promote efficient and	Policy	http://www.bcc.cuny.edu/instituti		
31	CUNY Bronx Community C	Center for Sustainable Energy	Tria Case, Esq	Executive Directo	Alternative fuels, energy an	Policy	http://www.bcc.cur	triacase@charter.net	718-289-5332
32	CUNY Bronx Community C	Center for Sustainable Energy	Michael Seliger, PhD		Planning and development,	Policy	http://www.bcc.cur	michael.seliger@bcc	718-289-5192
33	CUNY Bronx Community C	Center for Sustainable Energy	Reid Strieby	Co-Director Envir	Psychology; Environmental	Policy	http://www.bcc.cur	rlissrstrieby@earthlin	718-289-5133
34	CUNY Bronx Community C	Center for Sustainable Energy	Wilson Rickerson		State and municipal climate	Policy	http://www.bcc.cur	wilson.rickerson@bc	718-289-5332
35	CUNY Bronx Community C	Center for Sustainable Energy	Luis Torres		Alternative fuels, environme	Policy	http://www.bcc.cur	luis.torres@bcc.cuny	718-289-5332
36									
37	Hudson Valley Commu	School of Engineering and In	Program		Provides training to st	Training	https://www.hvcc.edu/catalog/programs/eit/pvc.html		
38	Hudson Valley Community C	School of Engineering and Industria	James Countryman	Chairperson		Training			(518) 629-7275
39	Hudson Valley Commu	The Center for Energy Efficie	Center		Part of HVCC's Workf	Training	www.hvcc.edu/	ceebs@hvcc.edu	518-629-4111
40									
41	New York University	Rudin Center for Transportat	Center		Research, training, edu	Policy	http://wagner.nyu.edu/rudincente		
42	New York University	Rudin Center for Transportation & F	Allison L. C. de Cerreño	Director	High-speed rail, freight, intel	Policy	http://wagner.nyu.e	allison.decerreno@n	(212) 998-7547
43	New York University	Environmental Studies	David Holland		Measuring energy generate	Technology	http://environmen	holland@cims.nyu.edu	
44									
45	Onondaga Community College				In collaboration with Hudso	Training			
46									
47	Pace Law School, Pac	Pace Energy and Climate Ce	Center		Research, negotiation	Policy	http://www.pace.edu/page.cfm?d		
48	Pace Law School, Pace Uni	Pace Energy and Climate Center	Hon. Richard L. Ottinger	Founder of Pace	Sustainable energy, environ	Policy	http://www.pace.ed	rottinger@law.pace.e	(314) 422-4121
49	Pace Law School, Pace Uni	Pace Energy and Climate Center	James M. Van Nostrand	Executive Directo	Electricity and gas regulatio	Policy			
50	Pace Law School, Pace Uni	Pace Energy and Climate Center	Dan Rosenblum	Senior Attorney	Energy efficiency and renew	Policy	http://www.pace.ed	rosenblum@law.pace	

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1.2.2 Energy Research Centers in New York Institutes of Higher Learning

As identified in the Directory, several public and private New York universities house energy-related research centers. These include Clarkson University, Columbia University, CUNY Bronx Community College, Hudson Valley Community College, New York Institute of Technology, New York University, Pace Law School at Pace University, Rensselaer Polytechnic Institute, Rochester Institute of Technology, Syracuse University, SUNY University at Albany, SUNY College of Environmental Science and Forestry, and SUNY Farmingdale State College. Each of these is discussed below.

- **Clarkson University Center for Sustainable Energy Systems:** Activities of this Center include research in wind energy, biomass, solar energy, energy efficiency, fuel cell and hydrogen storage, energy harvesting and storage, environmental impacts, and energy education. The Center also has two main subset groups, the Wind Energy Group and the Clarkson Biomass Group.
- **Columbia University Center for Energy Marine Transportation and Public Policy:** *Albert Bressand, PhD, Executive Director*. The research goals of this Center are to facilitate change in pursuing policy objectives such as energy efficiency, lower carbon technologies and energy sources, promote economic development, and abolish "fuel poverty." Recent research projects include: barriers to deployment of small-scale combined heat and power systems and integrated microgrid systems in New York City; benefits of demand response programs in New York cities; and public perceptions of energy efficiency and renewable energy.
- **The Cornell Fuel Cell Institute (CFCI)**: *Hector Abruña and Frank DiSalvo, Co-Directors.* CFCI is a collaborative center including Materials Science & Engineering, Chemical Engineering, and Chemistry and Chemical Biology departments at Cornell. Research focuses on developing materials to enable advanced fuel cell technologies in automobiles, stationary applications, and portable power.
- **CUNY Bronx Community College Center for Sustainable Energy:** *Tria Case, Esq, Executive Director.* This Center has a mission to promote efficient and alternative energy technologies in urban areas through education, training and research. Activities include educating the public on energy issues, providing a clearinghouse of information, and coordinating conferences and meetings with government and industry stakeholders and consumers.
- **Hudson Valley Community College Center for Energy Efficiency and Building Science:** This Center provides training to identify areas for improved energy efficiency and to make necessary repairs to increase efficiency of buildings. Courses/certificate programs include: building analyst; envelope professional; heating professional; and photovoltaic system installation and knowledge. The HVCC School of Engineering and Industrial Technologies also provides training and certification in photovoltaic installation and maintenance.
- **New York Institute of Technology Center for Energy, Environment, and Economics:** *Sarah Meyland, Director*. This Center's activities include conducting research, evaluating policy options, and advancing the use of sustainable energy technologies for electricity and transportation. Personnel conduct research and perform analyses for the public and private sectors. Activities also include public education, conferences, and sustainable energy technology demonstration.

- **New York University Rudin Center for Transportation & Policy Management:** *Allison L. C. de Cerreño, Director.* Center activities include research, training, education, promotion, and support of policy networks for transportation policy and management. Research projects have included: freight transportation planning and transportation operations.
- **Pace Law School Pace Energy and Climate Center:** *James M. Van Nostrand, Executive Director.* Activities of this Center include research, negotiation, education, and participation in regulatory proceedings related to energy efficiency, renewable energy and distributed generation with a focus on energy for electricity generation.
- **Rensselaer Polytechnic Institute Center for Future Energy Systems:** *Ganapathiraman Ramanath, Director.* Center activities include research and development, technology transfer, and workforce development/training. Research focuses on renewable energy, fuel cells and hydrogen and energy efficiency—specifically smart lighting and smart displays.
- **Rensselaer Polytechnic Institute Lighting Research Center.** *Mark Rea, Director.* This Center performs research on lighting technologies and applications, including solid-state lighting, LED, lighting design, human factor issues, and energy efficiency and environmental issues in lighting. Center activities also include demonstration and evaluation of lighting technologies, and training programs for government agencies, utilities, and lighting professionals.
- **Rensselaer Polytechnic Institute Center for Fuel Cell and Hydrogen Research**. *Glenn A. Eisman, Director.* This Center includes RPI faculty members in materials science, physics, chemistry, and engineering departments performing research related to fuel cells and hydrogen. Current research includes high and low temperature membranes, electrodes for PEM fuel cells, advanced instrumentation, fuel cell testing, porous media, nano-catalysts, electrochemical hydrogen pumps, and bio-catalysis.
- **Rochester Institute of Technology Center for Environmental Computing and Decision-Making:** *James J. Winebrake and J. Scott Hawker, Co-Directors.* This Center has the purpose of applying computing and information sciences to inform energy and environmental decision-making. Research projects include: life-cycle analyses of alternative fuels and vehicles; evaluation of greenhouse gas reduction policies; environmental impacts of freight transport; and health impacts of pollution.
- **Rochester Institute of Technology Golisano Institute for Sustainability, Center for Sustainable Energy Systems:** *Nabil Nasr, Director.* This Center is aimed at evaluating the technical and manufacturing aspects of alternative fuel and propulsion technologies, including: biodiesel, ethanol, fuel cells, and hydrogen.
- **Syracuse University Center of Excellence in Environmental and Energy Systems.** *Edward A. Bogucz Jr.*, *Executive Director*. This Center partners with industry, academics, and organizations to conduct research related to environmental and sustainable energy technologies. Activities include research, product development, commercialization assistance, and education.
- **SUNY University at Albany Energy and Environmental Technology Applications Center (E2TAC):** *Pradeep Haldar, Director.* This Center's activities include research and development focused on alternative energy and environmental technologies, microelectronics, and nanotechnology for energy and environmental applications. The Center also provides training and education.

- **SUNY College of Environmental Science and Forestry Center for Sustainable and Renewable Energy:** *Edwin H. White. Director.* SUNY ESF is the host campus of the Center, a 64-campus research and development clearinghouse for renewable energy and energy efficiency. The Center has conducted research on: fuel cells, photovoltaics, solar-fueled hydrogen production, biomass energy, biomass feedstock production from New York's forest-products industry, biomass CHP, and hydrogen production from biomass.
- **SUNY Farmingdale State College Solar Energy Center**: *Yelleshpur Dathatri, Director*. This Center's activities involve applied research on solar products and systems. The Solar Energy Center is accredited as a "Training Institution" and "Continuing Education Institution" by the Institute of Sustainable Power.
- **SUNY Stony Brook Advanced Energy Research and Technology Center (AERTC):** AERTC, to be housed at Stony Brook University, is a partnership of academic institutions, research institutions, energy providers, and industry, with the mission of "innovative energy research, education and technology deployment with a focus on efficiency, conservation, renewable energy and nanotechnology applications for new and novel sources of energy."

The identification of eighteen distinct energy-related centers in New York's universities demonstrates the wide-range and extent of energy-related research and activities in the state. The focus of these centers varies from research and development of cutting-edge energy technologies and materials to evaluating environmental and economic impacts of alternative energy options, to policy analysis, to public education.

1.2.3 Faculty

In addition to the many centers performing energy-related research at New York universities, the Directory lists faculty members involved in energy research who may be unaffiliated with a university center (or work at a university without such a center). The directory lists over **170 academics** with expertise in energy technology or policy, with a notable extent of variation and level of specialization. As revealed in the directory, New York academics' expertise includes the following disciplines:

- Policy. Research and analysis involving: energy markets, environmental and/or economic impacts of alternative energy options, electric load forecasting, electricity infrastructure planning, carbon trading and sequestration, total-fuel cycle analysis, energy sustainability, public role in energy decision-making, and energy siting (i.e. NIMBY) issues;

- Technology. Research and development: wind turbines, photovoltaics, hydrogen and fuel cells, wave and tidal power, petroleum, hydrogen from coal, biomass and biofuels, intelligent control for the built environment, nanotechnology, highly efficient lighting, advanced batteries, semiconductors and electronics, combined heat and power, materials (e.g. ceramics, metals, thin films) for energy applications, life-cycle engineering, and pollution prevention;

- Education/Training. Training programs and public education efforts including: photovoltaics installation and maintenance, energy efficiency opportunities and

repairs, for contractors and consumers, public energy education, demonstration of cutting-edge energy technologies, renewable energy workforce development, demonstration and evaluation of lighting technologies, training for government officials, utilities, and energy professionals.

The extent and range of the energy knowledge base of New York State academics is impressive. Clearly, New York academics' efforts could inform energy policy and decision-making in a number of ways, including providing: policy analyses; forecasting; information related to technological status and potential developments; stakeholder perspectives; and status and requirements related to training and public education.

1.3 Conclusion

The New York Directory of Energy Research in Higher Education will serve as an invaluable reference for NYSERDA, NYDPS, and other New York energy officials to identify experts in New York State academic institutions regarding energy technology and policy-related research. The Directory demonstrates the breadth and depth of energy knowledge possessed by New York State academic institutions and faculty. The Directory shows an enormous range of expertise and level of specialization among 18 energy-related centers and nearly 200 academics in the state. Collectively, New York's academic institutions have the potential to provide a resource of great value to New York State policymaking.

NYEPI Task 1 Outcomes and Findings*:*

- Directory of institutions and faculty performing energy-related research in New York State
  - Identification of 18 energy policy and/or energy technology centers in New York academic institutions
  - Identification of nearly 200 faculty with expertise in energy technology and/or policy
  - Provides contact information and other details to assist New York energy policy decision makers in accessing experts of relevance to critical energy issues
- Expertise is varied, and spread amongst a number of disciplines, including policy analysis, engineering, and life-cycle analysis.
- Energy-related expertise and activities spread throughout New York State, in both public and private institutions.

2 STATE AND FEDERAL MODELS OF ENERGY POLICY ADVISORY BOARDS

2.1 Purpose

This section describes the findings of NYEPI Project Task 2—*Identification and characterization of existing energy policy advisory boards.* This section outlines key characteristics of state and federal energy/environmental policy advisory boards. The listing is not intended to be exhaustive, but rather is intended to present different models that could be considered in developing a similar type of entity (i.e., NYEPI), in New York State.

2.2 State Models

The state energy advisory board models considered are listed below with a short description of each taken and/or adapted from each model's website. In many cases, this information was supplemented by telephone interviews with management at each program. As shown here and in Table 1, we examined seven state models.

2.2.1 University of California Energy Institute (UCEI)

The University of California Energy Institute (UCEI), founded in 1980, is a multi-campus research unit under the auspices of the University of California's Office of the President. UCEI receives base budget funding from the Office of the President, to which it also reports on financial and administrative issues. UCEI is located on the Berkeley campus and reports to the UC-Berkeley Vice Chancellor of Research. The director of the Institute, Severin Bornstein, is a Professor of Business Administration and Public Policy in the Haas School of Business at UC-Berkeley.

The Intercampus Advisory Committee (IAC) is the principal advisory body to UCEI. The IAC is comprised of representatives of the nine UC campuses and the three UC managed national laboratories. The IAC reports to the President of the University through the Vice Provost for Research. The IAC advises the UCEI director on policies, plans, budgets and the decisions on competitive awards.

The Mission Statement for the UCEI states that "the system wide University of California Energy Institute and its affiliates will:

i. Foster and support distinguished research programs in the energy field, complementing instruction at both the undergraduate and graduate levels.
ii. Serve as focal points for the identification, initiation and execution of:
    a) Interdisciplinary energy research;
    b) Policy-related studies on critical energy issues affecting California, the nation and the world;
    c) Energy-related research in the natural and social sciences, engineering and environmental design in areas of special interest to California
iii. Serve as centers for discussion of energy issues and dissemination of energy information. These activities will be accomplished through such activities as public lectures, conferences, extension services and studies.

iv. Cooperate with other research institutions and with state and federal agencies on studies aimed at solutions of energy problems."

2.2.2 Center for Energy, Economic & Environmental Policy, Rutgers University (CEEP)

The Center for Energy, Economic & Environmental Policy (CEEP) is located in the Bloustein School of Planning and Public Policy at Rutgers University. CEEP was established in 2003 with the mission to conduct "applied research to evaluate and help develop energy policy at the state, regional, national and international levels."

The Center's director is Dr. Frank Felder. The Center has a staff of about eight people. The Center's core funding comes largely through multi-year funding agreements with New Jersey's utilities. The Center's specific projects are funded primarily through grants from New Jersey government agencies and the U.S. Department of Energy. The Center has a 15-member Advisory Board, headed by the Center's founder Scott Weiner, and includes representatives from New Jersey's utilities, two former New Jersey governors, and representatives from several national environmental organizations.

The Center's expressed mission is to:

1. Educate future leaders of business, government and academia to prepare them for responsibility as makers or influencers of public policy.
2. Conduct multifaceted energy, economic and environmental research to support the initiatives and goals of New Jersey, the nation, and the international community.
3. Inform public policymakers, businesses, academia, and the public with objective, credible, and useful analysis.
4. Serve as a recognized and respected forum for collaboration among individuals and organizations to build stronger links between economic development and energy policy.

The Center's projects focus heavily on applied research and policy analysis related to New Jersey energy and environmental issues. Among the Center's current projects are:

- Provide research and modeling support to the New Jersey Board of Public Utilities (BPU) for the state's Energy Master Plan.
- Conduct evaluations of New Jersey's Clean Energy programs.
- Administer the New Jersey Hydrogen Learning Center and coordinating its website and quarterly events.
- Work with the Meadowlands Commission to develop and draft its Renewable Energy Master Plan.

2.2.3 Harvard Electricity Policy Group (HEPG)

The Harvard Electricity Policy Group (HEPG) is an example of a university-based "single policy issue" model. The Harvard Electricity Policy Group provides a forum for the analysis and discussion of important issues facing the electricity industry. It was founded in 1993 and is based at the Mossavar-Rahmani Center for Business and Government at Harvard University's John F. Kennedy School of Government. Participants include electricity industry executives

from public power and investor-owned utilities, independent power producers, consumer advocates, regulators, energy officials from both state and federal government, representatives of the environmental and financial communities and academics.

The objectives of the HEPG are "to address key problems related to the transition to a more competitive electricity market, to foster informed and open debate, and to contribute to the wider public policy agenda affecting the electric sector." Through research, information dissemination, and regular seminars, the HEPG facilitates policy discussions, which may lead to the development of new ideas or to an expansion of the policy debate.

Ashley Brown, a former state utility regulator, serves as executive director of the HEPG. Funding for the Policy Group is provided by the Mossavar-Rahmani Center at Harvard University and through grants from a multitude of organizations, primarily utilities and other corporations engaged in different aspects of the electric industry.

2.2.4 Public Utility Research Center, University of Florida

The Public Utility Research Center (PURC) is an example of a university-based, industry-focused model that incorporates several programs, including policy, research and training. PURC is located in the Warrington College of Business Administration at the University of Florida. It was founded in 1971 with the support of the Florida Public Service Commission and the state utility executives in large part to assist both regulators and utility managers address difficult decisions during a period of severe inflation and consumer unrest. Its focus includes electricity, natural gas, water, and communications issues. Since the 1970s PURC has grown from a small group hosting a single annual conference to an interdisciplinary center with expanded training and development programs and internationally recognized research. PURC describes its mission as threefold:

> "Research: Expanding the body of knowledge in public utility regulation, market reform, and infrastructure;
> Education: Teaching the principles and practices that support effective utility policy and regulation;
> Service: Engaging Florida, the nation, and the world in outreach activities that provide ongoing professional development and promote improved regulatory policy and infrastructure management."

The Center has a faculty of six members and also relies upon associates, senior fellows, and visiting scholars. The Center's Director is Dr. Mark Jamison. PURC is funded by a combination of public and private organizations ("sponsors"). An Executive Committee of eleven sponsors, including both the Florida Public Service Commission and the Florida Office of Public Counsel, establishes broad policy guidelines, identifies areas for research, assists in gathering data and feedback on projects, and approves the Center's operating budget. The Center also has Leadership Advisory Council, a group of regulatory professionals who offer strategic advice and feedback.

For the last decade, PURC has become increasingly involved with international activities, especially infrastructure investment and policy initiatives. Working with the World Bank, PURC runs the International Training Program on Utility Regulation and Strategy.

Domestically, the Center is engaged in research and outreach on energy policy and climate change issues that are related to implementation of Florida's Executive Order on climate change. These include: emission trading; distributed generation; drivers for utility-scale renewable energy projects; and rate design considerations. The Center is also coordinating with Florida's electric utilities a three-year research effort on the hardening of the State's electric infrastructure to better understand and recover from hurricanes. In addition, the Center holds an annual regulatory conference that brings together utility industry executives, regulators and academics from Florida and the Southeast region. PURC also conducts continuing education programs and training sessions that qualify for state legal education and technical credits.

2.2.5 Institute of Public Utilities, Michigan State University

The Institute of Public Utilities (IPU) is an independent nonprofit educational and research unit of Michigan State University founded in 1965. The IPU is separately incorporated as a 501(c)(3) organization. The IPU relies on contributions, largely corporate, to cover its operating expenses and sustain its programs.

The IPU is widely known in the regulatory community for its training and educational programs. Its core program is its Annual Regulatory Studies Program "Camp", an intensive two-week program for state and federal commissioners and regulatory personal that addresses both regulatory foundations and fundamentals (week one) and emerging issues and methods (week two). A NARUC Advisory Committee works closely with the Institute on this program.

The IPU also holds a series of specialized half-day and all-day workshops for both public and private sector regulatory professionals, relying for instructors on nationally known experts from both academics and applied perspectives. In addition, the IPU holds a major Annual Regulatory Policy Conference that focuses on contemporary issues of special importance to the regulatory community.

The Institute's director is Janice A Beecher. She is also an adjunct faculty member of Michigan State's Political Science and Economics Departments and the College of Law. The Institute itself does not have any faculty, relying instead on a core of about eight Senior Fellows and Faculty Associates, drawn primarily from other departments within the university.

The Institute has two advisory bodies. The NARUC Advisory Committee works closely with the Institute in the development of its Annual Regulatory Studies Program. An Industry Advisory Board meets annually to review the Institute's budget, program, trends and needs.

2.2.6 Power Systems Engineering Research Center (PSERC)

The Power System Engineering Research Center (PSERC) is an example of a multi-university structural model that focuses on energy-related research and education. PSERC consists of 13 university members nationwide, including Cornell University, which work collaboratively with the electric power industry on research and development, education, and professional

development. The 35 industry members represent power companies and independent systems operators (ISOs) from across the country, including New York.

The Center's university members work collaboratively with industry to:

1. "Engage in forward thinking about future scenarios for the industry and the challenges that might arise from them;
2. Conduct research for innovative solutions to these challenges using multidisciplinary research expertise in a unique multi-campus work environment;
3. Facilitate interchange of ideas among academia, industry and government on critical industry issues; and,
4. Educate the next generation of power industry engineers."

Its research agenda covers three topics: (1) markets; (2) transmission and distribution; and (3) systems research. Professor Richard Schuler from Cornell chairs the market research effort. The Center leverages financial support from its members to attract additional research funds, especially from the federal government. PSERC also conducts a professional development program through short courses, monthly Internet seminars, and on-site seminars.

Structurally, a current professor at Arizona State serves as the executive director of the Center, and each university member has a site director; together the directors make up the Center's executive committee. PSERC is assisted by an industrial advisory board, which meets twice annually.

2.2.7 Council of Environmental Advisors (New York State)

An alternative, non-academic model is the New York Governor's Council of Environmental Advisers, which was established by New York Governor Mario Cuomo and included the leadership of several national environmental organizations based in New York State (the National Audubon Society, the Natural Resources Defense Council, and the Environmental Defense Fund). The Council included prominent state and environmental policy, legal and research experts, and met several times annually with the Governor, senior environmental policy advisers, and occasional Cabinet members to discuss state environmental policy. The Council's responsibilities could be as structured or as free flowing as the Governor and the Council members desired. Meetings were private, discussions were confidential, and council members were not compensated for their time or advice.

2.3 Federal Models Considered

The Federal advisory board models considered are listed below, with a short description of each taken/adapted from each model's website. Five federal models were examined, as shown in Table 1 and as listed below.

2.3.1 EPA Science Advisory Board (SAB)

The Environmental Protection Agency's Science Advisory Board (SAB) consists of six standing committees, members of which serve for three years with the potential to serve additional three years. The SAB also includes ad hoc committees that serve for the duration of assigned

activities. Committees are made up of academics, researchers from industry, government, research institutes and non-governmental organizations.

The mission of the SAB includes:

- "reviewing the quality and relevance of the scientific and technical information being used or proposed as the basis for Agency regulations
- reviewing research programs and the technical basis of applied programs
- reviewing generic approaches to regulatory science, including guidelines governing the use of scientific and technical information in regulatory decisions, and critiquing such analytic methods as mathematical modeling
- advising the Agency on broad scientific matters in science, technology, social and economic issues, and
- advising the Agency on emergency and other short-notice programs."

Activities of the SAB include: non-consensus consultation on technical issues prior to the EPA conducting any significant work on the issue; written advice on EPA works-in-progress; review of EPA reports and work products; commentary and advice on important issues; conducting original research on topics of importance to the EPA; and providing prompt advice in emergency situations.

2.3.2 EPA Clean Air Scientific Advisory Committee (CASAC)

The Clean Air Scientific Advisory Committee (CASAC) "provides independent advice to the EPA Administrator on the technical bases for EPA's national ambient air quality standards. Established in 1977 under the Clean Air Act (CAA) Amendments of 1977 (see 42 U.S.C. § 7409(d)(2)), CASAC also addresses research related to air quality, sources of air pollution, and the strategies to attain and maintain air quality standards and to prevent significant deterioration of air quality. The Chair of CASAC also serves as a member of the chartered Science Advisory Board."

In its advisory function, CASAC recommends and appraises NAAQS revisions; advises the Administrator on relative contribution to air pollution concentrations; advises the Administrator of any adverse effects that may result from attainment strategies.

CASAC consists of seven standing members, including four academics and three people from research organizations; the seven-member standing committee must also include one member of National Academies, one physician, and one person representing State air pollution control agencies. Ad hoc committees are also formed through public nominations. Committee members receive compensation; CASAC is funded by the EPA.

2.3.3 DOE Secretary of Energy Advisory Board

The Secretary of Energy Advisory Board (SEAB), which had a sunset date in 2006, provided the Secretary of Energy with "timely, balanced, external advice" on issues of importance. The SEAB mission was "to provide advice, information, and recommendations to the Secretary of Energy on the Department's basic and applied research activities, economic and national security policy, educational issues, laboratory management, and activities and operations of the

Department of Energy as the Secretary may direct. Much of its work [was] conducted through subcommittees."

Standing members of the SEAB, which served for two years, included academics, representatives from business, environmental groups, labor, and government. Subcommittees (Task Forces) comprised of public, private, NGO, and academic participants are also used for specific issues. The SEAB was funded by the DOE, and members served on a pro-bono basis.

2.3.4 DOE State Energy Advisory Board (STEAB)

The DOE State Energy Advisory Board (STEAB) "develops recommendations for the U.S. Department of Energy (DOE) and the Congress regarding initiation, design, implementation, and evaluation of federal energy efficiency and renewable energy programs. In doing so, STEAB serves to integrate and provide consistency between federal, state and local activities." STEAB advisory activities include providing administrative and policy recommendations to improve energy efficiency and renewable energy programs, including recommendations for actions to encourage non-federal funding resources.

The board, which is funded by the DOE consists of 18-21 members, appointed by the Secretary of Energy, who serve 1-3 year terms. The majority of members are state employees; at least eight members must be directors of state offices and four members must be involved in low-income weatherization programs. People from the private sector, NGOs, utilities, public utility commissions, educational institutions, financial institutions, local government energy programs, and research institutions make up the remainder of the board.

2.3.5 National Academies Study Advisory Groups

Each year the National Academy of Science and the National Academy of Engineering (the "Academies"), under the auspices of the National Research Council, brings together over 6,000 of the nation's foremost scientists and experts to serve on hundreds of separate study committees to examine specific questions related to society's critical problems. The Academies "provide independent advice; the external sponsors have no control over the conduct of a study once the statement of task and budget are finalized. Study committees gather information from many sources in public meetings but they carry out their deliberations in private in order to avoid political, special interest, and sponsor influence."

Each year the Academies produce reports on important issues such as obesity, invasive plants, vaccine safety, energy, transportation, climate change, and homeland security. The reports may influence policy decisions, enable new research programs, or review programs. The National Research Council does not receive direct federal appropriations. Individual projects are funded primarily by federal agencies; also foundations, other governmental and private sources, and the National Academies endowment support projects.

2.4 Key Aspects of Each Advisory Board

Table 1 shows some of the key attributes of each of the models considered. Attributes were chosen based on those that may be most relevant for a NY energy policy advisory model.

Table 1: Overview of Attributes Related to Federal Energy Policy Advisory Boards.

Model Example	Mission/Purpose/Activities	Structure/Personnel	Advisory Role and Operations	Funding
State Models				
UCEI	Fosters and supports research programs in energy fields. Interdisciplinary research, policy related studies, and in natural social science, engineering, and areas of special interest to CA. Serves as forum for discussion and clearinghouse for energy information. Cooperates with other institutions and other agencies (state and federal) to conduct energy research studies.	Director; Intercampus Advisory Committee (comprised of representatives from the 9 UC campuses and three UC managed labs).	Facilitate discussion of energy issues and dissemination of energy information. Cooperate with state and federal agencies on energy policy related studies.	Receives base budget from UC Office of the President.
CEEP, Rutgers	Conducts energy, economic and environmental research and analyses to evaluate and help develop state, regional, national and international energy policy.	Director; staff of about eight people. The Center also has a 15-member Advisory Board, which includes utility and national environmental organization representatives, as well as two former New Jersey governors.	Informs policymakers, public and others with objective analyses.	Funded through multi-year agreements with NJ's utilities. Specific projects are primarily funded through NJ government and US Department of Energy.
Harvard Electricity Policy Group	Provides a forum for analysis and discussion of electricity industry issues. Conducts research, disseminates information, holds seminars.	Executive director; Participants include utility executives (public and private), independent power producers, consumer advocates, regulators, state and federal government energy officials, representatives of environmental and financial interests, and academics.	Conducts research, disseminates information, holds seminars.	Housed at Mossavar-Rahmani Center, which is funded primarily through grants from utilities and other electricity- industry corporations.

Model Example	Mission/Purpose/Activities	Structure/Personnel	Advisory Role and Operations	Funding
PURC, UF	Conducts research on energy and climate change issues, holds training and professional development programs, and engages in outreach activities. Coordinates with state electric utilities to conduct longer-term research. Holds an annual conference, which includes utility industry executives, regulators and academics.	Director; faculty of six members; also relies upon associates, senior fellows and visiting scholars. Executive Committee of 11 sponsors (including the Florida Public Service Commission and Office of Public Counsel) establishes broad policy guidelines, identifies areas for research, and assists in gathering data.	Holds an annual conference that brings together utility industry executives, regulators and academics from the Southeast Region.	Funded by a combination of public and private organizations. The Executive Committee approves the Center's operating budget.
IPU, MSU	Provides training, workshops, and educational programs, including the Annual Regulatory Studies Program "Camp", a two-week program for state and federal commissioners and regulatory personnel. Conducts research.	Director; eight Senior Fellows and Faculty Associates, drawn primarily from other MSU departments. Center has two advisory bodies: the NARUC Advisory Committee helps develop the Annual Regulatory Studies Program; an Industry Advisory Board reviews the budget, program, trends and needs.	Holds Annual Regulatory Policy Conference and additional workshops for public and private sector regulatory professionals.	Relies on contributions—largely corporate—to fund programs and operating expenses.
PSERC	Conducts interdisciplinary energy-related research. Facilitates discussions among academia, industry and government. Conducts professional development programs.	Executive director and site directors at each of 13 university members nationwide comprise the Executive Committee. Also includes 35 electric power industry members, including power companies and independent systems operators. Center is assisted by an industrial advisory board.	Facilitates communication between academia, industry and government on power industry issues.	Funding support from members, and grants from federal government and others.
Council of Environmental Advisers (New York State)	Discussed state environmental policy with New York State Governor, senior environmental policy advisers and Cabinet members. Responsibilities varied, and were structured as the Governor and the Council members desired.	Council included leaders of national environmental organizations based in New York State (e.g. the National Audubon Society, the Natural Resources Defense Council, and the Environmental Defense Fund), and legal and environmental research academicians.	Met several times annually with the Governor, senior environmental policy advisers and Cabinet members to discuss state environmental policy.	Council members were not compensated for their time or advice.

Model Example	Mission/Purpose/Activities	Structure/Personnel	Advisory Role and Operations	Funding
Federal Models				
EPA SAB	Reviews research and applied programs, reviews regulatory science and analytic methods, advises on scientific, economic and social matters, and peer reviews EPA activities and regulations. Also provides commentary, oral advice, and studies as requested.	Involves a staff office that has six standing committees and ad hoc committees as needed. Members of standing committees serve for three years with the potential to serve additional three years; members of ad hoc committees serve for the duration of assigned activities. Committees are not only made up of academics, but also researchers from industry, government, research institutes and non-governmental organizations.	Provides oral consultation, written advice on technical works-in-progress, review of EPA's technical reports and work products, commentary on emerging issues, and original research.	Environmental Protection Agency; (Committee members receive compensation and travel expenses, per diem, etc.)
EPA CASAC	Provides advice to EPA related to National Ambient Air Quality Standards (NAAQS) decision making – so relatively focused. Provides other advice as requested, related to air quality, sources of air pollution, and strategies to attain and maintain air quality.	Seven standing members (four academics and three people from research organizations; includes one member of National Academies, one physician, and one person representing State air pollution control agencies. Ad hoc committees are also formed (public nominations).	Recommends and appraises NAAQS revisions; advises the Administrator on relative contribution to air pollution concentrations; advises the Administrator of any adverse effects which may result from attainment strategies.	Environmental Protection Agency (Committee members receive compensation and travel expenses, per diem, etc.)
DOE SEAB	Provides advice, information and recommendations to the Secretary of Energy on research activities, policy, educational issues, activities and operations.	Standing members include academics, and representatives from business, environmental groups, labor, and government; standing members serve for two years. Subcommittees (Task Forces) made up of public, private, NGO, and academic participants are also used for specific issues.	Provides advice, information, and recommendations to the Secretary of Energy on research activities, policy, educational issues, activities and operations.	Department of Energy (Committee members serve on a pro-bono basis).

Model Example	Mission/Purpose/Activities	Structure/Personnel	Advisory Role and Operations	Funding
STEAB	Develops recommendations for DOE and the Congress regarding initiation, design, implementation, and evaluation of energy efficiency and renewable energy programs, with the purpose of ensuring consistency between federal and state policies.	Membership is 18-21 members appointed by the Secretary of Energy, serving terms of one-three years. The majority of members are state employees (bylaws state that at least eight members must be directors of state offices and four members must be involved in low-income weatherization programs); other members come from the private sector, NGOs, utilities, public utility commissions, educational institutions, financial institutions, local government energy programs, or research institutions.	Make administrative and policy recommendations to improve energy efficiency and renewable energy programs, including actions to encourage non-federal resources to supplement federal financial assistance.	Department of Energy
NAS	Conducts research and develops reports to answer questions posed by Congress and federal agencies.	Administered by the National Research Council. Study projects are managed and staffed by National Academies units, but study committees (hundreds each year) are made up of experts, academic and other.	Conducts research and provides reports on specific issues as requested by Congress and federal agencies. Reports may influence policy, enable new research programs, or review programs.	Individual projects are funded primarily by different federal agencies; foundations, other governmental and private sources, and the institution's endowment.

2.5 Outcomes and Findings

NYEPI Task 2 Outcomes and Findings*:*

- Identification and characterization of existing energy policy advisory institution models
    - Examination of seven state and five federal energy advisory institutions
- Among models examined, membership, structure, advisory role, activities, and funding vary considerably.
- New York State may draw upon precedents and lessons learned to develop the ideal model for NYEPI by combining the desirable aspects of each of these identified models.

3 RECOMMENDATIONS FOR FUTURE ACTION

3.1 Purpose

This section comprises NYEPI Project Task 3—*Recommendations for future action.* This section discusses findings from Tasks 1 and 2, and draws upon these findings to provide recommendations for future actions in development of the New York Energy Policy Institute.

3.2 NYEPI Project Key Findings and Discussion

Task 1 of the NYEPI project involved the identification and characterization of the higher education knowledge base in New York State, through development of a directory of energy research in higher education institutes. The Directory makes apparent the impressive extent and range of energy-related expertise in New York academic institutions—listing 18 energy centers, and nearly 200 faculty members involved in energy research. The Directory demonstrates that energy expertise is not primarily confined to one campus or university, but rather is spread among a large number of private and public universities.

Task 2 of the NYEPI project involved the examination of existing models of federal and state energy policy advisory groups. In examining various federal and state models, no one model stood out as the ideal in considering development of NYEPI. Each model has its strengths and weaknesses and was developed to respond to a unique set of circumstances or a specific problem/issue. Collectively, however, lessons can be drawn from these various models, as follows:

1. In general the identified federal models were structured to address specific policy issues. This may limit their value as models for New York as energy policy issues in the State span transportation, electricity, economics, environment, technological feasibility and social concerns. Limiting the scope of NYEPI to any one of these areas (or subsets within) may restrict the capacity of NYEPI to provide New York energy policy decision makers with the information necessary to address New York's complicated and often interconnected energy issues. *We recommend an entity for New York that is more multi-faceted, integrated, and systems-oriented, and that includes both public and private institutions of higher education.*

2. Federal advisory boards are usually housed within or serve as adjuncts to a single governmental agency seeking policy advice on a specific topic. This limits the ability of other agencies to tap into these resources. Because we envision NYEPI as a resource whose multi-disciplinary expertise would be available to a wide range of New York officials and agencies (e.g. NYSERDA, DPS, the Governor's Office) on a multitude of energy-related matters, *we recommend that NYEPI be accessible to a host of energy-related governmental organizations in the state*.

3. The various state models we examined were not adjuncts of a governmental agency, but rather operated as independent entities housed within an academic administrative structure. This may help enhance organizational independence and the ability to use the expertise of academic resources objectively without any perceived bias. *We recommend*

that NYEPI be established as an independent institution, but with funding coming from both public and private entities.

In light of these general recommendations, the following sections discuss the potential of NYEPI in terms of activities, structure, management, coordination, membership, and budget.

3.3 NYEPI Activities

The activities and objectives of existing state and federal energy policy advisory models vary considerably. A number of institutions focus on research, though the direction of research may be dictated from within or may be in response to questions posed by decision makers or those funding the research. Further, research and other activities may focus on one issue (i.e. electricity), or may span a number of energy-related topics.

A few of the examined institutions' activities include education in one form or another: training, professional development, workshops, providing a clearinghouse of information, and public education programs are part of the mission of a number of the examined institutions. In addition, providing peer review, guidance, and/or advice is another integral component of most of these institutions. The actual advisory roles of the institutions vary significantly among activities, including: analyzing and answering specific questions upon request; regularly reviewing regulations and policy proposals; providing advice; and performing original research to inform policy decisions.

Clearly, the potential activities of NYEPI are boundless—NYPEI activities could range from original research on topics of its own choice, to review of regulations and policy, to conducting workshops for public officials, to providing strategic planning guidance on public investments in R&D. The multi-functionality of NYEPI could be applied across a broad swath of energy issues. However, we recommend that at first NYEPI focus on a limited set of activities; for example, NYEPI may want to concentrate initially on providing guidance to energy decision makers involved in strategic planning and policy making. The activities of NYEPI could broaden over time as its capacity expands. These activities would provide a well-defined mission for the early stages of NYEPI's development.

Acknowledging the need for a focused mission, NYEPI must also provide value to its clients, especially NYSERDA and the DPS. The Institute must recognize that New York governmental agencies already possess considerable expertise and talent on energy policy matters. NYEPI's role should be to *supplement*, not displace, the State's energy policy expertise with the knowledge and talent of the State's academic community.

Therefore, key functional activities of NYEPI should include (though are not limited to): (1) providing policy advice and recommendations on energy issues; (2) conducting policy-related studies on critical energy issues affecting New York; and (3) serving as an academic clearinghouse on energy information and research. Further, NYEPI should be a resource that can be called upon by NYSERDA, the DPS and other state agencies to provide guidance on energy research and development activities, energy analysis review, and energy policy evaluation.

3.4 Structure, Management, and Coordination

The inventory developed here clearly demonstrates that there is a wealth of academic expertise on energy policy and technology issues spread throughout New York's colleges and universities, both public and private. The challenge is to establish an administrative model that might allow the State to use this expertise, when necessary, to assist in energy policy development and to inform energy policy decision-making.

There are different approaches for achieving this purpose. Most of the academic models we examined are based in a single university, indeed often on a single campus. Most relied almost exclusively on either public or private university expertise. Structurally, there was little cross-fertilization or integration of public and private university expertise. That is not to suggest that these models are not successful. Indeed, some are widely recognized as leaders in their fields. However, as the Directory demonstrates, New York State is unique in the diversity and number of institutions possessing considerable energy-related expertise. To the extent that New York State officials will want to be able to draw upon the expertise within both the State's public university system and its nationally recognized private colleges and universities, a different model may be required.

Two of the examined models—the University of California Energy Institute (UCEI) and the Power Systems Engineering Research Center (PSERC)—have successfully tapped into the energy expertise of multiple university campuses. However, even here there are differences. While the UCEI includes multiple university campuses, its scope remains confined to California's public university system. In contrast, the PSERC consists of 13 university members, some public and some private, spread across the US. Drawing upon both of these models may present the best structure to meet the needs of, and capitalize on the academic resources within, New York State.

UCEI resembles a more traditional university institute. It is located at a specific campus (Berkeley) and receives its base funding through the University of California. PSERC is more a "virtual" institute—a consortium of 13 universities nationwide—with no "headquarters" facility. Initially funded through a grant from the National Science Foundation, PSERC now relies primarily on funding from its private sector members, who are primarily power companies and independent system operators.

One common trait of each of these state models is strong leadership. Each has a director, sometimes called an executive director. In most cases, albeit not all, the director is also a faculty member at the affiliated university. The director's responsibilities are generally similar; primarily to develop the entity's budget and work plan, often working with an outside advisory committee.

The state models we researched all had limited permanent direct staff. However, all appeared to have the capability to tap into a wider pool of academic talent, either within that specific academic institution or across affiliated institutions, to conduct energy policy analysis and research. The number and composition of "staff" would vary depending upon the specific studies and activities being conducted and the sources of research funds.

3.5 Membership and Participation

The examined state models treated "membership" differently. In fact, some have no formal membership as they were based at a single campus within a single university. For the most part, the exceptions were those entities that had multi-campus or multi-university participation, such as the PSERC and the California Energy Institute. The PSERC has 13 university "members". Each university member had a site director (most university members had multiple faculty at each site involved with PSERC activities), and these site directors constitute the Center's executive committee along with the executive director.

In California's case, the closest arrangement resembling membership is the Institute's Intercampus Advisory Committee. This body consists of representatives from the nine University of California (U.C.) campuses and the three U.C. managed national laboratories. This body advises the Institute on policies, plans, budgets and competitive awards, and reports directly to the University President.

The more common type of participation is financially based. For example, the Center for Energy, Economic & Environmental Policy at Rutgers University was initially funded through a series of multi-year contracts with a group of electric and gas utilities. These companies are not formal "members" of the Center. Instead, they serve as members of the Center's Advisory Board. Similar models exist at the University of Florida's Public Utility Research Center and the Power Systems Engineering Research Center. Though the funding solely by private interests is not desirable for NYEPI, participation through sharing of resources may be considered as a model for participation by New York's academic institutions.

3.6 Budget

The state models demonstrate the importance of multi-year funding and the need to supplement "base funding" with additional revenue sources. Funding will be needed in two areas: (1) operations; and (2) research.

Operational funding is needed to support management activities of NYEPI. In some cases (e.g. the California Energy Institute and the Harvard Electricity Policy Group), this core funding appears to come from the academic institution(s) that host the program. In other cases, the major source of operating funds appears to be agreements with external private sources, for example, Rutgers's Center for Energy, Economic & Environmental Policy; Florida's Public Utility Research Center; and the Power Systems Engineering Research Center.

In virtually every model, core funding was supplemented by outside research funds, primarily albeit not exclusively from government agencies. For example, Rutgers receives substantial grants from various New Jersey government agencies to conduct analysis and research on specific energy issues. The California Energy Institute's research program benefits significantly from federal grants. Similar funding arrangements exist at almost all the state models we examined.

As noted above, obtaining funding from a source inherently means conforming to the funding institution's objectives; this should be seriously considered when determining the source(s) of funding for NYEPI, an institution with objectivity as a desired attribute.

3.7 Recommendation

We recommend that the New York State Energy Research and Development Authority (NYSERDA) issue a Request for Proposals seeking applications for the development and implementation of a New York Energy Policy Institute (NYEPI). The purpose of NYEPI would be to tap into the extensive knowledge and expertise of New York's public and private colleges and universities to support energy research and policy analysis and to provide advice and recommendations to state decision makers on energy issues affecting the state.

In its solicitation, NYSERDA should request that proposals outline the expected management and structure of NYEPI. Proposals should identify the core group of institutions that will participate as initial partners. It is envisioned that NYEPI will be based in an academic institution although alternative administrative models are welcome. In awarding funds, NYSERDA should give priority to those proposals that incorporate both public and private institutions of higher education located in New York State.

NYSERDA should provide multi-year funding to NYEPI. We recommend a minimum three-year funding commitment from NYSERDA in the range of $150,000 - $200,000 annually. Proposals should include a cost-share of a minimum of 25%. Only one award should be made.

NYEPI Task 3 Recommendations*:*

- NYSERDA should issue a Request for Proposals seeking applications for the development and implementation of NYEPI.
- Initially, NYSERDA should provide funding to develop NYEPI—a minimum three-year commitment in the range of $150,000 - $200,000 annually is recommended.
- Key functional activities of NYEPI should include:
  - (1) Providing policy advice and recommendations on energy issues;
  - (2) Conducting studies on critical energy issues affecting New York; and
  - (3) Serving as an academic clearinghouse on energy information and research.
- NYEPI should include both private and public academic institutions
- NYEPI's scope should allow for addressing multiple issues as they emerge
- NYEPI should strive for funding and support from multiple institutions, and maintain objectivity in its activities.

For information on other
NYSERDA reports, contact:

New York State Energy Research
and Development Authority
17 Columbia Circle
Albany, New York 12203-6399

toll free: 1 (866) NYSERDA
local: (518) 862-1090
fax: (518) 862-1091

info@nyserda.org
www.nyserda.org

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State of New York
David A Paterson, Governor

New York State Energy Research and Development Authority
Vincent A. DeIorio, Esq., Chairman
Francis J. Murray, Jr., President, and Chief Executive Officer

NYSERDA