



The Under Secretary for Science
Washington, DC 20585

November 24, 2025

Dear DOE and National Laboratories team,

I am honored to share this letter as your new Under Secretary for Science and newly appointed Director of the Genesis Mission.

The combination of inspiring missions, broad and deep scientific expertise, unique infrastructure, and national scale resources makes the Department and the 17 United States (U.S.) National Laboratories the greatest platform for scientific discovery and innovation in the physical sciences ever created. The unyielding, intelligent work undertaken by the Department of Energy and the Labs enables prosperity, peace, and security both at home and abroad. I'm deeply humbled and grateful to become part of that mission and legacy.

I have admired the Department and its work for many years. My journey to this role has been a long one, and I'd love to share how I came to join your ranks.

I came to the U.S. as an exchange student from Spain during my senior year of high school. The experience changed the direction of my life. I became enamored with America and began a decade-long journey that took me from Los Altos High School through to earning a doctorate at MIT. During those years I devoted myself to both science and engineering with equal passion. Early on, I was greatly inspired by the work of Richard Feynman and captivated by the worlds of nanotechnology and quantum mechanics. The spark to discover and build new things has never left me.

After earning my Ph.D., I joined IBM Research, coincidentally just as my wife and I were about to welcome our first daughter. The next 22 years flew by due, in part, to my fascinating work on semiconductors, artificial intelligence (AI), and quantum computing. Because of that work I am strongly associated with the creation of the quantum computing industry. One particular highlight unfolded in May 2016, when my research team launched the world's first cloud-accessible quantum computer. It was a remarkable moment that brought quantum computing out of the research laboratory and into the hands of technologists and computing enthusiasts around the world. I would argue that this was the moment quantum computing took its first steps toward becoming an industry of the future.

During this time of rapid change, I led the effort to successfully transform and reinvent one of the world's largest and most storied industrial research organizations. I also became deeply involved in U.S. science and technology policy. I had the honor of serving on President Trump's first Council of Advisors on Science and Technology (PCAST), where I led the Industries of the Future working

group, focused—and you will notice a recurring theme—on semiconductors, AI, and quantum. President Trump then nominated me to the National Science Board, the governing body of the National Science Foundation, where I served for five years, and was ultimately elected Chairman (the first Chair from industry in 30 years). Serving as Under Secretary for Science will be my third Presidential commission, and the third time I have had the honor to take an oath of service to my country, the United States, which has given me more than I could have ever imagined.

This brings me to today and, more importantly, to the future we all must build.

It's undeniable that there is a revolution in computing that is going to transform how science and technology is practiced and how research and development (R&D) is done. This revolution is going to impact every office, every mission, and every National Laboratory – in fact it already has. This revolution will be powered by the combination of “High Performance Computing + AI + quantum” and will usher a new class of supercomputing platforms; platforms that we will pioneer and that we will put to use to solve the most challenging scientific problems of this century and unleash a new age of AI- and quantum-accelerated innovation and discovery.

Pushing this new frontier will be hard, but I'm excited to say that thanks to President Trump we are going to make it a reality. With the launch of the Genesis Mission, the President has directed Secretary Wright and the Department of Energy to execute a historic national effort reminiscent of the Manhattan Project and the Apollo programs.

The Genesis Mission will have as a national goal to accelerate the AI and quantum computing revolution and to double the productivity and impact of American science and engineering within a decade (and in half that time across our National Laboratory complex). We will strengthen national security, secure energy dominance, and multiply the return on taxpayer investment into research and development, thereby furthering America's global technological and strategic leadership.

Let's dig a little deeper into what we are going to build, how we are going to do it, and when this needs to be done.

The idea of making all knowledge computable goes back hundreds of years to scientist and mathematician Gottfried Leibniz. He envisioned encoding all knowledge into a new representation, the binary (the world of 0's and 1's), which would allow the language of mathematics and the accompanying calculating machines to reason and problem solve in ways that would greatly expand human abilities. A couple of centuries later, in 1948, Claude Shannon codified and expanded these ideas to create what we now refer to as (classical) Information Theory, and with the contributions of Alan Turing and many other early computing pioneers, the theoretical and practical foundations of modern-day computing and information technology systems were built. When combined with the invention of the transistor, in late 1947, and supercharged with the planar semiconductor manufacturing process, we witnessed decades of exponential growth in computing and communication infrastructure. This is how we created the modern digital world. And now, we are at the edge of reinventing computing and ushering in a new era of accelerated scientific discovery.

The reinvention will be driven by two key vectors: AI and quantum computing; both technologies integrating and accelerating the high-precision and high-performance computing (HPC) environments for which the Department is justly world-renowned. What both AI and quantum have in common is that they will allow us to reformulate our data and our problems into new mathematical representations that exploit dimensionalities that are exponentially costly to access with traditional HPC codes and environments. Because nature has structure, we can learn its structure through high-quality data sets encoded in massive neural networks. Because nature is quantum mechanical, using quantum computers will enable us to calculate like nature does and achieve exponential speedups compared to classical machines for certain critical problems. And when combined with codes that reflect centuries of discoveries and theory in closed-form equations, we will build systems of unparalleled power.

The Genesis Mission will mobilize DOE's 17 National Laboratories, industry, and academia to build an integrated science and security platform connecting the world's best supercomputers, AI systems, and next-generation quantum computers with the most exquisite scientific instruments in the nation.

When realized, it will be the most complex and powerful scientific instrument ever built.

Leveraging the Genesis platform, along with the broad and deep domain expertise that exists across the Labs and our industry and university partners, we will create the world's largest and highest-quality scientific data sets to train the next generation of AI systems (pushing them beyond their current mastery of language and code into the realms of science and engineering). The platform build will be informed and driven by a portfolio of scientific and engineering grand challenges that will reflect the full scope of the missions of the Department, spanning discovery science, energy innovation, and national security. These grand challenges will be proving grounds for accelerated scientific discovery—demonstrating that it is not only possible, but a whole new paradigm for how science and engineering should be practiced and how the greatest discoveries and achievements can be realized.

So *how* are we going to do it?

Answering this question requires that we understand the vast differences between the science and technology (S&T) ecosystem the United States has today and the one that gave rise to the National Laboratories (and the National Science Foundation) at the end of WWII. The original vision and institutional architecture laid out by Vannevar Bush in his seminal report to President Truman at the end of WWII, titled "[Science: The Endless Frontier](#)," was an unquestionable success. The nation's best scientists and engineers were mobilized in unprecedented ways to win the war (with the Manhattan Project as the most successful example), and Bush brilliantly answered the question of how to keep them mobilized in times of peace to ensure the prosperity, security, and health of Americans through scientific progress. Decades later, we have the most vibrant and successful S&T ecosystem in the world, and as a nation we invest \$1 trillion annually in R&D. While Federal investments provide the irreplaceable and indispensable foundation of this ecosystem, it is crucial that we recognize that two-thirds of R&D investments are being carried out by the private sector. Universities and philanthropic research institutions constitute the other pillar that sustains the American innovation ecosystem. It is therefore a fact that the most ambitious scientific and technological goals that we must pursue as a nation require leveraging the full strengths of the entire ecosystem—an ecosystem that is a national treasure and that we must all work to strengthen and bring to new heights.

The original Manhattan Project was executed through Federal government direction alone and in secrecy. The Genesis Mission will require a partnership model unprecedented in scope to mobilize the entire S&T capacity of the nation. Consider the fact that we used to be very impressed when we built supercomputers with price tags in the billions. Today, multiple private-sector-led AI supercomputers are being built with price tags in the tens of billions of dollars. The aggregate computing and data center investments planned for the coming five years exceed \$2 trillion in the U.S. alone. We must leverage these investments for the success of our mission. Expect a lot of energy and creativity as we pursue partnerships across the Department. It is our only path to success.

And finally, the “when.”

The one thing we don’t have is time. We are going to act with an urgency that will feel deeply uncomfortable. The urgency is driven by the rate and pace of the computing revolution and by the respect with which we must treat the S&T prowess and investments of our most formidable competitor and adversary, China. This is a race we must and will win. In the original Manhattan Project, the existential threat of the war provided the winning combination of context and urgency. We have extraordinary challenges and opportunities ahead of us, in a world that stands at an inflection point. Scientific and engineering advancements in technologies like AI, quantum, fusion, and biotechnology will define the future of our country and of the entire world. We must remember that science, engineering and technology have become the new currency of strategic power. Let’s quiet all the external noise and other distractions, and let’s act like our lives depend on our execution (because they do). Let us focus on what needs to be done and deliver for our nation and for our fellow citizens. It is both the heritage of this Department, and it is our destiny. It may well be the work that defines our generation’s legacy and its contributions to our country.

I will close by sharing, on a more personal note, that I can’t wait to visit all the Labs and key facilities. I’m excited to learn from all of you, to help motivate and honor you, and to recognize the extraordinary work you have done—and will continue to do.

Now, let’s deliver on our mission.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dario Gil', with a stylized, cursive script.

Dr. Darío Gil
Under Secretary for Science and Genesis Mission Director