ADAPTING TO A CHANGING CLIMATE:

WATER, ENERGY, PEOPLE

An address by

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and

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At the reception introducing

Ian P. Kline

Recently appointed as CEO of Cadmus

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[1] The views expressed herein are entirely mine and not those of The Cadmus Group, Inc., or any of its clients.
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Good afternoon.

I am very pleased and humbled by the invitation from my colleagues at The Cadmus Group, Inc., to share my thoughts with you today on climate change, *the* pressing issue of environmental science, policy, and, inevitably, politics.

You will, no doubt, appreciate the fact that, since my talk follows the introduction of Ian Kline, our new CEO, this tends to "up the ante" a bit. But a little pressure is always good to keep the edge in one's performance. I am pleased to be a part of this celebration of this new chapter in Cadmus's history, and I offer my sincere congratulations to Ian, Ralph, and Gene.

An emerging consensus on the science

For any citizen coming to grips with the rapid developments in the science of climate change, especially for the overwhelming majority of us who are not climatologists, the past few years have been very confusing. Endless debate over the climate record, ice core samples, the impact of cloud cover, and the dark arts of modeling, to name just a

few, has presented very daunting obstacles to understanding, much less participating in, the public dialogue.

Clearly, the February report of the United Nation's Intergovernmental Panel on Climate Change (IPCC) offers the most compelling evidence, to date, that human beings have significantly, and negatively, impacted global temperatures, sea levels, and habitat among other things.

As a lawyer who generally embraces the importance of science, risk assessment, and economics in the formation of environmental public policy, I was impressed by the conclusions reached by The Honorable Richard A. Posner[3], a judge on the U. S. Court of Appeals for the Seventh Circuit, and, literally, a founding father of the very rigorous Law and Economics movement originating at the University of Chicago.[4]

Judge Posner and his followers are strong proponents of both economic efficiency and political liberty. He has also written about catastrophes and the appropriate responses to low-probability, high-risk occurrences.

In 2004 Judge Posner concluded that the evidence was altogether convincing that global warming was a serious problem for which human-caused emissions were the principal

[3] http://www.law.uchicago.edu/faculty/posner-r, accessed October 10, 2005

[4] Richard A. Posner, "Disaster Insurance," Hoover Digest (2007, No. 2): 44

cause. Since then, he says that "more evidence has accumulated and the voices of the dissenters are growing weaker."

"The global-warming skeptics are beginning to sound like the people who for so many years, in the face of compelling evidence, denied that cigarette smoking was harmful to health," claims the Judge.

Judge Posner identified several arguments for incurring "hefty current expenditures" to reduce carbon dioxide emissions in the near term. Global warming already imposes steadily rising costs. Also, there is a small risk of abrupt, catastrophic global warming at any time. He believes "a small risk of a huge catastrophe can add up to a very large expected cost."

Posner's third argument is "that reducing our consumption of energy by imposing a heavy energy tax would confer national security benefits by reducing our dependence on imported oil." I assume that this last point encompasses everything from a "revenue-neutral" carbon tax, with offsetting cuts on unproductive personal or corporate income taxes, to the implementation of a cap-and-trade program which, not withstanding its greater political acceptability, achieves roughly the same outcome, albeit with greater transaction costs and complexity and less economic benefit.

For this lawyer Judge Posner's testimony is potent stuff. But even if we view the scientific evidence as more contingent or uncertain than does Posner, there still are solid grounds for much greater effort on this front.

Some of us will recall the discussions of a "No Regrets" strategy for dealing with the specter of climate change back in the late 1980s and early 1990s. The idea was to maximize energy efficiency and alternate energy sources, plant trees, reduce traffic congestion, increase fuel efficiency with the primary intent of reducing conventional pollution, protecting habitat, restoring the water cycle, saving money, and improving the quality of life—all while reducing emissions of Greenhouse Gases (GHGs) in the process.

The response to the emerging scientific consensus

The current state of the science would, at a minimum, indicate accelerating the "No Regrets" strategy as a good start at mitigation of the problem. Clearly, this strategy is not, in and of itself, sufficient; but it would carry us much farther than we are today. For instance, a revenue-neutral carbon tax, with offsetting tax cuts on personal or corporate income, could be justified on supply-side, productivity, and efficiency grounds as a boon to the economy and national security without reference to climate.

In fact, there appears to be a broad, deep, organic response to the emerging scientific consensus on the part of business corporations, states, cities, and, if the success of EPA's voluntary programs is any indication, citizens throughout the country, many of whom are moving forward, on their own, with programs to mitigate GHG emissions, establish cap-and-trade regulatory regimes, and promote renewable sources of energy.

Recently, students and staff of the Pace Law School Center for Environmental Legal Studies carried out a survey of all fifty states, yielding an impressive compilation of state legislation, rules, and executive orders relating to climate change, regulatory and voluntary programs, energy efficiency and renewable energy.[5]

For some years now, The Cadmus Group has been honored to support the U.S. Environmental Protection Agency's (EPA) ENERGY STAR and its other Climate Protection Partnerships, all voluntary programs embraced by individual citizens, governments, school, colleges, universities, and corporations, which have prevented 70 million metric tons of carbon equivalent GHG emissions in 2006, up from 63 million in 2005. The ENERGY STAR program alone removed the equivalent of GHG emissions from 25 million automobiles in 2006.

And EPA's Climate Leaders Program, another initiative which Cadmus is pleased to support, has grown to over 100 companies representing more than eight percent of the total U.S. GHG emissions, all of whom set ambitious goals for emissions reductions.

[5] http://www.law.pace.edu/environment/climate-change-book.html, accessed on September 29, 2007

Stakeholder activism, especially on the part of stockholders, is elevating climate change to the top of the agenda, eclipsing all other environmental issues.

Multi-national corporations face complex disclosure issues with the Securities and Exchange Commission due to fragmented GHG regulatory regimes in the U.S., the divide between signatory and non-signatory countries to the Kyoto Protocol, and proliferating GHG emissions trading markets.[6]

Rebecca Smith, writing in The Wall Street Journal, reported that "From coast to coast plans for a new generation of coal-fired power plants are falling by the wayside as states conclude that conventional coal plants are too dirty to build and the cost of cleaner plants too high."[7] She notes the decision by the new buyers of TXU Corp. to drop 8 of 11 proposed power plants for Texas. Citing reversals in Florida, North Carolina, Oregon, and other states, she reports that nearly two dozen coal projects have been cancelled since early 2006.

According to Smith, "…Citibank downgraded the stocks of coal mining companies on July 18, noting that 'prophecies of a new wave of coal-fired generation have vaporized.'"

Whatever one thinks of these developments, and they are scary given the current absence of an alternative energy system adequate to our needs, it is clear that the world is

[6] See the discussion by Jeffrey A. Smith and Matthew Morreale in chapter 13, "Disclosure Issues," in *Global Climate Change and U.S. Law*, American Bar Association, ed. Michael B. Gerrard (2007): 453-455
[7] Rebecca Smith, "New Power Plants Fueled by Coal Are Put on Hold," The Wall Street Journal, July 25, 2007: A1

changing. It is time to start planning and building for a very different future if we are to avoid disruptions to our economy and society.

It is my sense that consensus will continue to coalesce around the science in ratifying the view that climate change is real and, more significantly, that human beings are significant contributors to the long-term problem. You can take that for what it's worth—just an informed layman's opinion.

However, tremendous controversy will persist and intensify over the appropriate policy response to the science, stemming primarily from issues of cost and feasibility. The pace of cost-effective technological innovation or management responses will be key variables affecting America's political will to address, head-on, the causes of climate change.

Take the case of carbon capture and storage (CCS), basically geologic sequestration (GS) of carbon dioxide (CO2) underground, which might, I repeat, might be a very cost-effective means of mitigating anthropogenic sources of the most significant GHG emissions from large-scale burning of coal. Again, this is an area where Cadmus has been pleased to support EPA's Underground Injection Control (UIC) Program, in collaboration with the Climate Change Division (CCD), in exploring the potential of CCS to mitigate climate change through the injection of CO2 deep underground.[8]

EPA Administrator Stephen L. Johnson's October 11th announcement that the agency will now develop regulations to establish "a clear path to geologic sequestration" is very

[8] http://www.epa.gov/safewater/uic/wells_sequestration.html, accessed on October 11, 2007

welcome news. EPA anticipates proposing regulatory changes to the UIC Program in the summer of 2008 and invites public input throughout the process.

GS involves capturing the CO2 from a power plant or other source and transporting and injecting it into deep subsurface rock formations with the aim of keeping it out of the atmosphere for hundreds of years, perhaps longer. The CO2 could be injected into deep saline aquifers, depleted hydrocarbon reservoirs, or coal seams that cannot be mined. The wells would all be subject to regulation by the UIC Program, a long-standing regulatory regime.

While CO2 injection is used routinely to increase production of some oil and gas wells, injecting large volumes captured from, say, fossil-fuel-burning plants raise several additional technical issues. Can the injected CO2 make its way through fractures and faults in rock formations, and thereby leak back to underground drinking water sources and impact water treatment processes, or the land surface where it can be trapped in low-lying and enclosed areas causing asphyxiation? What about the corrosive nature of the carbonic acid that is created when CO2 dissolves in water and its effect on well integrity and the environment? Other issues relate to impurities that may be injected along with the CO2 and long-term liability or responsibility for sequestrations lasting centuries.

The costs of CCS, particularly capture technologies, remain high, but may decline with broader application. CCS may well turn out to be a godsend for the coal industry in a carbon constrained era, giving it a new lease on life for literally hundreds of years.

Actions at a scale necessary to substantially impact GHG emissions, resulting in real-word mitigation of climate patterns, will require massive deployment of every conceivable tool—nuclear power, CCS, land use management, energy efficiency, renewable energy, and, someday maybe, geo-engineering and Solar Radiation Management (SRM) undreamed of by science fiction writers.

Resilience is the essence of adaptation

The case for immediate and sustained action is most compelling when we consider adaptation to climate change regardless of its causes.

Adaptation offers immediate, tangible, cost-effective, and, therefore, politically viable methods of coping with climate change. This is not the same thing as saying it will be easy. The focus must be on change to fit the new situation, including "Behavioral change of an individual or group in adjustment to new or modified cultural surroundings."[9]

An era of shifting climate will compel us to change the ways we manage ourselves, our natural resources, and our economy. It will surely require systemic economic and societal transformation amounting to cultural change, hopefully more evolutionary than revolutionary, avoiding severe impacts to our communities, our pocketbooks, and the ecosystems upon which we depend.

[9] *Webster's II New College Dictionary*, Houghton Mifflin Company (1995): 12

Adaptation requires resilience. And resilience is predicated upon "staunch acceptance of reality; a deep belief, often buttressed by strongly held values, that life is meaningful; and an uncanny ability to improvise." That was the view of Diane L. Coutu, senior editor at the Harvard Business Review who specialized in psychology and business.[10]

I know that this audience holds deep beliefs on the moral imperative of environmental stewardship for the benefit of humanity and the resources upon which we all depend. So I will focus on the other two aspects of resilience which relate to our ability to adapt to climate change, again, regardless of the cause, natural or anthropogenic.

Resilience is not the same thing as optimism. Coutu quotes James Collins, the celebrated author of the best selling business book, *Good to Great,* on the case of Admiral Jim Stockdale a prisoner of war who was tortured by the Vietcong for eight years. In response to Collins's enquiry as to who did not make it out of the camps, Stockdale replied, "Oh, that's easy. It was the optimists. They were the ones who said we were going to be home by Christmas….You know, I think they all died of broken hearts."

This is not to disparage optimism, one tethered to reality. "But for bigger challenges, a cool, almost pessimistic, sense of reality is far more important," says Coutu.

Water in all its aspects (chemical, physical, and biological) is one of many areas which already manifest profound impacts of climate change. To successfully adapt to these

[10] Diane L. Coutu, "How Resilience Works," Harvard Business Review (May 2002): 3

realities, we must soberly assess the situation in order to realistically manage people as well as hydrology.

Water management in a changing climate

We read and hear numerous stories of populations in Asia and Africa which will experience tremendous hardship due to changing climate conditions, rising sea levels, increased tropical disease, and other impacts. Consequences for the United States may not be nearly as catastrophic, but they are likely to be substantial and costly.

In 2003 the General Accountability Office (GAO) surveyed state water managers and determined that even under normal or non-drought conditions, 36 states anticipated water shortages in localities, regions, or statewide in the next 10 years. Under drought conditions 46 states expected shortages in the same time frame. In addition, increasing population and declining groundwater levels indicate that the freshwater supply is reaching its limits in some locations while freshwater demand is increasing.
The building of new, large reservoir projects has tapered off, and existing storage is threatened by age and sedimentation.[11]

The mounting pressure on water availability is building to a kind of perfect storm, in the Colorado River basin. This watershed covers 240,000 square miles and seven states including California, and a portion of Mexico. This past February, a blue-ribbon

[11] U.S. General Accountability Office, *Freshwater Supply: States' Views of How Federal Agencies Could Help Them Meet Challenges of Expected Shortages*, GAO-03-514 (July 2003), accessed at http://www.gao.gov/new.items/d03514.pdf on September 28, 2007

scientific committee of the National Research Council (NRC), part of the National Academies, issued a stunning report.[12] To summarize the findings in the most succinct way, let me quote the headline from The New York Times reporting its release: "That 'Drought' in Southwest May Be Normal, Report Says."[13]

The NRC committee reviewed data from tree-ring studies which provide a much longer-term view of weather and climate than do stream gauges which extend back only a hundred years. Tree-ring data go back 300, 500, even 800 years. In any event, the committee found that average annual flows vary more than previously assumed and that extended droughts are not uncommon.

Moreover, future droughts may be longer and more severe because of a regional warming trend. The preponderance of the evidence suggests that rising temperatures will reduce the river's flow and water supplies.

When the Colorado River Compact, which allocates water between the upper and lower basin states, was signed in 1922, it was assumed that the annual average river flow was closer to 16.4 million acre-feet. Unfortunately, the tree-ring reconstructions show that the years 1905-1920 were exceptionally wet ones!

[12] National Research Council (NRC), *Colorado River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability*, Washington, D.C. (The National Academies Press 2007)
[13] Cornelia Dean, "That 'Drought' in Southwest May Be Normal, Report Says," The New York Times, February 22, 2007: A1

Add to this the rapid increases in population in states such as Arizona (a 40 percent rise since 1990) and Colorado (30 percent growth in the same period), and you can see how water is becoming as precious as oil in that part of the world.

In Clark County, Nevada, which includes Las Vegas, water consumption doubled between 1985 and 2000, notwithstanding improved water conservation and efficiency.

We should take a moment to reflect on the Las Vegas (formerly, Las Vegas Springs!) experience and what it teaches us about the magnitude of the task before us and the potential of successfully, resiliently adapting to water shortages caused, in this case, by a five-year drought, the worst in perhaps 100 or even 500 years.[14]

Las Vegas's water comes from Lake Mead which is down almost 60 percent of capacity and, upstream from Mead, Lake Powell which is down approximately 34 percent of capacity, the lowest level since it was filled up three decades ago. The City shares Colorado River water with 30 million people, roughly 10 percent of all Americans, from Denver to Salt Lake City, Phoenix, Tucson, Los Angeles, and San Diego.

Agriculture consumes 90 percent of Nevada's water; but the Strip in Las Vegas, with 15 of the world's 20 largest hotels, complete with fountains, sea battles between pirate ships, and an 8.5-acre lake, accounts for less than 1 percent of the state's water use while

[14] George F. Will, "A City That Bets on Water," The Washington Post, February 27, 2005, accessed at http://www.washingtonpost.com/wp-dyn/articles/A54745-2005Feb25.html, on September 29, 2007. My discussion of the Las Vegas case draws largely from Will's excellent article, admittedly outside his normal zone of interest.

producing 60 percent of Nevada's economic output. The average hotel uses 300 gallons of water a day, but most of it is recycled.

Pat Mulroy, the general manager of the Southern Nevada Water Authority, has noted the "mind-boggling" phenomenon of retirees and others moving to the desert to plant Kentucky bluegrass, "a particularly thirsty kind." According to Mulroy the City was planting grass on *medians* which was "like moving to Alaska and walking down the street in a bathing suit in January."

I think we can safely say that Mulroy is a person with the ability to face reality as it is, rather than how she might wish it to be.

Not only did it stop planting grass on medians, but Las Vegas started paying $1 per square foot to remove grass or turf. As of 2005 it removed 50.9 million square feet, for an annual savings of 2.8 billion gallons of water. It is pushing desert plants for landscaping. Despite a population growing at 5,000 per month, water consumption declined from 318,000 acre-feet to less than 272,000 from 2002 to 2003, and even lower in 2004.

A recent report by the American Water Works Association Research Foundation (AwwaRF) and the University Corporation for Atmospheric Research (UCAR) points out

that climate change and variability portend significant consequences for water utilities, especially in the western United States.[15]

While scientists generally agree on the broad features of likely hydrological changes, such as an increase in global average precipitation and evaporation due to warmer temperatures, significant uncertainty remains about the amount of precipitation and runoff at the regional or watershed levels. Reliable predictions are presently impossible.

That said, the science suggests that the global climate cycle will become more intense, resulting in heavier but less frequent periods of precipitation. In other words, the science points to the possibility of longer periods of drought alternating with spells of heavy rainfall and runoff. The consequences are many. Let me describe just a few.

- Greater variability in runoff would make maintaining optimal reservoir levels more difficult and would reduce the reliability of water storage.
- Increased reliance on groundwater during extended dry spells would reduce aquifer levels and discharges to surface water bodies, with unintended consequences for aquatic ecosystems.
- Shorter periods of snow accumulation in mountainous regions, especially at lower altitudes, would result in reduced snow pack, which, along with earlier melting in the spring, would lead to reduced flows in late summer when water is scarce and demand is greater.
- Treatment costs would increase due to heavier runoff.

[15] American Water Works Association Research Foundation (AwwaRF) and University Corporation for Atmospheric Research (UCAR), *Climate Change and Water Resources: A Primer for Municipal Water Providers,* Denver, CO (AWWA 2006)

- Floods, droughts, hurricanes, and wildfires—as well the soil erosion they cause—would increase, threatening water quality and utility infrastructure.
- Rising sea levels would lead to saltwater intrusion and flooded infrastructure.

AwwaRF and UCAR observe, quite correctly in my view, that despite regional and local uncertainties, prudence dictates that utility managers undertake "planning for uncertainty" which entails implementing precautionary, adaptive strategies designed to foster utility systems and operations that are robust, resilient, and flexible in anticipating alternative climate scenarios. Consistent with the views of most policy analysts in the realm of water resources, the ones I agree with anyway, they contend that Integrated Water Resources Management (IWRM) is the most effective method for assessing adaptation options and their implications.

IWRM, as many of you know, is a systematic approach to planning and management which involves stakeholders and customers in the process. Through continuous monitoring and review of the resources, it facilitates adaptive management. It also provides an opportunity to articulate supply- and demand-side options with the aim of addressing factors relating to biological systems and socio-economic management realities.

No single climate model will yield reliable projections of future climatic conditions. Climate change models will also have to be "downscaled" to the relevant watershed level.

AwwaRF and UCAR recommend that any analysis use projections from several models to generate a range of plausible scenarios of the impacts of climate change on a utility's water resources.

Bob Hirsch, Associate Director for Water at the United States Geological Survey (USGS) has reminded me, there is no substitute for real data and information which is always necessary to inform and improve the models themselves; and I wish to associate myself with Bob's observations on this point.

Moving forward on adaptive strategies

America's water sector is responding to the emerging scientific consensus on the realities of global climate change and the stark reality of rising energy costs in a global market.

Recently, I addressed a conference of the Oregon Association of Clean Water Agencies (ACWA), an organization of 90 wastewater treatment utilities. A fair amount of the program was devoted to exploring how wastewater utility operators could manage or reduce GHGs emanating from their operations, thereby saving money and generating additional revenues through the creation and sale of offsets or credits under Oregon's climate change laws and programs.[16] I suspect we will be seeing more of this kind of activity on the West Coast and Northeast where states are planning to launch regulatory cap-and-trade programs which will create the necessary incentives.

[16] Oregon Association of Clean Water Agencies, Newsletter (Summer 2007): 7-9

The water-energy-climate nexus is also implicated in discussions of sustainable infrastructure and efficiency. A March 2007 cover story in Water & Wastes Digest[17] entitled, "Is Your Treatment Plant Due for an Energy Audit?" by Patrick Clifford, a senior associate of CTE Engineers, notes that approximately 3 percent of the total electricity generated by the electric power industry in the U.S. is consumed by the water and wastewater industry. Energy consumption at these facilities is estimated to grow by over 20 percent over the next 15 years.

ENERGY STAR, EPA's flagship voluntary program, has established a new industry focus for the water and wastewater sector.[18] Cadmus is supporting EPA on this exciting initiative which allows us to bring to bear our core strengths in water and social marketing and voluntary programs. We believe this is a win-win for sustainable infrastructure, climate mitigation, and adaptation to the extent it contributes to the overall financial resiliency of water and wastewater utilities.

According to EPA drinking water and wastewater systems spend about $4 billion a year on energy to pump, treat, deliver, collect, and clean water. Energy costs to run a drinking water and wastewater systems can represent as much as one-third of a municipality's budget.

[17] www.wwdmag.com , accessed October 1, 2007
[18] http://www.energystar.gov/index.cfm?c=.government.water_wastewater_focus, accessed October 3, 2007

Back in March Benjamin H. Grumbles, Assistant Administrator for Water at EPA rallied his management team in a memo on "Climate Change and the National Water Program" which established a Climate Change Workgroup. He anticipated that adaptation would be the main focus of the Workgroup, but he also noted the Office of Water's ongoing efforts regarding GS and energy efficiency. A report is expected very soon and promises to energize adaptation in the water sector.

EPA is also progressing nicely with its new WaterSense initiative[19], launched in 2006, which seeks to enhance the market for water-efficient products and services by building a national brand for water efficiency.[20] On October 1st it announced its new product specifications for high-performance, water-efficient sink faucets for bathrooms that use about 30 percent less water than conventional models.

WaterSense has also labeled more than 60 high-efficiency toilets which use 20 percent less water than standard models. This is an exciting new program which will only expand with time, saving energy while saving water.

America will need a diverse portfolio of technologies, management systems, economic instruments, and sustainable land use practices to adapt to the reality of uncertain climate patterns and their impacts on the water cycle.

[19] www.epa.gov/watersense, accessed October 9, 2007

[20] http://www.epa.gov/watersense/specs/faucet_final.htm, accessed October 3, 2007

Let me offer a few ideas for your consideration, recognizing that my list is provisional, incomplete, and subject to the limits of my own knowledge:

- Get the prices right as to the infrastructure, the water itself, and the incentives necessary to conserve and wisely use this most precious of resources. Doing so will also encourage technological innovation. Volumetric pricing combined with metering is a great driver of water efficiency and conservation. Nor should we subsidize water provision itself, although we should design programs to aid the poorest of our citizens who need our support.
- Corporations must recognize the business case for sustainable water use, from the source to the facility, to the product, while taking advantage of the economic opportunities inherent in water efficiency, conservation, and product innovation.
- Consider the landscape, the watershed, as well as the water itself. Protecting forests and grasslands will minimize unnecessary impervious surfaces, protect water quality, and maintain, even restore the natural flow regime. Green infrastructure or Low-Impact Development (LID)—green roofs, rain gardens, urban trees, curb extensions, and other amenities—can accomplish the same thing in the urban context while also mitigating urban heat island effect and, possibly, sequestering some carbon in the process. Managing development for higher densities which allow for more green space will also help.
- Invest in more robust monitoring, data collection, and modeling to make it accessible and usable at the local watershed scale. Knowledge and information

are powerful tools and essential to any successful, iterative, adaptive strategies which must evolve over time.

- Develop efficient water markets subject to necessary environmental regulation to protect aquatic ecosystems. In most western states, agriculture consumes 80-90 percent of the water due to the long-standing legal doctrine of Prior Appropriation ("first in time, first in right"). Cities, water trusts, and environmental groups are willing to pay the freight to protect their values and meet their water needs. They need to access efficient water markets to do so.
- Look to the East, not just to the West. Water efficiency and conservation is now recognized as an important goal even in water-rich areas such as the Great Lakes and the Southeast. Due to growth and climate, all regions of the country are challenged to adapt to the new, evolving water regime. The Great Lakes governors and a coalition of cities in the basin have all made new commitments to water conservation.

A final word

I hope I have not abused the privilege of speaking to you today. You have been an attentive audience.

Adapting to climate change requires that we attend to the many and varied aspects of water, energy, and people to cope with tremendous changes in the environment, the economy, and society as a whole. I hope you have found these thoughts of mine relevant to our shared commitment to this goal.

Notwithstanding my comments on the need for realism, verging on pessimism, in the pursuit of resiliency and adaptability, I am hopeful when I consider the creativity and resourcefulness which we Americans bring to the challenges we have encountered in our short, dramatic history.

Finally, on behalf of all of us at The Cadmus Group, Inc., thank you for joining us today. We appreciate your time and interest in these matters of mutual concern.