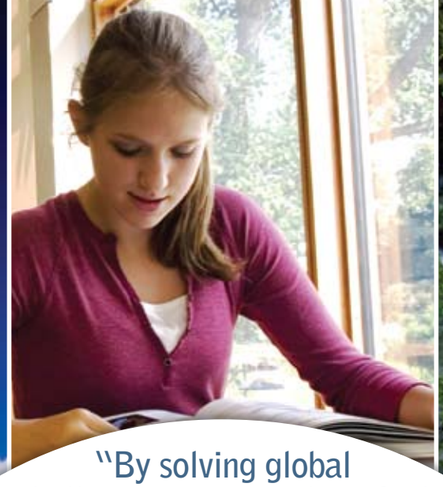
SYRACUSE CENTER OF EXCELLENCE
in ENVIRONMENTAL and ENERGY SYSTEMS

PROGRESS REPORT 2007 COLLABORATING FOR A SUSTAINABLE FUTURE

RESEARCH

DEMONSTRATION

INNOVATION



"By solving global challenges, our members fuel the region's economy."

Edward A. Boguczz, Executive Director

SYRACUSE CENTER OF EXCELLENCE
in ENVIRONMENTAL and ENERGY SYSTEMS

Creating innovations to improve built and urban environments

Clean & Renewable Energy

Syracuse CoE partners research and develop biofuels, improved wind and solar technologies, and efficient buildings. Our vision is sustainable, home-produced energy.

Indoor Environmental Quality

Syracuse CoE partners work with building owners, designers, and manufacturers to develop advanced ventilation, filtration, and personal microenvironment systems. Our vision is improved human health and performance.

Water Resources

Syracuse CoE partners investigate ways to promote healthy watersheds and ecosystems, by developing robotic water monitors and contaminant sensors. Our vision is clean lakes, rivers, and streams.

SYRACUSE CENTER OF EXCELLENCE
in ENVIRONMENTAL and ENERGY SYSTEMS

A federation of more than 140 companies and institutions, the Syracuse CoE is making Upstate New York a world-class hub for sustainable industry.

A proud member of: New York's Creative Core Real. Smart. Green.

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MESSAGE FROM THE CHAIRMAN
R. LELAND DAVIS

The foundations have been laid—let the growth begin. As our headquarters continues skyward, the Syracuse Center of Excellence in Environmental and Energy Systems (Syracuse CoE) continues to expand its economic influence and program footprint not only across Central Upstate New York, but also the US and internationally, focusing on sustainability and green business models.

Our Progress Report—*Collaborating for a Sustainable Future*—highlights the many projects and partner organizations that have helped to foster a hub of "intellectual collisions" focusing on green technology research and implementation.

The force behind this success has been our industry/university partnerships and their drive for technology transfer and commercialization of research developed in the laboratories.

As illustrated in this Progress Report, we have made great strides in the areas of clean and renewable energy, indoor environmental quality (IEQ), and water resources.

The outcome of this research and collaborative efforts will prove vital, as the industrial partners of the Syracuse CoE continue to travel down a path of sustainable design and renewable fuels, with an energy strategy of efficiency and re-use. As the Syracuse CoE moves forward, these concepts will become the foundation—in energy, IEQ, and water—for economic development and job creation in our region.

I would like to thank those who have helped take the concepts of the Metropolitan Development Association of Syracuse and Central New York's Vision 2010 plan several steps closer to reality.

With the hard work and dedication of our partners, we have the ability to re-shape the economic model of Upstate New York, the US, and beyond.

SYRACUSE CENTER OF EXCELLENCE BOARD MEMBERS & OFFICERS

The Syracuse CoE is a federation of independent firms and institutions, administered jointly by Syracuse University and the Syracuse CoE Office for Industry Collaboration, an independent nonprofit corporation. Board members serve as advisors to the Syracuse CoE federation and as directors of the Syracuse CoE Office for Industry Collaboration.

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2006 - 2007

A YEAR OF COLLABORATION & INNOVATION

OCTOBER 2006—Rick Fedrizzi, President, CEO, & Founding Chair of the US Green Building Council, receives the Willis H. Carrier Award at the Syracuse CoE Symposium. (L to R) Greg Powers, Vice President, Carrier Corp.; Eric Spina, Vice Chancellor, Syracuse University; Ed Bogucz, Executive Director, Syracuse CoE; Fedrizzi; and Mat Zlomek, President, Syracuse CoE Board of Advisors. For more on the Symposium, see story on page 27.

NOVEMBER 2006—Central Upstate New York has a great showing at Greenbuild Denver. At right, some of the New Yorkers present at a reception to honor Rick Fedrizzi. For more on Greenbuild, see story on page 24.

DECEMBER 2006—National experts from the American Institute of Architects hold sustainability meetings in Syracuse. See SDAT story on page 23.

JANUARY 2007—The University Sustainability Action Coalition in Syracuse launches numerous projects to promote sustainability. See USAC story on page 22.

JANUARY 2007—Dr. Charles Driscoll of Syracuse University, releases a landmark study on mercury pollution in the Northeast. See story on page 11.

MARCH 2007—The Syracuse CoE Office for Industry Collaboration and Rep. James Walsh (R-NY) present a total of $650,900 to five local Central Upstate companies to promote "green" technology development. See TAD story on page 18.

MARCH 2007—The GreenTeam exhibits at PowerGen in Las Vegas to successfully promote Central Upstate. See related story on page 28.

MARCH 2007—Neil Murphy, President, SUNY-ESF; Senator Hillary Clinton (D-NY); and Russ Johnson, Oswego County Legislative Chair, visit Northeast Biofuels (NEB) near Fulton, NY. See NEB story on page 29.

MARCH 2007—The EFC and Syracuse CoE works with the US Green Building Council's Upstate NY Chapter to create an Emerging Green Builders group. See EGB story on page 26.

APRIL 2007—Chief Oren Lyons headlines SUNY-ESF's Green Building Conference.

APRIL 2007—(L to R) Dan Reicher of Google and Janine Benyus of The Biomimicry Institute motivated the audience at Accelerate 2007. See story on page 25.

JUNE 2007—$3.6 million is awarded by the Syracuse CoE and Rep. James Walsh to 16 primary researchers. (L to R) Attending the announcement are Walsh; Nancy Cantor, Chancellor and President, Syracuse University; Anthony Collins, President, Clarkson University; and Neil Murphy, President, SUNY-ESF. See associated stories on page 10.

JUNE 2007—The National League of Cities comes to Syracuse for a multi-day training program co-hosted by the EFC and the Syracuse CoE. See story on page 21.

SEPTEMBER 2007—Bob McNary of New York's Empire State Development Corporation keynotes the EFC's Conference. See related story on page 21.

SEPTEMBER 2007—(L to R) Ed Reinfurt, Acting Executive Director, New York State Foundation for Science, Technology, and Innovation; Nancy Cantor, Chancellor and President, Syracuse University; State Sen. John DeFrancisco (R-50); and Marilyn Higgins, Vice President for Community Engagement & Economic Impact, Syracuse University at a press conference to announce that $13.8 million of debt reinvestment will be allocated for the Near Westside of Syracuse, including a substantial commitment toward "green" technologies and sustainable building redevelopment. See related stories on pages 8-9.

SEPTEMBER 2007—In September 2007, the Syracuse CoE helped Corning Inc. develop an energy summit. In addition to a number of invited guests, attendees came from all parts of the Corning corporation.

INDOOR ENVIRONMENTAL QUALITY | CLEAN & RENEWABLE ENERGY | WATER RESOURCES

CALLAHAN HOUSE TAKES HOME GOLD

In May 2007, the US Green Building Council certified its first house in New York. John and Elet Callahan's home in Skaneateles was built by Kevin Stack, President of Northeast Natural Homes, Inc.

The house, which won a Leadership in Energy and Environmental Design (LEED) gold rating, was built using recycled glass tile, wheatboard cabinets, cork floors, water-saving toilets, a composite porch, and low-emissions emulsion. During construction the site's natural capital and ecosystem were protected and locally generated wind power was used to provide energy for construction.

The home adopts principles of the Seventh Generation Sustainability Ethic, based on Iroquois Great Law. The ethic requires protection of the interests of the seventh generation born after the project is complete.

The Callahan home also received the highest certificate from the National Association of Home Builders Research Center, and it is designated a demonstration home by the New York State Energy Research and Development Authority (NYSERDA). Syracuse CoE charter member CDH Energy created the home's high-tech HVAC monitoring system.

Elet Callahan teaches sustainable development at the Martin J. Whitman School of Management at Syracuse University, where she is a professor of law and public policy. The Callahans moved into the three-bedroom house in June.

The three-bedroom LEED gold-rated home of John and Elet Callahan in Skaneateles, NY. Contrary to popular belief, a "green home" does not cost more than a conventional home. "A misperception exists that green building costs more, and while that was once true, it is no longer the case," says Kevin Stack, President of Northeast Natural Homes, Inc., who built the home. "Green buildings actually save financial, human, and ecological capital over time through lower operating and maintenance costs, higher performance, and better human and ecological health. Sustainable building has actually become the more cost-effective way to build, especially when externalities are factored in."

The Callahan's LEED gold-rated home in Skaneateles, NY incorporates:

- **IN-FLOOR RADIANT HEAT**—The "smart" radiant heat system consists of five heat zones, individual thermostats, and a radiant water supply (pictured top right).
- **DUAL FLUSH TOILETS**—These save an average family of four approximately 6,000 gallons of water per year, which also saves energy through reduced water pumping.
- **BIO-MAT SEPTIC SYSTEM**—This pre-treats effluent with a dual biomat filter and has a leaching capacity up to 10 times more durable than a conventional field (pictured middle right).
- **MODIFIED OPTIMUM VALUE ENGINEERING (MOVE)**—Unnecessary wood was eliminated from the home's skeleton to create a more energy efficient building envelope (pictured lower right).
- **NATURAL DRAINAGE PATTERNS**—These were preserved by minimizing lot coverage, protecting existing vegetation, and preventing erosion.
- **WIND POWER**—Northeast Natural Homes purchased sufficient wind energy to cover all onsite construction.
- **FLY ASH CONCRETE**—Using fly ash in concrete reduces pressure on landfills, creates a better product, and captures the energy of a waste material.
- **CORK FLOORS**—Cork is harvestable every six to nine years without cutting down the tree, contains anti-microbial substances, and has excellent acoustic properties.

In-Floor Radiant Heat

Bio-Mat Septic System

Modified Optimum Value Engineering

ON THE COVER | *CLOCKWISE FROM TOP:*
Syracuse community leaders, citizens, and WCNY Connected employees gather in the Near Westside neighborhood in September 2007 to learn about the Near Westside Initiative; Larry Wetzel, Chairman of Air Innovations, makers of specialized air conditioning systems; the Skaneateles, NY home of John and Elet Callahan, a LEED-gold-rated house; and one of Syracuse University's sweating/breathing manikins, used for indoor air quality experiments.

2007

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The Near Westside neighborhood, looking west from downtown Syracuse. The building on the right is The Warehouse, currently occupied by Syracuse University's School of Architecture. Many of the properties beyond the railroad line will be renovated as part of the Near Westside Initiative. The Syracuse CoE will lead efforts to incorporate green technologies in the project.

NEAR WESTSIDE INITIATIVE: ENERGIZING A NEIGHBORHOOD

On September 21, 2007 Syracuse received a double dose of good news when Syracuse University announced it will invest $13.8 million in the Near Westside neighborhood and WCNY Connected announced it plans to build a new broadcast and education center in the neighborhood.

The Near Westside Initiative (NWSI) is a collaborative effort to restore the Near Westside into a neighborhood of choice for residents of all incomes. Up to 263,000 square feet of commercial structures—including WCNY's new building—and up to 154,000 square feet of residential space will be developed—and that's just the beginning!

The Syracuse CoE will lead efforts to incorporate green technologies in the project. As part of this effort, the project will be used to evaluate the Leadership in Energy and Environmental Design-Neighborhood Development (LEED-ND) system proposed by the US Green Building Council, which will bring the initiative national attention.

The initiative plans to enhance housing and economic opportunities for existing and new residents, maintain and restore the neighborhood's historic architectural charm, and include residents in plans and discussions. Residential development will include an "artists' quarter," housing up to 70 artists. The NWSI will market this Arts, Design, and Technology Quarter nationally and internationally to attract prospective artists, entrepreneurs, and designers to the area, using a $485,000 grant from National Grid.

Among other groups involved in the NWSI are the City of Syracuse, Home HeadQuarters, The Gifford Foundation, Green and Seifter, National Grid, NYSERDA, Queri Development Corp., Syracuse Neighborhood Initiative, and Syracuse University.

(L to R) Robert J. Daino, WCNY President and CEO; Mark Robbins, Dean of the Syracuse University School of Architecture; and Mary Alice Smothers of P.E.A.C.E., Inc. An important component of the Near Westside Initiative is to include community groups such Home Headquarters and community leaders such as Smothers in the planning efforts.

State Rep. William Magnarelli (D-120) was instrumental in getting the state to forgive part of a loan to Syracuse University and to reinvest in Syracuse's Near Westside. "This is a great example of a state initiative that will make a difference in our community," said Magnarelli. "Syracuse University has developed an exciting plan to build on its accomplishment with the School of Architecture's Warehouse building, supporting technology and arts as two thriving economic and cultural engines in Syracuse."

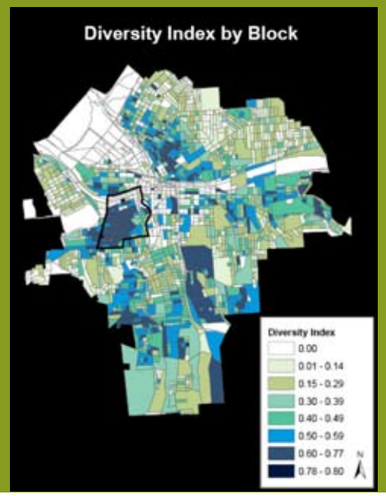
SYRACUSE LOOKS TO RESTORE A JEWEL

As part of the Near Westside Initiative, the City of Syracuse will submit a grant application to the state's Restore New York's Communities Initiative for an additional $10 million that, along with portions of Syracuse University's $13.8 million, will help:

✚ WCNY Connected construct a 75,000-square-foot, multi-story broadcast facility at the corner of West and Marcellus streets that will include television and radio studios, offices, and a 20,000-square-foot, state-of-the-art educational center. The WCNY construction will be the anchor project of the Arts, Technology & Design Quarter, and with the Syracuse CoE's help, will strive to achieve "gold" status in the US Green Building Council's LEED rating system.

✚ Enable Home Headquarters, the SU School of Architecture, and the Syracuse CoE to rehabilitate vacant, abandoned, condemned, and surplus residential properties in the neighborhood, with an overall goal of having 50 completed and occupied by 2011. With the Syracuse CoE's assistance this will be "green" housing for current and future city residents, located in a several-block area around Blodgett School and Skiddy Park.

✚ Redevelop the 220,000-square-foot CASE Supply building and the smaller, 28,000-square-foot Lincoln Supply building. Both buildings—expected to be LEED-gold—will bookend the WCNY facility.



A key goal of the NWSI is to maintain the neighborhood's diversity, providing housing and other opportunities to existing as well as new residents. At left is the Diversity Index of Syracuse, pictured block by block. The darker colors indicate a more diverse neighborhood. The Near Westside, outlined, has an index of 0.80. (Map created by Jennifer Perrone, Syracuse CoE intern.)

BELOW: "Everything's coming together," said State Sen. John DeFrancisco (R-50) at a press conference announcing plans for Syracuse's Near Westside. DeFrancisco was thanked for his role in getting the state to forgive part of a loan to Syracuse University and to reinvest in the Near Westside.

ABOVE: WCNY Connected plans to build a 75,000-square-foot, multi-story new broadcast facility at the corner of West and Marcellus streets that will include television and radio studios, offices, and a dedicated 20,000-square-foot art education center. The facility will be the anchor project of the Arts, Technology, & Design Quarter of the Near Westside Initiative.

ATTRACTING CREATORS, DRIVING INNOVATION

The Arts, Technology & Design Quarter (ATDQ), considered central to the economic revitalization of the Near Westside, is modeled in part on the highly successful Artist Relocation Program in Paducah, KY.

The ATDQ is envisioned as an interdisciplinary creative community of residences and workspaces for artists, designers, and technologists rising among former commercial structures in three Near Westside blocks, encompassed by West Fayette Street, Wyoming Street, Tully Street, and West Street.

These facilities will be constructed or renovated using—and will serve as a test bed and showcase for—environmental and energy technologies developed by Syracuse CoE industry partners.

Syracuse University's School of Architecture and UPSTATE: A Center for Design, Research, and Real Estate (based at the school) will draw from the university's $13.8 million NWSI funding to support design development for the ATDQ, engaging nationally recognized experts in architecture, landscape architecture, sustainable design, marketing, urban planning, real estate development, public policy, and finance.

Furthermore, UPSTATE will establish a home design center for Near Westside residents at The Warehouse, and it will also conduct a national design competition.

The Syracuse CoE will coordinate the efforts of its industry partners to create studio and innovation spaces for artists and designers using advanced sustainable designs and technologies. The Syracuse CoE will use its resources to integrate green technology innovations in both the residential and commercial Near Westside development projects.

INTELLECTUAL COLLISIONS SPARK INNOVATION

"CARTI projects represent the best in air quality and water resource management research being conducted in the US," says Rep. James R. Walsh (R-NY). "I'm proud to have secured funding to support ongoing research and education activities at the Syracuse CoE's partner institutions."

Funds from the US Environmental Protection Agency (EPA), fuels the Syracuse CoE's Collaborative Activities for Research and Technology Innovation (CARTI) program.

Begun in 2006, CARTI is a cornerstone of the Syracuse CoE's "technology transfer" initiative, which encourages open exchange of ideas and "intellectual collisions" between institutions and industry. CARTI research projects link academic researchers with business leaders across New York.

Along with the Syracuse CoE Office for Industry Collaboration's Technical Application and Demonstration (TAD) grants, Commercialization Assistance Program (CAP), and Research & Technology Forums, CARTI is vital conduit that ensures start-ups and established firms alike benefit from a well-spring of innovative research conducted at world-class Upstate New York colleges and universities.

"Commercializing technology developed from this research will invigorate economic and job growth in our community," adds Syracuse CoE Board Chairman R. Leland Davis. "The CARTI program is the spark that unites our distinguished universities with Upstate industries."

WALSH ANNOUNCES 2007 CARTI GRANTS, MEETS FELLOWS

Rep. James T. Walsh (R-NY) visited Syracuse University in June to announce the second round of CARTI grants, totaling $3.6 million and awarded to 16 projects, and to meet 2006 recipients of Syracuse CoE Graduate Fellowships. (L to R) Syracuse CoE Fellows Michelle Ferguson, Erik Burton, and Mike Janos of Syracuse University; Walsh; and Fellows Jason Demers of Cornell University and David Marr of Syracuse University. *See the list of 2007 CARTI grant winners on page 13.*

"CARTI PROJECTS REPRESENT THE BEST IN AIR QUALITY AND WATER RESOURCE MANAGEMENT RESEARCH BEING CONDUCTED IN THE US."
REP. JAMES T. WALSH

CLEAN & RENEWABLE ENERGY

NYSERDA GRANT TO TEST ENERGY EFFICIENT HOME

The Syracuse CoE was recently awarded a $75,000 grant from the New York State Energy Research and Development Authority (NYSERDA), for a total project valued at $105,000, to convene a research team of architects, engineers, builders, and renewable resources professionals to design and model a "market rate" ($175,000) energy efficient single-family residence for Syracuse.

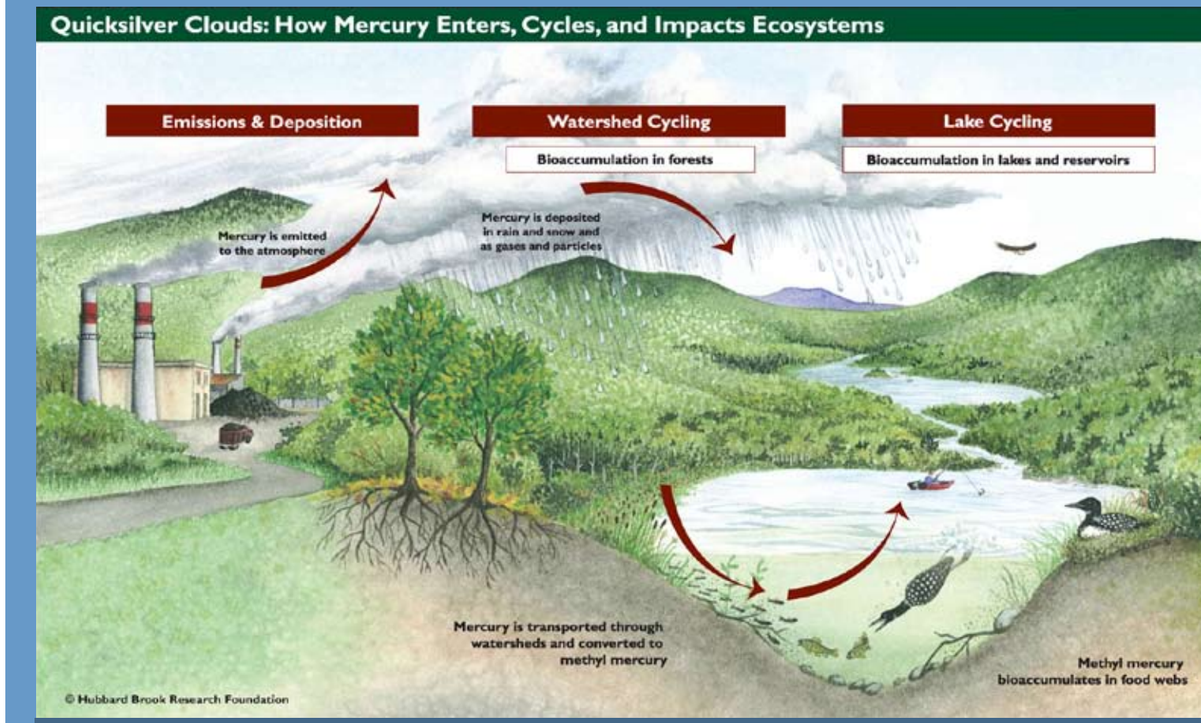
Members of the team are Ashley McGraw Architects, Munly Brown Studio, Northeast Green Building Consulting, LLC, RAM-TECH Engineers, and the Syracuse University School of Architecture.

The goal is to develop median-priced home "design intelligence" for home construction throughout the state. Design intelligence is a collaborative process that emphasizes performance objectives over form. One example is the use of computer models in which the whole design model can change in response to changing variables.

The project will be innovative in the integration of technologies, material systems, and site strategies that will dramatically reduce energy consumption within the budgetary constraints of building a median-priced home. The team's design method will be a departure from common practice and design intelligence will be used from the start.

The design process will allow the research team to bring to bear its full theoretical and practical experience in science, design, and construction. The team will use interactive modeling to allow pre-construction testing and the balancing of construction costs, environmental performance, and client expectations. Finally, modeling will allow the performance of the house—after construction—to be evaluated and compared to results gained from the modeling procedure.

WATER RESOURCES



Syracuse University Prof. Charles Driscoll, an expert on mercury pollution in watersheds, teamed up with the Hubbard Brook Research Foundation and Clarkson University to release two new landmark studies on mercury pollution in the Northeast. To read the reports, visit www.hubbardbrook.org.

CHASING QUICKSILVER THROUGH THE MOUNTAINS

Professor and Syracuse CoE associate Charles Driscoll and colleagues from the Hubbard Brook Research Foundation (HBRF) and Clarkson University have released the results of two new landmark studies that identify five known and nine suspected biological mercury hotspots in the northeastern US.

The findings suggest that coal-fired power plants in the US are major contributors to mercury pollution. One of the mercury hotspots occurs within New York's Adirondack Mountains.

The studies are the result of a three-year effort by Driscoll and his collaborators, including Tom Holsen of Clarkson University.

In January 2007, Driscoll and his team briefed Congress, and the studies spurred Sen. Susan Collins (R-ME) to announce her intention to introduce legislation creating a nationwide mercury monitoring network. Collins also intends to reintroduce legislation that would require power plants to reduce mercury emissions by 90%.

The HBRF team of 11 scientists used a database of more than 7,300 samples to quantify mercury levels in fish, loons, and other wildlife at lakes and reservoirs from New York to Nova Scotia. "We were surprised to find that the Adirondacks had some of the highest mercury levels in fish and loons in the Northeast," says Driscoll, Professor of Environmental Systems Engineering at the LC Smith College of Engineering and Computer Science. "The average mercury levels in yellow perch were more than twice the human health criterion established by the US Environmental Protection Agency."

Adapted from an article by Kelly Homan Rodoski in Syracuse Engineer, *Spring 2007. Read the full article online at http://www.lcs.syr.edu/communication/engineer_magazine.aspx.*

Daniel N. Valyou, an undergraduate honors student in the Clarkson University Aeronautical Engineering program, helps the Clarkson Unmanned Aerial Vehicle team by fitting instruments on a Cessna UAV.

BRINGING THE SKY DOWN TO EARTH

Scientific research is dependent on gathering accurate data, but when the research field is the atmosphere, gathering uncontaminated information quickly and efficiently is a challenge.

Weather balloons may be slow and U2 research aircraft too expensive, but aeronautical researchers have another choice. They can put instruments on relatively inexpensive, more easily deployed Unmanned Aerial Vehicles (UAVs).

That's what Syracuse CoE associate and Clarkson University Professor Suresh Dhaniyala plans to do, thanks to a $100,000 CARTI grant to produce a compact, fully instrumented UAV for real-time air quality studies in urban airsheds.

The use of small, unmanned aircraft is crucial to Dhaniyala's research, which models how submicron aerosol and microscopic particles—abundant in urban airsheds—move in the chaotic conditions of the atmosphere.

To fit out the UAV, Dhaniyala and his team are developing several next-generation instruments for improved real-time study of microscopic air particles. Dhaniyala plans to combine these new instruments with new modeling efforts and the UAV to better understand the effect of microscopic air particles on human health and the global climate.

"The main aircraft—called VectorP—will arrive from the manufacturer in October 2007," says Dhaniyala. "Until then, we are concentrating research on the development of instruments that will be flown in VectorP, and we have a smaller UAV that we have been outfitting with some of these for test flights."

WATER RESOURCES

ONONDAGA LAKE RETURNING TO HEALTH

In November 2006, the eighth annual Onondaga Lake Scientific Forum took place in Liverpool, New York, sponsored by the Syracuse CoE, Upstate Freshwater Institute, SUNY-ESF, and Syracuse University. Discoveries about the current "state of the lake" were presented, including:

- Reductions in nutrient levels, such as nitrogen and phosphorous, have been observed over the past several years due to improvements at the METRO sewage treatment plant.
- New monitoring efforts, including remote sensing and the measurement of water quality characteristics in real time, are yielding data to supplement the robotic monitoring already being conducted on the lake (visit www.ourlake.org for more information).
- Mercury levels in water samples collected from the lake decreased in 2006, although fish mercury levels increased.
- Continued monitoring of water, fish, and sediments will help scientists understand more about the complex cycling and dynamics of nutrients, mercury, and plant and animal life in the lake. These efforts will guide ongoing related rehabilitation efforts.

One sign Onondaga Lake is being revitalized was the visit to the lake in July 2007 of the Bassmaster fishing tournament. The lake is an excellent spot for catch-and-release fishing.

- **Computational and Experimental Study of Airflow and Particulate Pollutant Transport and Concentration around the Syracuse CoE HQ**. Goodarz Ahmadi and Douglas Bohl of Clarkson University—a one-year project. **($100,000)**
- **Membrane-based DNA Technique to Simultaneously Detect Opportunistic, Pathogenic, and Wood-decay Fungi in Buildings**. Susan Anagnost and C.J.K. Wang of SUNY-ESF—a one-year project. **($100,000)**
- **Shaped Silica/Gold Core-Shell Nanoparticle Based Intelligent Sensors for Waterborne Pathogens**. Tewodros Asefa and James C. Dabrowiak of Syracuse University (SU)—a one-year project. **($99,949)**
- **Biosensors with Low Cross-Reactivity for Waterborne Contaminants**. Philip Borer, Mark P. McPike, and Bruce Hudson of SU—a two-year project. **($299,884)**
- **Interaction Between Building Envelope Pressure Loading and Indoor Air Distribution.** Thong Dang and H. Ezzat Khalifa of SU—a one-year project. **($99,996)**
- **An Intelligent Urban Environmental System for CNY Water Resource Management.** Charles Driscoll Jr. of SU and Steven W. Effler of the Upstate Freshwater Institute—a three-year project. **($600,000)**
- **Development of a Real-time Self-Contained Buoy Detection System for Water-borne Trace Organic Contaminants.** John Hassett of SUNY-ESF—a one-year project. **($100,000)**
- **Controlling the Microclimate Around the Head with Local Ventilation**. Hiroshi Higuchi, Mark Glauser, and H. Ezzat Khalifa of SU; and Edward Arens, Zhang Hui, Charlie Huizenga, and Gail Brager of the University of California, Berkeley—a two-year collaboration with the Center for the Built Environment (CBE) at the University of California, Berkeley. **($300,000)**
- **Characterization of the Ambient Air Quality in Syracuse and Identification of its Origins**. Philip Hopke and Thomas Holsen of Clarkson University; Myron Mitchell of SUNY-ESF; and K. Max Zhang of Cornell University—a three-year project. **($600,000)**
- **Distributed Demand-Controlled Ventilation for Improving Indoor Air Quality**. H. Ezzat Khalifa, Can Isik, and Jianshun Zhang of SU; and C.J. Li of Rensselaer Polytechnic Institute—a two-year project. **($300,000)**
- **Development of an Antigen-Responsive Hydro-Shell for Detecting Aqueous Toxins.** Yan-Yeung Luk, Dacheng Ren, and Ashok Sangani of SU—a one-year project. **($99,868)**
- **Near-Real-Time Detection of Microbial Waterborne Agents to Inform Risk Analysis.** Ramesh Raina and Charles T. Driscoll, Jr. of SU and Margaret Coleman of the Syracuse Research Corporation—a one-year project. **($100,000)**
- **Impact of Carbon Dioxide on Human Decision Making and Productivity.** Usha Satish of SUNY Upstate Medical University and William B. Fisk of the Lawrence Berkeley National Laboratories—a two-year project. **($299,411)**
- **Integrating Sensor Network Design with Weather Forecasts and a Watershed Model to Predict and Manage Water Quality.** Christine Shoemaker and Dan Wilks of Cornell University—a one-year project. **($100,000)**
- **High Environmental Performance 2 (HEP 2)—Residential Housing for New York State.** Timothy Stenson, Jianshun Zhang, and Mark Bomberg of SU—a one-year project. **($99,989)**
- **Development of a Living Testbed for Built (Indoor) and Urban (Outdoor) Environmental Systems.** Jensen Zhang and H. Ezzat Khalifa of SU; Andrea R. Ferro of Clarkson University; Max Zhang of Cornell University; and Greg Dobbs of the United Technologies Research Center—a two-year project. **($300,000)**

For complete descriptions of the 2007 CARTI projects, visit www.syracusecoe.org.

WATER RESOURCES

HELPING FARMERS HELP WATERSHEDS

Plants and animals need phosphorus to thrive, but when farming practices cause an increase of this nutrient in streams, rivers, and lakes, aquatic algae and other plants take advantage. Blooms of algae can spoil the natural balance of aquatic ecosystems and interfere with sources of drinking water.

The process whereby increases in nutrients lead to over-abundance of algae and other plants is called "eutrophication." In 2007, Dr. Christine Shoemaker of Cornell University's Department of Civil and Environmental Engineering, received a $100,000 CARTI grant to improve the ability to understand and manage eutrophication in water bodies in Upstate New York due to excess phosphorus. The project is a collaboration with Cornell's Department of Earth and Atmospheric Science.

Shoemaker, a Syracuse CoE associate, is a mathematician, engineer, ecologist, and water management expert, who is studying the impact of farming on phosphorus levels in watersheds that supply New York and other cities with drinking water.

A major issue is how to reduce phosphorus that enters water from cattle feed. Most of this phosphorus enters the ecosystem as cattle manure that is applied to farmland. Farmers often feed their livestock more nutrients than they need for optimal health. Research by the New York State Department of Environmental Conservation shows that farm phosphorus runoff can be reduced by 30% through a "whole-farm plan."

"Earlier work by my colleagues and I indicates that if farming best-management practices are not implemented, phosphorus levels are going to increase, because there is more phosphorus going into the watershed than is leaving it," explains Shoemaker, who, along with her students, has developed a computer model to track water, sediment, and phosphorus in the 47-square-mile Cannonsville watershed, one of four reservoirs in the Delaware watershed system that supplies New York City.

Dr. Christine Shoemaker's research into phosphorus levels in drinking water resources centers on the Cannonsville reservoir, the easternmost reservoir in the Delaware/Catskills watershed that supplies New York City.

"THE COOLEST JOB"—INNOVATIVE COMPANY WINS EMERGING BUSINESS PRIZE

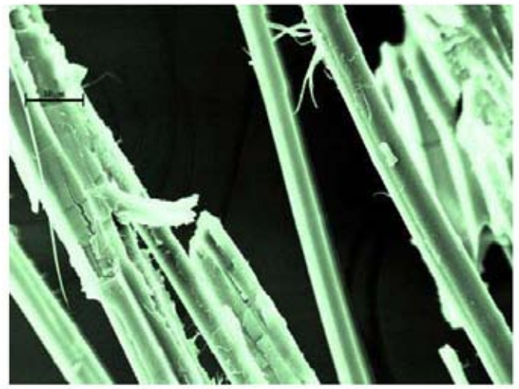
In April, the Metropolitan Development Association of Syracuse and Central New York awarded e2e Materials of Ithaca the $100,000 grand prize in the EssentialConnections.org Emerging Business Competition, judged by a distinguished panel of venture capitalists and business leaders.

e2e Materials—which produces high-durability biodegradable composite materials—also announced a partnership with a leading skateboard manufacturer. "Biocomposite skateboards are just the beginning," says e2e President Patrick Govang. "This competition provides a springboard for e2e to continue to develop into a host of new product areas. I have the coolest job in the world!"

Govang's business partner is Anil Netravali, a Cornell University professor of fiber science and apparel design. Netravali created a composite material that could soon replace products, such as formaldehyde-based particleboard. e2e Materials uses this biodegradable composite, made entirely from plant fiber and a resin derived from soy protein.

ABOVE: Cornell Prof. Anil Netravali used natural fibers obtained from plants (shown magnified), together with the resin from a soy protein, to create a composite material that could one day eliminate plastics made from oil. Netravali and business partner Pat Govang recently won a business prize for their start-up company—e2e Materials—which markets the bio-composite.

BELOW: Jeff McDonough, professional rider for Comet Skateboards of San Francisco, California, examines a skateboard made from e2e Materials' biodegradable composite.



CLEAN & RENEWABLE ENERGY

ANTEK: SUSTAINING NEW YORK WITH COLLABORATIVE RESEARCH

Founded in June of 2004, Antek Inc. has been collaborating with SUNY-ESF for more than a year in the development of clean and renewable energy systems.

Antek's work began with a small business grant in 2006 to research and develop a biofuel cell

The company has since taken a regional approach to sustainability with new collaborations with the Syracuse University Chemistry and Physics Departments, performing research into solar cells and hydrogen storage.

Building local collaborations has allowed Antek to take advantage of available regional resources and expertise, as well as create lasting business relationships.

Antek's goal is to conduct research in order to develop and then transition its products for commercialization.

Their objectives, however, are not limited to sustainability in terms of clean and renewable energy but also sustainability as it pertains to the Upstate New York economy. In other words, Antek wants to stay put in Syracuse and is putting its best foot forward to create jobs and build the region's economy by making sustainability a regional economic driver.

One of Antek's latest projects, with help from the Syracuse CoE, resulted in a cooperative opportunity for students interested in sustainability and clean and renewable energy systems.

Anthony Terrinoni, Vice President of Antek, is excited about the success and collaboration the coop created for all involved.

"This project afforded us a venue to evaluate the technical abilities of a student while offering him or her work experience on an innovative project in an energetic business environment," he says. "It was a great way to build a relationship with a university, and we're looking forward to working with other students."

ANTEK'S GOAL IS TO CONDUCT RESEARCH IN ORDER TO DEVELOP AND THEN TRANSITION ITS PRODUCTS FOR COMMERCIALIZATION.

JOIN THE CIRCLE OF SUCCESS!

The Syracuse CoE Office for Industry Collaboration launched an exciting, benefit-packed Partner Program in September 2007. By becoming a partner of this 501(c)(3) corporation, firms and institutions are automatically considered members of the Syracuse CoE federation.

The broad benefits of the new Partner Program are designed to attract industry and research partners collaborating in the fields of clean and renewable energy, indoor environmental quality, and water resources. Several access, outreach, and visibility opportunities are offered for participating firms and institutions.

Five sponsorship levels have been defined for industry partners. Along with Platinum, Gold, Silver, and Patron levels, there is a unique partnership for start-up companies, giving them an opportunity to reap the benefits of this networking and collaboration opportunity early in their existence.

Research institutions have two partnership levels to consider (Platinum and Patron), while economic development agencies and funding agencies that work with the Syracuse CoE Office for Industry Collaboration are automatically considered partners at no charge.

For more information on how the program can help your organization "innovate, collaborate, and excel," contact Sandy Downey, Executive Vice President of the Syracuse CoE Office for Industry Collaboration at 315-443-8211 or sdowney@syracusecoe.org.

INDOOR ENVIRONMENTAL QUALITY

CLARKSON RESEARCHERS TO STUDY IMPACT OF NEW VENTILATOR ON ASTHMA PATIENTS

For someone with asthma, airborne irritants can spring up practically anywhere, even inside the home. "One of the biggest culprits is the kitchen," says Cheryl A. Gressani, Director of Business Development for Air Innovations of North Syracuse, New York.

Cooking releases tiny particles that easily migrate, she explains. Air Innovations is working on a new product to help those with respiratory problems find some relief inside their homes.

With help from Clarkson University and a $150,000 grant from the Syracuse CoE Office for Industry Collaboration, the company has embarked on an 18-week study of HEPAiRx, an air heating, cooling, and filtration unit for use in a single room, known as an "integrated energy-recovery ventilator."

The ventilators are designed to be energy efficient as well. Air Innovations will install the units in the bedrooms of 45 asthma patients during the study and, with help from Clarkson researchers, record information on their health and the effectiveness of the system. In addition to heating, cooling, and filtering indoor air, the product brings in fresh air from outdoors. It also pressurizes the room to stop airborne irritants—such as those created during cooking—from entering.

The HEPAiRx air heating, cooling, and filtration unit was designed thanks to a collaboration between Air Innovations and Clarkson University.

CLEAN & RENEWABLE ENERGY

INDOOR ENVIRONMENTAL QUALITY

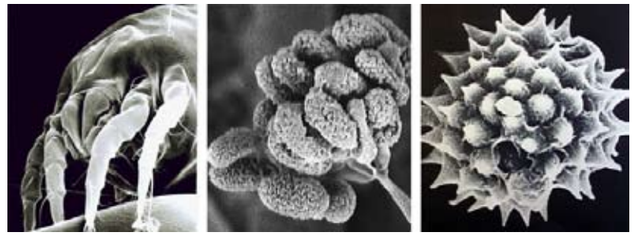
JOSEPH LAQUATRA: AN AWARD-WINNING EXPERT ON SUSTAINABLE HOMES

Dr. Joseph Laquatra is the Hazel E. Reed Human Ecology Extension Professor in Family Policy at Cornell University. A vastly experienced teacher and public speaker, Laquatra's educational programs for home owners and builders focus on areas of growing concern, such as home energy efficiency, indoor air quality, construction site waste, and residential sprawl.

In September 2007, Laquatra spoke at a Syracuse CoE Office for Industry Collaboration Research & Technology Forum on the topic of "Residential Moisture Control." "Excess moisture in homes contributes to structural decay and the presence of mold and other biological pollutants that are allergy and asthma triggers," explains Laquatra, who is an Outreach Team Leader for the Syracuse CoE Office for Industry Collaboration.

As an Extension Housing Specialist, Laquatra develops and implements educational programs on this and other topics through the statewide network of Cornell Cooperative Extension (CCE). One of these, the Consumer Education Program for Residential Energy Efficiency, currently engages 35 local associations of CCE.

In November 2006, Laquatra was the first recipient of the Outstanding Engagement Award from the National Association of State Universities and Land Grant Colleges (NASULGC) Board of Human Sciences. The award recognized him "for exceptional creativity and scholarship in the development, application, and evaluation of outreach, extension, and public service programs."



Three common household visitors often cause distress for allergy and asthma sufferers: (L to R) Close-ups of a dust mite, house mold, and a pollen grain. Dr. Joseph Laquatra of the Cornell Cooperative Extension is an expert on the control of allergy and asthma triggers, as well as home energy efficiency and residential sprawl.

R&T FORUMS BRING RESEARCH HOME

As part of its public outreach efforts, and with guidance from the Syracuse CoE Board's Research and Technology Committee, the Syracuse CoE Office for Industry Collaboration hosted a number of Research & Technology (R&T) Forums in Syracuse during 2006 and 2007. Below are examples of topics presented:

- In "Asthma, Children, and the Indoor Environment," Dr. Jerrold L. Abraham, Professor of Pathology, SUNY Upstate Medical University, spoke about childhood asthma and indoor environments. Abraham showed that the US Environmental Protection Agency (EPA) Assessment of Urban Dwellings for Indoor Toxins (AUDIT) reveals a complex interaction between demographics, the environment, and health outcomes. Some risk factors for wheeze in the first year of life include birth season, gender, not breast feeding, maternal age at birth, mold and fungi, and pet allergens, explained Abraham.
- In "The Market Dynamics of Indoor Environments and the Impact on Comfort, Health, and Energy," Tim Kensok, Director of Business Development at Air Advice, Inc., identified indoor environmental quality (IEQ) challenges for residential buildings. IEQ issues for homes include carbon monoxide, temperature, and humidity, and volatile organic compounds. At stake, explained Kensok, are asthma rates, energy costs, and the health and well-being of families.
- In "Gene-Environment Interaction in Attention Deficit Hyperactivity Disorder," Dr. Stephen V. Faraone of the Medical Genetics Research Center at UMU explained how Attention Deficit Hyperactivity Disorder (ADHD) is an environmentally complex disorder. Faraone investigated ADHD's links to mercury, manganese, lead, and polychlorinated biphenyl (PCB) exposure, as well as pregnancy and birth complications, fetal exposure to alcohol, and socioeconomic status.

In August 2007, Hugh Henderson, Founding Principal of Cazenovia, NY-based CDH Energy Corp. spoke on "Building Simulation for Green Building Design and Technology Evaluations" as part of the Research & Technology Forums sponsored by the Syracuse CoE Office for Industry Collaboration.

FROM BIO-FURNITURE TO "GROWING" CLEAN AIR—

INNOVATIVE FIRMS RECEIVE TAD GRANTS

In March 2007, the Syracuse CoE Office for Industry Collaboration awarded a total of $650,900 in grants to five companies. The merit-based Technology Application and Demonstration (TAD) awards—made possible by US Environmental Protection Agency funding secured by US Rep. James T. Walsh (R-NY)—are for projects to improve air or water quality. Projects began March 1 and will run through February 29, 2008.

✚ AIR INNOVATIONS OF NORTH SYRACUSE ($150,000)

Collaborating Partner: Clarkson University

This project field tests an integrated energy recovery ventilator in the homes of 45 individuals in Central New York with asthma or other respiratory diseases to determine if reductions in environmental pollutants and disease symptoms occur. The project includes a component that is funded by the New York State Energy Research and Development Authority (NYSERDA).

✚ HAPCONTROL LLC OF SYRACUSE ($150,000)

Collaborating partners: Cornell University, Triad Technologies Inc., the USEPA, the American Composite Manufacturers Association, and NYSERDA

This project conducts an independent performance verification needed to commercialize a new line of "bio-furniture" to eliminate hazardous air pollutants generated during furniture manufacturing.

✚ ISOLATION SYSTEMS INC. OF TONAWANDA, NY ($50,900)

Collaborating partners: Air ISO Inc., Graver Technologies, R.P. Fedder Corp., and Syracuse University

This project integrates unique air purification and room air management systems with a ductless split "fan-coil" system that can be deployed in medical facilities, such as airborne isolation rooms, surgical suites, or intensive care units.

✚ ORTHOSYSTEMS OF SYRACUSE ($150,000)

This project delivers a prototype instrument to automatically measure coliform bacteria and free chlorine residual in drinking water in real-time, providing water system managers the ability to monitor and rapidly respond to alert situations.

✚ PHYTOFILTER TECHNOLOGIES OF SARATOGA SPRINGS, NY ($150,000)

Collaborating partner: Syracuse University

This project tests the performance of a NASA-developed, plant-based system that removes volatile organic compounds (VOCs) from indoor air and converts the VOCs into plant food, in order to "grow" clean air.

CLEAN & RENEWABLE ENERGY

SYRACUSE COE PARTNERS DEVELOP BIOREFINERY

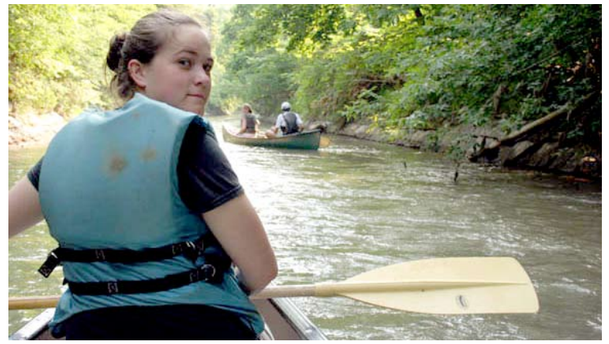
In December 2006, New York State announced a $10.2 million grant to SUNY-ESF to develop the first biorefinery in the US. SUNY-ESF is working with Catalyst Renewables Corp. of Dallas, TX, O'Brien & Gere, and New Energy Capital to develop a pilot commercial cellulosic ethanol facility in Lyonsdale, NY.

Catalyst Renewables currently owns two biomass-to-energy plants in New York. The new biorefinery will be constructed adjacent to the company's Lyonsdale Biomass Plant. Previously, ESF worked with Catalyst Renewables to establish the first commercial willow tree plantation in the US in Jefferson County.

In addition to willow, the Lyonsdale facility will use low-grade timber from surrounding North Country forests to produce an estimated 130,000 gallons of cellulosic ethanol per year, as well as other products. The plant will also generate electricity.

The Lyonsdale Biomass Plant in Lyons Falls, NY.

In another collaboration, Honeywell International is harvesting willows grown in the Solvay, NY Settling Basin. This project is part of the clean-up of the Onondaga Lake watershed. After harvest, the willows will be transported to the existing Lyonsdale plant for use as fuel for the 19-megawatt facility.



Danielle Spartano, a student with the Syracuse CoE Office for Industry Collaboration Internship Program, paddles Onondaga Creek as a member of the Onondaga Creek Conceptual Revitalization Plan project team.

TECHNOLOGY TRANSFER MEANS PEOPLE TRANSFER

If technology transfer is achieved through people transfer, one of the best ways Upstate New York industry can achieve both is through the Syracuse CoE Office for Industry Collaboration Internship Program, which brings students from world-class Upstate universities together with innovative companies.

Here are some vital statistics of the collaborative Internship Program:

✚ TO DATE, 28 STUDENTS HAVE INTERNED

+ 2005: 5 students
+ 2006: 13 students
+ 2007: 10 students
+ Total Budget = $77,469

Note: To date, two interns have been hired full-time by their sponsoring companies.

✚ FOUR UNIVERSITIES HAVE BEEN INVOLVED

+ Clarkson University—Mechanical Engineering, Industrial Hygiene
+ Cornell University—Biological Engineering, Design and Environmental Analysis
+ SUNY-ESF—Construction Management, Biotechnology, Environmental Chemistry, Water and Wetland Resources
+ Syracuse University—Interior Design, Mechanical Engineering, Chemical Engineering

✚ ELEVEN COMPANIES HAVE BENEFITED

+ Air Innovations of North Syracuse—Hired its intern from Clarkson University
+ Carrier Corporation
+ Colden Corporation
+ Enable of Syracuse
+ ENSR of Syracuse
+ Galson Laboratories of East Syracuse
+ Hueber Breuer Construction Co. of Syracuse—Hired its intern from SUNY-ESF/Syracuse University
+ King & King Architects of Manlius, NY
+ Scientific Research Corporation of Atlanta, GA
+ Taitem Engineering of Ithaca, NY
+ SUNY Upstate Medical University

THE ROAD AHEAD

WITH GUIDANCE FROM THE SYRACUSE COE OFFICE FOR INDUSTRY COLLABORATION'S RESEARCH AND TECHNOLOGY COMMITTEE, THE SYRACUSE COE IS IN THE PROCESS OF DEVELOPING TECHNOLOGY ROADMAPS FOR ITS THREE AREAS OF EXPERTISE:

✚ CLEAN AND RENEWABLE ENERGY

✚ INDOOR ENVIRONMENTAL QUALITY

✚ WATER RESOURCES

THE TECHNOLOGY ROADMAPS ARE A STRUCTURED, COMPREHENSIVE APPROACH TO TECHNOLOGY-BASED PLANNING THAT PROVIDE INFORMATION TO MAKE BETTER TECHNOLOGY INVESTMENT DECISIONS.

THIS PROCESS IS IMPORTANT FOR THE LONG-TERM COMPETITIVENESS OF THE SYRACUSE COE, AND IT WILL HELP IDENTIFY CRITICAL TECHNOLOGIES, GAPS AND DEFICIENCIES, AND WAYS TO LEVERAGE RESEARCH AND DEVELOPMENT.

THE 2006 COMMITTEE, LED BY CO-CHAIRS DICK CAUCHON OF SENSIS CORPORATION AND KEN BARKER OF SUNY UPSTATE MEDICAL UNIVERSITY, INITIATED THE TECHNOLOGY ROADMAPS, AND NEW CO-CHAIRS TOM YOUNG OF CLARKSON UNIVERSITY AND BOB DEL ZOPPO OF SYRACUSE RESEARCH CORPORATION ARE CONTINUING THE EFFORTS.

ADDITIONALLY, NEW MEMBERS HAVE BEEN ADDED TO THE R&T COMMITTEE IN ALL THREE FOCUS AREAS, INCLUDING ED WHITE OF SUNY-ESF, DEL DAUSMAN OF C&S COMPANIES, AND DAREK LETKIEWICZ OF O'BRIEN & GERE FOR CLEAN AND RENEWABLE ENERGY; ALAN HEDGE OF CORNELL UNIVERSITY AND LARRY WETZEL OF AIR INNOVATIONS FOR INDOOR ENVIRONMENTAL QUALITY; AND TED ENDRENY OF SUNY-ESF AND DICK ELANDER, RECENTLY RETIRED FROM THE ONONDAGA COUNTY DEPARTMENT OF WATER ENVIRONMENT PROTECTION, FOR WATER RESOURCES.

HELPING COMMUNITIES MANAGE SUSTAINABLE GROWTH

US ENVIRONMENTAL PROTECTION AGENCY, REGION 2 ENVIRONMENTAL FINANCE CENTER

Local governments throughout the country are continuously grappling with how to finance environmental improvements in order to comply with state and federal regulations, protect public health, and sustain or promote economic development activities.

In New York, the struggle to secure financing is a challenge for rural communities. Many have lost their industrial base and have subsequently experienced outmigration, which has lowered their tax bases.

The Environmental Finance Center (EFC)—funded by the US Environmental Protection Agency (EPA) since 1993 to serve EPA Region 2 (New Jersey, New York, Puerto Rico, and the US Virgin Islands)—provides assistance to local governments and others in developing methods of cost recovery for environmental improvements. The EFC is now affiliated with the Syracuse CoE and its more than 140 partners, and maintains a strong relationship with the Center for Environmental Policy and Administration at the Maxwell School of Syracuse University.

In New York, the EFC has a strong focus on water and wastewater issues in small communities, although other areas of environmental improvement, such as sustainable development and green buildings, have gained the EFC's attention.

A hallmark of the EFC is its Public Management and Finance Program (PMFP), a multi-faceted project that promotes the delivery of technical assistance to communities through collaborative initiatives with other technical assistance providers. Through this program, the EFC facilitates training events and discussion groups in which municipal leaders and technical assistance providers can share best practices and new information and create networks for ongoing collaborative projects.

The success of the program can be linked to the intentional focus on maintaining small groups at events, which creates a more intimate setting for sharing examples of real-life challenges faced in community projects and facilitates information sharing among participants.

ENVIRONMENTAL FINANCE CENTER EPA REGION 2

EFC, SYRACUSE COE HELP FABIUS COMMUNITY DEVELOP ENERGY PLAN

The Fabius, NY Energy Steering Committee is developing a community energy plan in an effort to create opportunities for individuals and organizations to implement energy-saving initiatives, reduce energy costs, and boost business opportunities that will benefit the community and the environment.

The committee, made up of town board members and local residents, was formed by the town in the spring of 2007. Organizers sought advice from organizations/agencies, including the EFC, the Syracuse CoE, Cornell Cooperative Extension, CNY Regional Planning and Development Board, SUNY-ESF, and consulting engineers RobsonWoese, Inc.

The committee hopes to raise community awareness about energy and environmental issues; promote efficient use of energy, including the use of energy-saving technologies and products such as compact fluorescent light bulbs; and encourage the adoption of sustainable/renewable power generation initiatives that are environmentally and economically sustainable.

"With increasing concerns regarding global energy use and conservation, we decided to take a proactive approach and explore energy options that make sense for and benefit our community," says Douglas Lyon, a member of the Energy Steering Committee. "We are off to a great start, and in the near future we will reach out to residents to gather information and input as we continue to develop an energy plan."

The committee is presently working on an inventory of the town's energy use, energy infrastructure, and renewable energy resources. The committee also plans to seek funding from various alternative energy grant programs to support special projects.

"We decided to take a proactive approach and explore energy options that make sense for and benefit our community."
Douglas Lyon, Energy Steering Committee, Fabius, NY

THE EFC AND ITS PUBLIC MANAGEMENT AND FINANCE PROGRAM: PROVIDING ASSISTANCE TO COMMUNITIES IN NEW YORK AND BEYOND

To provide for the well-being of communities, it's imperative that decision-makers manage resources in a way that effectively responds to present and future community needs, and it's critical for community members to be integrated into planning and implementation processes to promote "ownership" of the future.

That's where the EFC's Public Management and Finance Program (PMFP) comes in.

This unique program provides hands-on technical assistance and training to communities by connecting technical assistance providers to communities that need assistance with environmental projects. Training events and conferences that incorporate a wide range of topics are part of the PMFP. "Managing Infrastructure for Sustainable Economic Development," with a keynote presentation by Bob McNary, Director of Community Development for Upstate New York, Empire State Development, was a featured event in 2007.

The EFC/PMFP also co-hosted a national training event sponsored by the National League of Cities in June. Mark Lichtenstein, EFC Director, presented workshops on "Building and Maintaining Sustainable Water Infrastructure: Implementing the 'Four Pillars' in Your Community" and "Building Sustainable Communities."

Syracuse CoE Board Member Kevin Stack of Northeast Green Building Consulting led "Building and Renovating 'Green': Why It Makes Cents for Local Government." These sessions included attendees from Chicago, IL; Jacksonville, FL; and other communities across the country.

PMPF events allow participants to network and draw upon diverse experiences to create innovative solutions to community challenges.

THE PMFP WAS CREATED IN 2000 AFTER DISCUSSIONS THE EFC HAD WITH REPRESENTATIVES OF RURAL COMMUNITIES AND TECHNICAL ASSISTANCE PROVIDERS. **THE PMFP IS BASED ON FIVE THEMES:**

FINANCE	HOLISTIC SOLUTIONS	OUTCOMES	EFFICIENCIES	TRAINING
The absence of financial planning and consistent public finance practices contributes to barriers in community development and frequently promotes crises when infrastructure improvements are needed.	Issues faced by rural communities often are complex. Interconnected approaches to planning and problem-solving, which include considerations of all related problems, enable communities and local governments to prevent crises.	There is a need to measure the outcomes of technical assistance provided in order to assess how communities can derive the most benefit.	Financial and management capacity enables communities to maximize the efficiencies of working with technical service providers and other governments.	Supplementary technical assistance includes field training for technical assistance providers, public managers, elected officials, and constituency groups, as well as forums by which the impact of policy evolution can be examined.

GRANT INTENDED TO HELP PROTECT LAKE ONTARIO WATER QUALITY

Congressman James Walsh (R-NY) has secured a $123,694 Technical Assistance Training Grant for Syracuse University's EPA Region 2 EFC from the US Department of Agriculture's Rural Development Agency.

The grant will be used to support the EFC's Public Management and Finance Program, and will provide training and technical assistance on water and wastewater management to rural Lake Ontario communities.

The program will work closely with the Lake Ontario Coastal Initiative, a public-private partnership, based in Rochester, NY, dedicated to protecting Lake Ontario's shoreline and supported through federal funding secured by Walsh.

The EFC is affiliated with the Syracuse CoE, also strongly supported by Walsh.

"In terms of our region's quality of life, economy, and the very water many of us drink, Lake Ontario is one of our most important natural resources," says Walsh. "This grant will help to enhance water quality, assist local governments in smart planning and codes enforcement, and advance watershed management efforts."

"This grant will bolster the Central New York's collaborative efforts to protect the Lake Ontario shoreline," said Nancy Cantor, Chancellor and President, Syracuse University. "We're proud that our Environmental Finance Center and the Syracuse Center of Excellence are providing the support to help safeguard our region's precious natural resources. We are grateful to Congressman Walsh for his continuing support."

EFC SUPPORTS MAXWELL SCHOOL'S UNIQUE STUDENT CAPSTONE

The EPA Region 2 Environmental Finance Center has a solid partnership with Syracuse University's Maxwell School. As a graduation requirement of the Master of Public Administration program, students participate in a "capstone" project and act as consultants for an agency or community organization.

The EFC's role is to support the students' research and to introduce students to the communities in which they work. The true measure of the relevance of the students' research is that in each case, clients felt the students provided sound, practical results that could affect policy.

IN 2007, THE EFC CONCEPTUALIZED THREE PROJECTS:

OVERCOMING OBSTACLES RURAL NY COMMUNITIES FACE IN CREATING WATER/WASTEWATER ASSET MANAGEMENT PLANS—This USDA Rural Development (USDA-RD) project researched perceived and actual obstacles rural communities face in creating water/wastewater comprehensive asset management plans. The group focused on Central New York communities with populations of 10,000 or less. Students gathered information through interviews with municipal leaders and water operators, learning of the challenges of providing water/wastewater services. The team evaluated four asset management software programs available to small communities. A recommendation was a modular approach to incremental asset management, recognizing that each community is starting the process at a slightly different point, and that there is not a one-size-fits-all answer. Students offered recommendations for individual communities, for intra-municipal agreements, for state governments, as well as USDA Rural Development itself.

EMERGENCY PREPAREDNESS IN RURAL NY COMMUNITIES—This USDA-RD project created a report that analyzes the disaster relief system in place in New York State by comparing and contrasting two different disasters in the state's recent history: the 1998 North Country ice storm and the 2006 Southern Tier flood. Students thoroughly examined existing policies for emergency management and identified key areas where emergency management can be improved. In some cases, county and state emergency services do exist, but community leaders do not realize they are available; thus, the report identified gaps in communication channels and suggested ways to improve educational outreach.

LEED IN UPSTATE NY: AN EXPLORATION OF BARRIERS, RESOURCES, AND STRATEGIES—Students researched barriers, both real and perceived, that Upstate municipalities face starting or completing Leadership in Energy and Environmental Design (LEED) certification. They identified 10 key barriers and created a list of recommendations for overcoming them. One major recommendation was to create educational materials appropriate for a nontechnical audience. Students took this recommendation a step further and created a widely distributed *Field Guide for Municipalities* to help them navigate financial programs that provide incentives for green building.

TECHNICAL ASSISTANCE PARTNERSHIP FORUMS

The Environmental Finance Center Technical Assistance Partnership (TAP) forums provide an opportunity for technical assistance providers from the public, nonprofit, and private sectors to discuss water, wastewater, and other infrastructure, finance, and sustainable development issues.

At TAP forums, technical assistance providers share information on current projects, new policies, infrastructure funding opportunities, and they share learning about new technologies and project requirements.

USAC—FOSTERING THE NEXT GENERATION

In 2005, the EFC co-founded what is now the University Sustainability Action Coalition (USAC), an active group with more than 50 students, faculty, staff, and community members from the Syracuse area. This coalition includes representatives from SUNY-ESF and Syracuse University.

For one of USAC's several initiatives, members of the coalition are helping Le Moyne College, Onondaga Community College, SUNY-ESF, SUNY Oswego, and Syracuse University with their climate change commitments.

The American Institute of Architects' Sustainable Design Assessment Team was realistic about Central New York's potential for sustainable growth. In Syracuse, much will depend on the re-purposing of sites associated with the city's industrial past, such as the Inner Harbor, shown above.

NATIONAL EXPERTS IDENTIFY FIVE SUSTAINABLE STRATEGIES FOR SYRACUSE AND CNY

In December 2005, a unique partnership was formed, including the local chapter of the American Institute of Architects (AIA), City of Syracuse, EFC, FOCUS Greater Syracuse, local developers, Onondaga County, SUNY-ESF, and Syracuse University.

The group's collective vision resulted in a winning grant application to the AIA Sustainable Design Assessment Team (SDAT) program.

This led to a team of national experts facilitating a visioning process for Syracuse and CNY. SDAT—a community assistance program—convened architects and other professionals to work with the community's decision-makers and stakeholders. The team developed a framework for sustainability to help the community meet its immediate environmental, economic, and social equity needs without reducing the ability of future generations to meet theirs.

The six-person team held focus groups and town hall meetings attended by hundreds. In December 2006, it produced a major preliminary finding: While CNY has great energy, vision, and creative projects in the pipeline, SDAT noted, the area increasingly needs to speak with a single cogent voice when it comes to community planning, urban renewal, governance, and regional economic development.

SDAT'S FIVE RECOMMENDATIONS:

Take a Regional Approach	Use City Schools as Anchors	Continue Node & Corridor Development	Develop Integrated Transportation	Create a New Economic Base
CNY must revitalize its regional approach to issues such as economic development. It has to be more cohesive. Also, there is need for recognition in the larger region of the importance of developing the city core for regional success, and in the city for the important role the larger region plays in its success. SDAT felt Syracuse University and the Syracuse CoE could play a major role in bringing the entire region together.	Key neighborhood redevelopment should occur around the refurbishment of city schools. In addition to "bricks and mortar" construction and building "green" schools, sustainable and holistic neighborhood development around and with these schools is essential. The region's institutions of higher learning and their wealth of knowledge assets can be major catalysts for this.	The focus should be on continued development of key nodes, such as Armory Square and the Syracuse CoE's HQ. Syracuse also should expand on its "key corridors" (such as the Connective Corridor) and develop traffic arteries into grand boulevards, such as Adams Street and Almond Street. Also, Syracuse should accelerate development in the Onondaga Creek corridor—all the way to Onondaga Lake. Then, this corridor should be connected to other corridors and nodes.	Syracuse needs an integrated and energy efficient transportation system, such as light rail, a "clean-fuel bus only" east-west thoroughfare, and bicycle and pedestrian paths. This system could link the city's east and west sides, the University Hill with Downtown and Armory Square, and the city with its suburbs. A new intermodal transportation center, located near the Syracuse CoE HQ will be integral to this system.	CNY is not fully capitalizing on the strengths of its world-class academic institutions and should base a new regional economy on knowledge, clean and renewable energy, environmental systems, and innovative technologies. This could include eco-industrial/energy parks strategically located throughout the region.

OUTREACH

GREENBUILD 2006, DENVER

The Syracuse CoE and a number of its partners enjoyed a major presence in November 2006 at US Green Building Council's (USGBC) annual convention—Greenbuild—held in Denver, Colorado.

The Syracuse CoE partner and Board Member Kevin Stack of Northeast Green Building Consulting gave a presentation about building green and sustainable residential homes.

Assisted by the Metropolitan Development Association of Syracuse and Central New York, the Syracuse CoE targeted this event—with a attendance of 14,000—for major business attraction efforts.

These efforts included hosting a reception in honor of USGBC President, CEO, and Founding Chairman Rick Fedrizzi, a Central New York resident and Syracuse CoE Board Member.

Central New Yorkers Holly Rosenthal of Syracuse University (SU); Rick Fedrizzi, President, CEO, and Founding Chair, USGBC; Eleanor Ware of SU; and Robert Doucette of the Armory Development & Management Company at Greenbuild Denver.

GETTING THE WORD OUT

From October 2006 to September 2007, the Syracuse CoE hosted, exhibited/presented at, and co-sponsored several sustainability themed events:

In September of 2007, a Day of Peace was celebrated on the shores of Onondaga Lake with a gathering of the Haudenosaunee and Kanatsioharake people, as well as representatives from the Syracuse CoE. Syracuse University student Zenja Hyde created this symbol of Onondaga Lake embraced by the Everlasting Tree Wampum Belt. The belt symbolizes the Iroquois Confederacy, considered the world's first democratic union of independent states.

THE SYRACUSE COE HOSTED:

- The Syracuse CoE Symposium, "Innovative Built Environments: Design with Nature" (October 2006, Syracuse)
- "Characterizing Sources of VOCs and SVOCs in the Indoor Environment," with John Little, Environmental and Water Resources Engineering of Virginia Tech (December 2006, Syracuse)
- "Integrated Project Delivery through Building Information Modeling," hosted by the Syracuse CoE Office for Industry Collaboration (December 2006, Syracuse)
- Ole Fanger Memorial Indoor Environmental Quality Lectures (December 2006, Syracuse)
- Syracuse CoE Clean & Renewable Energy Conference, "New York's Renewable Energy Summit," co-hosted by Cornell University (June 2007, Ithaca, NY)
- Nine Research & Technology Forums, hosted by the Syracuse CoE Office for Industry Collaboration (Syracuse)

THE SYRACUSE COE EXHIBITED OR PRESENTED AT:

- Greenbuild 2006 (November 2006, Denver, CO)
- New York's Agri-Business Conference, hosted by Cortland County BDA (February 2007, Cortland, NY)
- Syracuse University Mayfest (April 2007, Syracuse)
- Agriculture & Energy Conference, hosted by NYSERDA (April 2007, Syracuse)
- SUNY Oswego Sustainability Summit (June 2007, Oswego, NY)
- Clima 2007 (June 2007, Helsinki, Finland)

THE SYRACUSE COE COSPONSORED:

- Onondaga Land Rights Environmental Summit, hosted by SUNY-ESF (October 2006, Syracuse)
- Syracuse Sustainable Design Assessment Team Project Meetings, co-hosted by the EFC (December 2006, Syracuse)
- Syracuse CoE Energy Group Meeting, hosted by SUNY-ESF (February 2007, Syracuse)
- Green & Sustainable Schools Conference, hosted by SUNY-ESF (March 2007, Syracuse)
- Accelerate 2007: New Ideas in Technology, Manufacturing, Energy, & the Environment (April 2007, Syracuse)
- EPA Regions 1 & 2 Sustainable Infrastructure Conference, co-sponsored by the EFC (April 2007, Groton, CT)
- SUNY-ESF Green Building Conference (April 2007, Syracuse)
- National Environmental Studies Summit (June 2007, Syracuse)
- National League of Cities Training Event, co-hosted by the Environmental Finance Center (June 2007, Syracuse)
- Rensselaer Polytechnic Institute Photovoltaic Presentation, hosted by the Creative Core GreenTeam (June 2007, Syracuse)
- Day of Peace (September 2007, Onondaga Lake, NY)
- Corning Energy Conference, hosted by Corning Inc. (September 2007, Corning, NY)

AT RIGHT: Chief Oren Lyons of the Onondaga Nation Council of Chiefs of the Six Nations of the Iroquois Confederacy chats with Conservationist Jane Goodall at the 2006 Roots of Peacemaking: Indigenous Values, Global Crisis event held at Onondaga Lake Park. Photo: Steve Sartori.

ACCELERATE 2007: NEW IDEAS IN TECHNOLOGY, MANUFACTURING, ENERGY, & THE ENVIRONMENT

In May 2007, five Central Upstate organizations collaborated to host *Accelerate 2007: New Ideas in Technology, Manufacturing, Energy, & the Environment.*

This one-day conference was an opportunity to educate consumers, promote exciting products and technologies, and foster innovative solutions that impact economic vitality, social equity, and environmental stewardship in Central Upstate.

The five organizations—the Syracuse CoE, the CNY Technology Development Organization, FOCUS Greater Syracuse, the Manufacturers Association of Central New York (MACNY), and Syracuse University's CASE Center—combined events that each had previously conducted separately. This collaboration leveraged the organizations' collective energy and know-how.

Janine Benyus of The Biomimicry Institute, Rick Fedrizzi of the US Green Building Council, and Dan Reicher of Google addressed the conference. The Syracuse CoE organized a well-attended clean and renewable energy workshop series and secured the popular "Toyota Hybrid Experience" exhibition.

The Syracuse CoE and partners also successfully targeted high school and college students for volunteer work and attendance. Participating colleges were Clarkson University, Onondaga Community College, SUNY-ESF, and Syracuse University, and high schools included Cazenovia, Cicero-North Syracuse, Syracuse, and Tully.

(L to R) Dan Reicher of Google and Janine Benyus of The Biomimicry Institute motivated the audience at Accelerate 2007.

Upstate Worm Farms brought to Accelerate 2007 a vermicomposting bin to dispose of food waste. "We saved 65 lbs. of pre-consumer food waste, which we estimated saved 95 lbs. of carbon emissions from entering the atmosphere," says Brenda Lotito, president of UWF. The waste-eating, compost-making worms did fast work. "We had fully composted results in 19 days!" says Lotito.

New York Upstate Chapter

PROMOTING GREEN BUILDING WITH STUDENT-LED ACTIVITIES

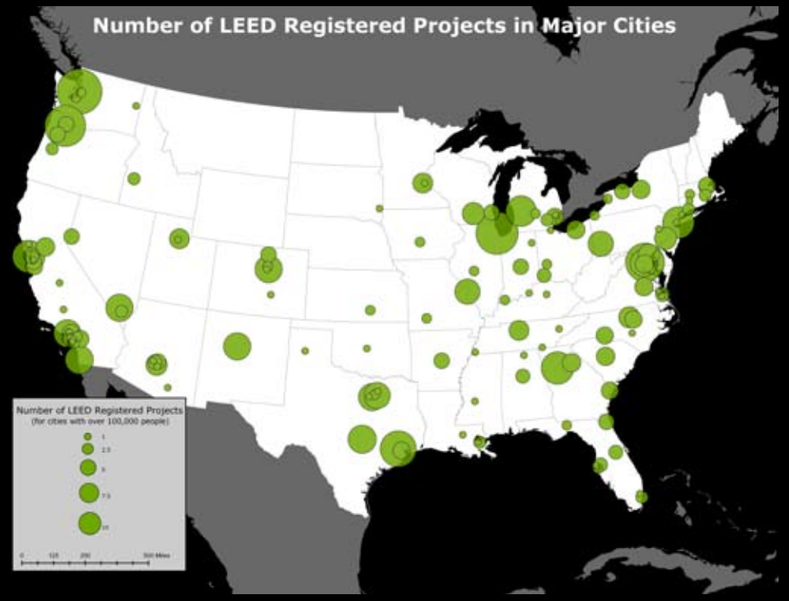
As part of its continuing efforts to promote green and sustainable building, and to involve students in its efforts, the Syracuse CoE and the Environmental Finance Center (EFC) realized positive results from a number of student led projects:

✚ **Emerging Green Builders (EGB)**—The Syracuse CoE and EFC assisted the US Green Building Council (USGBC) Upstate Chapter form the first EGB group in Upstate New York. EGB now includes students from Cazenovia College, Onondaga Community College, SUNY-ESF, and Syracuse University's schools of architecture, business, engineering, and public policy.

✚ **Proximal Population Mapping Project**—The Syracuse CoE hired a Syracuse University geography student to undertake a unique business attraction project, which included data mining and graphically representing the overall population, as well as USGBC Leadership in Energy and Environmental Design (LEED) projects, within a 500-mile radius of the city of Syracuse. Data shows that 90 million people live within the targeted radius, moving the city of Syracuse from the 134th largest city in the US to 17th, and 29th in terms of registered LEED projects. The Creative Core's GreenTeam is using this data and maps for business attraction efforts.

✚ **USGBC Upstate Chapter Co-Locates with the Syracuse CoE**—Tracie Baule-Hall, Executive Director of the Upstate Chapter, now has a satellite office with the Syracuse CoE. This will offer greater opportunities for the Syracuse CoE and its partners to collaborate with the USGBC on projects of mutual interest.

✚ **"Barriers to Building Green"**—The EFC conceptualized and helped supervise this Syracuse University Maxwell School Public Administration Capstone Project that also involved the USGBC Upstate Chapter. The project identified barriers to building green (including perceived financial ones) and strategies to assist localities with green capital projects. This project resulted in the production of a comprehensive, user-friendly "Green Building Field Guide" for local governments and other state organizations.



A proximal map of Leadership in Energy and Environmental Design (LEED) projects in the US. This shows Syracuse has a growing demand for green products and services. Jennifer Perrone, a Syracuse University geography student, prepared the map.

INDOOR ENVIRONMENTAL QUALITY

BETTER SCHOOLS MAKE BETTER STUDENTS

A major school renovation project is underway for the Syracuse City School District—$926 million will be spent on 35 different schools. The Syracuse CoE will help leverage the region's "green and clean" assets to make the school renovations sustainable. In December 2006, the Syracuse CoE hosted seminars with the theme of "Building on Ole Fanger's Legacy." (Ole Fanger, who passed away in 2006, was a world expert of indoor environmental quality and a Syracuse University professor.) The seminars focused on improving indoor environments in schools to improve student productivity. The Syracuse CoE and the Newhouse School at Syracuse University are producing a short documentary to communicate the importance of green and clean city schools for the whole community.

Students from H.W. Smith Elementary School in Syracuse.

L. Hunter Lovins, co-founder of the Rocky Mountain Institute, co-creator of the Natural Capitalism concept, and president and founder of Natural Capitalism, Inc., was a keynote speaker at the sixth annual Syracuse CoE Symposium.

THE SYRACUSE COE SYMPOSIUM 2006: DESIGNING WITH NATURE

More than 300 attended the 2006 Syracuse CoE Symposium, held at the Renaissance Hotel in Syracuse. Its focus was "Innovative Built Environments: Design with Nature."

The symposium discussed many areas of research, development, and commercialization within the Syracuse CoE, and students from partner institutions provided examples of their research in the popular Poster Presentation.

At the heart of the symposium was the knowledge that the impact of indoor environments on human health, productivity, and performance is driving innovative research. Furthermore, demand for healthy and sustainably built environments is catalyzing a market for new technologies that improve the places where we live, work, and learn.

CONNECTING EXPERTS WITH COMMUNITIES

Building on workforce development efforts initiated in 2003, the Syracuse CoE continues to connect people who have crucial technology skills with firms looking for those skills.

The Syracuse CoE calls this "technology transfer through people transfer." Consider Greg Dopko, a graduate of the Indoor Environmental Quality (IEQ) Certificate Program, instituted by MACNY in cooperation with Syracuse University and SUNY-ESF.

The IEQ Certificate takes advantage of Central Upstate's unique expertise in the subject. Participants gain skills to assess and design high-performance buildings by applying new principles for architectural and engineering design, materials selection, environmental control systems, and building performance data monitoring.

In addition to completing the certificate program, Dopko completed his bachelor's degree through Empire State College.

Bill Chadwick of Carrier Corp., a member of the Syracuse CoE Research & Technology Committee, helped Dopko with his coursework and introduced him to local firms.

Dopko also participated in the Syracuse CoE Office for Industry Collaboration's Internship Program. After graduation, he found full-time employment with construction firm Hueber Breuer.

Workforce development efforts have expanded with the creation of a "career ladder map" for students and professionals in clean and renewable energy careers, in partnership with CNY Works, Cayuga and Cortland counties, MACNY, SUNY-ESF, Onondaga Community College, and the CNY Biotech Research Center.

Greg Dopko is employed by construction firm Hueber Breuer.

New York's Creative Core
Real. Smart. Green.

REAL. SMART. GREEN.

TRANSFORMING THE ECONOMY OF CENTRAL UPSTATE NEW YORK

New York's Creative Core is a regional economic development initiative leveraging the creative, technological, and real property assets of Central Upstate New York.

One of the initiatives under the Creative Core banner is the GreenTeam, a group of government and regional economic development organizations; local, regional, and national businesses; academic institutions; and community groups, all collaborating for the benefit of the region.

The Syracuse CoE helped form this business attraction group as part of the larger branding effort—"New York's Creative Core. Real. Smart. Green."

The GreenTeam builds on current improvements to the region's economy, driven by collaborative research and technology transfer exemplified by the work of Syracuse CoE partners.

The GreenTeam's focus on innovative, green technology; its close association with regional businesses, institutions, and universities; and its creative, collaborative approach will help distinguish Central Upstate—"New York's Creative Core"—from other regions. The intent is to attract sustainable industries, companies, and entrepreneurs to the region.

By promoting these and other compelling incentives, the GreenTeam hopes to establish a sustainable and creative community of individuals and organizations that will invest in the region's future.

The GreenTeam is the Syracuse Center of Excellence; C&S Companies; Central New York Regional Planning and Development Board; City of Syracuse; Clarkson University; Cornell University; Greater Syracuse Chamber of Commerce; Manufacturers Association of Central New York; Metropolitan Development Association of Syracuse and Central New York; National Grid; New York State; Onondaga Community College; SUNY-ESF; SUNY-Morrisville; Syracuse University; O'Brien & Gere; Cortland, Onondaga, and Oswego County economic development agencies; and others.

Involvement in the GreenTeam exemplifies the Syracuse CoE's intentional effort to directly support the economic development work of this diverse but cohesive team. **Currently, there are four major initiatives:**

CENTRAL UPSTATE PRESENCE AT TARGETED EVENTS	BUSINESS ATTRACTION STUDY
The Las Vegas PowerGen Renewables March event was the first GreenTeam success, with the Syracuse CoE and its partners making positive business contacts. Future targeted events include Greenbuild Chicago (November 2007), PowerGen (February 2008), and the US Department of State Energy Summit (March 2008).	Led by a private contractor and MDA-coordinated, this initiative will provide a marketing analysis of three core technology sectors (Healthy Buildings/Sustainable Design, Energy, and Water Quality), and multiple sub-sectors. For each sub-sector (Building Conditional Systems, Solar Energy, and Water Treatment, among others) an integrated search of international businesses, market leaders, and suppliers; an analysis of business expansion/relocation considerations; an inventory of Central Upstate assets; and an identification of competitors will be made. The study will also include a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis. Key members of the GreenTeam, including the MDA, National Grid, Syracuse Chamber, the Syracuse CoE, and the Cortland County Business Development Corporation/Industrial Development Agency guide the effort.
MAPPING "CLEAN/ GREEN" TECH ASSETS	**PROMOTION OF REGIONAL PARKS**
A preliminary map of Central Upstate clean and green technology assets has been developed and additions to the map are ongoing.	There are four current regional development target areas: Onondaga County/Carrier Corp. sites; Cortland County; Oswego County's Riverview Business Park; and Seneca County's Seneca Army Depot. Three recent announcements indirectly reflect the work of the GreenTeam and the Syracuse CoE: a $14 to $17 million biofuels plant locating in Cortlandville; a National Grid grant to Riverview for further energy development; and the $38 million "green" Hope Lake Lodge Resort and Indoor Water Park at Greek Peak in Cortland County.

NORTHEAST BIOFUELS

GROWING A VISION IN VOLNEY

When a large employer moves operations elsewhere, the effects last. Take, for instance, the 1994 departure of the Miller Brewing Company from the Town of Volney, New York. The immediate effect was the loss of 891 jobs, or 13% of Oswego County's workforce, while in the medium term, the county experienced a 2% uptick in its unemployment rate, as the closure's effects rippled through the community.

Then there was the question of what to do with the 420-acre brewing complex. The answer has not only resulted in a surprising, innovative adaptation of the plant, it has given the community the promise of an economically and environmentally sustainable future.

Volney has welcomed a new tenant to the former Miller plant, now called Riverview Business Park. Under construction, the Northeast Biofuels (NEB) plant will use approximately 90 acres of the site and is repurposing Miller's equipment to effectively "brew" ethanol from corn. Eventually, NEB will produce 100 million gallons of ethanol per year—the third largest biofuel plant in the US.

In August 2007, NEB and its collaborators—including the Syracuse CoE, O'Brien & Gere, Operation Oswego County, National Grid, and others in the Creative Core GreenTeam—brainstormed how to leverage the park's assets: its infrastructure, existing buildings, and the "co-location synergies" provided by NEB.

"The site is rich in assets," explained O'Brien & Gere Vice President Darek Letkiewicz. "Nearby is I-481, CSX railroad, and the Inter-Coastal Waterway; it's in a New York Empire Zone; and Miller's power and water lines still exist." But it's the brewing complex's power house, wastewater plant, and warehouse—the site's "anchor assets"—that the brainstorming session focused on.

SUGGESTED USES FOR THE RIVERVIEW BUSINESS PARK ANCHOR ASSETS INCLUDE:

✚ **WASTEWATER TREATMENT PLANT**—Re-purpose eight existing tanks as biogas digesters to send methane to the power plant. Also, re-purpose the giant lagoon as an algae farm to provide oil to a possible biodiesel plant.

✚ **POWER HOUSE**—Convert the existing multi-fuel power plant to use biomass as well as byproducts from local agriculture and other Riverview ventures. Use excess heat from the boiler to heat a fish farm.

✚ **WAREHOUSE**—Convert the 695,000-square-foot warehouse to a fish farm, similar to existing tilapia farms in the US. The warehouse roof could support solar power cells.

In February 2007, Sen. Hillary Rodham Clinton (D-NY) visited Northeast Biofuels (NEB) in the Riverview Business Park in Volney, NY. (L to R) Sandra Downey, Executive Vice President, Syracuse CoE Office for Industry Collaboration; Clinton; and Ed Bogucz, Executive Director, Syracuse CoE. "We have made a great deal of progress to help New York become an energy leader," said Clinton. "Today I see how we are turning green into growth, good ideas into good jobs, and big challenges into even bigger opportunities."

In September 2007, New York Gov. Eliot Spitzer visited NEB. "I love the sound of construction," said Spitzer. "If you don't have construction you don't have growth. When I hear this project will take advantage of New York products, I know that we are going to generate jobs and that our economy will thrive again." (L to R) Doug MacKenzie, President and CEO of Permolex International; Spitzer; and Eric Will, NEB principal.

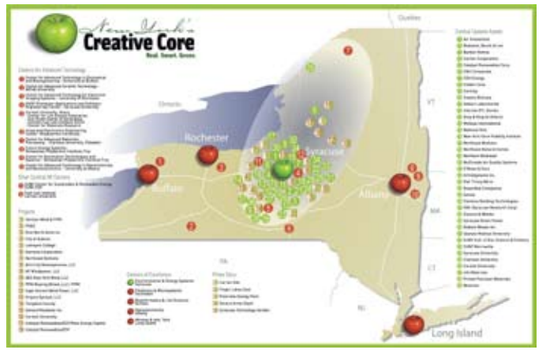
INVITING THE WORLD TO CENTRAL UPSTATE

In September 2007, the Syracuse Center of Excellence was awarded a $485,000 grant from National Grid's Strategic Economic Development Outreach Program to fund promotion and outreach projects for the Creative Core's GreenTeam and the Arts, Design, & Technology Quarter in Syracuse's Near Westside neighborhoods.

For the GreenTeam Initiative, the grant will be used to promote the green assets of the Central Upstate region. The goal is to encourage manufacturers, researchers, entrepreneurs, and innovators in the field of sustainable manufacturing and green technologies to locate to the region, thus spurring economic development and creating new investment and jobs.

The National Grid grant also will enable the Art, Design, & Technology Quarter Initiative to continue its arts-based revitalization project on the Near Westside of Syracuse. This initiative is modeled on those that have achieved significant, sustained growth and renewal in other regions. In Central Upstate, the initiative dovetails with the GreenTeam project by providing an incentive to attract artists, entrepreneurs, designers, and technologists.

The Strategic Economic Development Outreach Program grant is one of the programs provided through National Grid's New



York State Public Service Commission-approved Economic Development Plan. The program's goal—at a time when the national economic slowdown has intensified competition among states for a decreasing number of economic development projects—is to leverage marketing efforts to encourage businesses to locate in National Grid's Central Upstate service territory.

"National Grid sponsors major business attraction marketing efforts in the Capital and Western regions of Upstate New York," explains Susan Crossett, National Grid Vice President, New York Public Affairs. "This grant represents our confidence in the strategy recently developed here to attract green tech business, creativity, innovation, and investment in Central Upstate."

60 DORSEY STREET • SARANAC LAKE (DRAWING BY TOM SCHWEITZER) LISA MANN ARCHITECT

EFC, SYRACUSE COE, AND ITS OFFICE FOR INDUSTRY COLLABORATION SUPPORTS SARANAC LAKE RENEWAL PROJECT

In March 2007, the Syracuse CoE Office for Industry Collaboration supported Village of Saranac Lake property owners Susan Moody and Alan Brown in efforts to turn an abandoned warehouse into a sustainable mixed-use area (shown above in an architect's drawing).

This project augments a related effort of the EFC, Syracuse CoE, and GreenTeam members in this region of the Adirondacks. The Adirondack North Country Association—a 14-county association in New York's North Country committed to economic improvement—as well as other leaders in the Saranac and Tupper Lake regions have announced they are interested in basing their economic development strategy on sustainable and green technologies and businesses.

The EFC, Syracuse CoE, and GreenTeam are working with these North Country leaders and organizations to help make this vision a reality.

THE SYRACUSE COE HEADQUARTERS ONWARD AND UPWARD!

The foundations have been laid, let the growth begin," says R. Leland Davis, Chair of the Syracuse CoE board. Although asbestos and oil was encountered in the ground at the three-acre site of the Syracuse CoE HQ, the swift clean-up of these problems and the diligent work of LeChase, Op-Tech Environmental Services, and the New York Department of Environmental Conservation shows how development projects in Syracuse's brownfield sites should be handled. Thanks to this work, construction is on track for completion late in 2008, and Syracuse's renaissance continues.

After six months of drilling test wells for the innovative geothermal heating and cooling system, foundation work began at the site in October 2006.

This phase of the project was complex due to discoveries of a variety of unexpected conditions at the site, including three areas of contamination that needed remediation. However, the construction team expected to find the unexpected, and all discoveries were handled smoothly. In late August, construction passed a major milestone when excavations for foundations were completed.

One piece of undoubtedly good news was received in December 2006, when the Syracuse CoE learned the HQ's innovative design was selected for inclusion in the "National Design Triennial," an exhibition organized by the Smithsonian Institution's Cooper-Hewitt National Design Museum. The selection honored the work of the 11-firm design team, led by Ashley-McGraw Architects of Syracuse and Toshiko Mori of New York City, the team's design architect.

Collaboration and innovation are key elements of the HQ, which won't be just another downtown office building. In addition to office space, the 55,000-square-foot facility, situated at the corner of East Washington and Almond streets on the site of the former LC Smith typewriter factory, will include spaces for research, development, education, and public outreach by federation partners.

Among the building's features are the Carrier Total Indoor Environmental Quality (TIEQ) laboratory; laboratories for research and development of new fuels and products from biomass; an "Urban Ecosystem Observatory," a 250-foot meteorological tower from which measurements of outdoor air quality will be taken; and a green roof, which will reduce storm water runoff and reduce reflected heat.

"Our headquarters will serve as both a laboratory and a showcase for new products and services developed by our partners," says Ed Bogucz, Syracuse CoE Executive Director. "I was thrilled that even before construction is complete, the facility was included in a major national design exhibition."

Other collaborators in the design and construction of the Syracuse CoE HQ are Ove Arup and Partners of New York City; Transsolar Energietechnick of Stuttgart, Germany; Burt Hill of Butler, PA; Hargreaves Associates of New York City; Stearns & Wheler of Cazenovia, NY; O'Brien & Gere of Syracuse; John P. Stopen Engineering Partnership of Syracuse; Peterson Engineering of Syracuse; Otis Elevators of Farmington, CT; Tate Floors of Jessup, MD; Henderson/Johnson of Syracuse; and C&S Companies of Syracuse.

SYRACUSE CENTER OF EXCELLENCE MEMBERS

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C&S Companies
CDH Energy Group
Colden Corporation
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Galson Laboratories
HSBC Bank USA
King & King Architects
Metropolitan Development Association of Syracuse and Central New York
National Grid
Northeast Green Building Consulting
O'Brien & Gere
Robson & Woese
Rosenthal Companies
Sensis Corporation
Syracuse Research Corporation
US Green Building Council

Alfred University
Clarkson University
Cornell University
Institute of Ecosystem Studies
Rensselaer Polytechnic Institute
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Jeld-Wen Corporation
Johnson Controls
Keck Foundation
Keystone Associates
Kodak
Lamont Engineering
Manufacturers Association of Central New York
McQuay International
Molecular OptoElectronics Corp.
MRB Group
Munistat Services
Naef Recycling
National Center for Energy Management and Building Technologies
National Energy Management Institute
National Recycling Coalition
New York Indoor Environmental Quality Center
NIEQRI
Northeast Biofuels
Northern Biodiesel
NuClimate Air Quality Systems
Nussbaumer & Clarke Engineers
NY Rural Water Association
NY Water Environment Association
NYS Association for Reduction, Reuse, and Recycling
NYS Association of Towns
NYS Conference of Mayors and Elected Officials
NYS Department of Environmental Conservation
NYS Department of Health
NYS Department of Transportation
NYS Energy Research and Development Authority
NYS Environmental Facilities Corporation
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