

New Partnership Formed to Find Alternative Uses for Marcellus Shale Natural Gas

University Park, Pa.—A new industry-led initiative to promote in-state utilization of Marcellus Shale natural gas by developing combined-heat-and-power (CHP) systems was announced Thursday at the Natural Gas Utilization Workshop at Penn State.

The Commonwealth Recycled Energy Economic Development Alliance (CREEDA) wants to jumpstart development of CHP systems, which recover waste heat from the generation of electricity and then use it for additional purposes including humidity control, cooling and heating and refrigeration.

“Marcellus Shale-natural gas powered CHP systems are more efficient than conventional electricity generation. They also are the lowest cost method for reducing carbon emissions because they have longer operating hours throughout the year than solar photovoltaic or wind-powered systems,” said Richard Sweetser, senior advisor with the U.S. Department of Energy’s Mid-Atlantic Clean Energy Application Center, who introduced the initiative.

Held June 29 and 30 at Penn State’s University Park campus, the workshop drew more than 130 invited participants from natural gas companies, state agencies, local and state government and University researchers who examined three high-value uses for the long-term supply of natural gas being produced in Pennsylvania’s Marcellus Shale.

Besides CHP systems, the use of natural gas in transportation and as a fuel and feedstock for local manufacturing were discussed, with input from international companies with experience in the economics of large scale energy projects, which the Marcellus has the potential to support.

The Marcellus, stretching from West Virginia through much of Pennsylvania and into New York, is thought to be the largest of about two dozen shale gas plays in the nation with as much as 500 trillion cubic feet of recoverable natural gas. The increasing supply of domestic natural gas represents a new fuel source for manufacturers, public transit systems, schools and hospitals.

Marcellus natural gas, for instance, has the potential to reinvigorate the petrochemical industry in eastern Pennsylvania and create new petrochemical production in western Pennsylvania, said Tom Richard, director of the Penn State Institutes of Energy and the Environment (PSIEE).

“This is not just about clean energy or about creating a demand for cheap energy but about economic development,” Richard said. “Industries that use natural gas as a feedstock produce eight times more jobs than those that simply burn the fuel.”

Energy-intensive businesses in Pennsylvania that could potentially use Marcellus Shale natural gas include furnaces and foundries, lumber and wood products and food processing.

Workshop participants also explored the advantages of transitioning from petroleum-based fuels to natural gas-based fuels for transportation, advantages which include reductions in emissions and lower costs on a gasoline-gallon equivalent.

But switching involves significant challenges, from the cost of converting engines to natural gas to the limited refueling infrastructure across both the state and the nation. Regulatory barriers to conversions and bi-fuel vehicles also must be overcome.

“We need high-profile demonstrations with vehicle deployment to show that we can make this work,” said Andre Boehman, professor of fuel science in the Penn State College of Earth and Mineral Sciences.

While as recently as 60 years ago, many of Pennsylvania’s state institutions were powered by CHP, one of the biggest challenges facing adoption of these systems is lack of awareness by potential users, policy makers and the public of the benefits, such as greater fuel efficiency and lower carbon emissions. The target users of CHP include schools, hospitals and industrial plants.

But the development of CHP systems also faces regulatory and investment barriers. CREEDA, an alliance of natural gas utilities, end users, developers, manufacturers and academic researchers, will be key in developing a statewide CHP energy policy that addresses those barriers, Sweetser said.

Developing new uses and new markets for Marcellus Shale natural gas will take concerted and sustained efforts to educate stakeholders from elected officials and public policy makers to citizens, said Tom Murphy, co-director of Penn State’s Marcellus Center for Outreach and Research (MCOR).

“We need to rally the public with good science and good information,” Murphy told the group. “We need to let the public know the process of getting energy to them, so they can decide their own energy future. And we need to let parents know that there will be good jobs available for their children through wise use of our natural resources.”

The workshop was co-hosted by the Ben Franklin Technology PARTners, Central and Northern Pennsylvania, and the U.S. Department of Energy Clean Energy Application Center and was organized by the Penn State Industrial Research Office, Marcellus Center for Outreach and Research, and the Penn State Institutes of Energy and the Environment.

For more information about the event, contact MCOR at marcellus@psu.edu or (814) 865-1587.