

# Note on Carbon Pricing and the Social Cost of Carbon

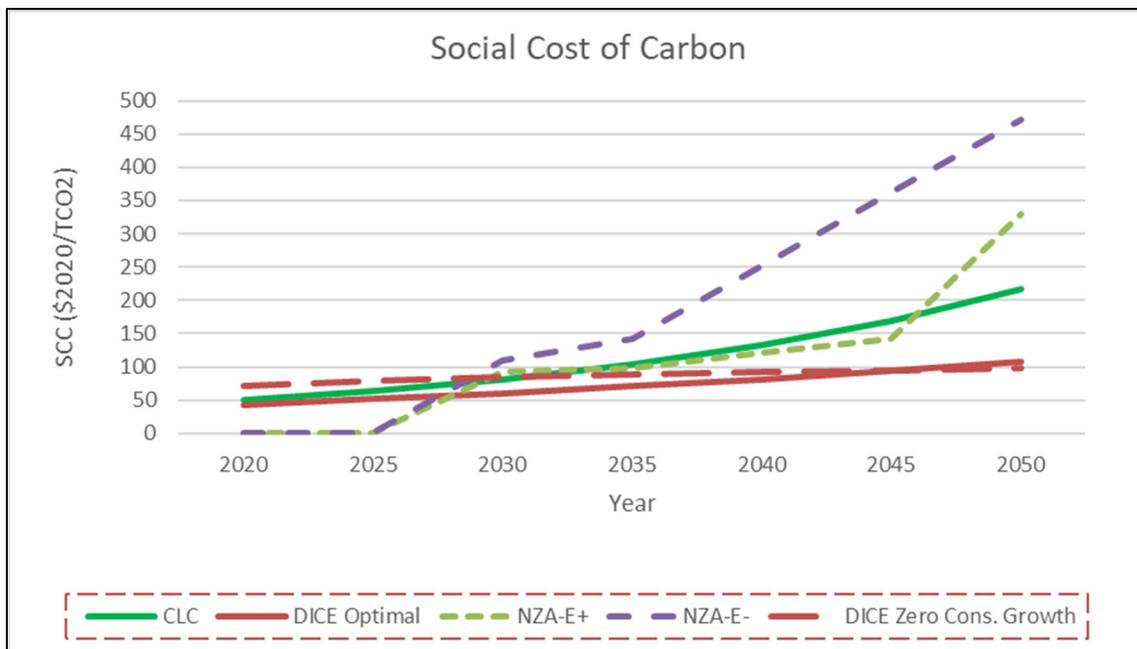
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The two recent meetings of the Harvard Electricity Policy Group covered a variety of issues related to clean energy policy. Closing discussion at the second meeting focused on carbon pricing.

A cost-effectiveness approach starts with an emission target for a certain date and determines a least-cost path to achieve that objective. This produces a marginal cost of emission mitigation, as in (Larson et al., 2020). The cost-benefit approach compares projected climate damages and compares with an estimated mitigation cost to determine a social cost of carbon, as in (Nordhaus, 2017). Either choice for carbon pricing could include periodic adjustments such as an Emissions Assurance Mechanism (EAM), as in (Metcalf, 2019).

A question arose about the implications for the social cost of carbon under an assumption that future generations do not enjoy economic growth. Setting the total factor productivity growth to zero in the DICE model produces essentially constant per capita consumption. This has two offsetting effects: it lowers the discount rate but also lowers the aggregate climate damages. The net effect is to increase the initial social cost of carbon by 66% but lower the price growth rate. The accompanying figure includes this sensitivity case along with the Nordhaus DICE optimal carbon price, the proposal from (Climate Leadership Council, 2021), and the marginal emission mitigation costs of the Net-Zero America range of scenarios to achieve a net-zero target by 2050.



## References

- Climate Leadership Council. (2021). Bipartisan Climate Solution. Retrieved from <https://clcouncil.org/our-plan/>
- Larson, E., Greig, C., Jenkins, J., Mayfield, E., Pascale, A., Zhang, C., ... Swan, A. (2020). Net-Zero America: Potential Pathways, Infrastructure, and Impacts Interim Report. Princeton University. Retrieved from [https://environmenthalfcentury.princeton.edu/sites/g/files/toruqf331/files/2020-12/Princeton\\_NZA\\_Interim\\_Report\\_15\\_Dec\\_2020\\_FINAL.pdf](https://environmenthalfcentury.princeton.edu/sites/g/files/toruqf331/files/2020-12/Princeton_NZA_Interim_Report_15_Dec_2020_FINAL.pdf)
- Metcalf, G. (2019). *Paying for Pollution: Why a Carbon Tax Is Good for America*. Oxford University Press, USA (Vol. 53). Retrieved from <https://www.rff.org/publications/books/paying-pollution-why-carbon-tax-good-america/>
- Nordhaus, W. D. (2017). Revisiting the social cost of carbon. *Proceedings of the National Academy of Sciences*, 114(7), 1518–1523. <https://doi.org/10.1073/pnas.1609244114>