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# 15 Years of California's Science & Technology Policy Fellowship

Lessons from a thriving Sacramento-based program can help  
similar initiatives improve decisionmaking across the nation.

In 2009, the California Council on Science & Technology (CCST) launched a Science & Technology Policy Fellows program for the California state legislature, with funding support from the Gordon and Betty Moore Foundation. The program, modeled on the American Association for the Advancement of Science (AAAS) federal Science & Technology Policy Fellowships, was the brainchild of multiple people. Among them were CCST's then executive director Susan Hackwood, Mary Maxon (then with the Moore Foundation), and Bruce Alberts, who at the time served on the boards of both CCST and the Moore Foundation. Alberts supported the idea at the Moore Foundation, which put together a coalition of funders and provided a five-year matching grant of \$3.5 million.

CCST was uniquely positioned to host this first-of-its-kind program. The nonpartisan nonprofit had been established in 1988 at the request of the California legislature to provide objective advice from California's scientists, engineers, and research institutions on policy issues involving science and technology. At the time of the fellowship program's inception, CCST had already been around for two decades and had built a reputation as a trusted, independent advisor to state policymakers.

Now that the fellowship program has been running for 15 years, we feel it important to reflect upon the many

lessons we have learned. The fellowship has shaped the careers of 172 PhD scientists (so far) who have come from all over the country—and even the world—while helping to make California's policies stronger and serving as a model for other states.

Although California is renowned for its technology- and innovation-based economy, when the program began it wasn't easy to find policymakers who wanted scientists in their offices. We learned that scientists had a poor reputation among legislators and were often perceived as arrogant and narrow-minded. However, the state's fast-moving technology sector—combined with an executive branch whose rigorous rulemaking often serves as a model for the nation—meant that the state clearly had the need for a more formal structure for science advising.

Over the years, the fellows themselves have demonstrated the benefits of the program, leading to two major milestones: expansion of the fellowship into the executive branch in 2019, and a series of state investments that enabled the program to fulfill its \$30 million endowment goal in 2023, ensuring a stable pipeline of up to 10 fellows annually to California policymakers in perpetuity. Now, as states are increasingly becoming laboratories for science policy, the lessons learned in our program in California may be helpful for similar programs across the nation and beyond.

### Find champions and leverage them

In 2008, CCST created a Science Fellows Advisory Committee with 10 members from academia, industry, philanthropy, and government. Among them were individuals who had worked with AAAS at the federal level, as well as Californians with the ability and credibility to broker relationships and address inevitable challenges with the legislature. As the program matured, the committee recruited new members, including retired legislators and former fellows. That diversity of expertise helped us navigate setting up the program, training the fellows, fundraising, and stewarding the program over time. Committee members also became important champions, enriching the program with their extensive networks and advocacy.

In the early days, Advisory Committee members were key in overcoming a big barrier to implementation: skepticism and pushback from legislators. When the CCST team posed the idea of the fellowship to legislators, some of them initially responded with what amounted to “We don’t want scientists coming in to tell us what to do. We don’t need them. This isn’t a good fit for us.” Committee members were instrumental in extending the necessary diplomacy, identifying possible shared benefits, and finding legislative champions willing to try out a fellow in their office and discover for themselves the program’s value.

Initially the committee, which met once a year, provided input and support for program development, implementation, and outcome metrics. After five years, in 2014, the committee began holding its annual meeting at the Moore Foundation, followed by a lunch that brought together CCST fellows and staff with the program’s philanthropic partners. These meetings cultivated and recognized the program’s champions, solidifying connections and personal investment. The lunch conversations also provided an opportunity for the fellows to share stories about their experiences directly with funders. These first-hand stories proved to be the “secret sauce” for fundraising, particularly when delivered in person by fellows themselves.

The elected officials who hosted fellows were also an important presence at these lunches. The funders of course wanted to meet the fellows, who were quickly gaining renown for their exemplary work and skillsets; but the legislators were the ones who confirmed the value of the program by saying, “We need this. What the fellows are doing is changing our policies, changing how we run the fifth largest economy in the world.” Legislators were the strongest and most credible voice for singing the program’s praises.

After 10 years, the program’s needs shifted from development to sustainability. And although CCST was still struggling to raise money, the lunches at the Moore Foundation were no longer necessary to raise funders’ awareness about the program. In 2018, CCST began consolidating governance authority and advisory bodies,

and the Board of Directors replaced the Fellows Advisory Committee with a Resources and Development Committee that was codified in CCST’s bylaws.

### Think big about recruitment

The fellows selection process is designed to be independent of political and special-interest influence, and it is driven by a Selection Committee composed of science policy experts from across the US. CCST has worked to select and deliver fellows with a diversity of backgrounds and experience, including diversity of race, gender, ability, orientation, experience, economic background, and area of scientific study. Therefore, much depends on the pipeline and recruitment process—which has also proven to be one of the program’s biggest challenges.

From the outset, CCST began recruiting fellows from a nationwide pool of PhD and professional degree applicants. We did this by advertising the opportunity widely and getting the word out to professional societies, the National Postdoctoral Association, and the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science.

At the time, there were no other state-based programs. By recruiting fellows from a nationwide pool of PhD and professional degree applicants, we were creating an opportunity for people outside of California who wanted state-level policy experience. We also cast the net widely in order to have a very competitive pool.

Over the past 15 years, 52% of the fellows have graduated with advanced degrees from California’s many universities. The remaining 48% have come from 24 other states and Puerto Rico, as well as several other countries.

To further build and diversify the applicant pipeline, CCST has continually added new outreach and recruitment efforts, including personalized outreach to historically Black colleges and universities, the AAAS Annual Meeting, the Black Doctoral Network, the University of Texas System’s Career Exploration Network, and CCST’s annual Science & Technology Week, along with expanded alumni outreach. On the suggestion of a former fellow, we also created an affinity group for Black, Indigenous, and other people of color to provide support to applicants, incoming and current fellows, and alumni, which has continued to expand in effort and scope.

### Know what to look for

Figuring out where to look for fellows has been an ongoing process, but figuring out what to look for in fellows required a course correction early on. In the beginning, our selection criteria were inadequate: We focused almost exclusively on academic rigor and achievement—for instance, on where and how many peer-reviewed articles the applicant had published, and on how well an applicant could defend their science and articulate it. As a result, the selection interviews were like mini-oral exams for the candidates, and we selected top-notch scientists.

It turns out that this qualification is not the most important factor for a fellow's role in the legislature. Science advising required soft skills and an emotional IQ to navigate the complex systems of policymaking. Fellows needed to be comfortable with uncertainty, ambiguity, and rapidly changing priorities, and to be capable of doing things very quickly with not a lot of information—a very different skillset from what we originally searched for.

As a result, a few of the early fellows faced additional challenges settling in to the work. Of course, technical work and analytical skills are required in the legislative and executive offices where the fellows work. But a significant portion of a fellow's day-to-day schedule calls for an ability to work under pressure, cover issues and topics outside their expertise, take direction from staff and legislators, and hear and respect political opinions that conflict with their own. Successful fellows are motivated by a desire to serve society and are able to connect science and technology with broader economic, social, and political issues.

Finding these distinctively qualified people requires a deliberate approach, so over the course of the first five years CCST changed the Selection Committee and process accordingly. Today the application highlights the desirable qualities by asking for a personal statement in which applicants describe their motivations, what they hope to bring to the program, and what they hope to take away. We look for self-awareness, humility, curiosity, and a growth mindset in their responses as defining characteristics and strong indicators of potential success.

Applicants who pass this selection are invited to an interview, where they are evaluated on their responses to behavioral and situational prompts. Typically, the applicants' incredible scientific accomplishments are obvious in the written application. So the interview process is designed to assess collaborative skills, leadership ability, communications facility, adaptive problem-solving, and ability to understand an issue from multiple perspectives.

Candidates are now formally evaluated on leadership potential, communication and collaboration, commitment to the mission, ability to benefit from the fellowship, and scientific and technical abilities—in that order.

We believe that this shift in focus during the selection process has been key to winning the approval of legislators, ultimately leading to state funding for the program.

### **Train, train, train**

The fellowship year kicks off with a monthlong, practical training on how to navigate the policy space. This crash course, which has evolved based on input from former fellows, includes principles of science communication and an introduction to policymaking in California—especially how bills are developed and analyzed. But the training also serves another purpose: It works best when it helps

fellows build a support network among their own fellows cohort, along with the dozens of state government personnel, experts, and alumni who lead the training sessions.

The training helps fellows understand the role they are about to play in the complex process of policymaking and politics. In the words of one alum, “At the end of the day, you’re not the decisionmaker.” Another put it this way: “Just because a policy decision doesn’t seem to make sense from the scientific perspective, it could still make a different sort of sense.” It’s not really possible to build true political acumen in a month, but we believe the crash course provides a foundation. One mentor surveyed observed that the fellows had a “level of training and intellectual ability [that] transfers rapidly. They are not just smart scientists—they are smart about how the system works.”

In the last two years, alumni have taken the lead in the fellows training sessions, along with other policy experts, leaders, and retirees like the irreplaceable Randy Chinn and Doug Brown, two longtime CCST advisors. In training and mentoring, alums can provide uniquely relevant, on-the-ground perspectives and understanding. We also offer ongoing seminars throughout the fellowship year to support professional development, networking, and relationship-building around evolving state science priorities. Fellows learn about the California budget by going through a simulation exercise in which they make decisions about how to spend the money and evaluate the trade-offs. They learn how a bill becomes a law and how to pitch a bill. They build an understanding of how California’s water system works by touring the Sacramento–San Joaquin River Delta, and they hear firsthand perceptions of the criminal justice system by visiting a correctional facility and speaking with people who are incarcerated.

This method of training has adapted as the program’s needs have changed. For example, the decision to place fellows in California’s executive branch was initially met with concern from members of the legislature, who questioned how fellows would handle confidential information and maintain the independence between the two branches, which are often at odds with each other. Given the sensitive nature of their work and the division of government, maintaining firewalls is imperative. By 2019, when a cohort included multiple executive branch office placements for the first time, policymakers had come to see the fellows as credible and effective advisors. Beginning in that year, the number of fellows increased from 10 to 15, and all are trained in both legislative and executive branch processes.

Ensuring that the fellows are trusted, free from influence, and not guided by partisanship is a core requirement of effectively building trust, continuity, and credibility. CCST has worked to integrate and address these fundamental tenets throughout all aspects of the program.

### Nurture the network

At the program's inception, the goal was to provide high-level science advice to California legislators. But the unique network of science advisors and decisionmakers across the state that the program and its alumni have now created is much more than a byproduct; it is a major asset to the people of California.

Shortly after the program began, we realized that building an alumni network would require a deliberate approach. In 2012, the William H. Hurt Foundation—led by then-executive director Bernadette Glenn, who later served on CCST's board—provided a grant to help kickstart an Alumni Steering Committee. This committee builds and maintains relationships among past program participants, current fellows, policymakers, and other policy fellowship programs. Laura Shybut, chief consultant at the Assembly Committee on Utilities and Energy, was part of the first fellowship cohort to have alumni mentors in 2017. She found so much value in this experience that she went on to serve as an alumni mentor for three years and has hosted fellows in her office for the last five years. Shybut sees the alumni

### Evaluate to explain value

As part of the initial funding agreement with the Moore Foundation, CCST hired outside consultants to carry out regular program evaluations over its first decade. These reviews, which aimed to determine whether fellows' technical input affected the approval, improvement, or rejection of legislation, demonstrated the program's value and effectiveness to funders while also helping to improve the program. The review process included interviews with current and former fellows, legislative staff, Selection Committee members, Advisory Committee members, program staff, and others. The evaluations also included a review of program files and observations of fellow selection interviews.

The reviews not only helped CCST and funders assess the program's impact; they also pushed hosts and fellows to articulate precisely what made the program valuable. Carrying out surveys and publishing their results helped build support for the program by uncovering exactly why legislative offices valued the fellows' work. For example, in a survey conducted after the program's first decade, 89% of the 67 former fellows surveyed reported that the legislative offices they worked with changed course after they provided input on incorrect

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network as “a powerhouse of experience, diversity, and time management—skills that when harnessed collectively, can create a web that holds both current and former fellows.” Given demands on the alumni as career professionals, establishing formalized structures can serve as “connective tissue that benefits the organization, the current class of fellows, and alumni enormously,” says Shybut. We believe that the knowledge embedded in the network also benefits the people of California.

As of 2024, roughly 84% of alumni work in policy-related careers, with 36% continuing to work in California state government and 48% working in adjacent roles in Sacramento. Fellows connect across branches of government, both during their office placements and as hired staff after their fellowships. In addition to contributing to the impact and credibility of the program, alumni help to expand the number of offices interested in hosting fellows, and many support the program's financial stability (formally and informally) through their full-time policy jobs.

In spring 2023, CCST was able to fund a new alumni engagement program officer—a staff position conceived of and launched by a former fellow—to better leverage the value of the network. Investing in this role greatly increases opportunities for alumni engagement and recognition.

technical interpretations. And 56% said this happened on a weekly or monthly basis. In an interview, California senator Sam Blakeslee explained that the fellows read peer-reviewed journals, know the bona fide institutions, and can identify when poor science is being misused by lobbyists to advocate for policy positions. “With this expertise,” he said, “a legislator can avoid embarrassment and increase his or her impact.”

More recently, surveys have become a regular part of the fellowship experience. They are administered after training, at mid-year, and in exit interviews with fellows and hosts.

### Seek multiple funding streams

Ideally, sustainable funding for a fellowship program should come from a diverse array of sources, such as philanthropies, individual donors, corporations, and the state. Our funding journey illustrates the importance and complexity of partnerships among philanthropy, nonprofit, and government sectors. After it was established by a consortium of philanthropic donors led by the Moore Foundation, the CCST fellowship program continued to receive funding from the Moore Foundation, some of which was used to create an endowment. As CCST explored different pathways to build the endowment, over time it became clear that a state partnership made sense.

In 2019, the state allocated \$11.5 million to the program,

followed by \$10 million in 2022. With the state's most recent \$10 million investment in June 2023, CCST successfully reached its \$30 million endowment goal, ensuring that California policymakers will have access to up to 10 CCST Science Fellows annually. To fund the remaining five to seven fellows in a full cohort, CCST currently relies primarily on philanthropic donors.

Although the fellowship is valued and contributes in a meaningful way to the capitol community, it was nevertheless difficult to get state funding. The reason CCST obtained significant funding is that in addition to having all the necessary elements of an effective program—the fellows themselves, their training and mentorship, the years of history, the champions, the partnerships—there was a surplus of state funds. The state needed to allocate funds for one-time use, and CCST was able to make the business case for why this program was a good investment of one-time dollars that would pay dividends to the state in perpetuity. In other words, the endowment was years in the making—so when a policy window of opportunity opened, common ground with the legislature already existed, and CCST leadership was prepared to actively pursue full funding.

### Build bridges for future success

Fifteen years after it began, the CCST Science Fellows program has become a vital node in an expanding network of state and federal programs. The AAAS fellowship program was helpful from the beginning, providing wise advice and assistance in the early days of the California program; a strong sense of camaraderie continues to this day between the two. CCST has also been successful because it is interwoven with other public policy and science policy fellowships in California, such as the Capital Fellows Programs and the Sea Grant Fellowship. These programs complement each other and are crucial to the survival of state-level science advice and the maintenance of a strong pipeline of skilled people for state service.

CCST is also connected to the National Conference of State Legislatures, which helps CCST coordinate with other state fellowship programs across the nation. Increasingly, CCST fellows alumni, along with AAAS fellows, are invited to facilitate training for other state programs. Thus far, CCST alumni have played key roles in efforts to stand up programs in Washington, Idaho, and Massachusetts. We have also worked with other state fellowship programs to develop a guide to the nuts and bolts of building a program, “Elements of a Successful Science and Technology Policy Fellows Program for State Government.”

CCST has joined forces with these other state fellowships because it believes that “a rising tide floats all boats” when it comes to cross-promotion (and funding potential). While CCST's program is successful, we don't have an overwhelming number of applications. With an abundance

of opportunities for graduate students, one of the challenges for any fellowship pipeline is visibility to early career scientists and engineers. Creating more state fellowship programs around the nation increases awareness of the importance of this type of work, helping both to drive applications to a program that fits each fellow's needs and to drive funding for such fellowships.

There are other benefits to joining forces with other programs, including cost-sharing. CCST works with state-level science and technology policy fellowships to staff a booth at the annual AAAS Annual Meeting, with the workload alternating between different programs each year. And because different programs sometimes respond to the same problems, it's been helpful to brainstorm and learn from each other, such as how to bring fellows back in-person after the COVID-19 pandemic or how to consider offering a hybrid option. We also can benefit from learning about different mechanisms for funding and building support; for example, other state fellowships had acquired executive branch funding before CCST did.

The CCST Science & Technology Policy Fellows program began as an experiment, but after 15 years it has matured and proven its value. As the fellows emphasize, their presence not only helps shape good legislation, but very often prevents bad legislation by uncovering deceptive information produced to support it. The fellows provide direct conduits to sound scientific judgements, such as those in the many reports of the National Academies of Sciences, Engineering, and Medicine. And by putting a human face on science, the fellows have dramatically improved how science and scientists are viewed by the California state legislature.

This experiment has brought not only expertise, but productive ongoing partnerships between scientists and decisionmakers to the state of California. It is an experiment that we hope can be replicated in all 50 states—with benefits for citizens, policymakers, and scientists alike.

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