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Mr. Chairman and distinguished members of the Commission, thank you for having me here today to talk with you about the topic of U.S. competitiveness. This is a very timely discussion as I just returned from a weeklong trip in China. This was my 22nd trip to China. My first trip was in 1981 to Beijing. I refer to that period as the "BT" period. Before Traffic. At that time, a trip across town took 10-15 minutes. Today, it takes an hour or more. The traffic today is emblematic of what is happening in China, and especially Beijing.

In February of this year, AeA released a report whose title says it all: "Losing the Competitive Advantage? The Challenge for Science and Technology in the United States." I am submitting a copy of this report to the Commission for the record.

The thrust of our report is that the United States is slipping. Yes, we are still the leader in nearly every way that one can measure, but that lead is eroding as other countries are catching up.

Let me be clear, it isn't that the United States is in decline. It's that others are advancing quickly from behind, putting all their economic resources into moving their countries forward. The problem is that even if the United States were doing everything right, the world still poses an unprecedented competitive challenge. Unfortunately, we aren't doing everything right, and this compounds the challenges that we face.

Our report on competitiveness identified five themes, which the United States needs to address to prevent an impending slide in U.S. global competitiveness.

First, the economic reforms around the world are rapidly transforming economies, making them dramatically more competitive.

The United States has long urged the world to adopt free market principles. Well, the world listened. Major economic reforms have taken place in Russia, Eastern Europe, China, and India, to name a few. Indeed, if you look back just 20 years to 1985, over 60 percent of the world lived under command and control economic systems.

While many Americans are just now beginning to recognize how competitive the world has become, this change didn't happen overnight. Just as the U.S. didn't achieve its current leadership overnight. It takes years of investment in your innovation infrastructure. You need to invest in research and development, particularly basic research. You need to invest in your people, especially in science and technology education. You need to adopt a system that encourages investment, welcomes change, and promotes risk-taking and rewards it.

Which brings us to our **second** theme, that other countries are adopting and utilizing technology to enhance their economic growth and competitiveness. And as a recent CIA report states, "the greatest benefits of globalization [will] accrue to countries and groups that can access and adopt new technologies."

Already many countries are using technology to leapfrog from behind. Technology allows countries to bypass traditional development paths and use the latest technology to bring themselves forward. The implications are far reaching for U.S. competitiveness; the stagnant economy of yesterday could be the competitive rival of tomorrow. There is no better example of leapfrogging than the development of China's wireless telecommunications infrastructure.

Other countries realize that the U.S. experience of the 1980s and 1990s is the model to be followed. Namely that the growth of the high-tech sector leads to wealth and job creation. But for that to happen, there is a need to build a high-tech infrastructure.

To this end, many countries are making great strides. China now graduates four times the number of engineers as the United States. Japan graduates twice as many, and South Korea with 1/6 the population, graduates the same number of engineers as we do.

The changes in China have led to massive injections of investment into the Chinese economy, and where investment goes, trade follows. In 2002, China surpassed the United States as the prime destination for foreign direct investment in the world. In 2004, China surpassed the United States as Japan's largest trading partner. In the same year, China was the largest U.S. trading partner for technology products, surpassing the combined 25 countries of the European Union.

China is not alone. Many countries are increasingly climbing the technology ladder. As with China, they are no longer satisfied simply to manufacture technology products. They are also striving to become creators and designers of the next generation of breakthrough technology products and services.

This is my **third** point. If U.S. workers are to compete in a world economy that is increasingly knowledge based and driven by technology, the American education system must improve.

A highly skilled workforce is the lifeblood of any successful company, industry, or national economy. Regrettably, the American K-12 system is failing to provide the math and science skills necessary for kids to compete in the 21st century workforce. Which in turn means that the U.S. higher education system cannot produce enough scientists and engineers to support the growth of the U.S. high-tech industry that is so crucial to our economic prosperity.

We should be appalled and embarrassed that our 12th graders score at the bottom on international math and science tests. Far too often, our students shy away from engineering and tech programs because these are seen as careers for geeks and nerds. Interestingly in China, 39 percent of its college students are majoring in engineering while only five percent do so in the United States.

This leads me to my **fourth** point. If we cannot produce enough domestic scientists and engineers, keeping out high-skilled foreign talent is not the answer.

For decades, if not centuries, America has been the beneficiary of an influx of many of the most talented minds on this planet. Foreign-born individuals represent one of every five scientists and engineers in the United States. That is over 1 million workers. These workers are job creators. They contribute a tremendous amount of knowledge, talent, and innovation to the U.S. economy. People might be surprised to learn that almost half of the Nobel Prizes awarded to researchers in the United States between 1901 and 1991 were won by foreign-born individuals or their children.

Unfortunately, immigration policy post 9/11 has deterred foreign nationals from coming to the United States to study or work at the very time that this talent has tremendous opportunities elsewhere. We literally cannot afford to lose their intellectual abilities. Indeed, last year we saw a 35 percent decline in Chinese applications to U.S. graduate schools of engineering.

Finally, the U.S. federal funding that spawned so many technology breakthroughs in the 20th century is faltering. Few people realize that federal funding helped create the Internet, MRI scanners, the mouse, and GPS system - to name a very select few.

So what has been happening to R&D funding? Well, federally funded research has declined as a portion of the economy, and the priorities have shifted away from technology. In 1981, half of all federal R&D went to technology; by 2003 this dropped to one third.

In November 2004, the U.S. Congress even cut the budget of the National Science Foundation by \$105 million, the first cut in 16 years.

Government investment plays an indispensable role in building the foundation of a knowledge-based economy by investing in ventures, concepts, and ideas often years before a commercially

viable product or service is available. When government provides the foundation, U.S. businesses convert these innovations into new products, services, and sometimes, new industries. Why would we want to break this cycle?

Mr. Chairman, the United States is not preordained to lead the world in economic or technological advancement. We achieved this lead by the sweat of our brow and 60 years of investments in our infrastructure. We understood that innovation – taken in its broadest sense as the open acceptance of change and new ideas – is what fuels our economy.

Yes, we are still in the lead, but I hope that everyone understands that it is a precarious one. While we are taking this lead for granted, others are rapidly moving up from behind.

The world is a changed environment. It is intensely more competitive, and we are going to have to work harder to stay out front. Unless this realization hits home, our lead will continue to narrow, and at some point, we will be staring at someone else's back.

Mr. Chairman and members of the Commission, thank you for having me here today.