

Commission on Climate Change & Energy

Final Report

Recommendations to address fundamental risks to our environment

INTRODUCTION

There is no more sobering fact than that, to date, we live on the only planet in the cosmos that sustains life. And no more worrisome fact than that, to our best estimates, our actions have severely risked our future sustainability on this planet. Today we live in a geologic era dominated by human actions; scientists refer to this age as the Anthropocene epoch because the single greatest environmental force is the collective choices of humanity.

Our actions over the past centuries have caused an ever-increasing warming of this fragile planet. Today we stand at the precipice of inexorability. If we do not address these fundamental questions and risks to our environment, the damage to the planet will be irreversible and the survivability of humanity in question.

The Millennial Policy Initiative Commission on Climate Change and Energy (Commission) have spent the past several months investigating these issues and have settled on these four key policy solutions as critical steps to protect our environmental system. Based on months of study by the members of this commission, we make the following recommendations for short- and long-term policy choices.

- 1. Governments should do all they can to ensure current clean energy resources and investments are expanded, particularly to low-income communities and communities of color.**
- 2. Workforce development programs should be updated to meet the challenge posed by the green energy transition.**
- 3. All states should be encouraged to commit to the Paris Climate Agreement, and the Federal government should rescind its withdrawal immediately.**
- 4. To ensure that we can achieve a 100% renewable future, states should commit to a timeline through legislation, fund research into energy storage, and commit to remove outmoded regulatory models that bar new, green energy market entrants.**

INCREASING ACCESS TO CLEAN ENERGY

If we are to properly address the challenge of climate change, we must also ensure that all citizens have access to available clean energy sources. Without cost-effective access to these clean energy sources, even the most aggressive climate change policies will likely fail to stop the breakaway effects of rising average global temperatures.

This question of access raises several interlocking concerns.¹ First, as with any question of resource distribution, there is an economic problem of ensuring cost-effective access. Related to this question, there is an equity-based question of how these resources should be owned such that they do not exacerbate resource and wealth concentration nor racial disparities.² And finally, there are political questions related to how best to encourage such access.

Before we can address those questions, though, this Commission must address what, precisely, it means by the phrase clean energy. When this report uses the phrase “clean energy” or “renewable energy” it uses that term

broadly to cover those energy systems that are not based on extractive resources such as fossil fuels. Fundamentally, if the source of the energy created is not-depleted by the act of generation it is considered a clean, renewable energy source.

With this definition in mind, the Commission notes that the most important immediate step that can be taken to increase access to clean energy is to reduce the cost of the resource. Simultaneously, though, we must broaden the distribution network to include communities (particularly communities of color) that may have been excluded under older models.

To achieve this, emphasis must be placed on outreach to lower income communities in the development of the renewable energy grid. This could begin through outreach to housing authorities, which provide access to these communities in large numbers with relatively limited investment. From there, outreach to communities living in single and multifamily homes can be made.

Additionally, this outreach should be paired with an equitable model of ownership over the clean energy units. Through modern experience with solar panels, the Commission notes the value of community-solar models of ownership. This model of ownership where members of a community all hold solar generation panels, pool the energy created by those panels, and each member receives energy based on that pool.³ These models can be based on resident-participant ownership of individual panels, or on resident-participant rental of the panels from a third-party investor. Under either model, the members of the community are provided significant discounts on the cost of power generation compared to legacy, fossil fuel generation. Moreover, the community organizing and action inherent in the model has ripple effects in the community that can increase overall welfare.⁴

This outreach to communities of color and lower socio-economic strata must also extend beyond as end-consumers of energy. It must also extend to the jobs and investments that will be required to make the extension to these communities. Trillions of dollars of global investment will likely be made between now and 2040 to ensure a transition to a green energy economy.⁵ Federal, state, and local governments should ensure that in government contracts related to these investment that minority-owned businesses contracts are emphasized. Moreover, as more fully developed later in this report, governments should ensure that opaque, outdated, or legacy industry protective regulatory structures are clarified to ensure a clean entry potential for new start up and market entrants.

The transition of the American economy to a green energy paradigm is a unique opportunity to ensure that principles of equity and economic security can be expanded to communities historically denied them. Millennial leaders should require that the policy choices ensure that green energy is cost-effective, that investments in the development of a new, distributed grid are made in an equitable manner, and that the ownership models of the resulting infrastructure empower the communities they serve.

ENSURING A JUST TRANSITION AND NEW WORKFORCE DEVELOPMENT

The Commission recognizes that increasing access to clean energy and moving toward a truly renewable future will result in major sectoral shifts in the economy. These shifts will be both industry-wide as industries based on non-renewable, extractive energy sources shutter, and cross-geographic as areas formerly supported by those enterprises lose major employers. Concomitantly, new industries will rise in areas not formerly associated with an energy economy.

These shifts are for the long-term benefit of the United States and the global community. But they will result in short-term dislocation for many American workers.⁶ The Commission therefore notes that a robust clean energy strategy must also include a holistic approach to workforce development. This approach must take into account the legacy programs available for workforce development, any shortcomings those programs have that may need reform in light of the shifts created by a clean energy strategy and must be premised on principles of equity and economic security for all American workers.

It is not clear how many jobs will be displaced by a full green energy transition.⁷ And it is possible that on net the decrease in jobs in some sectors will be offset by new jobs in green sectors. However, this net equalization hides the significant number of transitioning workers who will require deep and lasting training.⁸

The current model of workforce development in the United States is unlikely to be capable of handling the massive shifts caused by a clean energy transition. Legacy programs were designed to address an older economy and were premised on outdated assumptions about what the causes, needs, and outcomes of workforce development programs.⁹ Specifically, they were designed to handle intra-industry transitions (where one worker moved to a new firm in generally the same industry) and within the same general geographic area.¹⁰ Given the cross-sectoral and cross-geographic transition that will result from a clean energy transition, these programs will need fundamental retooling.

Moreover, both future workforce development programs as well as the employment practices of new energy producers must reflect a commitment to equity and economic security for all workers.

Regarding workforce development programs, the Commission therefore notes that worker representatives should enjoy representation in workforce development programs at parity with business representatives.¹¹ Additionally, these programs need to be financed far beyond the current levels. The federal government will invest a mere 0.07 percent of its total expenditures in its primary workforce development program in 2018.¹² This is not sufficient to handle the needs a green energy transition would precipitate. A key reason for this underfunding is that there is no dedicated funding mechanism for workforce development programs. To ensure such funding, the Commission recommends that Congress – and states – adopt a tax system for fossil fuels and that the revenues generated be dedicated to targeted workforce development programming.¹³

Finally, regarding employment practices at new energy producers, the Commission notes that access to unions is paramount. These positions will require technical skill and are therefore high employee turnover will result in significant losses for employers. Robust data establishes that firm in such industries with high-levels of unionization and close collaboration between management and labor perform better than non-unionized firms in the same industries.¹⁴ Additionally, these factors respect the fundamental dignity and equity of workers in the United States.

The transition to a green-fueled economy is a sea change in the American experience. It is critical that the transition be handled with dignity for all, and that the future it portends be grounded in equity and economic security for all.

ENSURING STATES COMMIT TO MEETING THE PARIS CLIMATE ACCORDS

The Paris Climate Agreement generally requires signatory countries to take actions to ensure that global average temperature rise in the coming century is less than 2 degrees Celsius from pre-industrial levels.¹⁵ It also requires members to take all efforts to ensure their nations are prepared for the impacts of climate change and to commit to transparency and reporting of these efforts.¹⁶

The Paris Climate Agreement represents a towering success of international cooperation and diplomacy. It is one of the few international agreements to achieve global consensus,¹⁷ and is the critical framework by which humanity – writ globally – will reconcile itself to the impact of Anthropocene global warming.

On June 1, 2017,¹⁸ President Trump's administration announced that it will withdraw the United States from this critical global consensus, effective November 4, 2020.¹⁹ This withdrawal represents a major blow to global efforts to combat human-generated climate change. As one of the highest greenhouse-gas producing nations, the United States' eventual withdrawal will have an outsized impact on global climate efforts.

Moreover, the withdrawal represents a failure of international leadership. The United States will have ceded its role and credibility if the withdrawal is affected. This will undermine the impact of the agreement and strengthen the geopolitical position of the United States' geopolitical rivals who may not be as deeply committed to the cause of mitigating the effects of global climate change.

In spite of this, though, the Commission believes that there is hope and a path forward for those American leaders committed to ensuring the success of the Paris Climate Agreement. In the wake of the announcement of withdrawal, American cities, states, and tribal governments, as well as large commercial entities have announced that they will individually commit to honoring the goals, and taking the actions necessary to meet those goals, of the Paris Climate Agreement.²⁰

The Commission commends efforts by states, cities, tribal governments, and private entities to meet the substantive obligations of the Paris Climate Agreement. It further notes that state level action is of particularly high impact, but that the majority of U.S. states have not made this critical commitment. The Commission therefore recommends to Millennial leaders to act to ensure that those states which have not made a commitment to do so. Based on the Commission’s review, advocacy is needed in the following states:²¹

Alabama	Alaska	Arizona	Arkansas
Florida	Georgia	Idaho	Illinois
Indiana	Iowa	Kansas	Kentucky
Louisiana	Maine	Michigan	Mississippi
Missouri	Missouri	Montana	Nebraska
Nevada	New Hampshire	New Mexico	North Dakota
Ohio	Oklahoma	Pennsylvania	South Carolina
South Dakota	Tennessee	Texas	Utah
West Virginia	Wisconsin	Wyoming	

Adding additional commitments from the states that have not yet affirmed a commitment to meeting the Paris Agreement’s short- and long-term goals will ensure that the United States, united as states, can meet the obligations it has made to the international community and to posterity.

As with the Paris Agreement itself, the Commission believes that specific actions to take may be determined by individual states, cities, tribal governments, and private entities.²² The type of actions that may be most effective in Montana may not be the most effective in Alaska. But it is imperative that each state commit to the goals and take immediate steps that are most effective based on its circumstances to meet the Paris Climate Agreement’s goals. The global climate, the United States’ international standing, and our posterity require nothing less.

TAKING STEPS TO ENSURE A RENEWABLE FUTURE

Meeting the goals of the Paris Climate Agreement is a necessary condition for combatting human-generated climate change, but it is not sufficient. If humanity is to sustain itself into the centuries, it must completely extricate itself from dependence on extractive, nonrenewable fuels. In time, as renewable sources of energy become ever-more economically viable this transition may develop as a natural consequence of market forces. But this timeline is uncertain, and we cannot afford such ambiguity. Additionally, without a firm target date current utility and energy companies will not be able to adequately plan and structure their efforts to meet the timeline. Therefore, the Commission believes that political and policy commitments must be made to ensure a speedy and comprehensive transition to 100 percent renewable energy sources is assured on a timely basis.

To date, there have been efforts in states across the United States to make these commitments. In New York, the state senate is considering a pending bill that would require that the state establish a 100 percent clean energy system by 2030.²³ Similar bills are currently pending in California,²⁴ Massachusetts,²⁵ Pennsylvania,²⁶ and Washington.²⁷ And Hawaii has passed a commitment to 100 percent renewable energy into law.²⁸ While there have been proposals at the federal level to make a national commitment, it is unlikely that these will pass given the current makeup of the Federal legislature. Therefore, the Commission commends these state level efforts and recommends each of these bills as a model for other states to utilize. Moreover, the Commission notes that these bills have attracted bipartisan support and

encourages such bipartisan efforts to ensure a robust transition to 100 percent renewable energy.

The Commission notes, however, that while policy choices are important as goal setting markers, there exist technical and regulatory challenges to ensuring a 100 percent clean energy future. Two challenges are worth specific consideration.

First, any plan to reach a 100 percent green energy system will require substantial improvements to current energy storage technology. Indeed, based on the experiences of Commission members, it is fair to say that current legislative efforts to set these targets are often stymied by protests that storage technology cannot properly store the required amount of clean energy. Based on the most recently available and robust research, these objections are overblown.²⁹ But there is an underlying truth that the energy grid will need to evolve to incorporate energy storage technology and that technology will need to be sufficient to store the energy society demands.³⁰ To meet this challenge, the Commission calls for Congress and the states to make significant investments in the basic and directed research necessary to increase the capacity of energy storage devices, in all forms.³¹

Second, regulatory barriers should be cleared to allow renewable energy companies to enter the energy market. In nearly every state, current regulatory structures were designed to regulate large utilities and fossil fuel energy companies.³² These regulations have resulted in large barriers of entry into such markets by renewable energy companies, and act to insulate legacy, fossil fuel energy companies from effective market competition.³³ States should undertake comprehensive reviews of their energy market regulatory structures. This review should be centered on identifying those regulatory strictures that may be outmoded in the context of green energy, or which function as legacy industry protection mechanisms. It should be understood, however, that those regulatory items that preserve the environment and protect the health and welfare of citizens should be maintained. Moreover, while that review takes place, states should seek to actively provide guidance and support to new start up or green energy companies as they navigate the current regulatory structure.

Taken together, these efforts to increase storage capacity and simultaneously clear away undue regulatory burdens will allow states to actually reach their goals for 100 percent renewable futures.³⁴

CONCLUSION

The challenge of climate change is the defining challenge of our time. While we face policy crisis on many fronts, none presents the truly existential threat that climate change poses. We face now the real possibility of massive disaster, including extinction, if we fail to contain the consequences of our human avarice.

The recommendations contained in this report are aimed at a new generation of leaders. These leaders did not ask for this responsibility, nor did their choices create this crisis. But, their actions will determine our success and our posterity. If we can provide access to green energy to all people, ensure those displaced in the short term are treated fairly and provided support, commit to meeting the essential goals of the Paris Climate Agreement, and ensure that we convert our total economy to green energy sources as soon as possible, we may be able to avert this crisis.

To those Millennial and future leaders who must deal with these issues, this Commission submits its guidance.

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CITATIONS

- 1 See World Bank, “An Analytical Framework for Inclusive Green Growth,” in *Inclusive Green Growth: The Pathway to Sustainable Development*, (2012), available at http://siteresources.worldbank.org/EXTSDNET/Resources/Inclusive_Green_Growth_May_2012.pdf.
- 2 See Ferris, Deoehn, “Racial Equity and Sustainability in the Green Economy,” *Sojourners*, September 26, 2016 (“One critical lesson from the environmental justice movement is this: Racial inequity and economic disparities are intertwined fault lines running in different directions, crisscrossing the everyday lives of people of color.”), available at <https://sojo.net/articles/faith-action/racial-equity-and-sustainability-green-economy>.
- 3 See Department of Energy, Solar Energy Technologies Office, “Community and Shared Solar,” July 25, 2018, available at <https://www.energy.gov/eere/solar/community-and-shared-solar>.
- 4 Other models of ownership exist. These include individual purchase, offsite shared solar, onsite multiunit shared solar, and various other third-party financed options. Each of these has benefits within its niche.
- 5 See Carbon Tracker Initiative, “Business and Investors Pioneering the Green Economy Highlight Multi-Trillion Dollar Opportunity in Tackling Climate Change,” December 7, 2015, (“Around US\$90 trillion will need to be invested globally in cities, land use and energy infrastructure between now and 2030 to meet global growth and development objectives.”), available at <https://www.carbontracker.org/businesses-and-investors-pioneering-the-green-economy-highlight-multi-trillion-dollar-opportunity-in-tackling-climate-change/>.
- 6 See Organization for Economic Co-Operation and Development (OECD 2017). *Employment Implications of Green Growth: Linking Jobs, Growth, and Green Policies*. 2017. P. 3-5. (“Aggregate effects may therefore mask regional and other dislocations, particularly during the transition period... In general, the following mechanisms drive the change in employment from green policies: (i) job creation in ‘green’ sectors that produce goods and services that reduce environmental pressure; (ii) job destruction in the sectors with large environmental footprints, i.e. ‘brown’ sectors that get replaced by the green activities; (iii) changes in employment – likely a net job gain – that are induced by changes in relative prices causing a shift in the structure of the economy towards cleaner production sectors, mostly the relatively labour-intensive services sectors; and (iv) changes in employment from a change in the size of the economy – potentially a net job loss when ambitious policies slow down economic growth.”), available at <https://www.oecd.org/environment/Employment-Implications-of-Green-Growth-OECD-Report-G7-Environment-Ministers.pdf>.
- 7 OECD 2017. P. 11. (“Robust empirical evidence of the overall employment effects of ambitious green policies is still lacking.”).
- 8 *Id.* at 15 (“These programs will be particularly important to facilitate the transition of low-skilled workers from jobs in the declining sectors to jobs with not-to-dissimilar skills in emerging sectors.”).
- 9 These problems are discussed in more detail in our sister report prepared by the Millennial Policy Initiative Commission on the Future of Work. We commend the analysis there and direct interested readers to its discussion for more detail about the structural, teleological, and financial challenges facing current government workforce development programs.
- 10 *Id.*
- 11 See Hanks, Angela & David Madland, *Better Training and Better Jobs: A New Partnership for Sectoral Training*, CENTER FOR AMERICAN PROGRESS, February 2018, at 5-10, (“Workers are increasingly on their own and in need of help. In this environment, it makes sense to create a way for workers to have a stronger voice in the design and implementation of training—via unions or other worker organizations. Doing so would help workers to get more training and ensure that the training they receive meets their needs... The problem is that the collaborations within state and local boards and within the organizations they fund are not always true partnerships because workers have far less voice in the system than do businesses or other organizations”), <https://cdn.americanprogress.org/content/uploads/2018/02/21132110/SectoralTraining-report-1.pdf>.
- 12 U.S. Department of Labor, FY 2018 Department of Labor Budget Summary Tables (2018), available at <https://www.dol.gov/sites/default/files/CBJ-2018-V1-02.pdf>.
- 13 OECD 2017. P. 6. (“The revenue raised through an environmental tax reform ... allows governments to either reduce harmful taxation in the labour market, to redistribute the revenue to mitigate negative distributional impacts, or to fund specific education and training programs.”).
- 14 See, e.g., Peter Auer, “In Search of the Optimal Labour Market Policies,” International Labour Organization, 2006.
- 15 See PARIS AGREEMENT ON CLIMATE CHANGE, Art. II, Sec. 1(a), adopted November 4, 2016, available at https://unfccc.int/sites/default/files/english_paris_agreement.pdf.
- 16 The Agreement called for numerous other efforts as well. The major goal of the Agreement, though, was the 2 degrees increase limitation and the main mechanism for enforcement was through the transparency regime for reporting Nationally Determined Contributions to that effort. The United Nations Framework Convention on Climate Change has summarized the other goals here: <https://bigpicture.unfccc.int/#content-the-paris-agreement>. The Commission recommends that all readers understand the full content of the Agreement and ensure their state and local governments publicly commit to collective success in meeting these goals.
- 17 The only other agreements with such wide-spread global consensus are the major Geneva Conventions, and the U.N. Convention on the Rights of the Child lacks only the signature of the United States to also reach global consensus.
- 18 Halper, Evan. 2018. “Trump Quits the Paris Climate Accord, Calling it a ‘Bad Deal’ for the U.S.” *Los Angeles Times*, June 1, 2017.
- 19 See Depositary Letter from Amb. Nikki Haley to Secretary-General Antonio Guterres, August 4, 2017, (“the United States intends to exercise its right to withdraw from the Agreement. Unless the United States identifies suitable terms for reengagement, the United States will submit to the Secretary-General, in accordance with Article 28, paragraph 1 of the Agreement, formal written notification of its withdrawal as soon as it is eligible to do so.”), available at <https://treaties.un.org/doc/Publication/CN/2017/CN.464.2017-Eng.pdf>; see also State Department Legal Memo Regarding Paris Agreement Withdrawal, 2017, p. 3, (“The United States could therefore withdraw as of November 4th, 2019, and such withdrawal would take effect a year later.”), available at <https://www.scribd.com/document/347089780/State-Dept-Memo-Outlining-Paris-Agreement-Withdrawal>.
- 20 See List of Signatories, WE ARE STILL IN, July 25, 2018, <https://www.wearestillin.com/signatories>.
- 21 *Id.*; see also Membership List, UNITED STATES CLIMATE ALLIANCE
- 22 See PARIS AGREEMENT ON CLIMATE CHANGE, Art. IV, Sec. 2 (requiring each member-state to establish its own method of meeting the goals through “nationally determined contributions.”).
- 23 S5908. N.Y. State Senate. Sess. 2017-18. Available at <https://www.nysenate.gov/legislation/bills/2017/s5908/amendment/original>.
- 24 S100. C.A. State Senate. Sess. 2017-18. Available at https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100.
- 25 S1849. M.A. State Senate. Sess. 2017-18. Available at <https://malegislature.gov/Bills/190/S1849>.

- 26 S1140. P.A. State Senate. Sess. 2017-18. Available at <http://www.legis.state.pa.us/cfdocs/billinfo/BillInfo.cfm?year=2017&sind=0&body=S&type=B&bn=1140>.
- 27 SB6253. W.A. State Senate. Sess. 2017-18. Available at <http://apps2.leg.wa.gov/bills/bills/BillNumber=6253&Year=2017&BillNumber=6253&Year=2017>.
- 28 HB623. H.I. State House. Sess. 2015. Passed into law 2015. Available at http://www.capitol.hawaii.gov/session2015/bills/HB623_CD1_.pdf.
- 29 See Brown, T.W., et. al., “Response to ‘Burden of Proof: A Comprehensive Review of the Feasibility of 100% Renewable-Electricity Systems,’” *Renewable and Sustainable Energy Reviews*, 92 (2018) 834-847, 842 (“the 100% renewable energy scenarios proposed in the literature are not just feasible, but also viable.”), available at <https://reader.elsevier.com/reader/sd/CE9EDAED67FC835B08DEC6D2B99FC41526F15DF13F3598FB5298258CA3A1C827B4115B9DD5EDCF9D8BF9BC4D381CDB13>.
- 30 Id. (“only a directed evolution of the current system is required to guarantee affordability, reliability and sustainability.”).
- 31 See Jacobson, Mark Z., et. al., “100% Clean and Renewable Wind, Water, and Sunlight All-Sector Energy Roadmaps for 139 Countries of the World,” *Joule*, 1 (2017) 108-121; see also Berg, Elizabeth, Abi Bradford, and Rob Sargent, “Marking Sense of Energy Storage: How Storage Technologies Can Support a Renewable Future,” *ENVIRONMENT AMERICA & FRONTIER GROUP*, December 2017, available at <https://environmentamerica.org/sites/environment/files/reports/Making%20Sense%20of%20Energy%20Storage%20vAME.pdf>.
- 32 See Union of Concerned Scientists, “Barriers to Renewable Energy Technologies,” July 25, 2018, (“renewable resources need to compete with wealthier industries that benefit from existing infrastructure, expertise, and policy. It’s a difficult market to enter.”), available at <https://www.ucsusa.org/clean-energy/renewable-energy/barriers-to-renewable-energy#.W1i5qtIzqUk>.
- 33 See Environmental Protection Agency (EPA), “Energy Resources for State and Local Governments: Barriers to Renewable Energy,” July 25, 2018, (“ In many cases, barriers to expanding renewable energy are regulatory and therefore within state control.”), available at <https://www.epa.gov/statelocalenergy/state-renewable-energy-resources#Barriers%20to%20Renewable%20Energy>.
- 34 There are many other types of policy tweaks and incentives that states could undertake to encourage renewable futures—things like assisting with gaps in energy transfer and regional transmission organizations, or ensuring a robust market for between utilities. But the two items noted above are the essential first steps.