

REPORT



Leon Panetta to Address CCST on Ocean Crisis

The oceans are in a state of crisis as a result of a host of human-related factors, and California needs to focus on constructive long-term strategies to mitigate these problems, according to Leon Panetta, co-director of the Leon & Sylvia Panetta Institute for Public

Policy and chairman of the Pew Oceans Commission, which in 2003 released the first thorough review of ocean policy conducted in 34 years.



LEON PANETTA

“The most important thing is promoting ecosystem management, trying to bring together

the issues of the land with issues of the coastline,” said Panetta, whose long career in public service has included three years as President Clinton’s White House Chief of Staff. “We need to develop regional consensus plans that coordinate policy at the local, state, and federal levels.”

At the October council meeting, Panetta will address the Council on *The Challenge of Protecting our Oceans*. Several problems face the oceans, and they have potentially wide-ranging consequences for the state and the country, said Panetta.

“First, we’re losing our fisheries; we’ve lost 90% of the big fish in the ocean, and we’re seeing fisheries being depleted around the country,” he said. “Second, pollution continues to be a real problem; we’re seeing increasing ‘dead zones’ [oxygen-deprived areas of the ocean devoid of fish] in the Gulf of Mexico, off of Chesapeake Bay, and near Oregon – runoff is literally destroying marine wildlife. Third, coastal development is increasing. California has 50% of its population living near the coast; it’s projected that an estimated 25 million more people will move there in the next 20 years. That will continue to

impact wetlands enormously.”

The challenges are in part due to the patchwork quilt of regulation, according to Panetta. “Governance of our oceans lacks any kind of coordination, there is a maze of conflicting rules and regulations at the federal, state, and local level that usually wind up being contested in federal district courts, ultimately judges determine what ocean policy is going to be.”

He stressed that investment in science and education will be critical to successful ocean conservation policy.

“There are all kinds of things that we think can help, coastal reserves, e.g. But without good science, the ability to monitor and observe, really determine what works out there, we aren’t going to make a lot of difference,” said Panetta. “There’s a lot we don’t know. 1500 people have gone to the top of Mt. Everest, 300 people have gone into space, but only 2 people have gone to the deepest part of our oceans; that tells you a lot about funding and the resources allocated to understanding the oceans.”

The Panetta Institute, located at CSU, Monterey Bay, serves as a non-partisan center for the study of public



policy aimed at helping the country meet the challenges of the 21st Century. Founded and directed by former White House chief of staff Leon Panetta and his wife Sylvia,

the Institute provides a variety of study opportunities in government, politics and public policy, and sponsors a range of activities, including the *Leon Panetta Lecture Series*, a Policy Symposium, a congressional internship program, and a master’s degree program in public policy.

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CCST is a nonprofit organization established in 1988 at the request of the California State Government. It is sponsored by the state’s major postsecondary institutions, supported by California’s federal laboratories and anchored by leading private-sector firms. CCST’s mission is to improve science and technology policy and application in California by proposing programs, conducting analyses, and recommending policies and initiatives that will maintain a vigorous economy and ensure California’s technological leadership.

CCST to Help Examine Transportation Infrastructure

In response to a request from State Senator Alan Lowenthal, CCST has begun a project in partnership with the Research and Technology Advisory Panel (RTAP) to develop strategies for both short-term and long-term support to California decision-makers on goods movement policy and infrastructure investment.

“The main goal is to provide expertise and innovative thinking that will help to inform the decision-making process,” said CCST Council Chair Lawrence Papay.

The project, which will be directed by Professor Genevieve Giuliano, Senior Associate Dean for Research and Technology at the University of Southern California and Director of the METRANS Center, includes two short-term tasks focused on specific issues associated with current goods movement decision-making. It also includes a third task involving development of a plan for a longer-term research activity that addresses analytical tools and decision processes in goods movement.



The ports of Los Angeles, Long Beach, and Oakland combined account for nearly 50% of all imports into the United States. Photo courtesy of METRANS Transportation Center, USC

“Transportation has been identified as a top science and technology issue in California for some time,” said Papay. “We are pleased for the opportunity to contribute to the development of a comprehensive transportation strategy that will help keep California economically competitive in the years to come.”

Globalization and the restructuring of economic activity have contributed

to rapid growth of goods movement throughout the world. California’s position as gateway to Asian trade, together with its large population and highly diversified industrial base, has resulted in rapid growth of trade and goods movement. California’s transportation infrastructure (highways, ports, intermodal facilities) has played a key role in fostering this growth. However, growth in transport demand has far outstripped growth in infrastructure. Increasing congestion on these facilities is adding to transport costs and threatening the long-term competitiveness of some segments of the California economy.

In the first task, CCST will examine opportunities and constraints associated with new technology implementation and the transportation planning process. The second task will examine technology alternatives for reducing emissions associated with goods movement. The main activity for this task will be to conduct a workshop with participants drawn both from the scientific community and the policy/planning analysis community.

The third task is to develop a plan for a longer-term study of how goods movement could be more effectively managed. It will address two sets of questions:

1. Do adequate analytical tools exist for assessing and understanding the full consequences of goods movement policy choices?
2. What is or should be the role of government in managing the goods movement system and moving toward a more efficient and sustainable system?

“Transportation infrastructure planning in California involves a complex process that is dictated largely by federal and state law,” said Papay. “Major infrastructure projects go through several stages of environmental review; the review process for large projects can be a decade or more. Being able to plan effectively is essential for the state’s economic well-being.”

Social and Behavioral Science Research Vital

to Meeting Climate Challenges

In determining how to respond to the impact of climate change, it is important to consider not just the policies themselves, but how they may be received by the public. Engaging citizens and determining their willingness to change behavior patterns are important considerations for implementing new policies, according to the National Research Council.

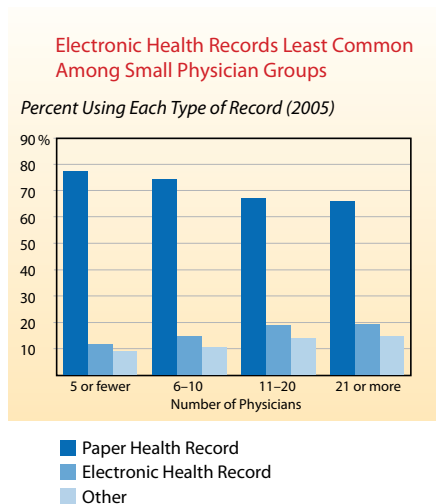
“The behaviors most people think make the most difference to the environment are not the ones that do,” said Paul Stern, director of the NRC Committee on the Human Dimensions of Global Change. “When people think of being ‘green,’ they tend to pay too much attention to minor daily behaviors like recycling, and not enough to major decisions like house size.”

The California Energy Commission is evaluating how to comply with the goals of the state’s ambitious greenhouse gas (GHG) legislation, which requires reduction of GHG levels to 2000 levels by 2010 and 1990 levels by 2020. CCST is exploring ways to facilitate development of an effective climate change response strategy for the state.

The importance of integrating behavioral and social sciences with research on technological aspects of climate was echoed by Michael Feuer, executive director of the Division of Behavioral and Social Sciences and Education of the NRC. “The debate over climate change has shifted,” Feuer said, “from whether it is happening to how best to measure its impacts and devise effective policy responses. Sound policy regarding ways we can mitigate unwanted climate change and help society cope with its effects will require attention to behavioral as well as technological innovations.”

Reducing Barriers to Financing HIT in California

Healthcare Information Technology (HIT) has significant potential to save California money – as much as \$8 billion annually from greater efficiency and reduced medical errors, according to one study by the RAND institute – and improve substantially the quality of care. Implementing HIT, however, is expensive, requiring standardized electronic records, the computer equipment to store and retrieve the records



securely and efficiently, and the networking capacity to connect systems statewide. California has taken another step towards implementing a comprehensive HIT system; CCST will assist in understanding and reducing the practical barriers impeding such a system.

As part of the \$300,000 project, “Reducing Barriers to Financing HIT in California: Market Assessment and Policy Options,” CCST will provide the peer review process and publication for the final report of the Governor’s HIT Financing Advisory Commission. The primary research is being conducted by a team of investigators under the direction of Robert Miller, professor of health economics at the University of California, San Francisco. The Commission is one of the HIT measures announced by Governor Schwarzenegger in January 2007; others include the establishment of a Deputy Secretary of HIT, with a goal of implementing universal e-prescrib-

ing by 2010; developing standardized personal health records (PHR) within the public and private sectors; and implementing a county-level pilot electronic medical record system for mental health patients within the requirements of Proposition 63, the Mental Health Services Act.

CCST has been focusing on the potential benefits of HIT to California since 2005, when it featured HIT as the principal theme of its October Council meeting (held jointly with the Institute of Medicine). It has been working with both the governor’s office and the Legislature, both of which have been active in promoting HIT. This year, the governor issued Executive Order S-06-07 aimed at advancing California’s efforts to adopt health information technology (HIT); last year, via Executive Order S-12-06, he directed the secretaries of Health and Human Services and Business, Transportation and Housing and the director of the Department of Managed Health Care to devise strategies to expand the use of HIT. In the Legislature, Senator Elaine Alquist put forth legislation this year (SB 320) that requires the state office that oversees the implementation of the federal Health Insurance Portability and Accountability Act to establish and operate the California Health Care Information Infrastructure Program. Another HIT bill that she proposed in 2006 (SB 1338) was superseded by ES S-12-06.

The HIT project in which CCST is involved will identify market segments/sub-segments that are experiencing barriers to financing clinical information systems, and determine reasons why these barriers to financing exist, such as poor financial health, lack of access to capital, or other factors. The project also will obtain data on private/public CIS financing initiatives within California and in other states, and present alternative policy options to the Commission.

Despite the acknowledged potential benefits of HIT systems, adoption so far has been limited. Only an estimated 15 percent of physicians nationally use electronic healthcare records, and small medical practices are less likely to use them than larger ones.

HIT PROJECT GOALS

- Identify market segments/sub-segments that are experiencing barriers to financing HIT
- Inventory significant private/public HIT initiatives in California and generate rough estimates of available funding
- Summarize selected efforts in other states to accelerate HIT adoption in health care organizations
- Summarize evidence on the effectiveness of incentives and other HIT policies
- Present potential alternative policy options and provide illustrative cost estimates for select policies

CAPITOL HAPPENINGS

Science and Technology Legislation Updates

Sacramento Considers Global Warming

Legislation

Many bills were sent to the governor's desk at the close of the 2007 legislative session which follow up on last year's AB 32, the landmark global warming bill passed last year. While the following bills have been sent to the governor's desk, it is not known as of press time whether they will be signed into law.

- **AB 35 (Ruskin)** the Sustainable Building Act of 2007, would require all new state-owned buildings, and any renovation conducted on old buildings, to meet applicable certification standards set out in the United States Green Building Council's Leadership in Energy and Environmental Design. Related bills were passed regarding environmentally friendly codes for commercial construction (AB 888, Lieu) and the Department for Housing and Community Development (AB 1058, Laird).

- **AB 118 (Nuñez)** would create the Alternative and Renewable Fuel and Vehicle Fund and the Air Quality Improvement Program. The act would appropriate \$10 million annually to fund alternative fuel and vehicle technology research, development, demonstration, and deployment in order to advance the state's leadership in clean technologies, achieve the state's petroleum reduction objectives and clean air and greenhouse gas emission reduction standards, develop public-private partnerships, and ensure a secure and reliable fuel supply.

Industry

In addition to the pending legislation, the attorney general's office has reached a pioneering agreement with ConocoPhillips, which has agreed to pay \$10 million to offset greenhouse gas emissions from a planned expansion of its refinery in Contra Costa County. It is the first time a

U.S. oil company has agreed to pay a state to offset projected emissions. The refiner agreed to pay \$10 million for projects that would curb greenhouse gases in an attempt to compensate for releasing an additional 500,000 tons of carbon dioxide a year when the expansion at its Rodeo refinery is completed in 2009. Under the agreement, projects to offset emissions could be changed if both parties believe the strategies, such as planting trees, are not effective in reducing the culprit gases. The agreement was reached because of the eventual restrictions that AB 32 would have imposed on the refiner anyway. The attorney general's office is attempting to negotiate a similar agreement with Chevron over a proposed facility in the city of Richmond.

California Air Resources Board (CARB)

On September 6 CARB Chair Mary Nichols unveiled six new measures to trim California's greenhouse gas emissions, as part of the required implementation of AB 32. All told, the six measures proposed by Nichols would cut the state's annual greenhouse gas emissions by the equivalent of 2.8 million tons of carbon dioxide. Combined with plans adopted by the air board in June, the state will have committed to annual reductions of about 16 million tons annually. (That total amounts to only a fraction of the 170 million-ton-a-year cut required by 2020, however.)

The proposals include a rule that would require mechanics to check and properly inflate tires when servicing a car, something many garages already do; a requirement to make electric power available to docked cargo ships so they can turn off their engines (ship exhaust is a source of carbon dioxide and contributes to poor air quality in communities near ports); and a

rule to make tractor-trailers more fuel efficient by requiring proper tire inflation and aerodynamic fairings to reduce drag. This latter rule accounts for nearly half of the emissions reductions to be accomplished by the new proposals.

If adopted by the full CARB, the proposals would go into effect on January 1, 2010. Additional proposals, including one requiring heat-reflecting "cool paints" on vehicles, are in the works.

National Governor's Association

The leading role that California has played in setting its own greenhouse gas standards has been upheld in a Vermont court. A dozen states have adopted plans to require a reduction in carbon dioxide emissions from motor vehicles and three other states are considering similar action, but auto companies have complained that the limits would require increases in average mile-per-gallon standards that may not be achievable.

However, in a ruling on September 12, a federal judge in Vermont said states have the authority to regulate greenhouse gas emissions from vehicles and rejected arguments that only the federal government could do so. Minnesota Governor Tim Pawlenty, the current chair of the National Governor's Association, said in response that as a result, limits set by California "could be the basis for what happens across the rest of the country. One of [the National Governors' Association's] objectives in the coming year is to either regionally or nationally expand those approaches... aimed at curtailing greenhouse gases," he said in an interview with the Associated Press.



Education

Math Science Initiative

Two of the three bills proposed by Senator Jack Scott as part of the “Math and Science Initiative” earlier this year have been enrolled, and one has been signed into law as of press time:

- **SB 112** (chaptered) exempts retired teachers who return to service from basic skills proficiency requirements and specifies that retired teachers do not need to participate in induction programs for new teachers. The intent is to help districts address their local staffing needs by reducing the barriers for retired teachers who are willing to work part-time as classroom teachers, or to provide support and assistance to new teachers.
- **SB 859** authorizes the Commission on Teacher Credentialing to issue or renew visiting faculty permits authorizing instruction in math or science to individuals who satisfy specified requirements, including having a minimum of 6 years of full-time teaching experience in an accredited California community college.

Both of these bills are intended to streamline the procedures to bring more well-prepared teachers into the classroom. They are a supplement to the traditional teacher preparation system. The Math Science Initiative package of bills was proposed following the release of the March 2007 report Critical Path Analysis of California’s Science and Mathematics Teacher Preparation System.

The third bill, **SB 588**, is being held over to the second year of the legislative session. This bill encourages experienced teachers and retiring professionals to become quali-

fied to teach mathematics and science and provides incentive funding of up to \$2,500 per teacher to school districts and county offices of education to assist teachers to acquire math or science content knowledge. The bill was postponed because of the costs associated with the incentive funding (approximately \$5 million/year) which were incompatible with the budget situation. The governor cut \$700 million from the final budget in order to meet legislative approval, making the addition of new programs very unlikely.

Data Systems

Funding to develop the architecture for the California Longitudinal Pupil Achievement Data System (CALPADS), which required the creation of unique student identifiers and the creation of a longitudinal database on student achievement, has been continued at \$2.5 million, but funding for the districts to supply the data has not. “School district participation in CALPADS is vital for the program’s success,” said State Superintendent of Public Instruction Jack O’Connell in a statement following the passage of the final budget. “I will continue to advocate for funding to support local data collection and maintenance to improve the accuracy of student data.” Funding to continue developing CalTIDES, a similar database to track teachers, has also been continued at \$1 million, though it is not scheduled for implementation yet.

Congressional Actions

Congress Passes America COMPETES Act

The America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES Act),

HR 2272, passed the House and Senate and was signed into law by President Bush on August 9. The \$43 billion Act will essentially double federal investment in science and technology over the next seven years. It is a response to the National Academies’ 2005 report, *Rising Above the Gathering Storm*. The report forecast that America risks losing its scientific pre-eminence, and the associated economic benefits of remaining the world’s high-tech leader; the document has been widely credited with moving the issue of high-tech competitiveness to the top of Congress’s agenda and generating bipartisan support for a response. The focus of HR 2272 is to improve America’s competitiveness by boosting investment in innovation and science and math education. Senator Dianne Feinstein cited CCST’s work in supporting the bill on the Senate floor earlier this year.

“It is highly encouraging to see such a concrete and far-reaching response to the recommendations of the National Academies report,” said CCST Council Chair Lawrence Papay. “As CCST recommended to the governor in its California Response to *Rising Above the Gathering Storm*, the challenges facing America’s competitiveness in science and technology are serious, and whatever actions are to be taken must be of a suitable scale. This Act is an enormous step in the right direction.”

Making Supercomputers More User-friendly than Ever

The San Diego Supercomputer Center (SDSC) is one of the leading such facilities in the nation. One of the four original sites in the TeraGrid project, it is internationally recognized for its contribution to computational biosciences and computational approaches to earth sciences and genomics. SDSC is especially known for its role in the creation and maintenance of the Protein Data Bank, the George E. Brown, Jr. Network for Earthquake Engineering Simulation Cyberinfrastructure Center (NEESit), cyberinfrastructure for the geosciences (GEON), and the Tree of Life Project (TOL). But for all the tremendous computing power it can bring to bear on projects ranging from protein simulations to earthquake analyses, it is the teamwork and user interface that has made SDSC stand out recently.

Earlier this month, SDSC released version 1.0 of a new user portal, featuring an innovative user-settable reservation system that gives researchers more control over when their jobs will run on the center's supercomputers. The service, not previously offered in high performance computing centers, is debuting on SDSC's DataStar and TeraGrid Cluster systems.

"We've had a lot of feedback in user surveys asking for faster turnaround time," said SDSC Director and CCST Council Member Fran Berman. "While we couldn't eliminate the queue entirely, we realized that a service that lets users themselves schedule 'windows'

of reserved time would let them complete jobs more reliably and get more done."

Queuing up for time on supercomputers is an all too common pastime for computational scientists, who may end up waiting anywhere from hours to days for their turn to use the machines. The unpredictability of queues can impede the course of research, slowing progress with unexpected periods of waiting.

The user portal offers researchers the opportunity to schedule jobs ahead of time through a web interface, accomplishing tasks such as running jobs and moving data that would ordinarily require complex



SDSC's computers are used for projects such as TeraShake, a large-scale simulation of earthquakes along the San Andreas Fault. (Amit Chourasia, Steve Cutchin, Kim Olsen)

command-line scripts. This is particularly useful for many researchers who find their sessions unexpectedly interrupted by glitches or minor problems with the software, forcing them to stop and fix the problem, waiting in the queue once again to restart. It is also useful for those who may need to be sure they run in conjunction with a scheduled event such as observing time on an electron microscope or other instrument.

"Any system, no matter how sophisticated, is limited by its usability," said Berman. "We hope that the new user interface will help SDSC serve the scientific community even more efficiently."

CCST WIRED Draft Receives Positive Response

CCST presented a working draft of its online Workforce Investment Board (WIB) toolkit, "*Racing for the future*," at the Meeting of the Minds in Monterey annual conference of the California Workforce Association on September 5. It was met with a positive response.

The toolkit is part of a workforce development project funded by a \$15 million U.S. Department of Labor initiative called "*Workforce Innovation in Regional Economic Development*," or WIRED. The California State Authority (CSA) is the contract lead.

"The Racing for the Future website draft provided an ambitious model to make

a great deal of valuable information available in an accessible, user-friendly format," said Virginia Hamilton, executive director of the California Workforce Association. "We look forward to seeing how this resource develops as the project moves toward completion."

CCST has been contracted to work on several areas of the WIRED project. This project, the toolkit, is designed to make a wide range of materials available to WIBs, regional associations designed to draw together partners from local industry and government to address workforce needs. The resources in the toolkit

include examples of roles that WIBs can play to respond to local workforce needs, case studies of successful WIBs, overviews of key high-tech industries such as nanotechnology, and analyses of economic trends in California. The toolkit is scheduled to be completed later this year.

CCST will also be working on an online resource focusing on state assets that contribute to innovation and economic development. That project is to be completed in mid-2008. CCST is also involved in other projects to prepare a STEM education action plan.

UCSB Brings Science to 8th Graders

The perennial struggle to encourage California's students to pursue and succeed in the sciences is by now well-known. While important efforts are being made to bolster the number of well-prepared science teachers in the classroom, there are also programs in place to connect the university community directly with the K-12 system. One such program at UC Santa Barbara has been both helping encourage 8th grade students to succeed in science as well as provide valuable experience to prospective scientists on communicating.

The science outreach program, funded by the National Science Foundation, is called "Let's Explore Applied Physical Science" (LEAPS). It aims to improve the skills of undergraduate and graduate students in

The program's goal is to find recommendations for enhancing master's level professional education for all the stakeholders.

communicating science to the public. As a central part of the program, it engages UCSB graduate and undergraduate "fellows" as instructors and mentors for exciting science projects in physical sciences in eighth and ninth grade classrooms. LEAPS establishes collaboration among fellows, school science teachers, and UCSB faculty scientists. The experience benefits the teachers and students, but also benefits the fellows who participate.

"LEAPS helps people-oriented science and engineering students thrive at UCSB by giving them the opportunity to share their enthusiasm for science with school children, while enjoying a close working relationship with teachers," said Beth Gwinn, professor of physics at UCSB. "Outreach opportunities such as this are valuable for everyone concerned."

The LEAPS program has been in place since 2002, with approximately a half-



LEAPS Fellows (the 3 graduate students in white lab coats) work with small student "research groups" on 8th grade classroom labs, in this case a "scattering" experiment in which students launch marbles to determine the shape of a hidden object.

dozen fellows designing and participating in projects with eighth and ninth grade students. This year, seven fellows are taking part in the program, all graduate students with specialties ranging from biochemistry to optics.

LEAPS is funded by the National Science Foundation's Graduate Fellows in K-12 Education (GK-12) program. GK-12 provides fellowships to enable talented students in science, math, and engineering to assist in K-12 schools. GK-12 was initially motivated in part by the 3rd International Mathematics and Science Study of achievement in primary and secondary education in 42 countries. The program aims to develop future research scientists, engineers, and educators with the experience and knowledge to be effective communicators to the public and mentors for K-12 schools. With the strong message of the 2005 report *Rising Above the Gathering Storm*, concerns about the science education have been reinforced. The NSF requested approximately \$47 million in 2007 to support 915 fellows in programs such as LEAPS nationwide.

"It has been rewarding for me to see the fellows' confidence and ability to communicate grow through their participation in LEAPS," said Gwinn. "The dedication and creativity of the teachers involved inspires my own enthusiasm for teaching at the university level."

UPCOMING CCST EVENTS

October 16-17, 2007

• Beckman Center, Irvine

Board and council meeting and dinner program. Leon E. Panetta, co-director of the Leon & Sylvia Panetta Institute for Public Policy, based at California State University, Monterey Bay, will be the dinner speaker at the October CCST meeting, which will focus on climate change and the oceans.

February 11-12, 2008

• Sacramento

Board and council meeting and dinner program.

May 21-22, 2008

• Sacramento

Dinner program and council meeting.

October 8-9, 2008

• Irvine

Board and council meeting and dinner program.

Papay Leaves Strong Legacy



LAWRENCE PAPAY
Outgoing CCST council chair and
CEO and Principal of PQR, LLC.

"This has been a wonderful time to be involved with CCST and its service to the state of California."

January 2008, CCST's first-ever council chair from industry will step down, concluding a period of intense and fulfilling activity for the Council. Lawrence Papay, CEO and principal of PQR, LLC and former sector vice president for the Integrated Solutions Sector at Science Applications International Corporation (SAIC), has served as chair since 2005.

"This has been a wonderful time to be involved with CCST and its service to the state of California," said Papay. "We have reached the point where CCST has been able to fulfill its original mandate of keeping California informed about science and technology policy issues better than ever.

Papay's term has been marked by a number of firsts, including the appointment Cornelius "Neal" Sullivan, vice provost for research at the University of Southern California, as the Council's first vice-chair. "Our partnership has been an effective collaboration," said Papay, "and I believe that the new institution of vice-chair has been a valuable addition to CCST's operations."

The past three years have also been a time of heavy activity for CCST, including seven major reports on subjects ranging from intellectual property policy to energy research to education. It also saw the inception of the federal laboratory affiliates program, and has been a time of increasingly close cooperation with the governor's office, Legislature, and various state agencies.

Major accomplishments for Papay's tenure include the passage of the Federal Laboratory Technology Contracting Act in 2006, which was drafted in direct response to a CCST report. CCST has also been in-

creasingly consulted proactively, with various agencies requesting assistance in examining issues ranging from bioethics to energy. "It has been gratifying to see CCST research contribute positively to the consideration and preparation of state policy," said Papay.

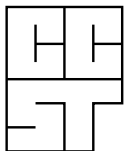
The *CCST Report* focuses on CCST activities and highlights innovative science and technology research and applications in California. The Report is written by Danny DeCillis, who welcomes information from readers about science and technology at work in the private, public, and education sectors. The *Report* thanks CCST members for their generous assistance in providing material for this issue. If you would like more information about CCST initiatives, please contact us at:

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California Council on Science and Technology



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