

# AMERICA'S PLEDGE

## Review of Estimates for GHG Emissions Mitigation Opportunities in the United States

Nonfederal leaders across the United States are stepping up to address climate change while promoting economic growth, creating jobs, and improving public health. Already, over 2,700 states, cities, and businesses, representing 159 million Americans, have committed to cutting greenhouse gas (GHG) emissions consistent with the goals of the Paris Agreement. These nonfederal actors have enacted a wide diversity of measures to achieve real reductions in emissions while driving economic growth, including cap-and-trade policies, renewable portfolio standards, low-emission vehicle targets, and standards for oil and gas methane that are delivering results.

But these opportunities are nowhere near exhausted. Given the rapid pace of innovation and technological change, there are significant opportunities to accelerate these trends in coming years.

Long-term low-GHG pathways are not only technologically feasible but are pro-growth compared to no-action alternatives.<sup>1</sup> A 2014 report by the White House Council of Economic Advisors found that failure to act on climate could result in annual global damages equivalent to 2% of global output by the end of the century.<sup>2</sup> And the costs are likely to be negligible compared to the benefits of investing in the new economy, improving health through cleaner air, and avoiding climate damages.<sup>3</sup> An additional study found that the United States could achieve reductions in the range of its 2025 target with near-negligible impacts on GDP growth (less than 0.05%).

This note summarizes recent research from diverse organizations that, taken together, paints a broad and consistent picture of major, near-term opportunities for significant new climate action in the United States. These estimates indicate that more can be done, increasing optimism for a cleaner future.

In September 2018, building on these important insights, America's Pledge co-chairs UN Special Envoy for Climate Action Michael Bloomberg and California Governor Edmund G. Brown, Jr. will release a first-of-its-kind, bottom-up, economy-wide analysis detailing the significant impact these actors are already having on the US emissions trajectory, and detailing new opportunities for states, cities, and businesses to reduce emissions in the near term while laying the foundation to achieve long-term climate goals.

### Power Sector

- Driven by technological innovation, market demand, and policies, a rapid transition in the US electric sector is underway.
- In many regions of the United States, it is now cheaper to build new wind and solar than new fossil generation.<sup>4</sup> The United States is projected to install 60 gigawatts (GW) of solar capacity through 2022,<sup>5</sup> and 60 GW of wind through 2026.<sup>6</sup> Given favorable market conditions and strong support for policies such as renewable portfolio standards,<sup>7</sup> states, cities, and businesses have driven significant growth in this area and have the opportunity to set more ambitious renewable energy targets.

- A Bloomberg New Energy Finance study found that half of all coal-fired power plants (roughly 150 GW) have run at a net loss over the last six years.<sup>8</sup> Coordinated support for phasing out these plants could yield substantial benefits well before 2030.

## Transportation

- There is significant untapped potential in cleaner transportation, which is now the biggest source of GHG emissions in the United States. While the Trump Administration is moving to dismantle fuel-economy and GHG standards for cars and trucks, the EPA estimated in 2016 that existing cost-effective technologies could cut emissions from vehicles sold between 2022 and 2025 by a cumulative 540 MMTCO<sub>2</sub>e over the lifetime of those vehicles.<sup>9</sup>
- Since 2016, nearly every forecast for electric vehicle (EV) growth has increased dramatically,<sup>10</sup> as costs have dropped and consumer demand has increased. Bloomberg New Energy Finance projects that 27 million EVs will be on US roads by 2030 and will increase nearly fivefold to reach 119 million by 2040.<sup>11</sup>
- The International Council on Clean Transportation estimates that US automakers could cut carbon emissions from new vehicles in half by 2030 from 2016 levels.<sup>12</sup>
- Nonfederal actors can help boost this potential through vehicle mandates, subsidies, infrastructure, and government procurement policies.

## Building and Industrial Efficiency

- Energy efficiency is consistently reported as the lowest-cost emissions reduction strategy while helping consumers save money on their energy bills.<sup>13</sup>
- An analysis found that new state-level consumer appliance standards could reduce US emissions by 23 MMTCO<sub>2</sub>e annually by 2035.<sup>14</sup> With renewed federal action, this could reach 134 MMTCO<sub>2</sub>e in annual savings by 2035.<sup>15</sup>
- Through policies promoting smart growth, building efficiency, and increased public transportation, US cities could reduce emissions 210–480 MMTCO<sub>2</sub>e annually by 2035.<sup>16</sup>
- The US Department of Energy estimates that existing technology (not including advanced technology, carbon capture and storage, or electrification) could cut energy demand in refining by 13% and in chemical production by 20%.<sup>17</sup>

## Oil and Gas—Methane

- Oil and gas operations are responsible for nearly 300 MMTCO<sub>2</sub>e of emissions annually in the United States but up to 45% of this—equivalent to removing 140 MMTCO<sub>2</sub>e by 2030<sup>18</sup>—could be captured at low or no cost through new policies, such as Colorado's, requiring technology improvements and monitoring for leaks.
- Another analysis estimates that this potential could be as high as 200 MMTCO<sub>2</sub>e by 2030.<sup>19</sup>

## Hydrofluorocarbons

- Hydrofluorocarbons (HFCs) are potent greenhouse gases used in air conditioners, insulation, and flame retardants. Expedited phase-out of these chemicals could result in 250 MMTCO<sub>2</sub>e of emissions reductions by 2030 at zero or low cost.<sup>20</sup>
- States, cities, and businesses can support this phaseout by encouraging HFC recovery and destruction from appliances prior to disposal and engaging with large retailers such as supermarkets on improved refrigeration management.

## Land-Sector Emissions

- Agriculture and land use is a large source of methane, carbon, and nitrous oxide emissions but these emissions can be mitigated with greater adoption of climate-smart agriculture that has substantial cobenefits to farmers and rural communities.
- Adoption of no-till farming and planting cover crops can increase soil carbon sequestration while reducing erosion and water pollution and increasing resilience to drought. One analysis found that agricultural nitrous oxide emissions could be reduced by 24%, assuming reasonable implementation costs.<sup>21</sup>

## Overall US Economy

- Studies assessing the potential impact of new policies on overall US emissions vary significantly and depend on what sectors and gases are covered in the analysis, as well as assumptions about technology costs and policy impacts.
- A recent peer-reviewed study compared 11 different models to understand the potential for reductions in fossil fuel emissions.<sup>22</sup> It reports an average potential reduction estimate of roughly 800–1,400 MMTCO<sub>2</sub>e per year below current levels by 2025, and an upper-end potential estimate of roughly 1,600–2,600 MMTCO<sub>2</sub>e per year below current levels by 2025.
- In September, America's Pledge will release a roadmap and assessment of potential new ambition, including actions that stem from states, cities, and businesses and that can reduce emissions across all major greenhouse gases.

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<sup>1</sup> The White House, "U.S. Midcentury Strategy for Deep Decarbonization," (2016), online at: [https://unfccc.int/files/focus/long-term\\_strategies/application/pdf/us\\_mid\\_century\\_strategy.pdf](https://unfccc.int/files/focus/long-term_strategies/application/pdf/us_mid_century_strategy.pdf).

<sup>2</sup> White House Council of Economic Advisers, "The Cost of Delaying Action to Stem Climate Change," The White House (2014), online at: [https://obamawhitehouse.archives.gov/sites/default/files/docs/the\\_cost\\_of\\_delaying\\_action\\_to\\_stem\\_climate\\_change.pdf](https://obamawhitehouse.archives.gov/sites/default/files/docs/the_cost_of_delaying_action_to_stem_climate_change.pdf).

<sup>3</sup> Barron, Alexander R., Allen A. Fawcett, Marc A.C. Hafstead, James R. McFarland, and Adele C. Morris. "Policy Insights from the EMF 32 Study on U.S. Carbon Tax Scenarios." *Climate Change Economics* 2018 09:01, DOI: <https://doi.org/10.1142/S2010007818400031>

<sup>4</sup> Energy Information Administration, "Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2018," March 2018, online at: [https://www.eia.gov/outlooks/aeo/pdf/electricity\\_generation.pdf](https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf).

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- <sup>5</sup> Green Tech Media Research, "U.S. Solar Market Insight: 2017 Year in Review," (2017), online at: <https://www.greentechmedia.com/research/subscription/u-s-solar-market-insight#gs.ZfxAWzM>.
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- <sup>8</sup> Nelson, William, "Half of U.S. Coal Fleet on Shaky Economic Footing," Bloomberg New Energy Finance, March 26, 2018.
- <sup>9</sup> Environmental Protection Agency, "Final Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards under the Midterm Evaluation," January 17, 2017, online at: <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100QQ91.pdf>.
- <sup>10</sup> Lacey, Stephen, "Everyone is Revising Their Electric Vehicle Forecasts Upward – except automakers," Green Tech Media, June 17, 2017, online at: <https://www.greentechmedia.com/articles/read/everyone-is-revising-electric-vehicle-forecasts-upward#gs.lqyaixU>.
- <sup>11</sup> Shankleman, Jess, "Big Oil just woke up to the threat of rising electric car demand," Bloomberg, July 14, 2017, online at: <https://www.bloomberg.com/news/articles/2017-07-14/big-oil-just-woke-up-to-the-threat-of-rising-electric-car-demand>.
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