Saratoga Technology + Energy Park

Next STEP

A periodic update on the Saratoga Technology + Energy Park

July 2006 • Issue 3

Executive Budget Announces Lab at STEP

On January 16, in his Executive Budget announcement, Governor George E. Pataki unveiled a comprehensive, multi-faceted plan to help reduce New York's dependence on imported energy, position the State to become a center for renewable energy research and job creation, and provide help for soaring home heating bills to New Yorkers.

A highlight of the Governor's address was the creation of a new alternative-fuel vehicle research laboratory, a joint project between the New York State Energy Research and Development Authority (NYSERDA) and the Department of Environmental Conservation (DEC). The proposed $24 million state-of-the-art laboratory will support the development and manufacture of clean and renewable energy technologies for transportation.

The laboratory, to be located in the Saratoga Technology + Energy Park (STEP) in Malta, will conduct research and testing on new and improved fuels, batteries, and pollution-control devices. R&D focus will include plug-in hybrids, hydrogen vehicles, renewable fuels, emerging distributed generation, and thermally activated technologies.

Lab Announced

The DEC/NYSERDA state-of-the art laboratory will support the development and manufacture of clean and renewable energy technologies for transportation.

Starfire Systems to Expand at STEP

In early July, State officials announced the partnership between NYSERDA; Starfire Systems, Inc.; and The United Group of Companies, Troy, NY, to begin construction on a 105,000-sq.ft. facility at STEP that will be home to a number of clean-energy and environmental technology companies. Starfire Systems is the first company to sign a lease to occupy 25,000-sq.ft. of space in the building to develop and manufacture high-performance nanostructured advanced ceramic products and materials.

"The growth of the clean-energy technology industry is evolving into an exciting new economic engine with tremendous potential," said Peter R. Smith, President and CEO of NYSERDA. "NYSERDA, along with Starfire Systems, the United Group, and the STEP team, is helping to fulfill the vision of technology growth in New York's Tech Valley. The new facility will be a great attraction for clean-energy and renewable-energy companies like Starfire to help us achieve our goal of reducing dependence on imported energy while bolstering New York's economy. We are pleased to be a part of this monumental effort because this is only the first step in growing clean energy technologies in New York at the Saratoga Technology + Energy Park."

continued on page 4

STEP to Grow

Both Starfire Systems and DayStar Technologies plan to expand into new buildings in Malta, New York at the Saratoga Technology + Energy Park.

STEP is on the web – step.nyserda.org

In February, NYSERDA announced the launch of the STEP website – step.nyserda.org – providing information to clean-energy and environmental technology companies looking to relocate and establish themselves in the heart of the fast growing Tech Valley Region.

"The STEP website is a tremendous tool for companies looking to grow and thrive in the Tech Valley Region," said Peter R. Smith, President and CEO of NYSERDA. "Enhancing communication with potential companies and the general public about our goals and efforts will help us be a leader in the clean-energy and renewable energy field."

The website offers information on the history of STEP, its site plans, vision and goals, and current activity. The website highlights current STEP companies by providing company descriptions and links to their websites.

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STEP Infrastructure Update

• Water and Sewer

Working with New York State Office of General Services and Bergmann Associates, water and sewer mains have been extended from Dunning Street into STEP and connected to 10 Hermes Road.

Rifenberg Construction was competitively selected for the project. Plans are being finalized to extend the mains into the Phase I development site, as well as for excavation and paving of the Phase I access road, and installation of power, telecommunications, and roadway lighting.

Bergmann Associates also will design the road providing access into Phase I, and will conduct the pre-engineering work for the loop road and pump station required for the Park.

• Forest Management

Richard Cipperly d/b/a North Country Forestry, created the STEP Forest Management Plan. The Plan covers the next 15 years, with the following goals:

- Maintain a healthy forest ecosystem, which contributes to the overall character of STEP
- Preserve and enhance sensitive ecosystems
- Provide non-motorized passive recreational and educational opportunities for the employees of companies located at STEP and Town residents

Mr. Cipperly is also administering the first tree harvest. In mid-September, he issued a prospectus to potential buyers. Bids were received in October, and G&T Enterprises, Johnsburg, New York, was selected. Harvesting for the Phase I portion of STEP began in January, and was completed in February.

In mid-2006, with input from the Town, Mr. Cipperly began to mark a trail that starts at 10 Hermes Road and wanders through the two ravines on the STEP property. The trail will be about a mile long.

• Surveyor

C.T. Male Associates, P.C. was competitively selected to be the surveyor of STEP. The firm will conduct surveys for topographic mapping, metes and bounds descriptions, and right-of-way delineations.

• Design Review Committee

A Design Review Committee has been established and tasked with design oversight for STEP, including building design and materials, outside lighting, seating, signs, and other Park details.

The Committee will be working with the developers, and making recommendations to NYSERDA. It is comprised of architects, engineers, and planners.

State of New York
George E. Pataki, Governor

New York State Energy Research and Development Authority
Vincent A. DeIorio, Esq., Chairman
Peter R. Smith, President and CEO

STEP is owned and operated by NYSERDA on behalf of the State of New York.

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Tour de Sol at STEP – May 11

The 18th annual 2006 Tour de Sol, was a high-tech, high-touch event that celebrated the progress made toward more environmentally friendly vehicles that use less fuel and emit less climate change emissions, as well as offer new ways of getting around. A weekend "green car show," several competitions, press-only events, and a "student day" attracted thousands of people, including the general public, students, manufacturers, and government leaders.

Last year, more than 60 entrants and 40 exhibitors participated. This year showcased hybrid, natural gas, biofuel, electric, and fuel cell vehicles from Honda, Toyota, Lexus, Ford, and more, as well as New York State businesses, students, and inventors who share a vision of a sustainable energy future.

This year's events included

- Technical testing for Championship vehicles
- Press and fleet only events, including ride'n'drives in advanced vehicles and presentations at STEP
- A "Student Day" that brought 1,000 students and government officials to a sneak preview and guided tours of vehicles in the Tour de Sol competitions and of the Saratoga Automobile Museum at the Saratoga Spa State Park
- America's only "green car show" at the Saratoga Automobile Museum's Spring Auto Show

The Tour de Sol is organized by NESEA – the Northeast Sustainable Energy Association

New Vehicle Technology
Governor George E. Pataki and NYSERDA President and CEO Peter R. Smith examine an innovative starter-alternator developed by STEP company Advanced Energy Conversion installed in a prototype version of an ADA-approved Metroking taxi as part of a NYSERDA R&D project.

Advanced Micro Devices to Move to LFTC

On June 23, 2006, Governor George E. Pataki, Dr. Hector Ruiz, Chairman and CEO of Advanced Micro Devices (NYSE: AMD), Senate Majority Leader Joseph L. Bruno and Assembly Speaker Sheldon Silver announced plans for one of the largest private sector industrial investments in New York State history – a multi-billion dollar deal that would enable AMD to build and operate the most advanced semiconductor manufacturing facility in the world at the Luther Forest Technology Campus (LFTC). This unprecedented economic development project is projected to create more than 1,200 new high-tech jobs, thousands of construction jobs, and more than 3,000 indirect jobs.

Under the terms of the agreement, AMD would be able to construct a new, $600 million, 1.2 million square foot facility, equipped with approximately $2.6 billion in state-of-the-art tools designed to produce 300 mm wafers using 32nm process technology. Expenditures at the facility are projected to total more than $2 billion during the first five years of operation, bringing the projected total investment to $5.2 billion. The Luther Forest site in Saratoga County was selected by AMD after an extensive review of a number of sites nationwide and internationally. The agreement enables construction on the 1.2 million square foot plant to begin between July 2007 and July 2009 and be fully operational sometime between January 2012 and January 2014.

"This is precisely what we had envisioned when I first announced our Center of Excellence initiative five years ago. This is an historic day for the Capital Region, for Upstate and for the entire State of New York, as this agreement sends a loud and clear message both nationally and internationally that the Empire State is in the forefront of the global high-tech economy," Governor Pataki said. "AMD is a worldwide industry leader and we're proud that they want to partner with us on this unprecedented investment bringing over 1,200 high-tech jobs to Upstate. With the Albany Center of Excellence, SEMATECH, IBM's chip-fabs in East Fishkill, Tokyo Electron Limited, ASML, Applied Materials, INVENT and now AMD, we have created a powerful semiconductor industry cluster that is transforming the Upstate economy and creating thousands of new high-tech jobs. This announcement is another key step in the creation of our Empire State High-Tech Corridor and makes clear that our SEMI-New York initiative is a success. I want to thank Hector Ruiz and the AMD Board of Directors for this tremendous vote of confidence in New York State."

"AMD's ability to serve market demand for our industry-leading technology depends on an intelligent, flexible way to scale our manufacturing capacity," said Hector Ruiz, chairman of the board and chief executive officer of AMD. "With a growing customer base, and the hope for a truly fair and open competitive playing field, our prospects for continued momentum over the long term look strong. We were impressed by the number of locations, including Luther Forest and Marcy, that would make an excellent location for a semiconductor fabrication facility. We commend the State of New York on their tremendous commitment to this project and look forward to a prosperous collaboration moving forward."

STEP is located adjacent to LFTC, where AMD will be build its manufacturing facility. STEP partners include the Saratoga Econmic Development Corporation, which is developing LFTC, and the University at Albany.

STEP Companies in the News

Starfire and Clariant form Strategic Alliance

As announced last September, Clariant International, Ltd., a global leader in specialty chemicals headquartered in Muttenz, Germany, and Starfire Systems, Inc., a world leader in polymer-derived, nanostructured ceramics located at STEP in Malta, New York, announced a broad-based strategic alliance to develop new technology and new applications in the promising field of nanostructured ceramic materials and coatings. Targeted industries include automotive, aerospace, and microelectronics. Clariant has completed a financial investment in Starfire as part of their agreement.

Starfire has demonstrated the advantages of their nanostructured ceramics in the motorcycle and automobile industry by developing brakes that provide superior performance at a fraction of the weight of conventional metal brakes. In July, Starfire materials were successfully tested by astronauts on a spacewalk during the U.S. Space Shuttle *Discovery* mission as a key component in the heat shield repair kit. Starfire nanostructured polymers and ceramics are also finding applications in the chemical process industries and can be used in the manufacture of semiconductor chips, coating systems, high temperature filters and handling of corrosive materials.

Clariant is represented on five continents with over 100 group companies and employs about 24,000 people worldwide. Its multifunctional polysilazane-based coatings offer leading-edge technology driven by innovative solutions. Starfire's polymers were selected for their unique combination of caulk-like workability under EVA conditions and the ability to convert in seconds under re-entry conditions to a stable, solid, high-temperature ceramic. Clariant brings their global marketing reach, process expertise, and production capacity to the partnership. The companies expect to uncover attractive new opportunities by combining Clariant's expertise in polysilazanes with Starfire's polycarbosilane based materials.

Starfire Systems President and CEO, Richard Saburro, commented on the agreement, "Clariant provides us with resources and market access to rapidly deploy our technology in key industries worldwide. They maintain strong relationships in the automotive and electronic industries and are a global leader in silane-based polymer technology that we expect will extend the temperature range of our materials and open up exciting new applications and markets. We are very pleased to announce this important partnership."

Hubert Liebe, Head of New Business Development at Clariant, commented, "High performance ceramics have been sought by industry for a long time but have been too costly with current technology and manufacturing methods. We look forward to working with the Starfire team to offer a new generation of high value products based on practical, high-performance, nanostructured ceramics and coatings."

Button-sized Computers

Starfire Systems is working to give the soldiers of the future button-sized computers with sensors no larger than a nametag that's designed to identify biological, chemical and radiological attacks. "We're making them for the military right now, but eventually they would be available to first-responders like firefighters and police," said Richard M. Saburro, President and Chief Executive Officer of Starfire Systems. "Our goal is to have a patch with this technology for existing equipment in two years. The entire outfit will take five to 10 years."

U.S. Rep. John Sweeney, R-Clifton Park, announced that the project will receive another $1.8 million in 2006. The project received $1.8 million in federal funding in 2005. The project partners include Starfire Systems, Albany Nanotech, Syracuse University, and the Army's Natick Soldier Systems Center in Massachusetts. For more information about Starfire Systems, visit www.starfiresystems.com.

Starfire and NASA

A repair kit using Starfire Systems' preceramic polymers was tested on the Space Shuttle *Discovery* in July 2005. The kit was one of three methods evaluated by astronauts for repairing damage to the ship's heat shielding in orbit. A puncture in the wing heat shielding brought down the Shuttle *Columbia* over two years ago. The kit could be used in an emergency situation to repair actual damage.

Astronauts on *Discovery* mission STS-114, successfully tested a crack repair kit during a spacewalk by applying a sealing paste based on Starfire polymers to a simulated Space Shuttle panel in the cargo bay. The kit resembles a caulking gun, but contains the paste of Starfire polymers and other ingredients that can repair small cracks and damaged coatings on leading edge surfaces to withstand the 3000° F temperatures of re-entry.

The Shuttle repair kit was developed for NASA by Alliant Techsystems Inc., a Minnesota-based advanced weapon and space systems company. Starfire's polymers were selected for their unique combination of caulk-like workability under EVA conditions and the ability to convert in seconds under re-entry conditions to a stable, solid, high-temperature ceramic. Starfire is working with NASA contractors on three additional repair systems, likely to be tested on future Shuttle flights. They are being developed to repair small areas, large areas, and the Shuttle tiles.

Starfire Systems develops and manufactures high-performance products and materials made from silicon carbide advanced ceramics, using the company's proprietary ceramic-forming polymers. Starfire's polymer-based ceramics break through traditional cost, design, and performance barriers for advanced ceramics products. Starfire is located at STEP.