



Leadership Forum on Climate Solutions

July 26, 2018

UC³

University Climate
Change Coalition

Be Boulder.



University of Colorado **Boulder**



Leadership Forum on Climate Solutions
Sustainability, Energy and Environment Community (SEEC) building
8 a.m. to 5 p.m., July 26, 2018

Introduction and background

Our dynamic and changing climate and our impact on it, is arguably the greatest challenge and the greatest opportunity that people have faced in the history of our species on the planet. Many vital questions accompany this observation, including:

- Can we choose to advance and apply climate science to better inform the political, economic and social decisions made by human society?
- Can we support innovation that will result in climate solutions at sufficient speed and scale?
- Will we harness human capital to meet this challenge by capitalizing on the opportunities inherent in it, while also realistically anticipating and implementing the resiliency strategies required to protect human and all other life?

The University of Colorado Boulder is a founding member of the University Climate Change Coalition (UC3). [UC3](#) is a “bold new coalition of 15 leading North American research universities that will prototype a collaborative model designed to help local communities achieve their climate goals and accelerate the transition to a low-carbon future.” Climate science and research are important components of CU Boulder, as is its history and leadership in the realm of sustainability. Chancellor Philip DiStefano embraced joining UC3, as membership aligned with this history and the campus’s strategic imperatives to lead, innovate and positively impact humanity.

As part of UC3 membership, CU Boulder committed to host a forum that focused on place-based climate solutions. Like the university, the City of Boulder also has a strong reputation for leadership on climate action. The incorporation of the City of Boulder precedes the founding of the university by a mere five years, and the two institutions now have a 142-year history of co-existence. The myriad challenges faced today have imbued resolve in city and university leaders to focus on and strengthen genuine collaboration that can and will benefit both institutions as well as the community at large.

The **Leadership Forum on Climate Solutions**, held on July 26, 2018, was a solid step in defining the parameters and content of genuine collaboration. Recognizing the importance of two additional essential sectors in forging positive change, leaders from the private and non-profit sectors also gathered with public and academic leaders for the day-long exploration of actionable solutions.

The forum was a first step in what will hopefully become a concerted, innovative and well-facilitated collaboration that will result in measurable change for the better. The report that follows outlines the content, flow and results of this initial forum.

Framing the day

The morning began with welcoming remarks from Vice Chancellor for Infrastructure and Sustainability David Kang followed by opening remarks from CU Boulder Chancellor Phil Distefano and City of Boulder Mayor Suzanne Jones. Following self-introductions and insights by each of the 36 attendees/participants, four speakers gave presentations framing some of the major challenges presented by climate change, including urgency, financing and innovating at scale. These speakers included Terri Fiez, Vice Chancellor for Innovation and Research, Jim White, dean of CU Boulder's College of Arts and Sciences, Eric Toone, Executive Managing Director and Technology Lead of Breakthrough Energy Ventures, and Dan Gregory, CEO of Pos-En Energy.

During these morning discussions, university, community and industry leaders immediately acknowledged this forum provided an opportune time to generate collaboration on climate change solutions. It was clear substantial impact is being made already by individual entities¹ but that the sum of these efforts is insufficient to achieve the kind of large-scale climate change goals to which they aspire. Leaders noted that new partnerships would be necessary to address the complexity inherent in, and resources required for, sufficiently impactful solutions.

One major theme put forth was the challenge that public perception presents in combating climate change. Not only does the delayed nature of climate change's symptoms² diminish its urgency in the eyes of most people, but its solutions require people plan on time scales far removed from their daily lives (i.e., at least 40-50 years). To mobilize action and achieve solutions at the required scale, the public must understand that we live in a world governed by physical laws, that facts and data are not political, that we don't have the time to wait, and that tackling this problem is not an option.

Another major theme of the morning concerned humans' propensity to consume and the challenging nature of climate solutions due to their unprecedented scale³. Emissions reduction in the energy sector, transportation, buildings and food may entail significant investments and changes to our existing infrastructure, which, in aggregate, constitute tremendous mass and may be difficult to achieve quickly. Altering physical assets on this scale requires concerted, organized and sustained effort. Furthermore, effective changes require we consider systems holistically while simultaneously reworking them at a granular level.

It was with these morning insights and frames of reference that forum participants entered the afternoon for working group sessions to both refine their collective visions and propose actionable solutions that could be collaboratively employed by municipal, university, industry and non-profit leaders.

Creating a vision

Forum participants divided into four groups to brainstorm a vision for the future and possible headlines that would appear in 2025 as a result of our present efforts around climate action. Headlines included:

¹ Appendix C

² The severe effects of climate change are delayed given Earth is a water planet and the planet's oceans, in particular, have provided a buffering effect as they absorb much of the impact by slowly warming.

³ Noted by Toone in his presentation, 80 percent of people reside outside the Organisation for Economic Cooperation and Development (OECD) countries currently, but will demand similar levels of prosperity, leading to energy demand doubling by the end of the 21st century.

- “How a Colorado partnership powered a clean energy transformation”
- “Boulder reaches 100 percent clean energy goals early, credits innovative partnerships with creating new green jobs and record economic growth”
- “Boulder turns on as city produces more energy than it consumes”
- “Boulder burst its bubble and created a climate of collaboration to save the world”

These headlines revealed our collective commitment to taking action and our desire to accelerate the means for achieving climate solutions, including:

- New partnerships are required to grow the economy in a socially responsible manner.
- Boulder and other communities should strive to meet their energy demands while reducing direct greenhouse gas (GHG) emissions.
- There is tremendous opportunity through technology, policy and cultural innovation in climate action that leave us better off both environmentally and economically.
- We must be optimistic, while recognizing clear challenges and constraints.
- Climate solutions should be pursued by industry, academia, government and the non-profit sectors in a collaborative manner, in spite of active disagreements between stakeholders on any specific issue.
- We need to be mindful of our community’s needs and of our neighbor’s needs as we work together to develop climate solutions.

Moving to action

Participants re-convened to identify specific opportunities and projects that could be pursued locally. The results can be classified into the categories of clean technologies proliferation, research, policy and new ventures.

Clean technologies proliferation:

- Low-income community solar
- Rooftop solar and wind
- Solar car ports
- Multi-modal transit solutions
- Land-based climate solutions and explorations, including carbon sequestration
- Internships to advance projects and build workforce expertise
- Electric-vehicle projects and investments, particularly along major traffic corridors
- Direct-current micro grid systems

Research:

CU Boulder, the City of Boulder and private industry can collaborate to research, demonstrate, collect data and prove solutions’ efficacy and scalability in the following areas:

- Vehicle electrification
- Transit pass system
- Autonomous vehicle transport
- Vehicle-to-grid capabilities
- Machine learning and artificial intelligence

Policy

- Removing barriers to sustainable implementation of low-carbon strategies, whether in the power sector, the built environment, food production, etc.
- Support for placing a price on carbon, whether through a carbon fee or tax, or a carbon tax and dividend architecture.

New Ventures:

- **Create an Innovation Zone in Boulder:** Experiment with land use and zoning capabilities that spans both city and university land. This would be a living laboratory in which we can start to understand how people interact with particular climate solutions and how we might shape policy accordingly. We can also observe how changes affect adjacent zones and Boulder at large, to understand how these solutions are best implemented with existing norms. Improving transportation corridor safety in order to encourage sustainable transport would be a high priority.
- **Establish a Research and Innovation Center on climate solutions:** This innovation center/incubator/think tank will bring together key stakeholders from the community who can work together to identify problems, develop solutions and business strategies, provide a platform for demonstration, and create spin-offs and start-ups focused on efficiency, resiliency, and climate solutions. The group would tackle problems around technology, financing, workforce development, policy and implementation at scale. Boulder will become the “Silicon Valley of Climate Solutions.”
- **Regional Transportation Solutions:** Develop a sustainable transportation solution that improves quality of service, mobility energy productivity, improved safety and emissions reductions. Bring together academia, operations, industry, finance, and government to work toward a shared vision for sustainable multi-modal transportation options that increase benefit for the region, city of Boulder, and CU Boulder. This effort will include research, data collection and analytics, industry and business collaboration, demonstration, implementation, and export of viable solutions to other communities.

Next steps and conclusion

The leadership forum successfully identified specific areas for further action and the establishment of three new ventures/task forces, described above.

The participants in the leadership forum were cautiously optimistic that this conversation will lead to actions that will meaningfully impact climate action in Boulder and the surrounding communities. The convening of a wide breadth of expertise and leadership on this topic created an opportunity to learn from each other and have a conversation from a diverse set of perspectives including academia, energy providers, finance, venture capital, local and state governments, policy and regulatory experts, industry, and the not-for-profit and business communities. Progress will be assessed through regular meetings of the new ventures/task forces and through periodic updates to a broader constituency that builds through collaborative action.

APPENDIX A

Participants: Leadership Forum on Climate Solutions

July 26, 2018

Academia (CU Boulder)

Terri Fiez, Vice Chancellor for Research and Innovation
Dave Kang, Vice Chancellor for Infrastructure and Sustainability
Jim White, Dean, College of Arts and Sciences
Max Boykoff, Director, Center for Science and Technology Policy Research
Alice Madden, Executive Director, Getches-Wilkinson Center
Emily Anne CoBabe-Ammann, Director, Strategic Projects, Research and Innovation Office
Shelly Sommer, Information and Outreach Director, INSTAAR
Jenny Briggs, Community Outreach Program Manager, Office for Outreach and Engagement
Jodi Hubble, Senior Director of Corporate and Foundation Relations, Office of Advancement
Dave Newport, Director, Environmental Center
Kim Calomino, Director of Local Government and Community Relations
Heidi VanGenderen, Chief Sustainability Officer
Alana Wilson, Post-doctoral Scholar, Transportation; Instructor, Environmental Design

Non-profit sector

Heidi Sherk, Director of External Affairs, The Nature Conservancy
Erin Overturf, Assistant Director, Clean Energy Program, Western Resource Advocates
Koben Calhoun, Manager, Global Climate Finance Program, Rocky Mountain Institute
Bill Patterson, CFO, Via Mobility Services

Business and industry

Joel Moxley, Investment Team, Breakthrough Energy Ventures
Dan Gregory, Chairman and CEO, Pos-En Energy
Nadia El Mallakh, Lead, "Energy Future Collaborations" & Assistant General Counsel, Xcel Energy
Mary Wenzel, Senior Vice President and Head of Environmental Affairs, Wells Fargo
Ryan Martens, Impact Investor, C4C
Jay Dietrich, Distinguished Engineer, Climate Stewardship and Energy, IBM
Eric Toone, Executive Managing Director and Technology Lead, Breakthrough Energy Ventures
John Tayer, President and CEO, Boulder Chamber of Commerce
Glen Davis, Vision Ridge Partners, Managing Member, GD17, LLC
Steve Schueth, Financial Services Advisor, Sustainable, Responsible Impact Investment
Peter Vitale, Business Developer, Stantec
Zach Friedman, Vice President of Renewable Transactions and Regulation, Black Bear Energy
Brody Wilson, Manager, Global Energy and Environment, IBM
Ben Gregory, Director of Business Development, Pos-En Energy

Public sector

Suzanne Jones, Mayor, City of Boulder
Brett KenCairn, Senior Climate and Sustainability Coordinator, City of Boulder
Taryn Finnessey, Senior Climate Change Specialist, Colorado Department of Natural Resources
Martha Rudolph, Director of Environmental Programs, CO Dept. of Public Health and Env. (CDPHE)
Zachary Owens, Program Manager, Transportation Fuels and Technology, Colorado Energy Office

Facilitator:

Howard Teibel, President, Teibel Education Consulting

Report author:

Kyle Unruh, MBA candidate, CU Boulder

APPENDIX B

A Leadership Forum on Climate Solutions
Sustainability, Energy and Environment Community (SEEC)
4001 Discovery Drive
July 26, 2018

AGENDA

- 8 a.m. Coffee and Registration
- 8:30 a.m. **Welcome**

David Kang, Vice Chancellor for Infrastructure and Sustainability
Chancellor Phil DiStefano, University of Colorado Boulder
Hon. Suzanne Jones, Mayor of Boulder
- 8:45 a.m. **Round the Room Introductions**
- 9:45 a.m. **Framing the Day**
Terri Fiez Vice Chancellor for Research and Innovation
Jim White, Dean, College of Arts and Sciences
- 10:15 a.m. Break
- 10:30 a.m. **Keynote:** Dr. Eric Toone, Breakthrough Energy Ventures
What is the Challenge? What is the Opportunity?
Q&A, Discussion
- 11:25 a.m. **International Best Practices**
Dan Gregory, CEO & Chairman, Pos-En Energy
What's working well in cities around the world and what could be applied in our region?
Q&A, Discussion
- 12:00 p.m. **Networking Lunch**
- 1:00 p.m. **Visioning: It's 2025...**
- 2:15 p.m. Break
- 2:30 p.m. **Actions to Move Forward**
- 3:15 p.m. **Summary, Wrap-Up, Next Steps and Final Thoughts**
Terri Fiez, Dave Kang, and Participants
- 4 pm-5 p.m. Reception

APPENDIX C

Broadly speaking, existing efforts expressed by those in attendance include:

- Innovative and targeted methods in venture capital.
- Proliferation of renewable generation and storage through business solutions.
- Improving buildings' energy efficiency.
- Facilitating adoption through regulation.
- Communicating opportunities and value in climate solutions.
- Employing clean energy solutions across commercial building portfolios.
- Creating a zone for innovative climate solutions near CU Boulder and within the City of Boulder.
- Electrifying thoroughfares and improving transportation fuels and technologies.
- Developing and promoting SRI investments.
- Scaling clean energy solutions in the market.
- Reconciling identities of those working both in research and implementation of climate solutions.
- Implementing DC micro grids for reduced operating expense, improved resiliency and reduced grid impact.
- Maximizing private contributions for impactful climate work.
- Innovative transportation solutions which flatten distance and decarbonize transport.
- Identifying next-generation research themes.
- Using data, artificial intelligence and automation to optimize systems and reduce energy use.
- Engaging NREL to incubate solutions and move them from development to commercialization.
- Changing utility regulation and incentives for a clean energy future, driving clean energy proliferation.
- Optimizing how we dispose of or use waste.