

Supplementary 1 - Data Sources

Through a review of the peer-reviewed and grey literature regarding forests and carbon in New England, the researchers determined that existing analyses of forests and carbon in New England employ different methodologies to different geographies and at different scales, leading to limited evidence of the New England-wide impacts of policies and actions that impact forest carbon. A key aspect of the research process was taking stock of data availability and quality vis-a-vis these metrics for New England and selecting data that provided: (1) historic detail over an extended time period; (2) consistency in measurement methodologies across the New England states; (3) reasonable estimates when cross-checked with other existing data for the region. For this reason, the study relies on established, well-documented international and national-level guidelines and data from the U.S. Forest Service (USFS) to develop consistent estimates on forests and carbon across the New England states. This study has also adopted a consistent methodology across all components of the analysis to enable reasonable comparison between states and the combined opportunity of all or some of the states.

The study relies on USFS Forest Inventory and Analysis (FIA) Forest Monitoring Data to conduct a consistent regional assessment of business-as-usual and alternate future pathways within and across the six New England states. The USFS has been collecting FIA data since 1928, first on timberland only, then on all forestland, and more recently on urban areas as well. The dataset is publicly accessible, validated, well-documented, and consistent across all New England states; data are generated following a consistent methodology and are available for each New England state individually; and the data allow for various analyses given the ability to access inventory data including data on forest area; forest growth, mortality and removals, including for harvest; forest carbon and carbon sequestration; and forest loss and gain to and from other land categories. The USFS FIA Forest Monitoring dataset is generated through a national field-based inventory system in which USFS scientists measure forest characteristics, use, and change on a series of permanent ground plots laid in a hexagonal grid across the continental US. A certain percentage of the total number of plots in each New England state are measured each year over a period of between 5 and 7 years, which is considered the inventory period, at the end of which all plots in the state have been assessed. FIA inventory data are developed to meet a sampling error of 67% following Forest Service Directive FSH 4809.11, which requires that the sampling error for forest area cannot exceed 3% error for every 1 million acres of timberland. Sampling errors for volume, removals and growth are targets. The USFS notes that FIA inventories are reliable for large areas (e.g. state level) but that sampling errors increase as the data are divided into smaller geographies because sample size decreases ([Burrill et al 2018](#)).

Importantly, FIA classifies forest and other land types according to forest use, which suits the purposes of this study as it allows for assessment of forestland that is both mature and protected and that is actively managed through harvest, which results in acres with varying tree canopy cover over time. Seen through the lens of harvest, a forest use definition of forestland differs significantly from a forest cover definition. Forest cover, for example, represents forest cover in a moment in time and may not pick up on recently harvested acres. On the other hand, harvested land will be kept in the forestland category under the FIA's forest use-based definition. In a report exploring different definitions of forest, the IPCC has discussed differences in administrative, use, and cover definitions ([IPCC 2000](#)). A more detailed treatment of these differences specifically across FIA (forest use) and the National Land Cover Database (forest cover) data is available from [Coulston et al 2014](#), where a distinction is drawn between forest use as "...a function of

the social and economic purposes for which land is managed” and forest cover as “...a human definition of the biological cover observed on the land” (Watson et al 2000 as cited in Coulston et al 2014).

The researchers accessed FIA data from [Chapter 6: Land Use, Land Use Change, and Forestry](#) of the [US EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019](#) (US EPA 2021), submitted by the U.S. Government to meet annual U.S. commitments under the United Nations Framework Convention on Climate Change (UNFCCC), including a summary piece from this chapter compiled by USFS scientists entitled [Greenhouse gas emissions and removals from forest land, woodlands, and urban trees in the United States, 1990-2019](#) for New England state-specific data on carbon stocks, fluxes, and land use changes (Domke et al 2021). The report provides national level data on GHG emissions and removals from forestland, woodlands, harvested wood products, and urban trees from 1990 to 2019 in the U.S. [Appendix I](#) of Domke et al 2021 provides state-specific estimates of carbon stocks and fluxes for each carbon pool for the following categories: forest land remaining forest land; settlements remaining settlements; land converted to forest land by land use change category; and forest land converted to land by land use change category. The land use categories include cropland, grassland, settlements, and other land.

The researchers also accessed FIA data through [USFS State Factsheets](#) for each New England state, and through the online [EVALIDator](#) tool that allows users to work with FIA data extrapolated from the plot to the population level with associated information on sampling errors and number of plots included in the estimates. The pathway for carbon potential in urban areas leveraged FIA’s urban data. These data are collected using a different methodology than that used for the FIA forestland data discussed in this section; the discussion of our urban analysis details these differences.

FIA data were supplemented where possible and as needed with peer-reviewed literature and state reports from the region. Supplemental data sources have been referenced where used.