



**Science Applications International Corporation**  
An Employee-Owned Company

January 26, 2005

Mr. Anthony Mantello, Director of Facilities Engineering  
Albany County Department of General Services  
112 State Street, Room 600  
Albany, New York 12207

Re: Photovoltaic System - Albany County Hockey Facility

Dear Tony,

At your request, we have validated the energy savings attributable to the photovoltaic (PV) system proposed for the Albany County Hockey Facility. Based on our independent assessment of the ETM Solar Works proposal, we anticipate the system will produce approximately 42,000 kilowatt-hours of energy per year. Additionally, we project 22,000 kilowatt-hours of annual *interactive* energy savings due to the shading effect of the PV system. This reduces the refrigeration load on the chiller by decreasing the heat radiated through the roof onto the ice sheet.

Using the average cost of electricity at the facility (\$0.14 per kilowatt-hour), this combination of energy production and interactive savings will reduce the utility cost by approximately \$9,000 per year. Some diminishment in energy production over the life of the PV system is expected, but any effect on the annual cost savings will likely be offset by higher utility rates.

Over its 25-year projected lifespan, the PV system will also provide the following environmental benefits:

- 2,400 lb reduction in oxides of nitrogen emissions.
- 4,700 lb reduction in sulfur dioxide emissions.
- 1,410,000 lb reduction in carbon dioxide emissions, equivalent to 135 cars.

With the assistance of NYSERDA, the proposed PV system will provide an economically viable source of alternative energy for Albany County, and SAIC fully supports this endeavor. Please feel free to contact me with any questions.

Sincerely,

Ronald B. Slosberg  
Assistant Vice President

# CONTINUATION SHEET

AIA DOCUMENT G703

APPLICATION NO: 1  
 APPLICATION DATE: 05/01/05  
 PERIOD TO: 05/01/05  
 ARCHITECT'S PROJECT NO: 5630

AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, containing Contractor's signed certification is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G % (G + C)	H BALANCE TO FINISH (C - G)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD			
1	System design	\$3,500.00					\$3,500.00
2	Bonds	\$17,420.00					\$17,420.00
3	PV modules	\$163,000.00					\$163,000.00
6	Roof racks	\$8,900.00					\$8,900.00
7	Inverters	\$24,130.00					\$24,130.00
8	DAS	\$11,000.00					\$11,000.00
9	Wiring and conduit	\$6,000.00					\$6,000.00
11	Administrative expense	\$18,600.00					\$18,600.00
12	Labor, ETM	\$23,200.00					\$23,200.00
13	Labor, electricians	\$15,000.00					\$15,000.00
14	Equipment rental	\$1,800.00					\$1,800.00
15	Travel	\$3,630.00					\$3,630.00
16	Warranty	\$1,500.00					\$1,500.00
17	Reporting	\$2,000.00					\$2,000.00
18	Planned profit	\$30,170.00					\$30,170.00
19							\$0.00
20							\$0.00
	<b>GRAND TOTALS</b>	\$329,850.00	\$0.00	\$0.00	\$0.00		\$329,850.00

Users may obtain validation of this document by requesting of the license a completed AIA Document D401 - Certification of Document's Authenticity

Post-it® Fax Note	7671	Date	7-6-05	# of pages	1
To	Cunnie	From	Lori		
Co./Dept	Albany	Co	ETM		
Phone #	518 452-8800	Phone #	607 785-6499		
Fax #	518 452-8111	Fax #	607 786-3388		

**COMMONWEALTH ELECTRICAL INSPECTION SERVICE, INC.**  
 Main Office 357 Elwyn Terrace -- Manheim, PA 17545  
**MUNICIPAL CERTIFICATE - ELECTRICAL APPROVAL**

Panel Board No. N/A Cert. 57058 Cut-in Card No. K05145  
 Owner ALBANY COUNTY  
 Occupant ALBANY HOCKEY TRAINING FACILITY  
 Location 830 ALBANY STREET RD YD COLONIE  
 Installation Consisting of 40 KW PHOTO VOLTAGE SYSTEM  
Per ART 690, 1999 N.E.C.  
 Installed By ETM Solarwerks Lic. # N/A

The conditions following governed the issuance of this certificate, and any certificate previously issued is cancelled:-  
 This certificate only covers the electrical equipment and installation conditions as of date. Upon the introduction of additional equipment or alterations, application shall be promptly made for inspection.  
 Inspectors of this Company shall have the privilege of making inspections at any time, and if its rules are violated, the Company shall have the right to revoke this certificate.

Date 7/6/05 INSPECTOR Michael J. Pate 607-860-8600  
 Member N.F.P.A. I.A.E.I.

# Niagara Mohawk

A National Grid Company



Sandra A. Mason  
Senior Analyst – Energy Supply, NY

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

July 8, 2005

Mr. Anthony Mantello  
Director of Facilities Engineering  
c/o Albany County Department of General Services  
112 State Street, Room 600  
Albany, NY 12207

**Re: PV System Acceptance**

Dear Mr. Mantello:

This letter is to confirm that Niagara Mohawk, a National Grid Company, has accepted the interconnection for your Photovoltaic generating facility located at 830 Albany Shaker Road, Latham, NY 12110. Our acceptance is based on the results of the verification inspection and testing conducted by the Regional Engineer, Peter Altenburger, on July 7, 2005.

Based on that inspection, Niagara Mohawk, a National Grid Company, will now permit your facility to be operated in parallel with its system. Please be advised that this permission is conditioned on your continued compliance with both the contractual and technical requirements for this interconnection.

Any reconciliation charges, if applicable, will be followed up by Peter Altenburger.

If you have any questions, please do not hesitate to call me.

Sincerely,

Sandra A. Mason  
Senior Analyst – Energy

Supply

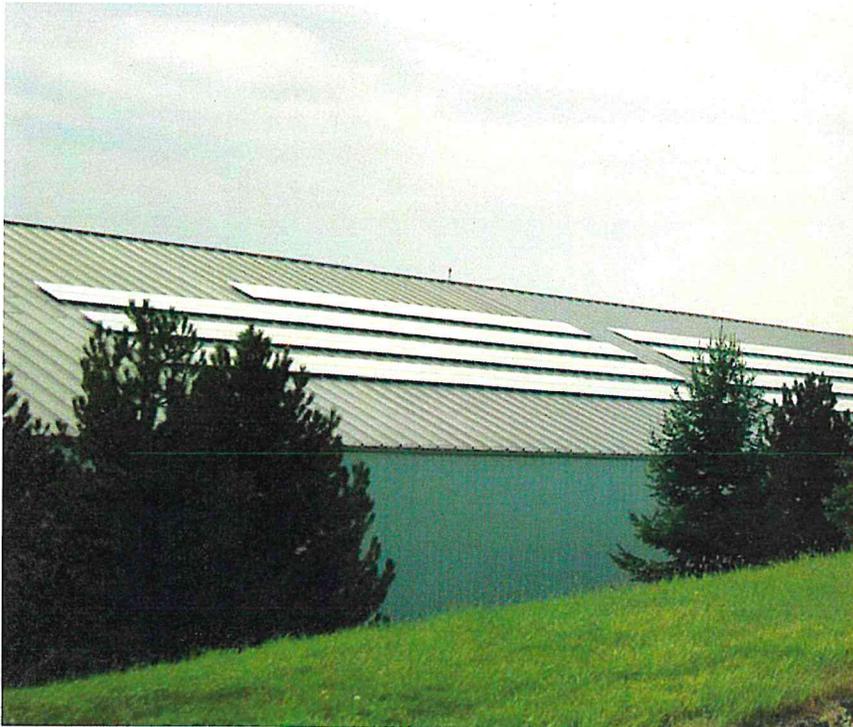
Enclosures

Xc: S. D. Leuthauser  
P. F. Altenburger  
G. Canough, c/o ETM Solar Works  
C. Kontogiannis  
CLA 25.1-13.495

Electric Asset Mgmt\Distributed Generation/DG Letters/13.495 Kontogiannis, Constatine/Connectivity Letter .doc

Energy Supply, A-4  
300 Erie Boulevard West  
Syracuse, New York, 13202-4250  
315.428.5316 Fax: 315.428.3103  
Sandra.Mason@us.ngrid.com

# ALBANY COUNTY HOCKEY FACILITY



## THE BACKGROUND

Solar-electric power is generated from the conversion of sunlight into electricity through a photovoltaic (PV) or solar cell. Photovoltaics provide Power Naturally<sup>SM</sup> and reliably. While the initial system cost can be considerable, NYSERDA has introduced an innovative program to make PV systems

## more affordable

and to encourage new PV installations through qualified system installers.

## THE STORY

**The Albany County Hockey Facility, located in the Town of Colonie, opened in 1991.** It houses an Olympic-size refrigerated ice sheet and is open 10 months a year, averages over 110 hours of activity per week, and is visited by more than 100,000 people annually. The facility hosts a variety of recreational and competitive skating events, offers a food concession, meeting room, and provides skate rental and sharpening services. Camps and training schools; youth, adult, high school and college hockey; access to educational institutions such as athletic leagues for educational activities; and public skating are all part of the facility's activities.

Albany County officials opted to install a 40 kW photovoltaic (PV) system to offset the building's electricity use thereby reducing electricity costs. The system helps reduce the building's peak load,

augment grid integrity, and increase renewable energy awareness through education and site promotion. In addition to installing the 40 kW PV system, the County implemented several other energy conservation measures including a new dehumidifier, replacement of domestic water heaters, replacement of corridor lighting, refrigeration system repairs, installment of an advanced master utility meter, and installation of a new automatic fill system used by Zambonis for ice re-surfacing.

**"I'm pleased to partner with NYSERDA on this exciting project," said Albany County Executive Mike Breslin. "The new solar energy system at our Hockey Facility will save electricity and protect our environment while saving Albany County taxpayers money. I look forward to continuing to work with NYSERDA to educate others about the benefits of renewable energy sources."**

**For more information call 1-866-NYSERDA  
or log on to [www.PowerNaturally.org](http://www.PowerNaturally.org)**

**Thanks to the NYSERDA Photovoltaic Incentive program, places like the Albany County Hockey Facility can install affordable PV systems. It's part of NYSERDA's commitment to help make New York State more energy efficient.**

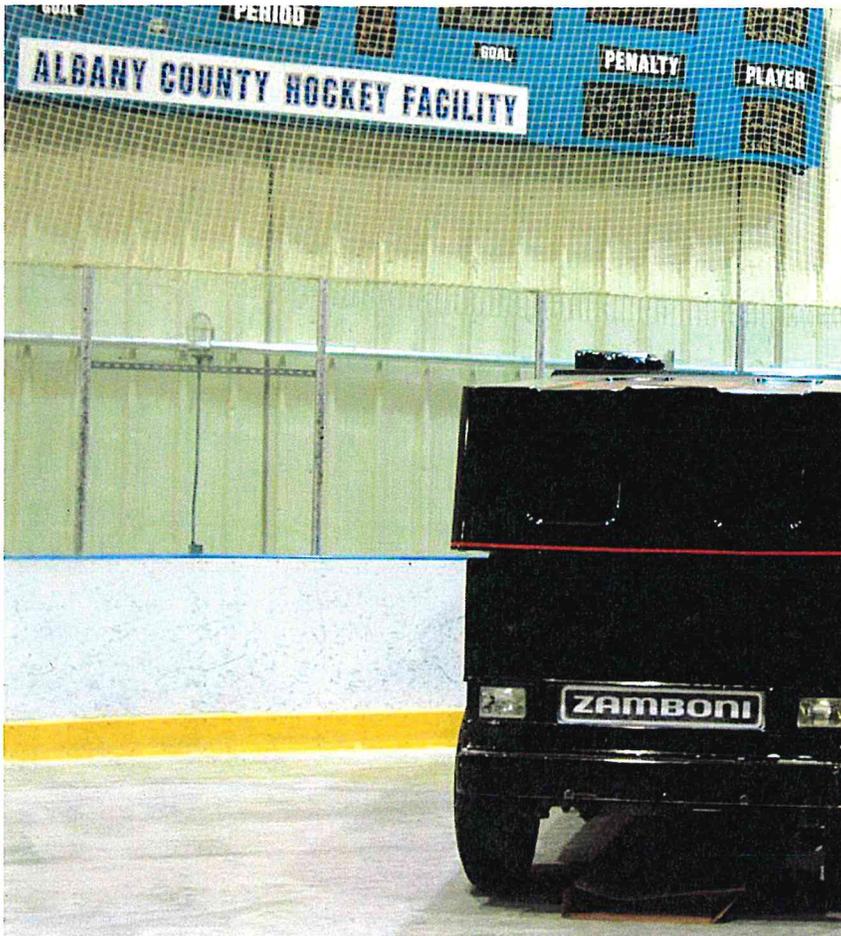
## THE TEAM

- **NYSERDA:** funding and coordination of this PV project, and 11 other municipal PV projects, is a result of the settlement of a lawsuit by the New York State Office of the Attorney General (OAG) against the Virginia Electric Power Company (VEPCO). [www.PowerNaturally.org](http://www.PowerNaturally.org)
- **SAIC:** Assisted Albany County in system specifications, assessing system impacts on building electrical and structural components, and provided technical coordination. [www.saic.com](http://www.saic.com)
- **ETM Solar Works:** Installed the PV system. [www.etmsolar.com](http://www.etmsolar.com)

## THE SYSTEM

The 40 kW DC PV system is comprised of 240 PV modules, each producing 175 watts of power. It was installed on a west-facing, sloped, standing-seam roof.

Six, 6 kW inverters convert the electricity to alternating current to be used in the building. The total AC power is estimated at 32.5kW.



## THE SAVINGS

The estimated annual output of the Albany County Hockey Facility PV system is **40,300 kWh** enough to offset the facility's lighting load. Because the PV system shades the roof, the County expects to save an additional 24,300 kWh in reduced cooling demand.

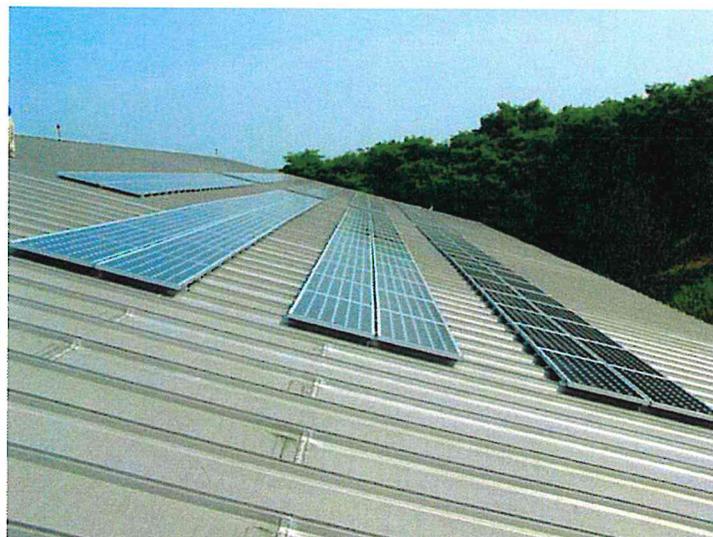
Emissions of CO<sub>2</sub> will be **reduced by 73,000 pounds annually.**



Panoramic View of 40 kW Sharp PV System (west-facing)



Integrated Weather Station



Edge View of PV System