

# Carbon Benefits of New York's Forests: Monitoring, Measurement, Reporting & Verification

## KEY POINTS

1. MMRV is an essential part of efforts to reduce GHG emissions and climate risk.
2. MMRV provides reliable accounting to underwrite results-based payments to climate benefit providers.
3. Current MMRV, which is based on randomized field audits is expensive and ineffective.
4. The next generation of MMRV uses remotely-sensed data to cover broad geographic areas at relatively low cost, in near real-time.
5. CAFRI has developed a digital map-based forest carbon monitoring system to support statewide MMRV needs under the CLCPA.

### WHAT IS MEASUREMENT, MONITORING, REPORTING and VERIFICATION or MMRV?

- **MMRV** is a multi-step process to account for changes in greenhouse gas (GHG) emissions resulting from programs and activities intended to mitigate climate change.
- **MMRV** seeks to prove that an activity has either avoided or removed GHG emissions, in order to underwrite results-based payments to those providing climate benefits.



**MEASUREMENT** of GHG reductions resulting from a project or program activity, relative to 'business as usual' or 'baseline' emissions. Other **co-benefits** may also be estimated.



Once project or program activities are underway, **MONITORING** data is collected on a periodic basis to estimate emission reductions, relative to the baseline.



**REPORTING** of monitoring results to a third party, such as a regulatory authority or offset broker, for validation. **Data transparency** may be required as part of reporting.



**VERIFICATION** of reported results so that compliance with the program or project agreement can be certified. This last step is required prior to payment for participation.

- Broad-scale MMRV can pinpoint high-performing program areas in order to **maximize return on investment**, while identifying areas of potential non-compliance for audits.
- Tools for carbon MMRV have versatile applications in **resource stewardship** and **regulatory enforcement**.



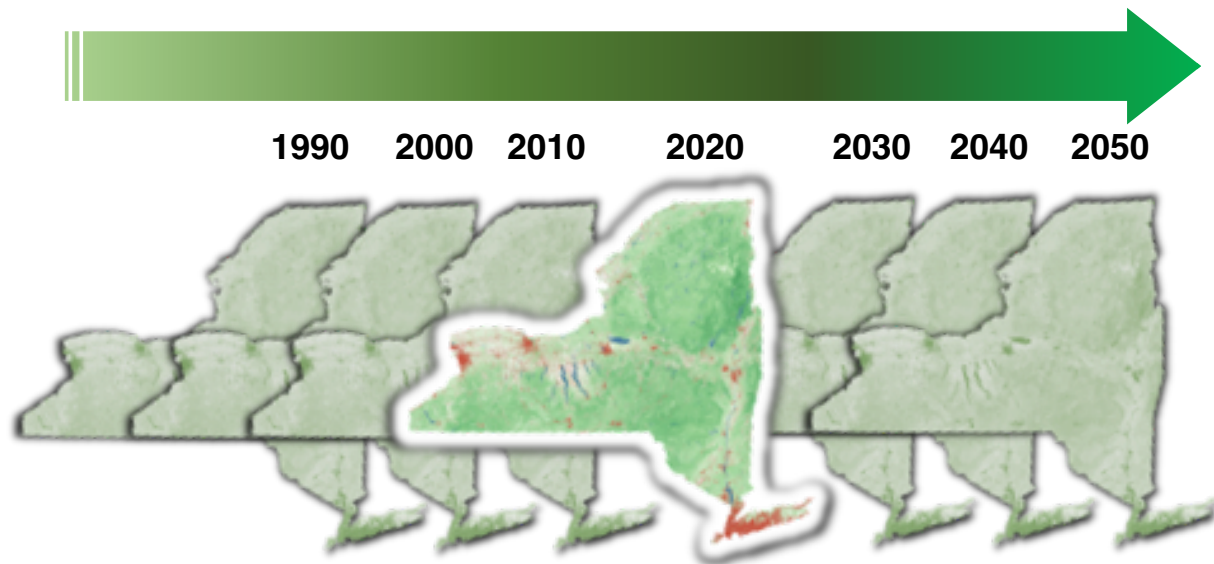
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## MONITORING FOREST CARBON ACROSS NEW YORK STATE

Monitoring for NYS easement programs, such as 480a Forest Tax Law, depends on **randomized field visits** for **compliance audits**. A tiny fraction of easements can be audited each year, at substantial cost. If a landowner violates an easement agreement, multiple years are likely to pass before non-compliance is detected, if at all.



The Climate and Applied Forest Research Institute (CAFRI) has developed a **digital map-based carbon monitoring system** that tracks parcel-level changes in forest biomass, carbon stocks, disturbance, and land use across all of NYS. The system uses freely available data from federal programs and models (developed by CAFRI for NYS) to produce high-resolution yearly maps from 1990-2020. As new satellite imagery is released each year, CAFRI scientists analyze it and update the series with new yearly maps. This IPCC-compliant approach is cost efficient, accurate, versatile and ready to be deployed in support of CLCPA implementation.

## HOW CAN CARBON MONITORING SUPPORT NEW YORK'S CLIMATE GOALS?

### State & Local Government

For policy makers and regulators, CAFRI's carbon monitoring system allows them to identify, prioritize and continually verify investments in forest-based climate solutions that yield the greatest net climate benefits. High-precision remote monitoring allows agencies and organizations to target and prioritize field visits for compliance verification, using advanced tools that detect changes in forest cover and biomass over time.

### Forest Landowners & Managers

Broad-scale monitoring supports ecosystem protection and stewardship by detecting and assessing impacts of disturbances related to management practices, insect pests, invasive species and extreme weather on carbon sequestration and storage. Timely detection of changes, especially in remote landscapes like the Catskills and Adirondacks, provides a better window of opportunity for mitigation efforts that sustain climate benefits.

To learn more about measurement, monitoring, reporting and verification of forest carbon benefits across NYS, please contact:

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