

## Commencement Speech at Green Mountain College

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- President Fonteyn, Trustee Chair Cortese, Graduates, Family, Faculty, Friends...
- It's a privilege and an honor for me to be here to help celebrate the new graduates of this remarkable college.
- And how really remarkable Green Mountain College is!
  - Older than MIT, Stanford, and UC Berkeley, Green Mountain has been a pioneer in emphasizing strong teacher-student relationships facilitated by a low student-to-faculty ratio; in hands-on experiential learning; and in its integrative, interdisciplinary core requirements linking liberal arts with a focus on the environment.
  - That shared focus on environment and sustainability—across majors from art and history, to biology and renewable energy, to business and hospitality management—has made this place “green” in far more than name.
    - In 2010, GMC nabbed the number one ranking on SIERRA magazines “Cool Schools” list.
    - In 2011 the college became the Nation’s first climate-neutral campus, through a combination of clean energy, energy efficiency, and local carbon offsets.
    - In 2014 it received a gold rating from the Association for the Advancement of Sustainability in Higher Education.
    - And in 2015 it was ranked the number two green school in the Nation by the Princeton Review.
- It is these special characteristics of this place that make it such a particular pleasure for me to be with you this morning—in both my personal and official capacities—to honor not just the new graduates but the College itself; to honor all of you for your achievements and the College’s achievements in interdisciplinary higher education that places the great challenge of environmental sustainability where it belongs, as part of every major and every future career.
- This is personal for me because I have spent so much of my own career working to advance interdisciplinary teaching, learning, research, and practice focused on the great challenges of the human condition—population, resources, environment and sustainability, public health, development, and international peace and security.
  - Two books I read in high school in the late 1950s—“The Two Cultures” by the British mathematician and philosopher C.P. Snow, and “The Challenge of Man’s Future” by the American geochemist and international scientific statesman Harrison Brown—convinced me that all these challenges are interconnected, that none will be solved unless all are solved, and that the solutions will require integrating understandings and approaches

from the humanities and social sciences as well as from the natural sciences and engineering.

- The need for integration doesn't mean, of course, that we don't need people who specialize in the individual disciplines. The world needs more good biologists, chemists, engineers, economists, sociologists, historians, and journalists, among many other disciplines. But it also needs people who specialize in being interdisciplinary—at putting the pieces together—a specialization no less demanding of rigor and no less worthy of respect than physics or economics.
- That is the path I decided to pursue, and it is a path I commend to any of you who are so inclined, even as I commend pursuit of more discipline-focused careers to those inclined in that direction.
- But first, having dwelt briefly on why my speaking here this morning is particularly personal for me, I want to tell you why it is also official in my capacity as President Obama's science and technology advisor.
  - It's official because Green Mountain College is a splendid example of the effective embodiment, in higher education, of three of the highest priorities of the Obama Administration, which means that my speaking here provides an opportunity to underscore the President's and my agreement with and support for what this College is doing and stands for.
  - I'm here, in other words, in part because my boss thinks it's a good idea for his deputies to get out of Washington from time to time to visit places where what the Administration has been advocating is actually working!
- The first of the Administration's priorities for which this college is an exemplar is lifting the Nation's game in education, "from pre-school to grad school" as the President has said, by relying less on lectures and more on active learning through student-led inquiry, group problem-solving, and hands-on testing of ideas and methods in the context of real-world issues that capture students' interests.
  - These are the hallmarks of the Obama Administration's strategy for keeping students excited about learning, helping them learn more faster, keeping more of them in school, and better preparing them for productive careers in the real world.
  - And these are precisely the characteristics of teaching and learning that Green Mountain College has been demonstrating with such signal success for so long.
- The second Obama priority that Green Mountain College embodies in action is the promotion of partnerships across academia, business, government, and civil-society to address societal needs that no single sector can successfully tackle alone—for example, the creation of opportunity for the underprivileged and under-served; the development and propagation of advances in healthcare that deliver better outcomes for more people at lower costs; the deployment and creative use of modern information technology in education and workforce training; and innovation that allows the elderly to live more productive and satisfying lives. (I have to say I'm personally especially interested in that one.)

- The President has often said that these kinds of challenges require “all hands on deck”, and it is just that sort of commitment to partnerships in service to society that animates programs and projects at Green Mountain engaging students and faculty with real needs in the community, the region, and the Nation.
- One has only to look, on the Green Mountain College website, at the list of projects that GMC students have completed in the college’s capstone course, “A Delicate Balance”, to understand how this works here.
- The third priority and focus of both the Obama Administration and Green Mountain College that I want to talk about this morning is, of course, the great challenges of environment and sustainability that infuse so much of this college’s teaching and service and that have claimed so much of the attention of my boss and many of us who work for him.
  - And to start on this topic let me just say flatly that I believe that President Obama is the most environment-savvy, sustainability-focused President in the history of this country. He gets the importance of clean air and clean water. He gets how clean and efficient energy relate to these. He gets wilderness and biodiversity. He gets the importance of plight of the oceans. He gets what sustainability will require. And he gets how climate change is intertwined with all of these.
  - He has put the talents and resources of the Federal government to work to address these issues in a multiplicity of visionary ways. Some examples:
    - Already in 2009, in his first year in office, he issued an Executive Order requiring every Federal department and agency to prepare a sustainability implementation plan, to submit it to his Council on Environmental Quality—the CEQ—and to update it every year. And it has happened.
    - His EPA has issued light-duty vehicle combined fuel-economy and greenhouse-gas emission standards that will double average new-vehicle fuel economy and cut their emissions in half over the 15 years from 2010 to 2025.
    - His Department of Energy has issued a raft of building and appliance energy-efficiency standards that are cost-effectively shrinking the energy and carbon footprints of U.S. homes and businesses and will continue to do so for decades.
    - He has set aside more land and water as wilderness and national parks and monuments than any President in history.
    - He has established the first-ever National Ocean Policy and empaneled the interagency National Ocean Council to implement it. (I co-chair that Council with the head of the CEQ.)
    - He has established an interagency Arctic Executive Steering Committee, of which I am the chair and the immediate past U.S. Ambassador to Sweden is the Executive Director, to coordinate policies and priorities across the 25 Federal departments and agencies with Arctic responsibilities. A central theme of this interagency effort is understanding and coping with the consequences that global climate change is having in the Arctic, as well as the influences that the Arctic is having on climate change in the rest of the world.
  - And, as most of you know well, the focus on climate change in the Arctic is just one of the facets of President Obama’s crowning environmental achievement, his three-pillar Climate Action Plan, launched in June 2013. Under that plan:

- the country is on-track to meet the President’s greenhouse-gas emission-reduction goals for 2020 and 2025;
  - multiple public/private/civil-society partnerships are boosting prepared-ness and resilience against the changes in climate that cannot be prevented; and
  - U.S. leadership in bringing other countries along in both emissions reductions and resilience building has met with a gratifying—even if not yet wholly sufficient—degree of success.
- I want to say a few words about the role of insights from climate science in shaping the President’s Climate Action Plan, because this has been an Administration in which, as the President promised at the outset, science and facts would guide policy, and because helping ensure that this happens has been my own most important responsibility as his Science Advisor.
- The science of climate change is based on (1) the fundamental physics and chemistry of the atmosphere and the oceans, the physics of ice, and the biochemistry of living things; (2) millions of measurements, over many decades, by tens of thousands of scientists in thousands of locations across the globe; (3) the study of Earth’s climate over the millennia, as recorded in glaciers, coral reefs, sediments, and tree rings; and (4) computer models of steadily increasing sophistication and reliability that help meld the physics, chemistry, biology, and measurements into a coherent picture.
- This immense body of science has established six key understandings beyond any reasonable doubt.
1. Earth’s climate is changing at a pace and in a pattern not explainable by natural influences.
  2. The dominant cause of the changes is an increase in the atmospheric concentrations of carbon dioxide (CO<sub>2</sub>) and other heat-trapping gases caused primarily by fossil-fuel burning and land-use change.
  3. These changes are already causing harm to life, health, property, economies, and ecosystems, with more heat waves, downpours, droughts, and wildfires; more of the most powerful storms; worse smog; and major impacts on ecosystem dynamics.
  4. The harm will continue to grow for decades, because of the momentum in the climate system and the inertia in society’s energy system.
  5. But the projected harm will be much smaller if we take prompt, strong evasive action than if we don’t.
  6. The distribution of the offending emissions across the nations of the world is such that this evasive action will need to include nearly everybody.
- These are the understandings that shaped the President’s Climate Action Plan. They provided:
- the motivation for seeking to develop a cost-effective plan to reduce those impacts;
  - the sense of urgency for doing so at once rather than waiting;
  - the understanding that such a plan must include not only measures to reduce the emissions that are driving global climate change but also measures to increase preparedness for and resilience against the changes in climate that can no longer be avoided;
  - the detailed knowledge of the sources of the offending emissions and the character of society’s vulnerabilities that allows appropriate specificity in designing a plan; and

- the recognition that any U.S. plan must include a component designed to bring other countries along.
- Today, nearly three year after the President put this Plan forward, there have been important advances on each of its three pillars—reducing domestic emissions, building preparedness and resilience for the changes in climate that can no longer be avoided, and working with other countries to get them to do the same. In addition to the progress on U.S. reductions and resilience already mentioned...
  - Public opinion is shifting toward the need for additional action.
  - The private sector is stepping up, with many major corporations taking action as well as calling for more action from government.
  - The costs of wind and solar are plummeting.
  - The energy efficiency of buildings is soaring.
  - Hybrid and electric cars are improving.
  - And, perhaps most important of all, the Paris Conference of the Parties last December produced an unprecedented agreement in which:
    - 196 nations committed to Intended Nationally Determined Contributions for emissions reductions out to 2025 or 2030. (This country’s is 26-28% below 2005 level by 2025.)
    - Accounting and reporting provisions were made legally binding.
    - All countries will revisit commitments at 5-year intervals to increase ambition.
    - Mitigation and adaptation assistance to countries in need to reach least one hundred billion dollars per year by 2020 and remain at that level or more at least until 2025.
- Of course there is much more to do, from the domain of global climate-change policy to implementing sustainability and resilience at the community level, to using language and the arts to engage and inspire the public to environmental awareness and action.
- I guess my generation felt we needed to leave something for your generation to do. But with the training and experience the new graduates of Green Mountain College have received here, I am confident that you will do what is required.
- So let me close by offering my congratulations to the graduates, their teachers, and their families...perhaps most of all the families, who have supported the graduates and suffered with them through the trials of completing a degree, and who are surely ready to see the graduates start “making a living” as well as “making a difference”.<sup>1</sup> Congratulations and thank you!

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<sup>1</sup> Note: The motto of Green Mountain College is “Making a Living and Making a Difference”.