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From: [redacted] P6/b(6)
To: "Hitchcock, Adam" <ahitchcock@who.eop.gov>, "Hitchcock, Adam" <"/o=eop/ou=first administrative group/cn=recipients/cn=adam_hitchcock">
Bcc: "Hitchcock, Adam" <"/o=eop/ou=first administrative group/cn=recipients/cn=adam_hitchcock">
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Energy sector poised for innovation -- with the right spark

By Bill Gates and Chad Holliday
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This country runs on innovation. The American success story -- from Ben Franklin's bifocals to Thomas Edison's light bulb to Henry Ford's assembly line to today's advanced microprocessors -- is all about inventing our future. The companies we ran, Microsoft and DuPont, were successful because they invested deeply in new technologies and new ideas.

But our country is neglecting a field central to our national prospect and security: energy. Although the information technology and pharmaceutical industries spend 5 to 15 percent of their revenue on research and development each year, U.S. companies' spending on energy R&D has averaged only about one-quarter of 1 percent of revenue over the past 15 years.

And despite talk about the need for "21st-century" energy sources, federal spending on clean energy research -- less than $3 billion -- is also relatively small. Compare that with roughly $30 billion that the U.S. government annually spends on health research and $80 billion on defense research and development.

As many have noted, an energy future built on yesterday's technology threatens to leave people exposed to price shocks (hurting Americans and devastating the world's poor) and would exacerbate our national security problems and increase our trade deficit, given our dependence on costly foreign oil. The science is also clear that without significant efforts to tackle the climate issue, the effects of warming will grow, undermining agriculture, making droughts and floods more common and more severe, and eventually destroying ecosystems.

We need a vigorous strategy to invent our future and ensure its safety and prosperity. In the realm of energy, as with medicine and national defense, that requires a public commitment.

Why can't the private sector do this? What makes energy different from, say, electronics? Three things.

First, there are profound public interests in having more energy options. Our national security, economic health and environment are at issue. These are not primary motivations for private-sector investments, but they merit a public commitment.

Second, the nature of the energy business requires a public commitment. A new generation of television technology might cost $10 million to develop. Because those TVs can be built on existing assembly lines, that risk-reward calculus makes business sense. But a new electric power source can cost several billion dollars to develop and still carry the risk of failure. That

investment does not compute for most companies.

Third, the turnover in our power system is very slow. Power plants last 50 years or more, and they are very cheap to run once built, meaning there is little market for new models.

It is understandable, then, why private-sector investments in clean energy technology are so small. Yet, while it may make sense for individual companies to make these choices, accepting the status quo would condemn our country to very bad options.

This is why we have joined other concerned business leaders -- including Norm Augustine, former chairman of Lockheed Martin; Ursula Burns, chief executive of Xerox; John Doerr, partner at Kleiner Perkins; Jeff Immelt, chief executive of GE; and Tim Solso, chairman of Cummins -- to create the American Energy Innovation Council.

There is vast opportunity in energy. Prices are declining in solar energy and wind, and they could fall further with new technology. There is a critical need for better electricity storage technologies to enable electric vehicles and very-large-scale renewable energy. Advanced nuclear power could burn non-enriched uranium -- which the world has in vast quantities. New efficiency technologies can cut energy demand by half or more in dozens of applications -- in cars, buildings and some industrial processes.

And this list just scratches the surface. Vigorous federal commitments to new energy technology would bring these options to commercial viability.

Our country has great assets to bring to the challenge. Our research universities are among the best in the world, and our federal energy laboratories have brilliant scientists capable of delivering breakthroughs.

But we need to rethink the scale and urgency of the energy endeavor. The federal government must invest more and be smarter about the innovation process.

In a few months our group will offer detailed recommendations to strengthen and reform American energy innovation. As we develop recommendations, we are reaching out to leaders in business, government and academia, as well as experts in science and technology. Eventually we plan to advocate to Congress, the White House and others. We are pleased that energy innovation has never become politicized because Republicans, Democrats and independents share a common interest in scientific breakthroughs that improve people's lives. We are confident that this spirit will be reflected in these discussions.

The core force of innovation -- vision, experimentation and wise investments -- has led to thousands of breakthroughs that benefit us all. A serious commitment to innovation can be transformative, as we saw with the effort to replace chlorofluorocarbons two decades ago. We need the same serious commitment in the energy sector to developing the original American energy supply: innovation.

Bill Gates is chairman of Microsoft Corp. Chad Holliday was chairman and chief executive of DuPont from 1998 to 2009.