Building a pipeline of skilled workers

Virginia remains competitive as a place to do business. But can it provide the labor pool needed in a global economy?

by Garry Kranz
Spend a few minutes with Bill Ermatinger and it's easy to see why he's worried. The vice president of human resources and administration for Northrop Grumman Shipbuilding in Newport News needs to hire 15,000 new, highly skilled employees. The infusion of engineering and design talent is crucial as the company ramps up production this year of the USS Gerald R. Ford, the first ship of a new generation of nuclear-powered aircraft carriers commissioned by the U.S. Navy.

The first ship is scheduled for delivery by 2015. Where will Northrop Grumman find so much brainpower? It's a question that keeps Ermatinger awake at night. But he can't hire out of desperation. Ermatinger's recruits must possess a range of sophisticated engineering and similar proficiencies, as well as be able to obtain military clearances.

The Ford-class ship is a paragon of technological innovation. Each carrier will be equipped with a nuclear propulsion plant, capable of generating 2½ times the amount of electricity as the Navy's Nimitz-class vessels. Improved weapons movement is expected to double the Navy's capacity to deliver “smart” bombs. And enhanced flight decks will boost the number of pilots who can take off on missions.

Compounding Ermatinger's challenge is this sobering reality: roughly half of Northrop Grumman's 22,000 employees in Newport News will be eligible to retire within the next decade. “It creates the conditions for a perfect storm: high demand, low [labor] supply and a lot of people leaving the work force,” he says.

The company is attacking the issue on all fronts. It's pushing internal promotions and wooing industry veterans and retirees from competing defense firms. Northrop Grumman Shipbuilding already runs a well-established Apprentice School, which has produced more than 2,500 graduates since 1919. 90 percent of whom have advanced to positions of responsibility in the company. Of even greater significance for the future is the company's willingness to forge alliances with Virginia schools and community colleges. Experienced employees serve as mentors to students, help teach courses and advise educators on curricula.

Work-force needs at Virginia's largest industrial employer may seem extreme. Yet business leaders across Virginia share Northrop Grumman's anxiety. In fact, the problem of a looming labor shortage is national in scope. According to the federal Bureau of Labor Statistics, about 78 million people born between the end of World War II and 1964 — the so-called baby boom generation — will be eligible to retire in the next two decades or so. And there aren't nearly enough workers in the pipeline or entering the market to plug that drain.

Still, the situation transcends numbers. Business leaders say Virginia has enough people to fill the void. The larger worry is how to revive dwindling interest among young people in manufacturing, engineering, mathematics and the sciences — disciplines that equip people for technical careers. "For Virginia's continued success, we need to train our work force better than other states train theirs," says
The national rankings: where Virginia stands

Business

#1 Best state for business, second consecutive year, Forbes.com, July 2007

#1 Top state for business, CNBC (a financial news cable channel), July 2007

#1 Most business-friendly state, Poliini Corporate Real Estate Inc., March 2007

#4 Best state for business, Chief Executive magazine, January 2008

Education

#5 Overall educational quality Education Week, 2008 report

#38 State expenditures on public schools as a percent of taxable resources, Education Week, 2008 report

#2 Best U.S. public university, the University of Virginia, U.S. News and World Report, 2007 edition

#33 and #71 100 best MBA programs in the world, U.Va's Darden School of Business and the College of William & Mary's Mason School of Business, respectively, The Financial Times, January 2008

Technology

#1 Highest concentration of tech workers in the country, Cyberstates 2007

Tom Harned, president of the Virginia Economic Developer's Association.

Fragmented system

So far, the state continues to garner accolades for its pro-business climate. Forbes.com named Virginia the top state for business in 2007 for the second consecutive year. And Education Week magazine tipped its cap to the state's school systems last year, declaring Virginia's children the most likely in the nation to succeed as they mature to adulthood.

Even so, economic leaders worry that Virginia will lose its competitive edge if it doesn't move quickly to revamp the state's fragmented system of work-force training. The commonwealth has 29 separate training programs, spread across 12 agencies under the supervision of four different secretariats, a system described by critics as wasteful and inefficient.

Gov. Timothy M. Kaine wants to put the unwieldy system under the supervision of the community college system, a proposal that's drawing support from business and manufacturing groups.

The link between work-force training, education and economic growth was under-

scored last fall when questions about Virginia's ability to provide skilled workers nearly torpedoed its most notable economic project of 2007. Virginia landed a plum when Rolls-Royce elected to build its new aircraft-engine facility in Prince George Coun-

ry. The deal is expected to create more than 500 jobs — with an annual salary of $48,000 — and capital investment of as much as $500 million. Plus, there could be a spin-off effect, with other supporting industries following Rolls-Royce to Prince George.

Economic leaders are gleeful and rightfully so, that Virginia beat out seven states and the two other finalists: Georgia and South Carolina. Even the project's code name was tony: Project Corvette. But Virginia's selection was far from a shot-in-the-dark. "We felt it was in doubt for most of the 12 months" of negotiations, says Liz Povar, director

Photo courtesy Rolls-Royce plc

A Rolls-Royce aircraft engine plant is coming to Prince George County

gather stakeholders from various agencies and presenting a unified front. Irrelevant training programs were winnowed from the stack, replaced by those that met Rolls-Royce's needs. In fact, a specific program that will create new research centers, internships and training was put in place and will require collaboration between the University of Virginia, Virginia Tech and the Virginia Community College System (VCCS).

Sweetening the pot no doubt helped as well. Rolls-Royce could get nearly $570 million in financial incentives. Part of that package awaits legislative
approval: a $35 million performance-based cash grant tied to job creation and capital investment.

**Demanding accountability**

Virginia’s work-force challenge does not stem from lack of resources. Virginia allocates about $400 million annually for workforce training, about half of which ($216.6 million) originates from federal programs. Virginia taxpayers supply the balance, about $184 million. Bureaucracy appears to be the major stumbling block. Companies accepted a fragmented approach when labor was plentiful, but they are less patient today. “We as a state have not crossed third base and rounded toward home yet,” says Mark Singer, executive director of the nonprofit Virginia Career College Association, a lobbying and research organization that serves state-supported institutions of higher education.

Earlier this year, Kaine issued an executive order, authorizing a new approach. He named the state’s community college system as the gatekeeper for work-force development. That makes VCCS responsible for two key missions: coordinating numerous programs and orienting training around the requirements of Virginia’s businesses. Kaine’s directive came nearly five years after a 2002 study by the Joint Legislative Audit and Review Commission concluded that Virginia lacked a “coherent, coordinated system” for addressing work-force training.

The governor’s approach makes sense to Hugh Keneg, president of the Virginia Chamber of Commerce: “This makes the state’s chief delivery agency also responsible for organizing the services.”

Thomas Morris, Kaine’s secretary of education, also supports the change, with this caveat: “If we’re going to ask community colleges to be the organization responsible for work-force training, then, by golly, we need to make it possible for them to do so.”

Kaine has created a subcabinet of 15 agencies to review all work-force programs periodically and to recommend improvements. One early recommendation calls for placing about $40 million of federal money under the administrative control of the VCCS. The money is Virginia’s share of the Workforce Investment Act, enacted in 1988 to help states train citizens for gainful employment. Presently, the lion’s share of the cash goes to 16 Workforce Investment Boards, or WIBs,
scattered across the state. There’s little coordination of services between the boards and no centralized oversight of how funds are used.

However, the community college system won’t be at liberty to spend the federal stipend. Rather it will have oversight to ensure Virginia’s WIBs get the most value. Economic-development-related career training is nothing new for the state’s 23 community colleges. In recent years, they have stepped up efforts to dovetail curricula with the needs of Virginia employers, says Vice Chancellor Peter Blake.

For instance, one 4-year-old program, funded to date entirely by federal grants, places 75 “career coaches” at 125 of Virginia’s 350 high schools. As VCCS employees, they provide support to high school guidance counselors. “The coaches are there to let young people know about career opportunities in their local communities and the career paths they’ll need to follow to get there,” says Blake.

Blake also touts a federally funded Middle College that encourages dropouts between 18 and 24 to return to school. The program is especially critical in rural areas in which a high percentage of residents fail to complete high school. The Career Coaches and Middle College initiatives have been funded by a patchwork of federal grants, but Kaine’s proposed biennial budget requests $1.8 million a year from legislators to sustain the programs.

Boon for Lynchburg

Central Virginia Community College (CVCC) in Lynchburg exemplifies the powerful tool at the state’s disposal. It takes an integrated approach by trying to interest middle school students in science and math. The aim is to encourage students to pursue high school courses that qualify them for community colleges, which can be speedboards to Virginia’s four-year institutions.

A new set of engineering programs launched jointly last year by CVCC and the University of Virginia already has enrolled 175 aspiring engineers. Industry participation is pivotal to its success. Local companies

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**Technical careers**

To prepare young people for technical jobs, Virginia will open six new career and technical academies. They will build on existing programs and are being developed with partners from business, school divisions and colleges and universities. The programs are:

**Agricultural Science Academy, Halifax County**
Program will focus on careers in forestry management and leadership in forestry-related industries, including agriculture, biotechnology and manufacturing.

**Governor’s Academy for Innovation, Technology and Engineering, Newport News**
Program will focus on electrical and mechanical engineering with instruction provided at high schools in participating school divisions, online and at Thomas Nelson Community College.

**Governor’s Career and Technical Academy, Arlington, Arlington County**
Program will integrate instruction in science, technology, engineering and mathematics in five focus areas—automotive, digital media, information technology, emergency medical services and engineering.

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**Fostering Innovation and Relevance Through STEM and Trades, Suffolk**
Program will focus on engineering and industrial trades, health sciences, automotive technology, information technology and human services.

**Pathways Academy, Russell County**
Program will focus on science, technology, engineering, mathematics and will include correlated “handson” instruction in science and mathematics for middle school students. Dual-enrollment classes offered at the University of Virginia’s College at Wise (UVAWise) Technology Center in Lebanon will be offered to students in Russell, Dickenson, Tazewell, Scott and Lee counties.

**Stafford Career and Technical Academy, Stafford County**
Program will focus on information technology, mathematics and engineering with instruction provided at three locations—Brock Point High School, North Stafford High School and Stafford High School.
sponsor about 70 students, providing them with full- or part-time jobs, internships and reimbursement for tuition, books and fees. “The whole idea is trying to prevent a brain drain. We’re working to keep local talent for local companies,” says Stan Shoun, who runs the college’s Center for Workforce Development and Continuing Education.

The training program has been a boon to Lynchburg-based Areva NP Inc., one of the world’s largest designers of nuclear power plants, reactors and maintenance equipment. Areva employs about 1,700 people in Lynchburg. It also sponsors about 45 aspiring engineers enrolled in the community college/U.Va. program. The nuclear industry is experiencing resurgence as utility companies begin ordering new nuclear power plants, says Jim Hicks, Areva’s vice president of business integration. Utilities need the new plants to feed a voracious appetite for electricity.

Within five years, Areva plans to hire up to 1,000 engineers to meet demand. At the same time, nearly one-third of its employees are approaching retirement. Partnering with Central Virginia Community College is part of Areva’s strategy to plug the talent gap. The goal? Provide aspiring engineers with opportunities to work at least part time. “Our business has been expanding, and this is a great way to bring in new people,” says Hicks.

Engineering needs in Lynchburg and the surrounding region are particularly acute. Equally as hungry for nuclear engineers as Areva is Babcock and Wilcox Nuclear Operations Group, an operator of nuclear facilities worldwide. M/A-Com, part of Tyco Electronics, needs electrical engineers and apparel maker J. Crew Inc., which operates a distribution and customer service center in Lynchburg, prizes well-trained software engineers.

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Although the region boasts five liberal arts colleges, none offered an engineering program until recently. Sweet Briar College, a women’s college with 775 students, is in the third year of classes that enable students to obtain bachelor’s degrees in engineering sciences and engineering management. Sweet Briar is one of only two women’s colleges in the U.S. to offer a degree engineering track, says Hank Yochum, the program’s director. (Smith College is the other.)

Even newer is the School of Engineering and Computational Sciences at Liberty University, founded by the late Rev. Jerry Falwell. The curriculum debuted last fall with an enrollment of about 60 students. Ron Sones, dean of the new engineering program, expects “many, many times that number” in a few years. The curriculum focuses on four key engineering tracks: nuclear, electrical, industrial and software design. “From the beginning, we wanted very much to build the school to provide a practical benefit to the local economy,” says Sones.

Liberty’s program differentiates itself by placing heavy emphasis on research at the undergraduate level. Students are required to complete a two-semester research track that includes developing new engineering processes. Graduates receive not only an engineering degree, but hopefully a patent for their discoveries as well, says Sones. To that end, Liberty plans to launch an intellectual property office this year to help students commercialize their research.

Reshaping the Valley

Further west, nonprofit research firm SRI International wants to be a catalyst for reshaping Virginia’s rural economies. The Menlo Park, Calif.-based company last year chose Rockingham County as the site for its Center for Advanced Drug Research, set to open next year. It will enable researchers from James Madison University and other Virginia colleges to collaborate with SRI scientists on breakthrough therapeutics for treating a host of diseases.

SRI was a seminal force in the ascendance of California’s Silicon Valley, sparking a rash of startups and acting as a magnet to draw clusters of support-services companies. SRI anticipates having a similar transformative effect in Virginia, says John Sternlicht, SRI’s senior director of strategic projects and a former deputy secretary of commerce and trade under Gov. Mark R. Warner.

SRI is teaming with area governments, colleges and the Shenandoah Valley Economic Development Partnership to identify the region’s work-force demands. About 160 companies have provided input on the knowledge base necessary to sustain the Valley’s evolving industrial base. Primary schools and colleges could use the data to pattern their curricula on the needs of the area’s industries. “The work-force needs of the Valley are changing. It will preserve its agricultural heritage, but there are new components that require people to learn some different skills,” says Sternlicht.

National rankings prove Virginia is a desirable place to do business. In terms of the future, the biggest enemy may be complacency. “Failure is not an option,” says Ermatinger, referring to Northrop Grumman’s aircraft-carrier deadline. As he knows so well, corporate success in the future will depend on human capital, not just dollars and cents.