

## OXY-COAL PROJECT PROMISES ECONOMIC, ENVIRONMENTAL BENEFITS FOR UPSTATE NEW YORK

*The Oxy-Coal and related CCS global market has the potential to generate 3,500 jobs, \$900 million in annual economic impact for New York State Over 2012-2020*

Jamestown Board of Public Utilities (BPU), Praxair, Inc., Ecology & Environment, University at Buffalo School of Engineering and Applied Sciences, and Dresser Rand announced today (July 31, 2007) a potential carbon capture and storage (CCS) demonstration project that could become an international model for future energy development. An engineering study will assess the feasibility of applying Praxair's oxy-coal technology to BPU's proposed Circulating Fluidized Bed (CFB) Clean Coal base project. If successful, this will be the first demonstration project of its kind in the U.S.

According to Ecology & Environment (E&E), a Buffalo-based environmental consulting firm, the Jamestown base project has the potential to grow into one of the most significant economic development initiatives in upstate New York. If local western New York companies begin supplying the oxy-coal global market, CCS initiatives (including the Jamestown BPU CCS demonstration) are likely to generate \$900 million in annual economic impact and 3,500 new jobs in future years (2012-2020) to New York State. Direct annual spending from the global demand for oxygen supply systems, compressors and carbon dioxide (CO<sub>2</sub>) capture systems could potentially total \$573 million annually. Initially the project will create 300 construction jobs and generate \$29 million in economic impact to the Southern Tier region.

"As we strive to provide sufficient energy production to meet the needs of the modern world with a minimum adverse effect upon the environment, we cannot rely solely upon the rapid expansion of renewable energy sources, or nuclear energy sources which have their own environmental risks down the road," said George Rusk, Vice President, E&E. "Given the huge availability of coal throughout the world as a source of energy production, we realistically have to take immediate steps to discover economical and practical methods of using that product that will reduce to acceptable levels (or better eliminate) emissions of toxic substances and promote the use of those methods throughout the world. This project will be a laboratory for the development of that technology and thus could be a principal factor in the struggle to save our planet."

The Jamestown BPU is the largest municipally-owned energy-generating utility in New York State, providing service to the City of Jamestown and the surrounding area for more than 115 years. A final environmental impact study for a new CFB Clean Coal Base plant was approved

by the BPU board in May. The study concluded that the proposed project would significantly reduce emissions from its existing coal-fired generation facility. The proposed cost for the CFB Clean Coal Base project is \$145 million.

“The BPU has been committed to developing and executing a plan to replace our aging plant facilities in a way that would meet or exceed environmental requirements, striving for carbon neutral or negative emissions,” said John Zabrodsky, BPU chairman. “The environment is a main focus and that is why we continue pursue innovative carbon control technologies that will maximize the efficiency of our operations. The addition of Praxair's technology could take the project's environmental performance to a whole new level, drawing national and international attention to this initiative.”

“We are thrilled that the Jamestown CFB project is in a position to play a helpful role in the demonstration and deployment of Advanced CCS technology at no added cost to our taxpayers,” said city of Jamestown Mayor Sam Teresi. “Jamestown has historically played a pioneering role on many fronts with respect to providing public power, deployment of hydropower, and natural gas and wind generated power. We are now poised to play a significant role in development of world-wide energy technologies.”

Praxair, a Fortune 300 company and the largest industrial gas supplier in North and South America, holds 200 patents relating to oxy-fuel combustion. The company's largest technology center, with 1,400 employees, is located in Tonawanda, N.Y.

“This is an excellent opportunity to demonstrate new, world-class technology right in our own community,” said Charles McConnell, vice president, gasification and oxy-coal technology at Praxair. “Demonstration projects are fundamental to building a road map to commercial implementation of carbon-dioxide capture technology in the future.”

Oxy-coal technology involves the efficient combustion of coal in a mixture of oxygen and recirculated flue gas. Oxy-coal technology lowers the cost to capture carbon dioxide (CO<sub>2</sub>), a by-product of combustion linked to global warming. Once captured, the CO<sub>2</sub> is compressed and transport by pipeline to an underground storage site. Air emissions are reduced by a factor of 10 compared to the best air based coal burning technology currently available.

“New York State already hosts leading globally integrated companies that for many years have supplied industrial process inputs, power generation equipment and components to European,

South American and Asian markets impacted by the Kyoto protocol and carbon management initiatives”, said Ian Miller, Senior Economist at Ecology & Environment.

Houston-based Dresser-Rand Group, Inc, with 2,300 employees in New York’s Allegany, Cattaraugus and Steuben Counties, could realize an increase in employment ranging from 200 to 500 resulting from the Jamestown base project and other potential oxy-coal projects worldwide. The company is a recognized leader in custom-engineered steam turbines and centrifugal and reciprocating compressors.

“Dresser-Rand is a leading supplier of CO<sub>2</sub> compression equipment with nearly one million horsepower of installed capacity globally,” said Brad Dickson, Dresser-Rand’s Vice President and Chief Marketing Officer. “We’re excited to be part of this groundbreaking technology that will contribute to our nation’s energy independence and environmental stewardship.”

From the academic perspective, the University at Buffalo School of Engineering and Applied Sciences envisions the establishment of a UB Education and Research Center in Carbon Capture and Sequestration. The Center would cluster a core group of research and education faculty and staff with CCS expertise to study carbon dioxide separation, byproduct utilization, sequestration methods and outcomes and the optimal production of alternative fuels.

“The Center would become an internationally recognized destination where state of the art low-carbon-emission technology can be shared, displayed and disseminated to an international technical community and the general public,” said Dr. Harvey Stenger Jr., Dean, UB School of Engineering and Applied Sciences. “New senior staff members with doctorates in mechanical and chemical engineering, support staff and undergraduate and graduate students will be recruited for the Center adding to the career opportunities generated from the project. This is a once-in-a life-time opportunity for our region that we need to bring to the forefront, and collectively make happen.”

