

GOAL SETTING FOR NATURAL & WORKING LANDS

Appendix F — Estimated Annual NCS Mitigation Potential with Sufficient Data Available

Table F1. Carbon metrics, eligible land areas, and annual mitigation potentials for Natural Climate Solutions (NCS) in Oregon for which sufficient data are available.

Median carbon metrics (in metric tons of carbon dioxide equivalent per acre of NCS activity per year, or tCO₂e/acre/yr) are shown with minimum and maximum values in brackets, along with estimated eligible acreage (in thousand acres), and resulting climate mitigation potential (in million metric tons of carbon dioxide equivalent per year, or MMTCO₂e/year; 1 MMTCO₂e/year = 1,000,000 tCO₂e/year). Maximum and minimum values reflect the maximum and minimum found during review. Negative values reflect potential net emissions under certain assumptions. (a) indicates non-Oregon Specific values used; (b) indicates only one observation available. NCS may or may not be possible to implement in areas where other NCS are implemented; therefore, it is not appropriate to calculate a total climate mitigation potential by summing the values provided. Detailed information for these draft estimates will be published in the forthcoming Natural Climate Solutions and Metrics Analysis.

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NCS activity	Median carbon metric [min, max] (tCO ₂ e/acre/yr)	Eligible land area (thousand acres)	Median climate mitigation potential [min, max] (MMTCO ₂ e/yr)	Eligible area description & source	Notes / caveats on area definition
Forest conservation, protection, and reduced deforestation in forest land	105.84 [49.40, 182.97]	37.79	4.00 [1.87, 6.91]	Average annual forest area converted per year (2006-2024) per the LCI. ¹	<i>Based on historical trends</i> Avoided conversion is difficult to establish without a forward-looking baseline.
Wildfire risk reduction strategies in forest land	0.43 [-0.04, 2.71]	3,734.48	1.61 [-0.14, 10.13]	Forest area eligible for fire management per Oregon's 20-Year Landscape Resiliency Strategy. ^[1]	Net carbon effects vary by year and fire conditions; net sequestration is uncertain

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Reforestation and restoration of forest/Afforestation	10.39 [3.05, 18.17]	680.13	7.07 [2.08, 12.36]	Cumulative forest area lost since 2006 per the LCI. ²	Reforestation may occur on areas that were lost prior to 2006. May include areas unsuitable for reforestation (e.g., recently converted to agriculture).
Afforestation in developed land	1.74 [0.46, 2.40]	137.73	0.24 [0.06, 0.33]	Area that could be planted to reach the neighborhood tree canopy goal across Oregon urban area ("tree canopy gap") per Tree Equity Score. ³	-
Riparian area improvement	5.41 [4.75, 9.53]	500.18	2.71 [2.38, 4.77]	Land area suitable for riparian reforestation in ambitious scenario estimate per Graves et al. (2020). ⁴	-

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Protection and avoided conversion of seagrass	171.69 [19.46, 411.40]	3.60	0.62 [0.07, 1.48]	Total estimated eelgrass acreage per Lyle et al. (2022). ⁵	<i>May overestimate potential</i> Total eelgrass extent used, not area at risk; unlike other avoided-conversion categories where only at-risk or average converted area is counted.
Coastal wetlands restoration	3.81 [-1.16, 7.90]	12.86–22.03	0.08 [-0.03, 0.17]	Coastal (tidal) potential area available for wetland restoration. Lower bound from Graves et al. (2020); ⁴ upper bound from Brophy (2019). ⁶ Only upper bound used to calculate the climate mitigation potential values (median and [min, max]).	Wide range in eligible area (12.86–22.03k acres) reflects differences in methodology and scope between the two bounding sources.

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Protection and avoided conversion of grassland and arid lands	6.85 [1.78, 10.32]	81.90	0.561 [0.15, 0.85]	Average annual grassland area converted per year (2006-2024) per the LCI. ¹	<i>Based on historical trends</i> Avoided conversion is difficult to establish without forward-looking baseline.
Grassland and arid lands restoration	0.59 [0.15, 0.86]	6,798.84	4.02 [0.99, 5.85]	Area of Oregon grassland in poor condition per SageCon Landscape Planning Tool. ⁷	<i>May overestimate potential</i> No adjustment for feasibility constraints
No till and reduced tillage	0.25 [-0.17, 0.79]	613.02	0.153 [-0.10, 0.48]	Total cropland in Oregon using intensive or conventional tillage practices (2022) per USDA NASS. ⁸	<i>May overestimate potential</i> No adjustment for agronomic or economic feasibility of adoption.

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Cover crops, strip cropping, alley cropping	0.24 [0.08, 0.59]	2,977.13	0.71 [0.24, 1.76]	Total cropland that could feasibly transition to additional conservation agriculture practices. per CaRPE tool. ⁹	
Trees in croplands and buffers	10.66 [0.31, 17.95]	418.02	4.46 [0.13, 7.50]	10% of total cropland in Oregon (2022) per USDA NASS ⁹ minus existing agroforestry percent.	<i>Low confidence</i> Eligible area based on a speculative 10% assumption with no suitability basis; regional variation between East and West Oregon not captured in this estimate.
Nutrient management	0.20 [-0.03, 2.43]	2,199.74	0.45 [-0.07, 5.35]	Total fertilized cropland in Oregon (2022) per USDA NASS. ⁹	<i>May overestimate potential</i> Does not account for variation in current fertilizer practices or economic feasibility of adoption across all acres.

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- ¹ Oregon Department of Energy (2025). *Land-based Net Carbon Inventory: Appendix F: Inventory Results*. <https://www.oregon.gov/energy/energy-oregon/Documents/2025-Carbon-Inventory-Appendix-F.pdf>
- ² Oregon Department of Forestry. (2025). *20-year Landscape Resiliency Strategy: 2025 Implementation Report*. <https://www.oregon.gov/odf/aboutodf/documents/2025-odf-sb83-landscape-resiliency-strategy-implementation-report.pdf>
- ³ American Forests. (n.d.). *Tree Equity Score*. <https://www.treeequityscore.org/>
- ⁴ Brophy, L. S., Greene, C. M., Hare, V. C., Holycross, B., Lanier, A., Heady, W. N., O'Connor, K., Imaki, H., Haddad, T., & Dana, R. (2019). Insights into estuary habitat loss in the western United States using a new method for mapping maximum extent of tidal wetlands. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0218558>
- ⁵ SageCon Partnership. (2024). *Ecstate Maps and the SageCon Landscape Planning Tool* [Interactive mapping tool]. <https://sageconpartnership.com/vegetation>
- ⁶ Brophy, L. S., Greene, C. M., Hare, V. C., Holycross, B., Lanier, A., Heady, W. N., O'Connor, K., Imaki, H., Haddad, T., & Dana, R. (2019). Insights into estuary habitat loss in the western United States using a new method for mapping maximum extent of tidal wetlands. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0218558>
- ⁷ SageCon Partnership. (2024). *Ecstate Maps and the SageCon Landscape Planning Tool* [Interactive mapping tool]. <https://sageconpartnership.com/vegetation>
- ⁸ Graves, R. A., Haugo, R. D., Holz, A., Nielsen-Pincus, M., Jones, A., Kellogg, B., ... Schindel, M. (2020). Potential greenhouse gas reductions from Natural Climate Solutions in Oregon, USA. *PLOS ONE*, 15(4), e0232651. <https://doi.org/10.1371/journal.pone.0232651>
- ⁹ U.S. Department of Agriculture (2024). *2022 Census of Agriculture: United States Summary of State Data*. <https://www.nass.usda.gov/Publications/AgCensus/2022/index.php>