

REQUEST FOR PROPOSALS (RFP)

Carbon Sequestration Characterization Study — Northwest Oregon

RFP No. 2026-CCS-02

Northwest Natural Gas Company ("NW Natural")



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1. General Information

Northwest Natural Gas Company ("NW Natural") is soliciting proposals from qualified firms to perform a comprehensive carbon sequestration characterization study in Northwest Oregon (the "Study"). The Study will evaluate the suitability of candidate formations for long-term geological storage and/or mineralization of CO₂, develop a regulatory and permitting roadmap, and produce an actionable decision framework to inform NW Natural's future investments in carbon capture and sequestration (CCS).

NW Natural is a local distribution company headquartered in Portland, Oregon, serving approximately two million people through more than 800,000 meters in Oregon and Southwest Washington. The company is committed to implementing climate solutions that work for the environment, customers, and the community, with a long-term objective of reaching carbon neutrality by 2050.

NW Natural's Integrated Resource Plan identifies CCS as a likely least-cost pathway to achieve deep emissions reductions. Prior internal work and third-party analyses suggest promising sequestration potential in the Western Oregon Basin, including the Sunset Highway Sandstone and Columbia River Basalt Group (CRBG) units near the Mist area. This Study will leverage existing data and fill critical gaps to determine where and how NW Natural should advance CCS development in-state.

NW Natural operates within a regulatory environment that includes Oregon's Climate Protection Program (CPP) and Washington's Climate Commitment Act (CCA). The Study will support NW Natural's strategic planning and compliance under applicable programs by evaluating geologic carbon management options in Oregon and the broader region.

2. Core Problem Statement

The Pacific Northwest lacks permitted, scalable CO₂ storage infrastructure despite increasing decarbonization mandates.

Key barriers include subsurface uncertainty, unclear injectivity performance, lack of hub-scale infrastructure design, and permitting risk.

This RFP is designed to resolve those barriers. Each requirement is structured to eliminate a specific failure mode observed in prior CCS projects, including overestimation of storage capacity, underestimation of injectivity constraints, and failure to align with permitting requirements.

3. Objectives

The objectives of this RFP are to:

- 1) Select an experienced Consultant to complete a robust, decision-ready characterization study of candidate sequestration formations (sedimentary and basalt) in Northwest Oregon, with particular attention to areas proximate to the Mist Underground Natural Gas Storage Facility and the Sunset Highway Sandstone.
- 2) Deliver a defensible technical basis for advancing specific sites to detailed characterization, Class VI permitting, and potential pilot/demonstration.
- 3) Provide a techno-economic analysis (TEA), risk assessment, and phased development plan that NW Natural can use to make investment decisions and pursue funding opportunities past the pilot/demonstration stage.
- 4) Provide an opportunity for electric utilities in the region to leverage the groundwork in objectives 1-3 above to advance carbon capture and sequestration for power generation applications.

4. Project Overview and Scope of Services

4.1 Definitions

Term	Definition
Carbon Capture and Sequestration (CCS)	A suite of technologies and practices that capture CO ₂ from industrial, energy, or ambient sources and transport and store or mineralize it to prevent atmospheric release.
Class VI Well	A geologic sequestration well regulated under the U.S. EPA Underground Injection Control (UIC) program for long-term storage of CO ₂ .
Mineralization (in Basalt)	Injection of CO ₂ -enriched water into reactive basaltic formations to form stable carbonate minerals over time.
Consultant	The selected firm engaged by NW Natural under this RFP to perform the Study.

4.2 Scope of Services

To comply with NW Natural's proprietary data protection requirements, the scope of work below has been revised. International Reservoir Technologies, Inc. (IRT), which currently maintains NW Natural's proprietary subsurface data, is a reservoir engineering and geoscience consulting firm specializing in subsurface characterization, reservoir simulation, and storage performance analysis. IRT will perform the reservoir characterization and modeling activities previously described in Tasks 2, 3, and 4 using NW Natural's proprietary subsurface data and in collaboration with the selected bidder. The selected bidder will receive the resulting reservoir characterization and modeling information under a Non-Disclosure Agreement (NDA) and will use these technical results to complete the remainder of the Carbon Sequestration Characterization Study. IRT will work closely with the selected consultant throughout the Study

to support integration of the reservoir characterization and modeling results into the overall project.

Task 1 — Project Management & Quality Assurance/Quality Control (QA/QC)

Establish project management plan, schedule, communication protocols, and risk register; implement QA/QC procedures; hold monthly progress meetings and provide status reports.

Task 2 — Data Compilation, Integration & Gap Analysis (to be performed by IRT)

Compile and reconcile existing geologic, geophysical, petrophysical, geomechanical, hydrogeologic, and operational data (including NW Natural proprietary Mist data where applicable under NDA). ~~Build a GIS database;~~ Identify data gaps for each location and a prioritized plan to close them.

Task 3 — Geologic Screening & Static Modeling (to be performed by IRT)

Characterize candidate sedimentary units (e.g., Sunset Highway Sandstone) and basalt formations (e.g., CRBG), Grays River Volcanics, Tillamook Volcanics, etc.) for storage/mineralization potential. Develop stratigraphic and structural frameworks; evaluate caprock integrity, faulting, and containment; estimate preliminary storage capacity ranges.

Task 4 — Dynamic Reservoir Simulation & Injectivity Assessment (to be performed by IRT)

Conduct screening-level injectivity and storage performance analyses sufficient to compare candidate formations and identify major technical uncertainties.

Develop order-of-magnitude estimates of storage capacity, injectivity constraints, containment risks, and key data requirements for future characterization. Detailed field-development optimization, pressure management design, and commercial-scale injection planning are not required.

Task 5 — Monitoring, Reporting & Verification (MRV) Concept and Environmental Review

Develop an MRV concept tailored to sedimentary and basalt settings (e.g., pressure/temperature monitoring, seismic, soil gas); identify environmental considerations, baseline data needs, and data QA/QC.

Task 6 — Regulatory & Permitting Roadmap

Map permitting pathway for Class VI (sedimentary storage) and applicable permits for mineralization projects, including EPA UIC, Oregon DOGAMI and DEQ processes, county/municipal approvals, cultural resources, and land access. Define timelines, data requirements, and key decision gates.

Task 7 — CO₂ Supply, Transport & Surface Facilities

Assess candidate CO₂ sources (proximity, volume/quality), transportation options (pipeline/trucking/rail/ships), compression/dehydration needs, interconnection, and phased hub/cluster development concepts. Develop a scalable hub strategy integrating emitters, transport, and storage. Detail least-cost least-risk steps for rapidly scaling up CO₂ transportation and subsequent sequestration by considering methods of CO₂ transportation in and out of the region.

Task 8 — Techno-Economic Analysis (TEA) & Investment Case

Develop CAPEX/OPEX estimates (Class 4/5), levelized cost of storage, and economic scenarios incorporating applicable federal/state incentives. Estimate number of wells, spacing, completion strategy, and monitoring systems needed to meet growth and decarbonization compliance requirements for NW Natural and interested parties, including nearby CO₂ emitters. Provide sensitivity analysis (e.g., utilization rates, financing, schedule, monitoring scope).

Task 9 — Stakeholder & Community Engagement Plan

Identify key stakeholder groups, permitting challenges, land access issues, and community, tribe, landowner and other agency considerations that could materially affect project development schedules or costs.

Task 10 — Risk Identification and Mitigation Plan

Identify technology, policy, permitting, safety, and other adjacent risks associated with large-scale CO₂ transportation and sequestration in the region along with mitigation strategies and potential outcomes. Include risks associated with operating a sequestration reservoir adjacent to an active underground natural gas storage facility.

Task 11 — Deliverables & Decision Framework

Produce interim memos, draft and final reports, an executive summary, GIS package, [and supporting technical documentation model files](#). Provide a decision matrix that scores candidate sites and recommends next steps (e.g. seismic survey design, stratigraphic test well, pilot).

Optional Task 12 — Expand the Report to Consider NW Oregon Power Generation

While completing tasks 1-11, consider CO₂ captured from existing natural gas thermal generation assets and sequestered in the subject geology to support existing and future power generation. Consider immediate and actionable opportunities in the Port Westward area and build a plan from these successes in conjunction with potential large emitters in the region (e.g., renewable diesel or SAF production facilities), CO₂ hubs, CO₂ pipelines, the local production and use of blue hydrogen and associated CO₂, and compatibility with local and state greenhouse gas regulations.

Optional Task 13 — Expand the Report to Consider Washington Power Generation

While completing tasks 1-11, consider CO₂ captured from new or existing natural gas thermal generation assets and sequestered in the subject geology and similar Washington area geology to support existing and future power generation. Consider synergies with other large emitters in the Puget Sound region, CO₂ hubs, CO₂ pipelines, the local production and use of blue hydrogen and associated CO₂, and compatibility with local and state greenhouse gas regulations.

4.3 Deliverables

- Project Management Plan and Schedule (Month 1, [in coordination with IRT](#))
- Monthly status reports and risk register updates
- ~~Data inventory and GIS database (shapefiles/GeoPackage), with metadata~~
- ~~Geologic screening memo with maps and cross-sections~~
- ~~Static and dynamic modeling technical memorandum with inputs/assumptions~~
- MRV concept note and environmental baseline plan
- Regulatory and permitting roadmap with estimated durations and critical path.
- CO₂ supply and transport assessment
- Techno-economic analysis with sensitivities and scenarios, including engineering schematics, development plan, and cost linkage
- Risk identification and mitigation plan
- Phased investment roadmap and decision gate framework
- Draft Final Report (Month 10) and Final Report (Month 12) with executive summary and decision framework

4.4 Schedule

The anticipated period of performance is twelve (12) months from Notice to Proceed (NTP). Key dates for the RFP process and anticipated contract milestones are provided below; NW Natural may adjust dates at its discretion.

<u>Date</u>	<u>Event</u>
07/31/2026	RFP issue date
08/07/2026	Questions due on RFP
08/14/2026	Responses to questions posted/issued
08/28/2026 (11:59 p.m. PT)	Proposal submissions due
09/04/2026	Initial notification / shortlist
09/09/2026 – 09/11/2026	Interviews / presentations (if requested)
09/15/2026	Notification of intent to award

<u>10/15/2026</u>	<u>Target contract execution</u>
<u>10/30/2026</u>	<u>Notice to Proceed (NTP)</u>
<u>10/30/2027</u>	<u>Target Study completion (Final Report)</u>

5. Bidder Instructions

5.1 Point of Contact

All correspondence, including questions and proposal submissions, shall be directed to: renewables@nwnatural.com. Use subject line "RFP 2026-CCS-02 Submission".

5.2 Questions and Communications

Questions regarding this RFP must be submitted by the deadline in Section 4.4. NW Natural may consolidate and issue responses to all prospective Proposers. Communications outside of the process may result in disqualification. NW Natural will host a webinar on Wednesday, July 8 at 10:00AM Pacific to allow for live Q&A:

<https://teams.microsoft.com/meet/23610801043272?p=nUPMRHMrK92c4CxIjH>

5.3 Submission of Proposals

- Each Proposer shall submit its proposal in accordance with this document.
- Proposals shall be submitted via email in unlocked PDF (primary) with editable attachments (Excel/Word) as required.
- Multiple proposals are permissible; each must be a complete, standalone submission labeled Proposal #1, #2, etc.
- Alternative pricing/term structures shall be submitted as separate proposals.
- Include separate prices for optional Task 12 and 13 add-ons for electric utilities to consider.
- Include proposer information & relevant certifications
- Include labor, hours, rates, and other direct costs, exceptions, assumptions, and signed NW Natural bilateral non-disclosure agreement

5.4 Terms and Conditions of Submission

- Proposer shall comply with all applicable laws and regulations; collusive behavior is prohibited.
- All information provided by NW Natural in connection with this RFP is confidential and may not be disclosed except as required to prepare a response and subject to a fully executed Non-Disclosure Agreement (NDA) to be submitted along with proposal.

- Notwithstanding any NDA, Proposer acknowledges that NW Natural may share proposals with regulatory bodies (e.g., Oregon Public Utility Commission and Washington Utilities and Transportation Commission) as required; Proposer waives objections to such review.
- Proposer shall not use NW Natural's name or logos in any public materials without prior written consent.
- NW Natural may request clarification or additional information at any time.

5.5 Errors, Omissions, and Withdrawal

A Proposer that discovers an error or omission may withdraw and resubmit its proposal prior to the submission deadline. A Proposer may withdraw its proposal at any time by notifying the Point of Contact in writing.

6. Proposal Selection and Award Process

6.1 Evaluation

NW Natural will evaluate and rank proposals based on conformance with this RFP, demonstrated qualifications, technical approach, schedule, commercial terms, and price. NW Natural may conduct interviews and request best-and-final offers.

6.2 Minimum Qualifications

- Demonstrated experience delivering at least three (3) geologic carbon sequestration screening/characterization studies within the past seven (7) years, including static/dynamic reservoir modeling and permitting roadmaps
- Experience with basalt mineralization and sedimentary storage projects in the Pacific Northwest or analogous settings
- Familiarity with EPA UIC Class VI permitting requirements and development of MRV concepts
- In-house or teamed capability for geoscience, reservoir engineering, geomechanics, environmental review, and TEA
- Robust QA/QC program and data management practices
- Demonstrated ability to develop utility investment roadmaps, integrated resource planning support, carbon management portfolio evaluations, or similar decision-support analyses.

6.3 Evaluation Criteria (Illustrative)

- Technical approach and understanding of scope
- Relevant firm and key personnel experience; past performance on comparable CCS assignments; references

- Project schedule, staffing plan, and ability to mobilize
- Quality of TEA methodology, risk assessment, and decision framework
- Commitment to safety, environmental stewardship, and community engagement
- Commercial terms, total evaluated price, and value
- Certification as minority-owned, women-owned, disadvantaged or emerging small business
- Oregon/Washington presence and knowledge of regional geology and permitting

6.4 NW Natural Rights

- Select one or more Proposers; negotiate with any Proposer(s); or make no award
- Waive informalities, irregularities, or deficiencies in any proposal
- Cancel or reissue the RFP at any time
- Make selection and award decisions based on any factors deemed appropriate in NW Natural's discretion. This RFP creates no obligations, express or implied.

7. Proposal Response Package Components

- A. Cover Letter (authorized signature)
- B. Executive Summary
- C. Technical Proposal: approach by task, assumptions, deliverables, QA/QC
- D. Project Team: organization chart; key personnel resumes (2 pages max each)
- E. Relevant Experience: at least three comparable CCS studies with client contacts
- F. Schedule: Gantt-style schedule with milestones and key decision gates
- G. Cost Proposal: time-and-materials with not-to-exceed (NTE) or fixed price; include labor categories, hours, rates, and ODCs; identify optional tasks
- H. Commercial Exceptions: redlines or exceptions to standard terms (if any)
- I. Safety, Environmental, and Community Engagement plan summary
- J. Forms: signed NDA and Certifications
- K. Cost Proposals for Optional Tasks 12 and 13

Optional:

- Sample work products (non-confidential)

- Small/disadvantaged business certifications
- Draft data management plan

8. Contracting, Confidentiality, and Additional Terms

- **Contract Form:** The engagement will be under NW Natural’s standard professional services agreement (PSA). The agreement is available upon request and bidders are strongly encouraged to submit a mark-up with their bids.
- **Ownership:** All work product, data, models, and deliverables created under the contract shall be “work made for hire” and owned by NW Natural, subject to third-party license restrictions disclosed by Consultant and approved by NW Natural.
- **Confidentiality:** Consultant must execute an NDA. NW Natural may disclose proposal and project information as required by law and to regulators.
- **Insurance:** Maintain commercially reasonable insurance, including general liability, professional liability/errors & omissions, automobile, and workers’ compensation; certificates required upon award.
- **Health, Safety & Environment:** Adhere to NW Natural safety policies and applicable laws during field and office work; provide a project-specific Health and Safety Plan prior to field activities.
- **Data Security:** Implement appropriate cybersecurity and data protection practices; no external data sharing without NW Natural approval.
- **Invoicing & Payment:** Payment schedule shown below with percentage of total project bid and deliverable; payment terms net 30 days upon receipt of proper invoice.

Notice to Proceed	10%
Preliminary Findings Report Out	20%
Draft Final Report Delivered	30%
Final Report Delivered	35%
Final Acceptance	5%

Appendix A — Study Area Context and Prior Findings (Summary)

The Western Oregon Basin exhibits promising characteristics for CO₂ storage and/or mineralization. Prior screening indicates the Sunset Highway Sandstone possesses favorable porosity and permeability at appropriate depths (approximately 2,900–5,500 ft) beneath regionally extensive caprock, with structurally isolated blocks that may aid containment. Basalt formations in the Mist area may enable rapid mineralization with potential operational advantages (e.g., lower operating pressures). This Study will validate and refine these findings and define next steps including seismic survey design, stratigraphic test wells, permitting, and pilot planning.

IRT will provide the results of the results of the modeling obtained from the available data.

Existing data that would be made available include:

- Production and log data for each Mist, OR area gas well
- Storage data from 40+ years of gas storage well operation at Mist, OR
- 3D seismic survey over Mist UGS field (3.9+ sq miles)
- Mineralization focused L1 geologic screening study