



STATE OF WASHINGTON
CONSERVATION COMMISSION

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January 28, 2025

The Honorable Bernard Dean
Chief Clerk of the House
338B Legislative Building
Olympia, WA 98504

The Honorable Sarah Bannister
Secretary of the Senate
312 Legislative Building
Olympia, WA 98504

Dear Chief Clerk Dean and Secretary Bannister:

The Washington State Conservation Commission respectfully submits the enclosed legislative report required under the 2023 proviso funding for Climate-Smart Livestock Management. The proviso directs the State Conservation Commission to submit a report to the Legislature summarizing the grants awarded and the likely annual greenhouse gas emission reductions achieved as a result to the appropriate committees of the legislature by December 2024.

Should you have any questions, please contact me at (360) 280-6486 or kdelavan@scc.wa.gov.

Sincerely,

Kate Delavan
Director of Policy and Intergovernmental Affairs
Washington State Conservation Commission

Enclosure: Sustainable Farms & Fields Climate - Smart Livestock Report

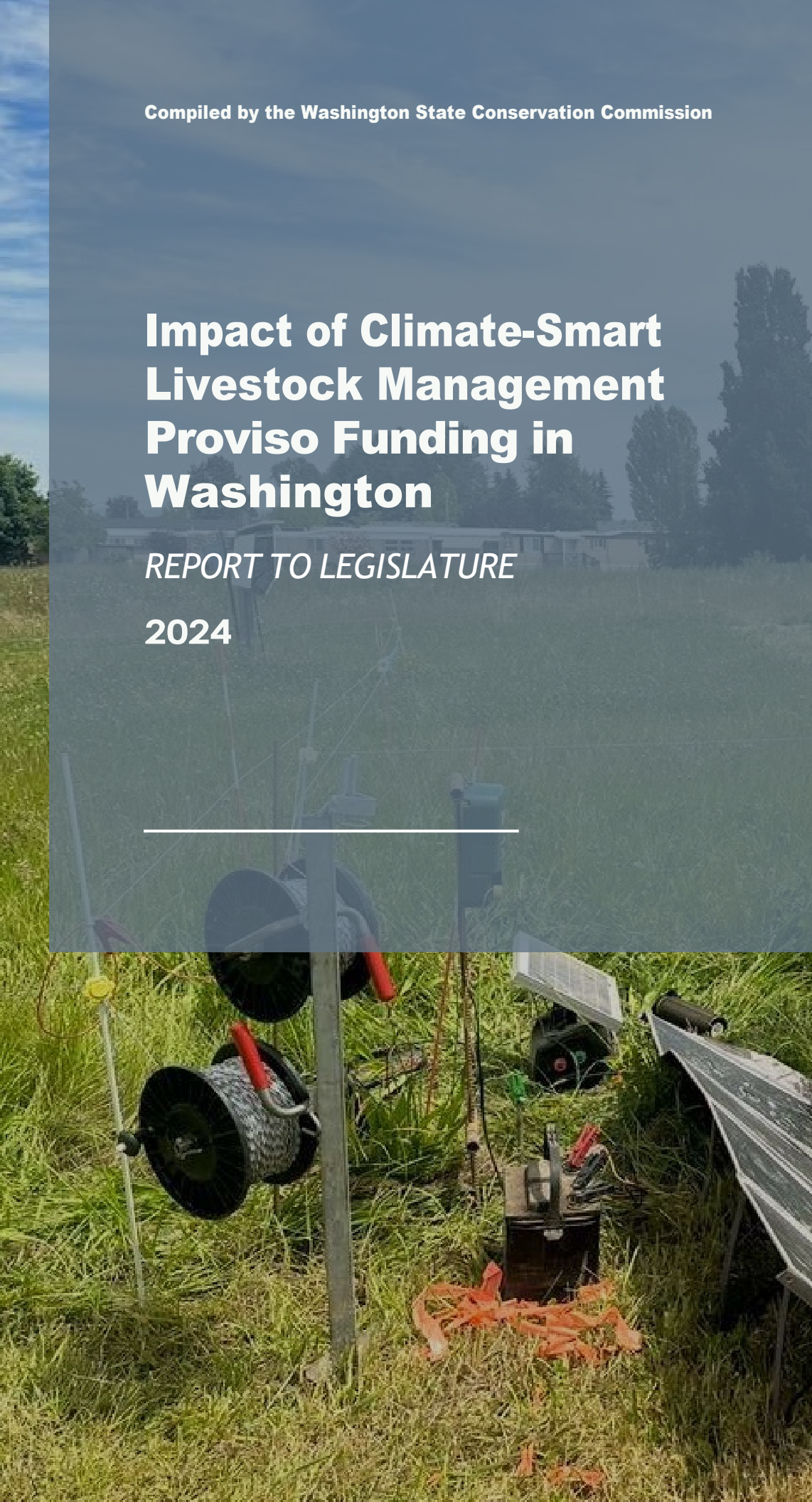
cc: Members of the House Agriculture & Natural Resources Committee
Members of the Senate Agriculture & Natural Resources Committee
Owen Rowe, Senior Policy Advisor Natural Resources, Office of the Governor
Matthew Hunter, Budget Advisor, Office of Financial Management

Compiled by the Washington State Conservation Commission

Impact of Climate-Smart Livestock Management Proviso Funding in Washington

REPORT TO LEGISLATURE

2024



Summary

One-time funding of \$30,000,000 from the Climate Investment Account was appropriated for the 2023-25 biennium to the Washington State Conservation Commission (SCC) Sustainable Farms and Fields program for organic agricultural waste and greenhouse gas emissions reduction through climate-smart livestock management. As of December 1, 2024, \$4,560,234 has been allocated to fund 51 projects across Washington state.



Proviso Language

\$30,000,000 of the climate commitment account-state appropriation is provided solely for grants through the sustainable farms and fields program for organic agricultural waste and greenhouse gas emissions reduction through climate-smart livestock management. Of the amounts provided in this subsection:

(a)

(i) The commission may grant up to \$22,000,000 toward cost-share agreements for anaerobic digester development to dairy farm owners. Grants awarded for anaerobic digester development must have at least a 50 percent nonstate match and be awarded through a competitive process that considers:

(A) The amount of greenhouse gas reduction that will be achieved by the proposal; and

(B) The amount of untreated effluent that will be decreased.

(ii) Recipients of grants under(a) (i) of this subsection must provide a report to the commission within one year of receipt of the grant, detailing the success of the project in meeting the stated criteria for the competitive process.

(b) The commission may grant up to \$6,000,000 for technical and financial assistance to increase implementation of climate-smart livestock management, alternative manure management, and other best management practices to reduce greenhouse gas emissions and increase carbon sequestration.

(c) The commission may grant up to \$2,000,000 for research on, or demonstration of, projects with greenhouse gas reduction benefits.

(d) When funding for specific technologies, including anaerobic digesters, the commission must enter into appropriate agreements to support the state's interest in advancing innovation solution to decarbonize while ensuring compliance with Article VIII, section 5 and Article XII, section 9 of the state Constitution.

(e) The commission must submit a report summarizing the grants awarded and the likely annual greenhouse gas emission reductions achieved as a result to the appropriate committees of the legislature by December 1, 2024.

Summary of Activities

SCC assembled a climate-smart livestock advisory committee, co-led by WSDA and comprised of the following representatives:

Gary Bahr, Washington State Department of Agriculture

Chris Clark, Natural Resources Conservation Service

Allison Costa, Natural Resources Conservation Service

Jake Dunton, U.S. Environmental Protection Agency

Kyrre Flege, Washington State Department of Agriculture

Jay Gordon, Washington Dairy Federation

Karla Heinitz, Washington State Conservation Commission

Karen Hills, Washington State Conservation Commission

Alison Halpern, Washington State Conservation Commission (past)

Larry Johnson, Natural Resources Conservation Service

Javier Lopez, South Yakima Conservation District

Peter Moulton, Northwest Community Partners LLC

Aaron Peterson, Washington State Department of Commerce

Martin Quinn, Department of Ecology

Eric Schuh, Snohomish Conservation District

Marni Solheim, Department of Ecology

Georgine Yorgey, Washington State University

The advisory committee met seven times between August and December 2023. Subcommittees were formed for each of the four funding opportunities summarized below and advised SCC staff on development of scoring criteria, Requests for Applications, and evaluated applications for funding.

This one-time funding resulted in three new funding opportunities:

- Alternative Manure Management
- Research and Demonstration
- Dairy Anaerobic Digesters



Shulin Chen, WSU

This funding also allowed SCC to run a special application round for the Sustainable Farms and Fields Program for projects supporting livestock operations.

Funding Allocations

The commission may grant up to **\$22,000,000** toward cost-share agreements for anaerobic digester development to dairy farm owners.

\$6,000,000 for technical and financial assistance to increase implementation of climate-smart livestock management, alternative manure management, and other best management practices to reduce greenhouse gas emissions and increase carbon sequestration.

The commission may grant up to **\$2,000,000** for research on, or demonstration of, projects with greenhouse gas reduction benefits.

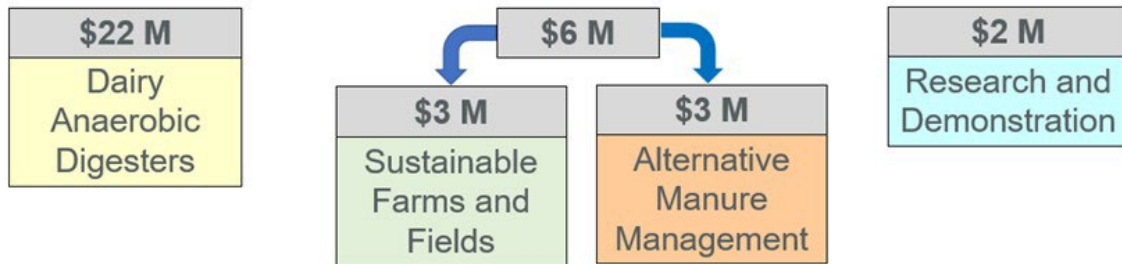


Figure 1: Appropriated funds were implemented through new and existing funding opportunities within the Sustainable Farms and Fields grant program. The amounts for each opportunity were directed via budget proviso.

Dairy Anaerobic Digester – up to \$22 million

SCC was appropriated \$22 million to fund dairy anaerobic digesters. The proviso requires applicants provide a 50% nonstate match. An attempt to secure federal funding to serve as match through the Regional Conservation Partnership Program was not successful. With an estimated project cost per digester of up to \$10 million, there are likely no potential applicants able to raise the capital necessary to meet the match requirement. Due to the complexity of this funding and the lack of available match funding, the Dairy Anaerobic Digester solicitation is still under development. It has not yet been released as of Dec. 1, 2024.

Research and Demonstration - up to \$2 million

Request for Applications was released on February 20, 2024.

- Six applications were received in the first application pull on March 29, 2024.
- Four applications were received in the second application pull on June 3, 2024.
- One application was received in the third application pull on July 1, 2024.



Funding Allocations (Continued)

SCC allocated \$1,576,532 in total to seven research projects. While these projects will result in outcomes that will allow livestock production systems to reduce greenhouse gas emissions, improve the return on investment for anaerobic digestion systems, or provide dairy producers with decision-making tools, the projects themselves are not expected to result in significant greenhouse gas impacts. See Appendix A (pg. 6) for a list of Research and Demonstration funded projects.

Alternative Manure Management - up to \$3 million

The objective of this funding is to reduce greenhouse gas (GHG) emissions associated with manure handling systems from baseline levels at dairy and livestock farms in Washington through grants to conservation districts and other public entities for implementation of projects.

Projects must occur on livestock operations where manure is stored in anaerobic (liquid) form and may include multiple components of a manure handling system and associated upstream and downstream components needed to accommodate the change to the manure management system, including transporting manure for eventual field application.

A Request for Applications was released on February 20, 2024. Sixteen applications were received in the first and only application pull on April 5, 2024.

SCC allocated \$1,172,266 to seven projects and \$58,017 to staff support. The funded projects have expected GHG emissions reductions of 8,535 metric tons of carbon dioxide equivalent over five years. These projects leverage \$245,188 in private funds and \$377,073 in federal funds. See Appendix B (pg. 9) for a list of Alternative Manure Management funded projects.

A funding amount of \$2,900,000 of alternative manure management funding was inadvertently tagged as associated with dairy digester projects when it was moved from the Operating budget to the Capital budget in the '24 Supplemental. SCC is seeking a fix in the '25 Supplemental Capital budget so that this funding can be allocated to alternative manure management projects that are not necessarily connected to a dairy digester. This change aligns with the SCC's understanding of the original legislative intent of the funding.

Sustainable Farms & Fields Climate-Smart Livestock - up to \$3 million

This funding opportunity was the same as the Sustainable Farms and Fields grant program, but project implementation and technical assistance are focused on livestock operations.

A Request for Applications was released on February 5, 2024. Forty-one applications were received by the application pull on March 20, 2024.

Funding Allocations (Continued)

SCC allocated \$1,753,419 in total to 37 projects, with an expected GHG impact of reductions of 1,620 metric tons CO₂ equivalent. These projects leverage \$281,000 in other funding.

See Appendix C (pg. 10) for a list of Sustainable Farms & Fields Climate-Smart Livestock funded projects.

Questions or comments?

For more information please visit the SFF: Climate-Smart Livestock webpage or email SFF Program Manager Karen Hills at khills@scc.wa.gov.



Appendix A

Research and Demonstration Projects

Climate Commitment Act Funding, Spring 2024

Title: Assessing GHG Emission Reduction Potential of Covered Lagoons

Award Amount: \$182,902

PI: Dr. Shulin Chen

The results of this project will provide critical information related to implementing covered animal manure lagoons in the Northwest. The model can be used to enhance existing tools, such as the California Air Resources Board tools, by providing more accurate predictions with finer resolutions. This project brings together technical experts from WSU with complementary expertise.

Dr. Shulin Chen, the project director, is a professor of Biological Systems Engineering at Washington State University. Dr. Chen has been involved in applied research in anaerobic digestion and dairy manure management for more than two decades.

Title: Climate-Smart Dairy Manure Management System with Reduced Greenhouse Gas Emissions and Enhanced Udder Health

Award Amount: \$200,000

PI: Dr. Birgitte Ahring

This project will test a targeted pretreatment technology (AWOEx) before anaerobic digestion to significantly enhance the carbon conversion efficiency of the process, resulting in up to 100% more biogas/methane. This pretreatment technology has another anticipated benefit - improving udder health in dairies where manure solids are recycled as bedding. This project brings together technical experts from two laboratory groups at WSU with complementary expertise, including Dr. Craig McConnell from WSU Department for Veterinary Medicine.

The project director, Dr. Birgitte Ahring, is a professor in the Bio-product Sciences and Engineering Laboratory at WSU Richland and has expertise in biomass conversion and anaerobic digestion.

Title: Developing Techno-Economic Dairy Farm Manure Management Case Studies to Evaluate Carbon Market and Cost Incentive Policies

Award Amount: \$162,283

PI: Dr. Shannon Neibergs

This project will provide information and tools to dairy producers to help them evaluate and understand to help them evaluate and understand the potential economic returns and risks of manure management capital investments. This project will result in three dairy farm manure management case studies, using existing studies on manure management technology, update their capital costs, and integrate emerging carbon market revenue and policies to evaluate net economic returns and capital investment risk. Two dairy producer focus groups will help design and evaluate the case studies.

Appendix A (Continued)

This project brings together team members with extensive experience in nutrient (manure) management studies and outreach. The project director, Dr. Shannon Neibergs is a Professor and Extension Livestock Economist with Washington State University, where he has been since 2006. He has worked extensively on economic issues relating to the dairy industry, including recent work on emerging carbon markets in dairy, advanced manure treatment, and anaerobic digestion.

Title: Pathways for Change: Understanding and Supporting Washington Dairies in Contributing to Washington's Climate Goals

Award Amount: \$306,695

PI: Ms. Georgine Yorgey

To support progress towards greenhouse gas reductions and climate-smart practices in Washington, this project will deliver technical assistance and conservation planning to help move dairy producers from a point of interest to understanding their current footprint and identifying the high-quality reductions that are economically feasible. Data-based cohorts will be developed across Washington's diverse dairy landscape to assess economic and technically feasible practices in specific dairy settings, resulting in information generated to develop a statewide GHG reduction roadmap for dairy, in collaboration with dairy-related stakeholders.

The WSU team is led by Georgine Yorgey. Georgine Yorgey is Associate Director of the Center for Sustaining Agriculture & Natural Resources. She has worked at Washington State University for the last 15 years, with a focus on issues relating to the nexus of climate change and agriculture, including a substantial focus on issues relating to dairy manure and anaerobic digestion

Title: Advancing Dairy Manure Management A Self-Sustaining Anaerobic Digestion System for Enhanced Methane Capture

Award Amount: \$175,409

PI: Dr. Liang Yu

The project's goal is to evaluate the economic and environmental performance of the in-situ anaerobic digestion stripping evaporation system (AD-SES), focusing on greenhouse gas mitigation for commercial application. Using advanced AD technology, the system will convert animal manure into clean water meeting Class A reclaimed water standards, renewable natural gas (RNG), and nutrient-rich fertilizers. The project includes four key tasks: (1) developing an advanced filtration method using biochar and membrane technology to remove ammonia from clean water produced by the AD-SES to meet drinking water standards, (2) implementing a second-stage vacuum evaporation system for methane and ammonia recovery from digestate while studying microbial communities to enhance soil health, (3) quantifying methane emissions from the proposed technology compared to existing AD facilities and dairy manure lagoons, and (4) conducting a comprehensive techno-economic analysis to evaluate the system's performance and cost-effectiveness.

Dr. Liang Yu, the Project Lead, is an Assistant Professor of Biological Systems Engineering at Washington State University. Dr. Yu specializes in developing and implementing sustainable waste management technologies, as well as conducting techno-economic analysis and life cycle assessment.

Appendix A (Continued)

Title: Pilot Testing an Intensified Versatile Anaerobic Digestion (IVAD) System for Dairy Application

Award Amount: \$166,361

PI: Dr. Shulin Chen

The purpose of this project is to conduct a comprehensive evaluation of the pilot system and expand the scope of work of the DOE grant to generate new information and advance this technology to the next level of commercialization. The project has four major objectives, including (1) to evaluate and model the Intensified Versatile Anaerobic Digestion system performance under different operating conditions, (2) to implement a new component for in situ biogas upgrading to produce purer natural gas, (3) to conduct techno-economic analysis to compare the economics of the system with the existing technologies; (4) to carry out an extension and outreach program.

Dr. Shulin Chen, the project director, is a professor of Biological Systems Engineering at Washington State University. Dr. Chen has been involved in applied research in anaerobic digestion and dairy manure management for more than two decades

Title: Site-Specific Intervention-Driven Emissions Reduction Strategies for Climate-Smart Dairy Farming: Research and Demonstration

Award Amount: \$370,585

PI: Dr. Lav Khot

The purpose of this project is to produce outcomes that will help Washington dairy farms realize climate-smart sustainable dairy farming through continual greenhouse gas emissions monitoring and site-specific emissions reduction interventions. The project has four objectives, (1) Integrate, validate, and deploy rugged localized weather and greenhouse gas emissions sensing network on a commercial dairy farm to monitor and map emissions, (2) Test efficacy of biochar treatments (in-vitro and on-farm) to mitigate emissions from dairy manure storage facilities, (3) Study cattle feed additive (e.g., 3-nitrooxypropanol) role in enteric methane emissions reduction from dairy cattle, and (4) Demonstrate the piloted technology and extension education.

Dr. Lav Khot, the project director, is actively engaged with the Washington agriculture and cattle industry stakeholders through his research and extension program in precision agriculture engineering and as the director of WSU's Agricultural Weather Network (AWN).

Appendix B

Alternative Manure Management Projects

Climate Commitment Act Funding, Spring 2024

Columbia Basin CD Dairy Pipeline (\$217,000)

This project will involve installation of piping to transfer dairy wastewater to a pivot for field application.

Lewis CD Solids Separator (\$220,000)

This project involves the implementation of a solid/liquid separator facility at a dairy.

Pierce CD Solids Separator (\$163,637)

This project provides match funding for installation of a solid/liquid separator at a dairy and improved dairy manure management.

South Yakima CD Waste Transfer (\$100,103)

This project will support installation of waste transfer piping to transport liquid waste to some of the nearby fields for application using irrigation pivots, reducing emissions from diesel currently used to truck waste.

Underwood CD Dairy Manure Management Upgrades (\$220,460)

This project will upgrade a dairy's manure storage system to include a solid/liquid separator.

Whatcom CD Solids Separator (\$79,740)

This project is for the installation of a secondary solid separation facility at a dairy.

Whatcom CD Separator (\$137,593)

This project is for the installation of a separator for manure management at a dairy.

Appendix C

Funded Sustainable Farms and Fields Projects

Climate Commitment Act Funding, Spring 2024

Below are summaries of projects that received funding in the Spring 2024 round of Sustainable Farms and Fields, aimed at supporting climate-smart livestock operations. In this round of funding, \$1,702,441 of funding was allocated to support 36 projects at 16 Washington conservation districts.

Pasture Improvement, Benton CD (\$13,132)

This project is aimed at pasture improvement, nutrient management, and renovating and extending a historic windbreak as part of a prescribed grazing plan for a cattle operation.

Soil Health Reinvigoration, Benton CD (\$12,928)

This project will support prescribed grazing and nutrient management on a small cattle operation.

Pasture Health Improvement, Benton CD (\$16,557)

This project aims to enhance pasture health of a local ranch through nutrient management and prescribed grazing.

Increasing Climate-Smart Practices on Livestock Management Properties, Cascadia CD (\$23,178)

This funding will allow the district to provide technical assistance to livestock managers with the goal of increasing voluntary adoption of climate-smart practices for livestock management.

Manure Spreader for a Micro-Dairy, Cascadia CD (\$11,410)

Cost share on a manure spreader for a micro dairy operation will improve farm efficiencies and allow the producer to reach her nutrient management goals on the pasture to improve forage yields.

Virtual Fencing Demonstration for Prescribed Grazing Restoration, Clark CD (\$54,709)

This demonstration project is focused on use of virtual fencing to graze areas on the West side of the Cascades to manage invasive species like reed canary grass or used alongside ponderosa pine plantings for future silvopasture.

Prescribed Grazing and Nutrient Management for Pasture Health, Clark CD (\$201,989)

This multi-faceted project includes a reimbursement program fostering responsible nutrient management practices, purchase of a trailer and no-till drill for a rental program, cost share on temporary electric fencing materials for ten landowners for implementation of rotational grazing, and workshops focused on prescribed grazing and nutrient management.

Kittitas County Compost project, Kittitas County CD (\$30,000)

The project is to provide a compost spreader and compost screening system for a diversified livestock operation, facilitating improved nutrient management.

Appendix C

Climate-Smart Practices in CRM Facilitated Meetings, Okanogan CD (\$13,725)

This funding will help support the 14 annual Conservation Resource Management (CRM) meetings attended by local ranchers and land managers, integrating discussions on climate-smart practices into these meetings.

Elk Prairie No-Till Project, Pacific CD (\$79,436)

This project is to help a farmer who manages 200 acres purchase a no-till drill that he plans on sharing with his neighbors and community, reaching up to an additional 15 land managers and up to 680 additional acres.

Regenerative Grazing Plan Implementation, Pend Oreille CD (\$124,666)

This funding will support implementation of existing regenerative grazing plans for landowners in Pend Oreille and Stevens Counties to enhance soil health, grazing practices, livestock well-being, ecosystem resilience, and carbon sequestration. The funding will also support the purchase of a manure spreader for the district rental program.

Regenerative Grazing Plan Writing, Pend Oreille CD (\$16,793)

This funding will allow the writing of four new regenerative grazing plans, intended to enhance soil health, grazing practices, livestock well-being, ecosystem resilience, and carbon sequestration.

Livestock Materials and Technical Assistance, Pierce CD (\$35,893)

This project will provide seed for seven producers and tree seedlings for one producer to implement a silvopasture system and will fund technical assistance for project implementation. This project will also provide funding for continued SFF and Climate Smart Best Management Practice outreach and technical assistance efforts.

Workshops and Technical Assistance, Pierce CD (\$12,821)

This funding will support staff time to plan, hold, and carry out workshops focused on livestock-related climate-smart practices, and to provide follow-up technical assistance, farm visits, and materials (seed and trees) to workshop attendees. The request also Pierce Conservation District's (PCD's) Latinx cultural navigator to provide consecutive interpretation services at two of the workshops.

Cost Share Funding for Producer Manure Spreader Purchase, Pierce CD (\$5,312)

A 25-acre organic diversified livestock and crop farmer is seeking cost-share assistance to purchase a manure spreader to improve nutrient management.

Cost Share Funding for No-Till Drill Purchase, Pierce CD (\$103,024)

This funding will provide cost share for a dairy farmer to purchase a larger no-till drill to seed his and his surrounding neighbor's fields annually to increase carbon sequestration, reduce fuel and labor costs, and reduce diesel emissions,

Appendix C

Improved Soil sand Seeding to Accentuate Carbon Sequestration (ISAACs), Pierce CD (\$55,538)

This demonstration project seeks to showcase a single-pass aeration and seeding method to reduce operations' carbon footprint while improving pasture health and productivity. Pasture Prairie Establishment Demonstration Project, San Juan Islands CD (\$7,000). This project will assess plant cover, forage yields, and forage diversity through field monitoring of a previously planted pasture-prairie plot to quantify the effects of seeding, tillage, and mowing methods on native forb forage quality and quantity.

Livestock Technical Assistance, San Juan Islands CD (\$62,500)

This funding will be used to conduct technical assistance for existing and new livestock cooperators interested in implementing climate-smart practices.

Cover Crop Project, Skagit CD (\$34,997)

This funding will support a large seed purchase for landowners to implement cover crops, outreach about the program, and events to display how the practice is effective.

Manure Hauling, Skagit CD (\$25,000)

This funding will support a manure hauling service as a complement to Skagit CD's manure share program.

Silvopasture Planting, Skagit CD (\$10,325)

This project will support the establishment of silvopasture on roughly 5 acres of pasture on a sheep farm.

No-Till / Reduced Till Drill Acquisition Project, Snohomish CD (\$116,880)

This project is to fund a no-till drill for a dairy to use for the seeding of grains, grasses, and legumes and will include a field day to demonstrate no-till/reduced till to other local producers.

Cover Crop Grazing Implementation Project, Spokane CD (\$141,250)

This project will support purchase of over 12,000 feet of temporary fencing and seeding of over 700 acres of cover crop to facilitate cover crop grazing on a dryland crop operation.

Cover Crop Grazing Livestock Water Access Project, Spokane CD (\$141,188)

This project seeks to augment established infrastructure to provide water to livestock for cover crop grazing project on annual dryland crop ground.

Windbreak Project, Stevens County CD (\$4,406)

This project will add a windbreak along the livestock alley to improve cattle protection, soil moisture retention, and forage health at a small organic dairy.

Grazing Management Project, Stevens County CD (\$7,625)

This project will allow a small, diversified grazing operation to overseed a diverse forage mixture into a 27.5-acre pasture to improve forage health and diversity, soil health, and carbon capture potential.

Appendix C

Livestock Technical Assistance Project, Stevens County CD (\$20,000)

This funding will allow development of a Carbon-Smart Grazing Management program, increase outreach for the program, and update grazing literature to be regionally and locally relevant. SCCD will also host many events and farm tours to showcase implemented projects and demonstrations.

Nutrient Management System, Thurston CD (\$49,000)

This funding will provide match for a current EQIP contract with NRCS to improve a farm's Nutrient Management system through constructing a waste storage facility to improve nutrient management.

Temporary Fence Project, Thurston CD (\$15,000)

The purchase of temporary fencing will facilitate intensive prescribed grazing on a livestock operation.

Silvopasture Project, Whatcom CD (\$27,075)

This project will support silvopasture plantings on a livestock operation.

Technical Assistance, Whatcom CD (\$40,965)

This project will support technical assistance to local livestock operators in addressing their carbon sequestration and climate resilience goals.

Cover Crop Seed for Dairies, Whatcom CD (\$21,563)

This project will allow purchase cover crop seed and provide technical assistance for commercial dairy and livestock producers.

Livestock Watering Project, Whitman CD (\$51,121)

This project will provide cost share for a landowner that is requesting assistance to build a well and watering trough with a tank to support prescribed grazing practices.

Livestock Watering Project, Whitman CD (\$100,000)

This project involves building three watering facilities on the property that will support the prescribed grazing efforts and crop production on 2,400 acres. The producer will utilize cattle grazing between crop rotations to facilitate transition to reduced tillage.

Technical Assistance Outreach and Education, Whitman CD (\$17,510)

This funding will support technical assistance to work with land managers to identify potential climate-smart projects.

Fair Manure Spreader, Whitman CD (\$25,000)

This project will provide cost share for the Palouse Empire Jr. Market Stock Sale Association to purchase a manure spreader for use at the Palouse Empire Fair on acres managed by the fair and nearby partners.