Raising The Bar:

An Overview of NCX's Next Generation Harvest Deferral Methodology

Today's Presenters

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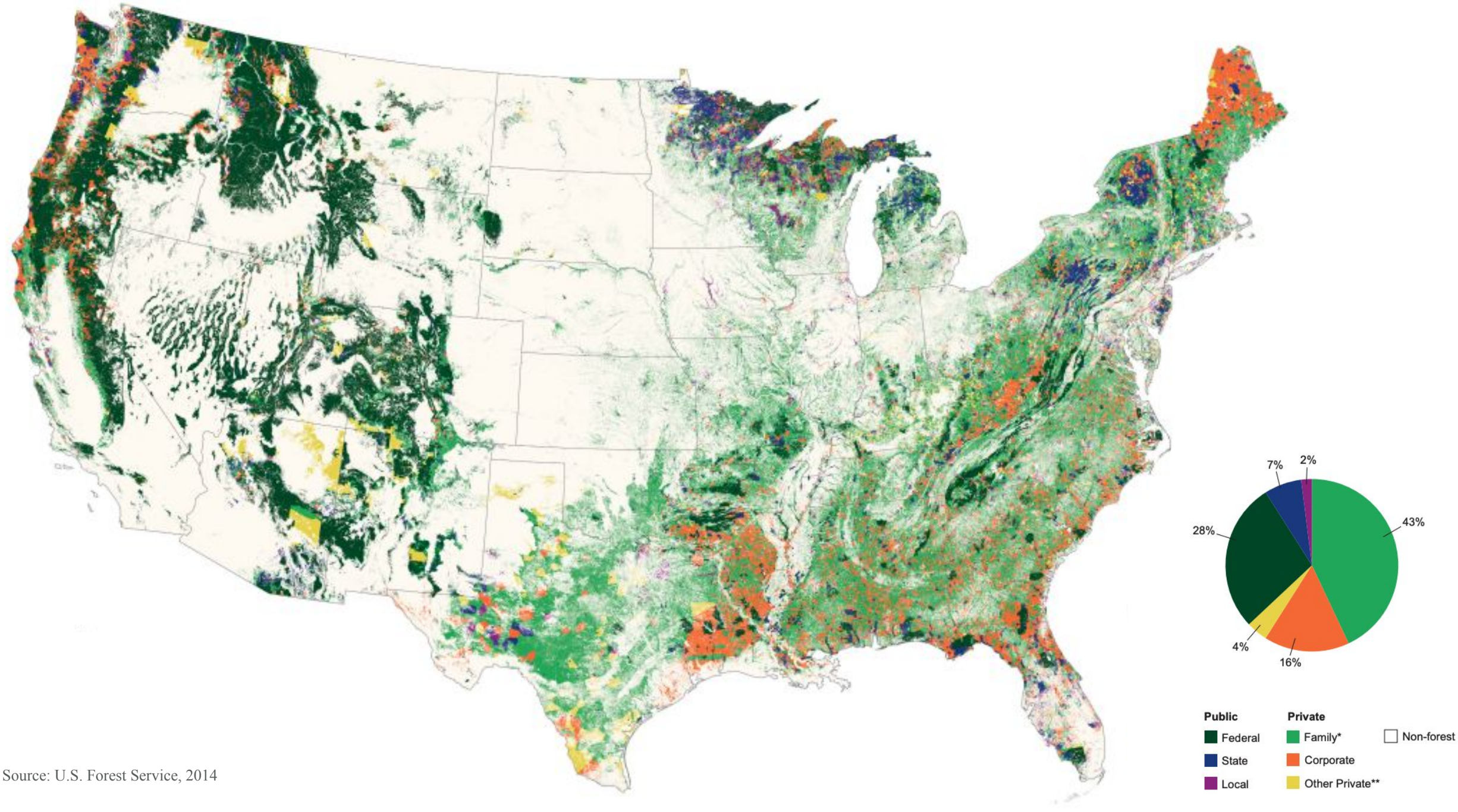
Head of Science, NCX

Agenda

- NCX's approach to carbon crediting
- Why we updated our methodology
- What's New for latest version
- Accessibility and reproducibility
- Quantification details



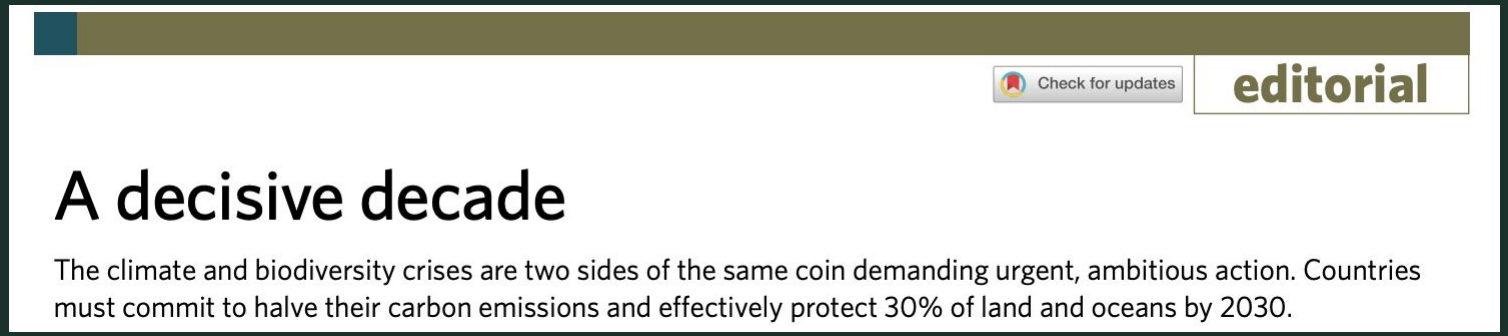
Source: U.S. Forest Service, 2014

Why We Updated Our Methodology

Valuable feedback from public comment period in April of this year

Summary white-paper available - link in follow-up email after this!

Clarify our focus on speed and scale in this decisive decade



A decisive decade. *Nat Ecol Evol* 5, 1465 (2021). https://doi.org/10.1038/s41559-021-01582-1

Unique Aspects of Methodological Approach

- Short-term contracts with ex post-crediting
- annually updated baselines
- baseline as a predictive model
- remote sensing data and models for measurement and monitoring

} one-year terms > rapidly measure + evolve

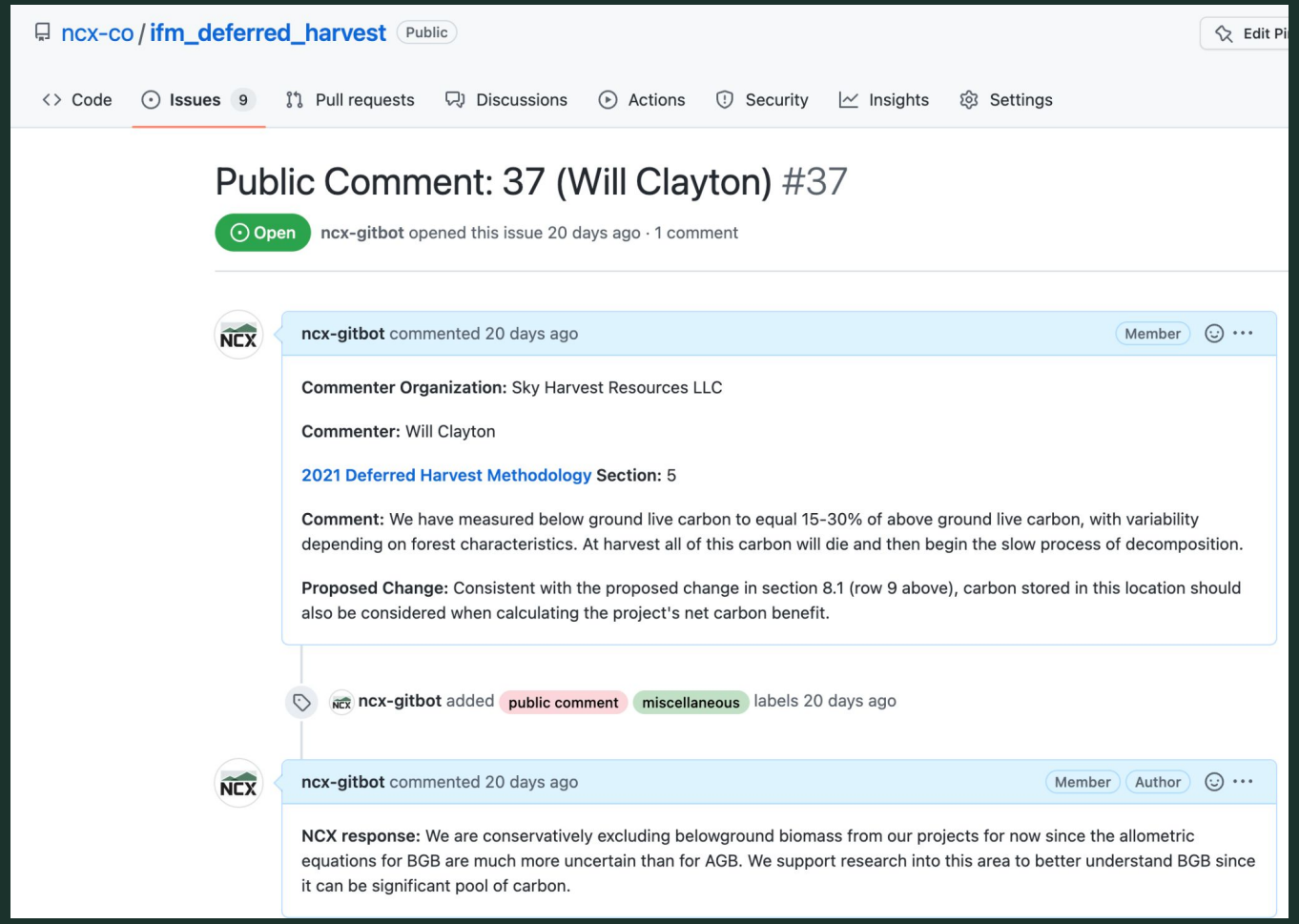
What's New in our Latest Version

- Restructured accounting to incorporate carbon storage in harvested wood products
- Leakage
- Performance benchmarks
- Uncertainty
- Time-value of carbon
- Bugfixes – clarify eligibility and language for key areas of confusion
- *Explainers available on NCX Learning Hub: info.ncx.com/next-generation-methodology*

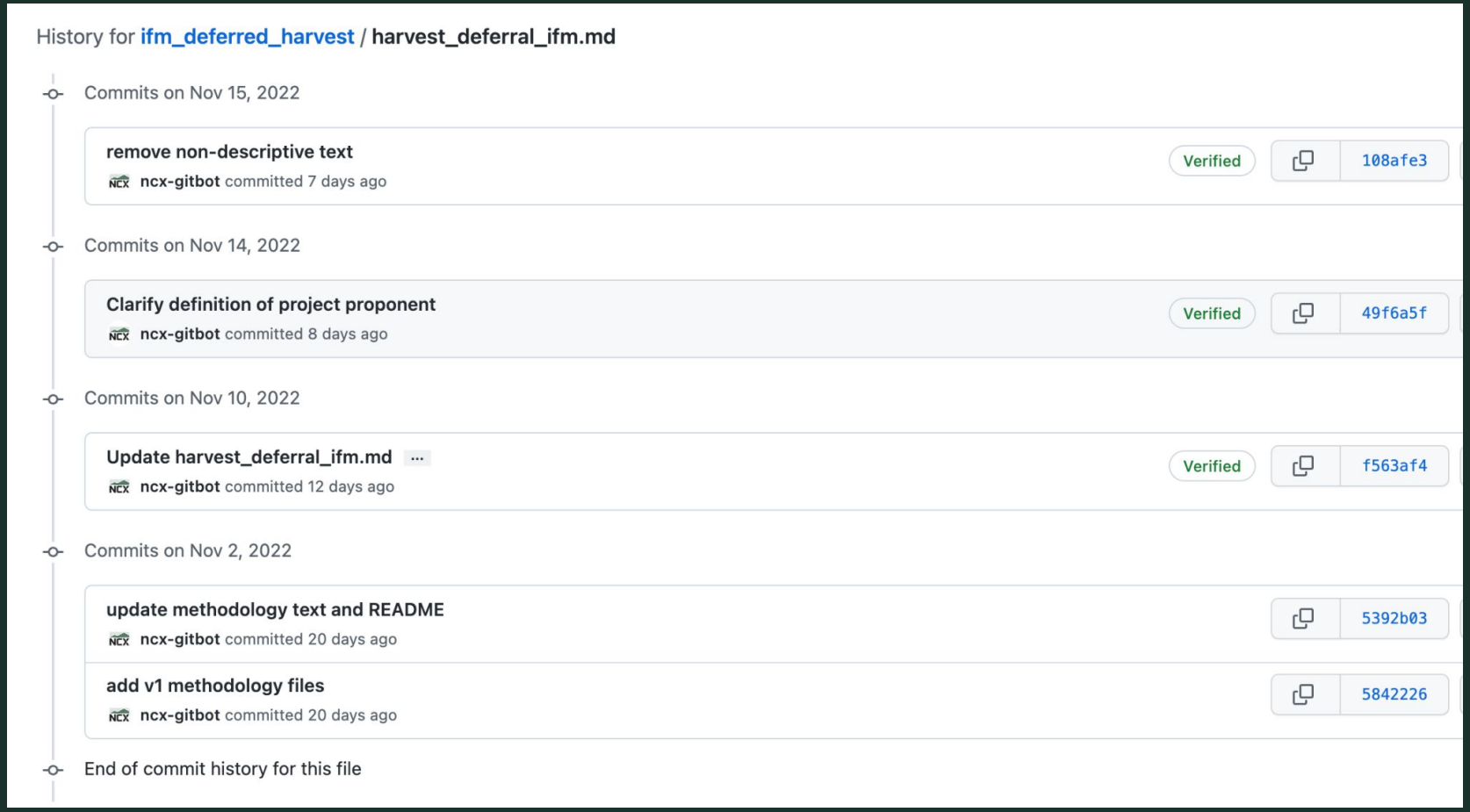
Accessibility and Reproducibility

- GitHub hosting – https://github.com/ncx-co/ifm_deferred_harvest
- R package (creditr) useable to implement the top-level equations in the methodology
- Supplemental data tables – compiled data from USFS publications, FIA, Climate Action Reserve
- Precomputed values for decay integrals
- Change log visible in Git history

Accessibility and Reproducibility



Accessibility and Reproducibility



Quantification Details

$$\Omega = (u)(1-l)\sum_{i=1}^{N}(\Delta_{baseline,i} - \Delta_{project,i}) \quad \text{(Equation 1)}$$

Where:

Ω	total impact (mtCO2, discounted to present value).
$\Delta_{baseline,i}$	discounted impact of emissions in the baseline scenario (mtCO2) for spatial unit i
$\Delta_{project,i}$	discounted impact of emissions in the project scenario (mtCO2) for spatial unit i
l	market leakage deduction factor
u	uncertainty conservativeness factor
i	index for spatial unit i (e.g., cell, pixel, property)
N	number of spatial units

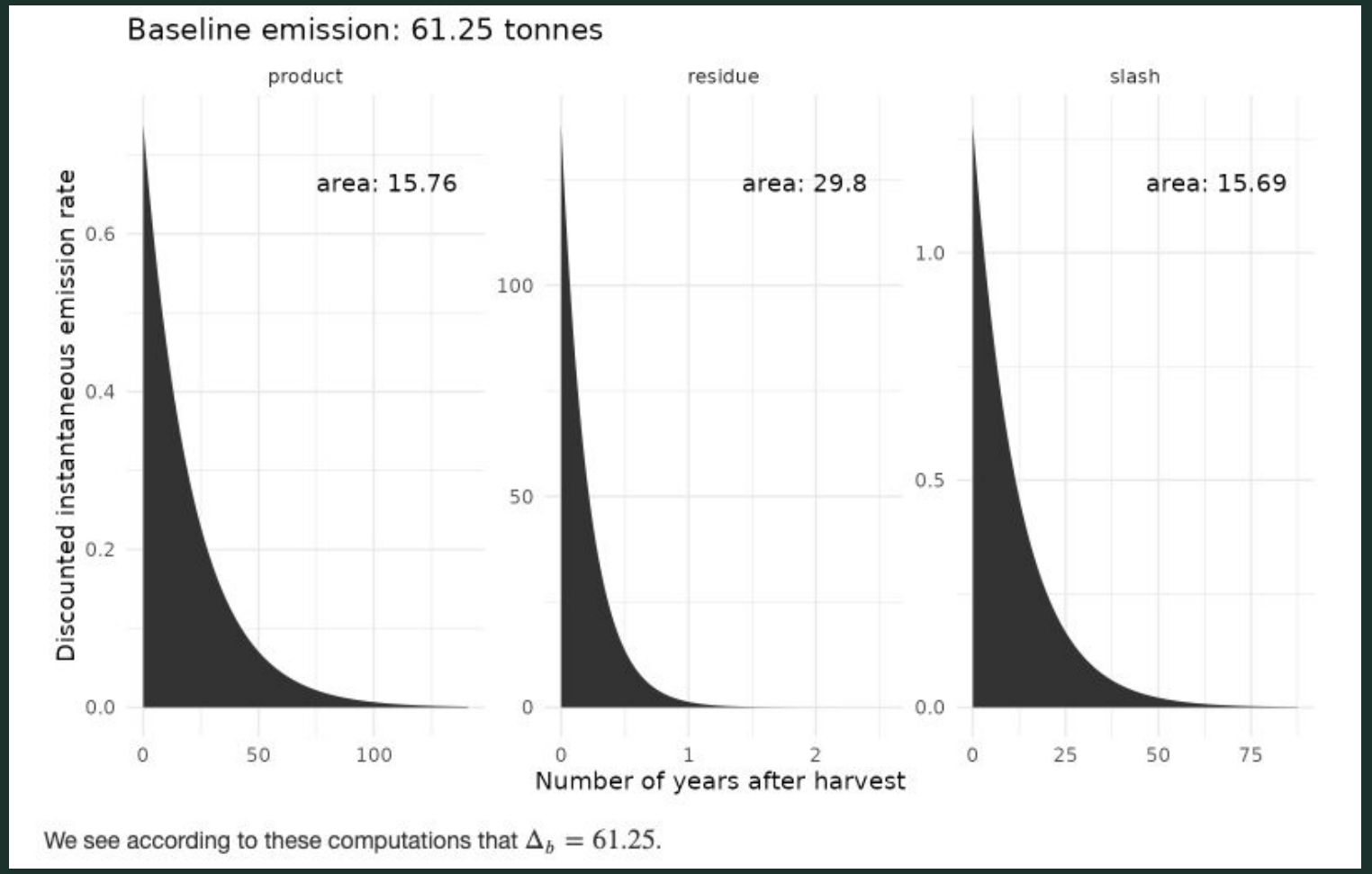
Quantification Details

$$\Delta_{baseline} = C\tilde{r} \sum_{p \in P} m_p \int_0^{\infty} F(\lambda_p, \rho, t, d = 0)dt$$

Starting carbon in aboveground live biomass
Proportion expected to be removed under business-as-usual harvesting activity

For each harvested wood product pool, summed decay through time, discounted to present value

Quantification Details



We see according to these computations that $\Delta_b = 61.25$.

Quantification Details

$$\Delta_{project} = E_0 + E_d - s$$

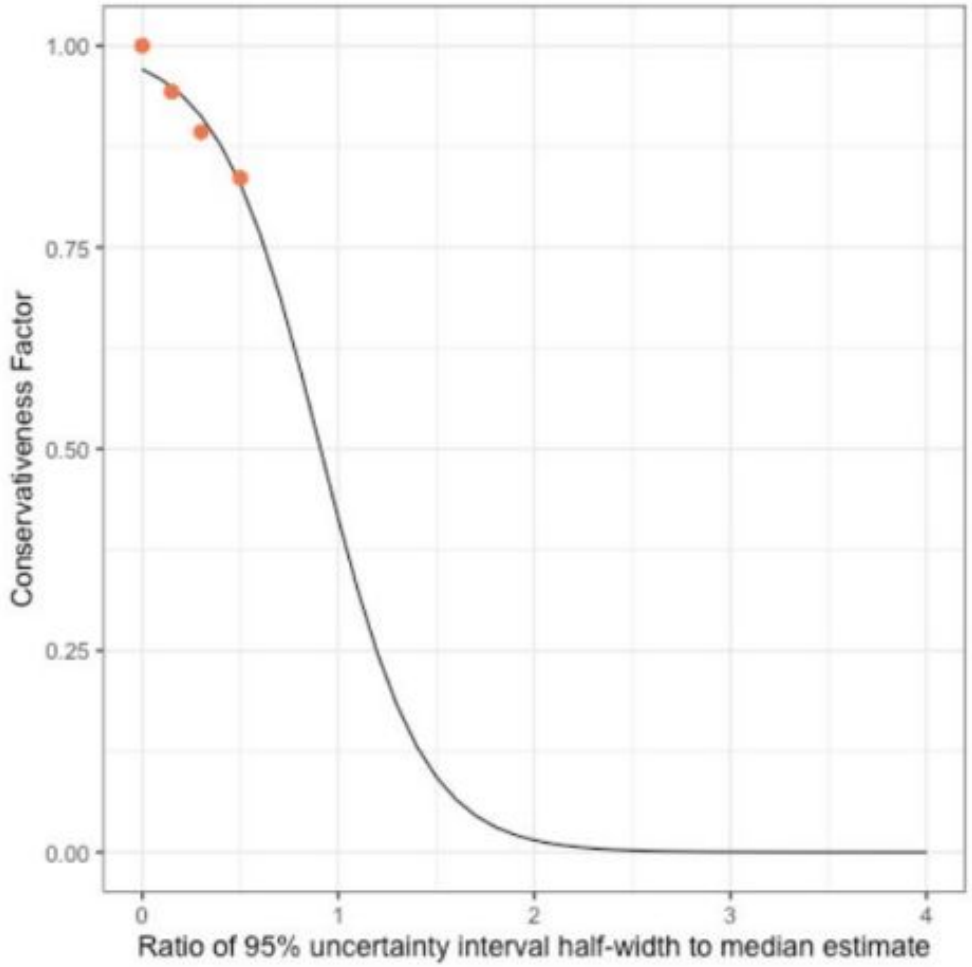
E_0	emissions due to harvests that occur during the project period (*project-period harvest*)
E_d	emissions due to the deferred BAU harvest, which occurs at $t = d$ (*deferral emissions*)
s	sequestration due to the growth on component of the aboveground live tree biomass for which harvest was deferred

Quantification Details

Uncertainty Conservativeness Factor

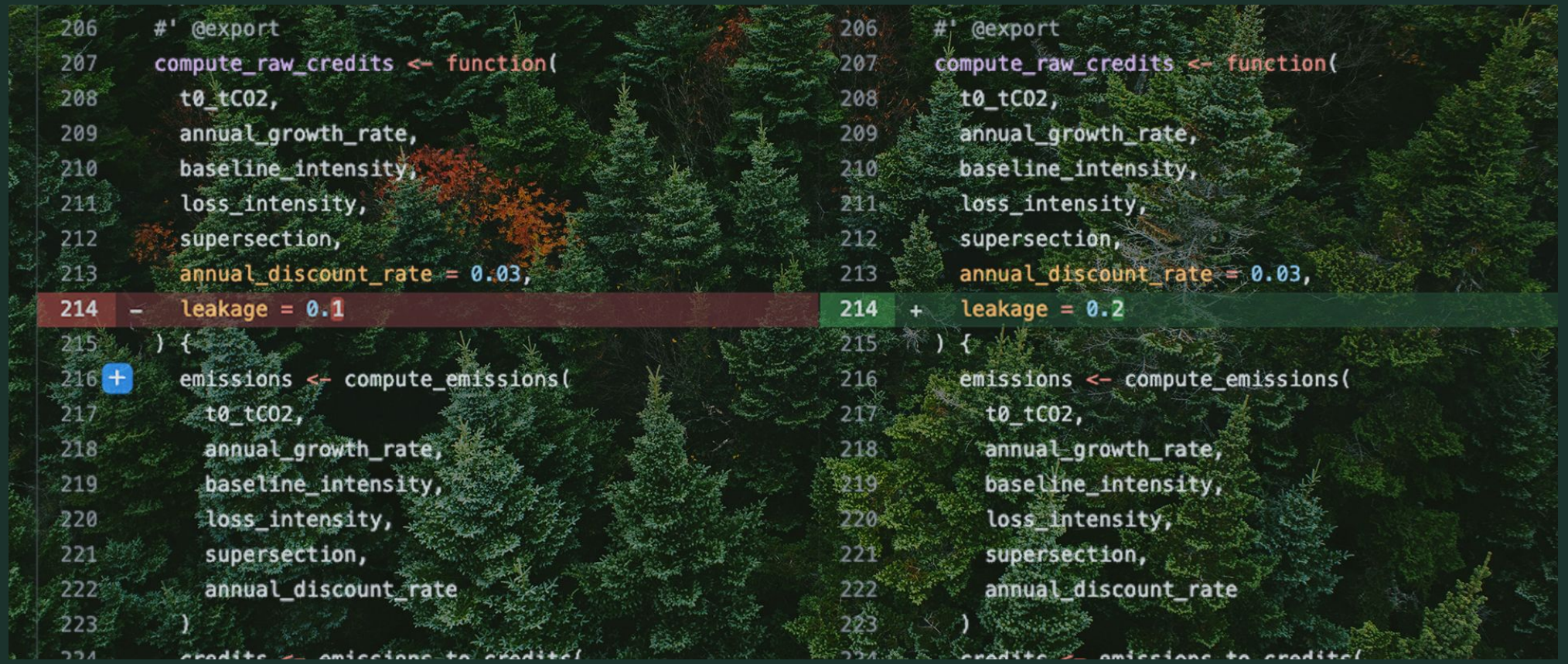
$$u = 1 / (1 + e^{-(3.502478 - 3.851745 * x)})$$

Figure 1. Logistic regression function fit to IPCC-derived stepwise guidelines.



Quantification Details

Leakage



```
206  #' @export
207  compute_raw_credits <- function(
208    t0_tCO2,
209    annual_growth_rate,
210    baseline_intensity,
211    loss_intensity,
212    supersection,
213    annual_discount_rate = 0.03,
214 -  leakage = 0.1
215  ) {
216 +  emissions <- compute_emissions(
217      t0_tCO2,
218      annual_growth_rate,
219      baseline_intensity,
220      loss_intensity,
221      supersection,
222      annual_discount_rate
223    )
```

```
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220      loss_intensity,
221      supersection,
222      annual_discount_rate
223    )
```

Audience Q&A

Thank You for Joining Us

PLEASE DIRECT COMMENTS TO

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WEBSITE

ncx.com