

IOF-WV Focuses on Nation's Growing Energy Demand

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If you are driving to Morgantown on a snowy evening and run out of gas near the Roanoke exit, you would pay much more than usual for gas.

WVU Institute of Technology President Charles Bayless, during this week's **Industries of the Future-West Virginia** (IOF-WV) ninth annual symposium in Charleston, used that situation to describe how developing nations view energy consumption.

"When you're outside looking in, you have a different impression of energy than we do," Bayless said.

He said a nation's gross domestic product is correlated with its energy use. For countries to grow, then, they must use more energy. And if more nations are transitioning from labor economies to energy economies, energy costs will continue to increase.

Today, the U.S. has 3 percent of the world's population but consumes about 29 percent of its energy. As more nations "make the transition," they will place "tremendous pressure" on energy production.

Bayless called it an "energy crisis driven by a billion people."

His presentation, though, was also optimistic, describing why West Virginia is "right in the driver's seat concerning energy." Coal, he said, is "the easiest road to the future" as the nation structures its economy around higher energy costs.

Natural gas production, he said, peaked in 1974 and has slowly declined since. Today, the U.S. has about 4 percent of the world's proven reserves. In just over nine years, the country will

use that supply.

"We are hurting when it comes to natural gas," Bayless said.

The world, meanwhile, has about 42 years of oil in its reserves, Bayless said, and improved location and recovery methods should add to that, even as U.S. imports continue to overshadow domestic production.

"I'm not predicting we are going to run out," he said. "I'm predicting prices are going to stay high."

Coal reserves, in contrast, promise about 247 more years of energy, Bayless said.

"We are going to turn to coal as a nation," he said. "... West Virginia is well positioned to take advantage."

Energy providers, Bayless said, are bound to build coal plants. Coal is sure to be expensive, but not as expensive as natural gas or oil. Meanwhile, the coal liquefaction process, which involves delivering gas and oil from coal, also should see an increase in popularity.

"Higher energy prices are here to stay," Bayless said. "How do we plan to capitalize?"

IOF-WV is a cooperative effort between the **West Virginia University National Research Center for Coal & Energy** and the **West Virginia Development Office** and is sponsored by the **U.S. Department of Energy's Office of Industrial Technologies**.

The program works with the state's traditional industries to increase energy efficiency. It attempts to achieve these goals by forming partnerships among companies, researchers and national laboratories to address the energy and waste concerns of industries.

Another symposium speaker, Sen. **Brooks McCabe**, D-Kanawha, said one of the state's goals should be translating its expertise in energy into dynamic economic change.

High-technology development, he said, "is the ends, not the means."

"We have huge opportunities here," McCabe said, referring to the energy sector. "... Industry has to come to the table and figure out what the new game plan is going to look like."

Recycling Unused Energy

Producing energy leaves behind unused energy, which holds more opportunity, said another of the symposium's speakers, **Tom Casten**, chairman and CEO of Illinois-based **Primary Energy**.

Casten said "an energy train wreck is coming." Low-cost electricity plants are operating at full capacity. The country's number of coal plants, meanwhile, has not increased since 1990, he said.

"There's just nowhere to go," he said.

Casten's company pushes the construction of decentralized coal plants that use exhaust heat, pressure drops and industrial tail gas to produce additional energy that would otherwise be wasted. The process would mean more energy with the same amount of coal. Recycled energy, in addition, is as clean as solar energy.

A **Primary Energy** facility in Chicago, Casten said, produces as much energy as all the solar collectors in the world.

"I'm a fan of solar energy," he said. "I'm all for it, but let's go get the low-hanging fruit."

The facilities would not be centralized because whatever is using the power would have to be connected directly to the

source. The facilities could be on-site energy recycling plants or combined cycle plants that produce both heat and energy. "I personally don't believe we should build another centralized plant," Casten said.

West Virginia, Casten said, has the opportunity to create 800 megawatts of recycled energy capacity. Generating the energy is more expensive than it would be at a centralized plant, but considering transmission, distribution and reserve costs, industries actually could save money, he said. Providers also would have to hire 10 times the number of skilled personnel, but Casten said the investment would be worth the costs.

"What kind of resources do we need to do what we need to do?" he asked.

Industrial Gas Utilization Center

This year's symposium also marked the announcement of the **Industrial Natural Gas Utilization Center** at WVU in Morgantown.

Jeff Herholdt, manager of the West Virginia Development Office's Energy Efficiency Program, said the center's purpose is to bring together resources held by the state's energy-intensive industries and reduce energy costs.

Herholdt said the center will look at why natural gas use is increasing and how coal could help meet energy needs in the state and nation.

"The big culprit is natural gas use at electricity utility centers," he said.

IOF-WV has gathered the technological expertise, Herholdt said. The Industrial Natural Gas Utilization Center plans to take that expertise and apply it to energy issues.

