Putting supercomputing on the XPRESS track

By Neal Singer

A Sandia-led team in the stratosphere of high-performance supercomputing has been funded by DOE’s Office of Advanced Scientific Computing Research to design an operating system suitable to handle the million-trillion-per-second mathematical operations of an envisioned exascale computer, and then create prototypes of several of its programming components.

Called the XPRESS project (eXascale Programming Environment and System Software), the effort to achieve a major milestone in supercomputing is funded at $2.3 million a year for three years and engages a team that includes the universities of Indiana, North Carolina, Oregon, and Houston; Louisiana State University; and Oak Ridge and Lawrence Berkeley national laboratories. Work began Sept. 1.

The project’s goal is to devise an innovative operating system and associated components that will enable exascale computing by 2020, making contributions along the way to improve current petaflop (a million billion operations a second) systems.

New inclement weather notification process is simple, straightforward, standardized

By Cathy Ann Connelly

Sandia has changed its procedures for inclement weather work delays, which now are set for universal, hour-specific start times for all members of the workforce.

“The new approach will help all of us be safer as we drive, park, and walk into work,” says Brian Bielecki, director of Security and Emergency Management Center 4200, “and it gives us clear, simple, and standardized communications about what to do, when to do it, and how to account for charging time.”

Should overnight winter weather conditions make parking lots unsafe until they are cleared, Sandia Emergency Operations Center (EOC) will deliver a workforce message about the delay, including a specific time to report to work, and other details including how to charge time for the delay.

Under typical snowy conditions, messages will be sent no later than 5 a.m. the day of the delay, and will include a stipulated start time dependent on the severity of the storm — usually around 9 a.m.

Messages will be delivered in all the familiar ways, starting with Sandia email, so employees can choose.

A historic campaign

ECP eclipses $5 million goal for United Way

By Nancy Salem

Labs employees and retirees made history this fall when Sandia became the first company ever to donate $5 million in a single campaign to the United Way of Central New Mexico (UWCNM). And Sandia didn’t stop there. As of mid-November, the Labs’ Employee Caring Program (ECP) had collected $5.2 million for UWCNM with total giving up 13 percent over last year’s record-breaking $4.6 million contribution. The final numbers will go even higher as more retiree donations come in during December.

“This has truly been a historic campaign,” says Anthony Thornton, this year’s ECP campaign chair and deputy to the VP of Defense Systems and Assessments Dept. 5220. “I have been deeply inspired by the commitment of volunteers within Sandia who tirelessly gave their time and energy to make this year’s campaign the most successful in Sandia’s history. We could not have achieved this milestone without their efforts.”

The 2012-13 ECP campaign also set goals to increase participation in every division from the 2011 baseline and engage newer employees in the Labs’ culture of giving.

PV partnership

Sandia is advancing viable, low-carbon power through its collaboration on five US Regional Test Centers (RTC) where industry can assess the performance, reliability, and bankability of large-scale photovoltaic energy systems. See the story on page 5.
At the approach of the holiday season, think about this for a moment: There are kids in our country who, on any given day of the year, have to go without a pair of shoes. They choose the ones they already own. You can make some child’s day by donating something — every dollar helps.

For over 10 years, we’ve sponsored the Kids Shoes campaign, a program sponsored by Sandia. Kids Shoes has been around for 55 years. In that time, the program has benefitted thousands of children in our community, including some who have grown up to become members of our own Sandia community.

Shoes for Kids has an interesting origin story: In 1956 two scientists who had traditionally exchanged gifts at Christmas realized that there really wasn’t much they could do for themselves. Rather than doing yet another gift exchange, they thought, “How about putting that money we’d otherwise spend on each other toward something that someone really does need?” How about, for example, buying new shoes for disadvantaged kids?

As Sandia President and Labs Director Paul Horner noted recently in a memo to employees, “This selfless gesture has blossomed into a holiday tradition that ensures children without some of the comforts many of us take for granted will have good and well-fitted shoes.”

The Shoes For Kids campaign is a partnership among Sandia, area schools, Payless Shoe Source, and the Sandia Laboratory Federal Credit Union. In addition to benefiting children in Albuquerque, the campaign has grown to include children as far north as Bernallillo, and as far south as Los Lunas and Bernalillo. Last year, Sandians generously donated nearly $13,000 to buy new shoes for children in need.

This is a program that truly makes a direct and tangible difference for kids every single day. If you care to contribute something this year to make one child’s life a little better, find out how to participate at the Shoes for Kids website at http://www.sandia.gov/idsa/.

* * *

On page 8, we have a story about Rachel Hof, a Stanford graduate who has interned at Sandia over the past four summers. Rachel has just been awarded a Rhodes scholarship, making her one of 32 Americans so honored this year. She was selected from over 1000 American candidates who were nominated by their colleges and universities. She plans to commence her study in contemporary literature at Oxford University next October.


The Rhodes scholarship is always regarded as the world’s most prestigious academic award. America’s Rhodes scholars are an eclectic but breathtakingly accomplished lot who have a way of rising to the very top of their chosen professions. Having been associated with Rachel — she was a student intern at the Lab News during the summer of 2009 — I can tell you that she very much belongs in the august company of Rhodes scholars I listed above. She will make her mark in a big, big way. She is a remarkable young woman who has dealt with some daunting personal challenges with grace and courage. Congratulations, Rachel.

Sometimes you just get lucky like that. Just in time for Christmas, I received the following e-mail: “This is to notify you that you have been chosen as one of the beneficiary of a grant donation for humanitarian and your personal development. You have been awarded a grant sum of £500,000 GBP. Well earned.” It was not immediately clear what this story was all about. The e-mail was from an unknown individual at the Sandia News room.

I was actively investigating this message when I noted that the contact individual is decidedly illiterate. After following up with Mr. ****@***** (Executive Secretary) with this email: ******@xxxx.com.” I was told that this individual has a 1/4 percent of the average reading ability of a 9th-grade student. I was also told that the contact person is attempting to scam the Sandia workforce.

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Employee death

Remembering Kevin Strecker

‘He was one of the best and brightest, just a sponge for knowledge,’ friend recalls

Kevin Strecker was a brilliant physicist with a child’s enthusiasm and curiosity for science, a giving mentor, and a person who cared deeply for others. On Nov. 4, he died of a heart attack at the age of 38. He is survived by his wife of 16 years, Michelle. “He was a once-in-a-career colleague,” says Lorraine Sadler (8112). “I first heard his name when I was a graduate student. He was the first person in the field of cold atom physics.” Kevin earned his doctorate from Rice University in 2004. He pioneered the Feshbach resonance in lithium to create novel states of matter including matter wave solutions of attractively interacting Bose-Einstein condensates and strongly interacting Fermi gases.

That same year he joined the Combustion Chemistry and Diagnostics Department (8353) as a postdoctoral associate and continued his work on chemical dynamics research. In 2007 he was hired as a staff member and continued to contribute to chemical dynamics research at the Combustion Research Facility (CRF) and lead new technique development for nonproliferation and chemical detection with his colleagues in 8108.

“He was one of the best and brightest, just a sponge for knowledge,” says Dave. “We bonded as colleagues immediately. Even though he was my postdoc, he mentored me as much as I mentored him. At his core, Kevin wanted to understand the world and make a difference. He was an extremely bright and driven person. People gravitated toward him because he was someone not treating you right, someone was not treating you right, or if he saw an injustice, he would try to fix it.”

Outside of work, Lorraine describes Kevin as a bit of a Renaissance man. “He knew how to do almost anything, especially if it was hands-on. He was an avid cook and he and his wife Michelle rebuilt their entire house practically by themselves,” she says. “He loved his Mini Cooper. It was just quirky enough to fit his personality.”

“To me, he was a true physicist with deep insights. He had the extraordinary ability of extracting the essence of a problem from complex context quickly and accurately,” says Hao-Feng Huang (8353). “But he was much more than an excellent scientist; he was a real gentleman. Whenever I or someone else had a problem, he was there to help. I cannot believe a person with such a kind heart passed away from a heart attack.”

“I had the pleasure of working with Kevin on an atom-trapping project,” says Scott Bisson (8128). “It was immediately struck by his abilities and knew that we had someone truly exceptional on our team. He was an exceptional experimentalist, and was able to improvise with just about anything. He was also very patient, and was always willing to take time to explain things. He always put the project and his team ahead of himself. Above all, he was my friend and I will miss him.”

Kristi Duenas (8128) got to know Kevin about five years ago through the Dynamics of Molecular Collisions Conference. “I learned firsthand not only how insanely intelligent he was on a multitude of subjects, but also what an awesome human being he was,” she says. “I still find myself expecting him to saunter in and up the stairs with his faint head nod in good morning or up to my desk with the task next he needed help with because he seemed to think I could do anything. I truly appreciated the compliment and will sorely miss his presence here. The sun shines just a little less brightly with him.”

— Patti Konig

Marilyn Hewson will become Lockheed Martin CEO Jan.

L ockheed Martin has named Marilyn A. Hewson, 58, president and chief operating officer of the corporation effective immediately and chief execu-
tive officer (CEO) and president effective Jan. 1. Hewson will also retain her role as executive vice president of the Electronic Systems business area, which includes Sandia, until the end of this year. In making the announcement on behalf of the board, CEO Bob Stevens said, “Marilyn is an exceptional leader with impeccable credentials and deep knowledge of our business, customers, shareholders, and employees.”

During the same meeting that resulted in Hewson’s selection as CEO, the board also confirmed Stevens as executive chairman effective Jan. 1. In that role he will work with Hewson to facilitate a smooth CEO transition.

“As board executive chairman,” Stevens said, “I will remain very active and involved in our company’s work, playing any role that would be of value, and I will do this throughout 2013.”

Hewson joined Lockheed Martin in 1986. She has served as executive vice president of the Electronic Systems business area since January 2010. She earned her bachelor’s degree in business administration and a master’s degree in management from the University of Alabama.

She also attended the Columbia Business School and Harvard Business School executive development programs. She chairs the Sandia Corporation and serves on the board of DuPont. Hewson is a member of the Association of the United States Army Council of Trustees and the University of Alabama’s Culverhouse College of Commerce and Business Administration Board of Visitors.

Alternative Fuels Challenge boosts STEM learning

More than 25 middle schools and 300 students from around the state partici-
pated in this year’s New Mexico Alternative Fuels Challenge held Nov. 17 in Albu-
querque. The event was spon-
ored by Sandia/Lockheed Martin, Albuquerque Public Schools, and other organiza-
ations interested in advancing science, technology, engineer-
ing, and math (STEM) curricu-
mums in New Mexico’s schools.

The competition ties pro-
ject-based learning with STEM. Students receive a hydrogen fuel cell and electric motor. From there, they apply their education and imaginations to create the most original and fastest hydrogen-powered cars. In addition to racing their cars, which are built from scratch, the students submitted a short essay topic in the area of alternative fuel, each team received an oral presentation.

The winners this year were: Kennedy Middle School (Albu-
querque) first place; Chimayo Middle School (Chimayo, N.M.), second place; and Taylor Middle School (Albu-
querque), third place.

Teams won trophies for the four different competitions and overall awards. Cash awards were presented to three teachers of the top programs to assist them in expanding energy education at their schools.

Sandia’s volunteer commitment was coordinated by Community Involvement Dept. 3652.
Weather policy

(Continued from page 1)

which sources they prefer to monitor. Sources include:
• Sandia email
• Sandia Bulletin Board (Dial 845-6789 and follow the menu choices.)
• Radio Sandia, 1640 AM
• News coverage through local television and radio stations
• Sandia Facebook, www.facebook.com/SandiaLabs, and
• Sandia Twitter, twitter.com/#!/sandialabs

“This new protocol allows Sandia response crews to be more efficient in their early morning clear up of parking lots because they’ll be vacant and easier to clear and prepare,” Bittan says.

The fixed start time approach to delays was implemented at Los Alamos National Laboratory (LANL) a few years ago and has proven to be efficient for LANL’s similar large number of personnel. LANL employees enter through even fewer access points and they experience a much higher number of inclement weather days than Sandia.

The new arrival time protocol has been coordinated with Kitting Air Force Base (KAFB) so that gates will be fully staffed at universal access times following a delay.

Delayed arrival times at Sandia apply to the entire Sandia population, except for inclement weather response teams. This includes all off-site employees, such as those reporting for work at Innovation Parkway stations for weather delays, including any telecommuting work conditions. Sandia Labs will open at ___ a.m. (today/tomorrow) for all employees. Check for schedule updates due to worsening weather conditions. Updated information will be posted as needed through the following:
• Sandia email
• Sandia Bulletin Board (Dial 845-6789, there will be a short pause before providing menu choices)
• Radio Sandia, 1640 AM
• News coverage through local television and radio stations
• Sandia Facebook, www.facebook.com/SandiaLabs, and
• Sandia Twitter, twitter.com/#!/sandialabs

Follow any contingency plans previously developed for weather delays, including any telecommuting work arrangements made with your manager. Information regarding road conditions can be found at www.nmroads.com.

Time Charging
• Do not use the inclement weather TRC-270 if you were scheduled to be off work for vacation or travel, or if you worked your normally scheduled hours for the day.
• Charge TRC-270 for any work time you missed due to the delayed start time. For example, if you normally start at 8 a.m., and Sandia delayed opening until 9 a.m., you would charge one hour of time to TRC-270.
• By contract, staff augmentation contract associates who are impacted may not bill project(s)/task(s) for hours not worked.

Other inclement weather messages may include alerts at other times of day, such as weather warnings, early workforce releases, and Sandia closure notices.

Other Inclement Weather Considerations
When at work, as weather deteriorates, pay attention to email notices and keep in mind proactive winter precautions from Security and Emergency Management:

Emergency, Safety & Health
• Do not overload yourself with hand-carried items while walking. High winds combined with the inability to use your hands and arms to balance make you prone to falling.
• Be aware that the wind may stir up debris causing ear, nose, throat, and eye vulnerabilities. You should consider eye protection and respiratory guard/masks to mitigate any airborne debris hazards.
• Be mindful of doors blowing open in windy conditions.
• If it should snow or become icy, be aware of slipping hazards. Sandia annually averages 2-3 slips in parking lots as the result of slippery surfaces and inadequate footwear.
• Assist others if you recognize they may be compromising their safety or the safety of others. Let’s look out for one another.

Situational awareness is paramount when an unrecognized hazard surfaces. Situational awareness provides reaction time and space to recover from incidents that could result in injury.

Security
• High winds may prevent security area (i.e. Limited Area, Property Protection Area, etc.) entry/exit points from securing properly. When entering or exiting a security area, please ensure that those entry/exit points are properly secured to prevent the compromise of classified, critical infrastructure, and personnel.
• Report any facility issues that could lead to a compromise in security at: TELECON 844-4571.

Sandia’s ECP campaign breaks $5 million barrier

(Continued from page 1)

Sandia’s overall participation rose to 73.6 percent from 71.8 percent the previous year, and more than 90 percent of divisions raised their participation. New employees showed a participation increase of 5.6 percent.

Deputy Laboratory Director and Executive VP for Mission Support Kim Sawyer, chair of UWCNM’s 2012-13 $28.15 million campaign, says the response from Sandians and retirees this year was “absolutely fantastic.”

“It continues to demonstrate our strong culture of giving,” she says. “Other companies admire the generosity of Sandians and our retirees and are envious of what we have accomplished for the good of the community year after year.”

Ed Rivera, UWCNM’s president and CEO, says Sandia’s generosity is at the root of the agency’s successful campaigns. “We talk about the culture of giving that is Sandia,” Rivera says. “It’s infectious. It’s huge.”

Rivera says Sandia’s per capita giving ranks in the top among companies of its size nationwide. “We thank you for that from the bottom of our hearts and from all those who benefit from what you do,” he says. “Sandians are thoughtful people who are informed about the challenges in our community. You give money and time so generously. You will change lives.”

Anthony singled out Pam Catanach (3652), the Community Relations specialist who has been ECP’s program manager for eight years, for special praise. “Pam is the real engine behind the campaign’s success,” he says.

He thanked Sandia’s 65 ECP representatives who reached out to workforce members and planned activities within divisions. He says the ECP kickoff event on Oct. 8 raised $3,148 for the UWCNM’s Community Fund, which supports the area’s most vulnerable through grants to qualifying health and human services agencies. Book fairs were well attended, with proceeds going to the fund.

Anthony passed the campaign chair torch to Kelly Westlake, senior manager of Controller Operations Dept. 10510.

“Anthony and the 2013 ECP have set the bar at an astronomical level, but I recognize how amazing Sandians are when they not only put their minds, but hearts, to task with the will to succeed in helping those most vulnerable in our community,” Kelly says. “I am honored to lead Sandia to another new record in 2014.”
PV partners

Sandia helps DOE bring large-scale solar systems to market

By Nancy Salem

Sandia is advancing viable, low-carbon power through its collaboration on five US Regional Test Centers (RTCs) where industry can test the performance, reliability, and scalability of large-scale photovoltaic energy systems. “With the trend in the solar industry toward larger systems and greater capital investment—substantial amounts of money are going into this field—the financial community is increasingly scrutinizing how well these systems operate,” says Charles Hanley, manager of Photovoltaic and Distributed Systems Integration Department 7620. “The RTCs will provide enhanced monitoring and improved performance prediction capabilities for new technologies being introduced to the market.”

Sandia has a long history of measuring and modeling performance of PV systems, from single panels to multi-megawatt arrays, the kinds of systems found on residential rooftops and small businesses. “Sandia works in partnership with the US solar industry to advance the state of the art in system integration and system optimization,” Charles says.

Sandia researchers a few years ago developed the idea of an incubator for commercial-scale PV systems up to 500 kilowatts or a megawatt, the size found on big-box stores or schools. The Labs’ National Solar Thermal Test Facility (NSTTF) was quickly identified as a perfect site for such a PV testbed.

At the same time, DOE was working with industry and stakeholders to determine their most pressing needs. The agency hosted a workshop in Berkeley, Calif., on PV manufacturing attended by the CEOs of module manufacturers and members of the financial community. “It was clear from the workshop that the broad community wants better ways to quantify technical aspects to support the bankability of PV systems,” says Jennifer Granata (6112) of the Labs’ solar group.

Sandia was asked to develop the RTC concept that would help keep the dramatic growth in this market on track,” he says. “The RTCs will develop protocols and conduct testing and analysis on the systems that can give investors some concrete data with which to assess the risk,” Jennifer says.

A good fit for Sandia

She says the PV world until now did not have full and independent standardized processes for monitoring and evaluating large systems. The workshop attended DOE to develop test locations for large arrays where PV manufacturers could try out new designs and systems and get reliable data. “It fits with the Sandia idea on system incubators,” Jennifer says. “We had ideas on how this could work.”

DOE asked Sandia and the National Renewable Energy Laboratory (NREL) in Golden, Colo., to submit proposals for what the agency named Regional Test Centers. Jennifer led a team effort to develop a Sandia proposal for testing infrastructure and a validation plan to measure and evaluate performance and reliability.

DOE decided to fund physical and data monitoring infrastructure and validation across RTCs in different climates, with Sandia and NREL working together on the overall project management. Sandia manages four of the five locations with local partners: Albuquerque; Orlando, Fla.; Burlington, Vt.; and Las Vegas, Nev. The fifth location, Denver, is managed by NREL.

The sites are in varying stages of development, from examining plans to go-to-go. Each will put in infrastructure up to one megawatt, so multiple different-sized systems can be tested. At Sandia, the project has started on eight acres at the NSTTF with an option to expand by an additional 30 acres. Infrastructure includes a road, communications equipment, and the electrical lines for monitoring system performance, and switches.

“Most of the work is underground,” Jennifer says. “Companies can come in and put a PV system in place. AC goes right to the grid.”

Jennifer says key components of the RTCs are the processes, standards, and guidelines for validating large PV systems. Experts from the participating sites have developed a validation plan with step-by-step processes to assess and quantify system performance.

“[The Regional Test Centers, with lab expertise, can provide an independent, third-party perspective, and test beyond the standard protocols to improve our understanding],” Jennifer says.

RTCs are a part of DOE’s SunShot Initiative, a collaborative national effort to make solar energy cost-competitive with other forms of energy by the end of the decade. DOE wants to encourage widespread, large-scale adoption of renewable solar energy technology and infrastructure.

Charles says the RTCs are an important part of the effort. “This will produce improvements in performance monitoring that can greatly reduce the uncertainty around investing in large-scale projects and therefore help keep the dramatic growth in this market on track,” he says.
Making a difference

By Stephanie Hobby • Photos by Patty Zamora

More than 250 Sandia employees, contractors, retirees, and family members devoted their October weekends to participate in the nationwide Make a Difference Day. For more than 10 years, Sandia has been providing opportunities for employees to participate in the event, which impacts local nonprofit organizations.

“Sandia has a long and rich history of serving our communities, and we are proud to continue that tradition,” said Kim Sawyer, deputy Labs director and executive vice president for mission support at Sandia.

This year, Sandians helped out by sorting and packaging food for Roadrunner Food Bank, decorating pumpkins with the Make-A-Wish Foundation, conducting nanotechnology experiments with students at the National Museum of Nuclear Science and History, landscaping the grounds of Sandia Base Elementary School, and repairing and extending a fence at Shandian Child Development Center. In addition, the Sandia Volunteer’s Action Network sorted clothing for Barrett House Attic Thrift Shop.

Early in October, Sandians donated items and funds to a drive for care packages for the Rio Grande Valley Blue Star Mothers, after which 10 Sandians sorted and packaged the donated items for US troops.

Make a Difference Day is the nation’s largest volunteering event and is known as “the national day to help others.” Nationwide, the event is the fourth Friday and Saturday of October, but Sandia volunteers decided to make the most impact by extending their efforts through the entire month.

Make a Difference Day is celebrated in nearly every city and state across the country, and last year more than 3 million Americans joined together in the spirit of service. Sandia partners with several businesses in Albuquerque to help, and this year, 2,000 people are expected to join the effort in Albuquerque and the surrounding area.
Rachel Kolb has one of those rare resumes for a 22-year-old. She's a National Merit Scholar with a bachelor's degree in English from Stanford University. She's the first Stanford student to twice win the university's distinguished Boothe Prize for essay writing. She was a summer intern four times at Sandia in areas ranging from the Lab News to Strategic Foundations to Surety Engineering. And she's closing in on a master's degree.

Rachel just added another entry: Rhodes Scholar.

By Nancy Salem

Rachel is an Albuquerque native. Her parents Bill (6123) and Irene (2992) Kolb have worked at Sandia since the early 1980s. Rachel graduated in 2008 from Albuquerque Academy and entered Stanford, where she earned a bachelor's degree this year and will complete a master's, also in English, next June.

Rachel wants to be a writer and plans to study contemporary literature and comparative social policy at Oxford, earning a master's degree in each over two years. She loves fiction and nonfiction and hopes to work disability-related issues into her writing. She's also considering work in academia.

"I love reading," she says. "I read the classics and try to keep up with contemporary fiction."

Some favorite authors are Jonathan Franzen, Hilary Mantel, Michael Chabon, Virginia Woolf, William Faulkner, and George Eliot. Her undergraduate thesis was on Charlotte Bronte's Jane Eyre. "I enjoy writers who experiment with the form and with what they can do with their craft," she says.

Rachel is an accomplished horsewoman and president of the Stanford Equestrian Team. She says her connection to horses is one of the most important things in her life. "They allow me to communicate without language," she says. "They take you as you are." Rachel heads to Oxford next fall. She studied there through Stanford's Bing Overseas Studies Program during her junior year, from October to December 2010. "Being at Oxford made me want to apply for the Rhodes Scholarship," she says. "I enjoyed the one-on-one tutorial system and the intensive focus on individual projects instead of large classes."

"We are so thrilled for her," Irene says. "And to be honest, we feel quite humbled. We are proud of every-thing Rachel has accomplished."

"We're blessed to have her," he says. "I'm proud and I'm honored to know her and to have her in my life. She's extraordinary. I've learned more from her than she has from me."