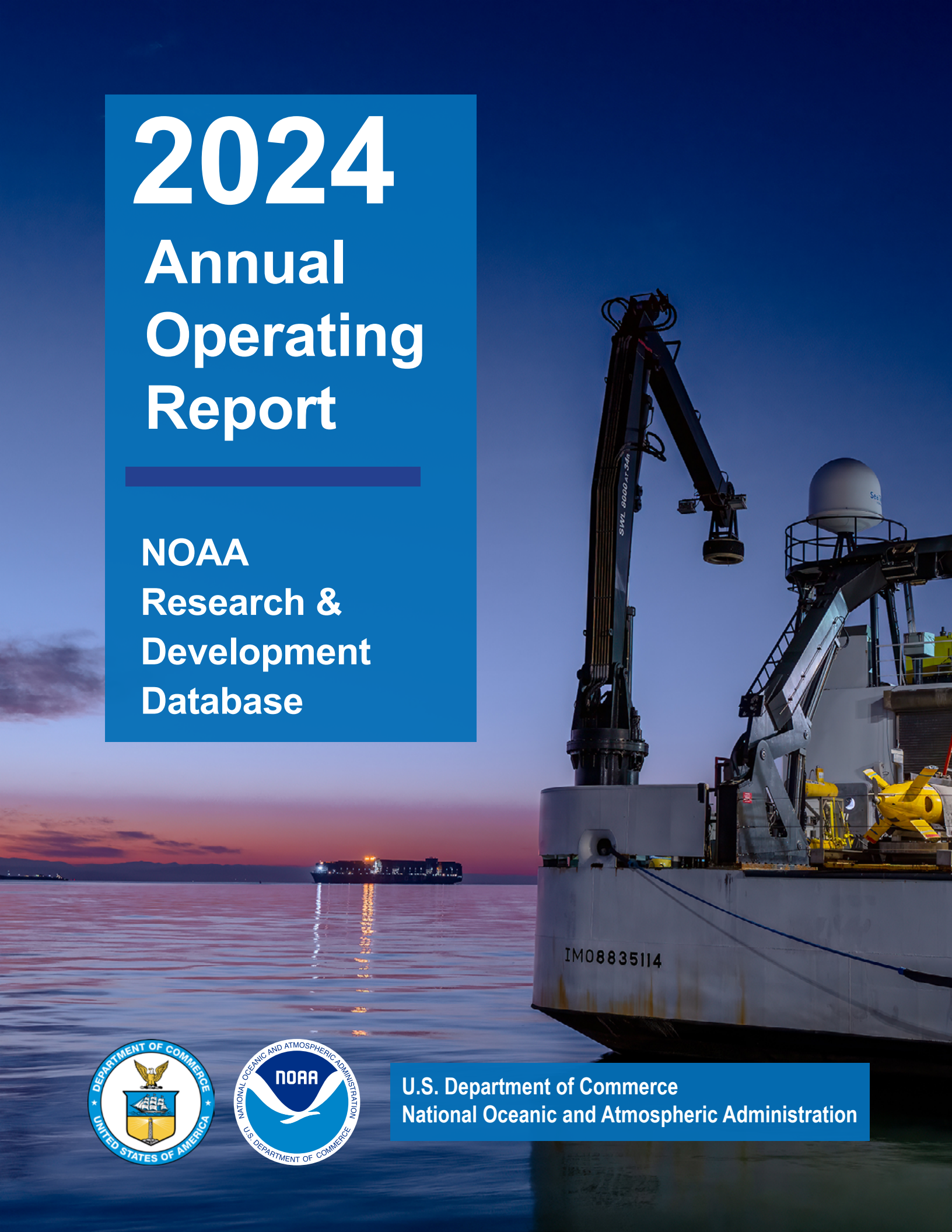
2024 Annual Operating Report

NOAA Research & Development Database



U.S. Department of Commerce
National Oceanic and Atmospheric Administration

2024 NOAA Research & Development Database Annual Operating Report

NOAA Technical Memorandum OAR OSS-005

Office of Science Support
NRDD Management and Development Team

Karin Bucht, Meka Laster, Ishrat Jabin,[1] Megan Deehan, Laura Newcomb, Tim Snyder, Kai Mong, Allison Owen,[1] Kristina Kiest,[1] and Moe Pahlavan

Acknowledgments

This work was completed with the collaborative efforts and input of the entire NRDD community: data enterers, program and project managers, the NRDD Information Technology (IT) team, the Research and Development Enterprise Committee (RDEC) and many more. This report aims to share the accomplishments and milestones delivered by the NRDD community.

Cover Photo

NOAA Ship *Okeanos Explorer* at the dock in San Francisco, California, with autonomous underwater vehicles *Eagle Ray* (right) and *Mola Mola* (left) on the deck. Credit: Image courtesy of Art Howard, Global Foundation for Ocean Exploration/NOAA Ocean Exploration, 2023 EXPRESS: Exploration of Central California Coast.

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[1] NRDD team members who contributed to NRDD management and development efforts in 2024, but were no longer involved with the NRDD at the time of this report.

Contents

Executive Summary

The National Oceanic and Atmospheric Administration (NOAA) Administrative Order (NAO) 216-115B provides guidance for continual planning, review, evaluation, and rebalancing of NOAA's research and development (R&D) to address evolving mission needs. This NAO mandates that NOAA identify and monitor planned and actual investments for NOAA R&D in a database to maintain accountability for its R&D portfolio. In 2024, the NOAA Research and Development Database (NRDD) served as such a database, providing a single access point for data on R&D projects conducted by NOAA and NOAA-funded external partners.

The 2024 NRDD Annual Operating Report provides an overview of NRDD data inputs, usage, stakeholder engagement, and improvements made during 2024, to inform the NOAA Research and Development Enterprise Committee (RDEC) and the NRDD user community how NRDD funding was used.

Users created and approved 230 new NRDD project records in 2024 and made and approved updates to over 330 existing projects during the FY24 Project Actuals Data Call. As of April 2025, there were 5,376 approved project entries in the NRDD system, 672 of which were active, ongoing projects.

The NRDD team conducted a variety of user and stakeholder engagement activities in 2024, including user forum meetings, listening sessions with NOAA Research (OAR) labs and programs, an NRDD training series open to anyone at NOAA, and the development of new communication and training materials.

The NRDD team implemented several improvements to the NRDD system and related tools for data entry and access in 2024. These included:

1. **.NET (Cloud) Migration** in which the NRDD site and associated tools were migrated from their former server-based environment, to an Amazon Web Services (AWS) cloud environment in alignment with OAR IT's cloud migration strategy.
2. **Transition Plan Visibility Changes** to limit view and download access of transition plans uploaded to the NRDD to protect potentially sensitive information contained in plan documents.
3. **Changes to Format Requirements for NOAA Funding Lines** to align with updated format requirements with the implementation of Business Applications Solutions (BAS) at NOAA.
4. **Interactive Project Dashboard** on Looker Studio that allows users to dynamically explore approved NRDD project data without logging onto the NRDD site.
5. **Bulk Template Improvements** to streamline and improve clarity of data entry processes and ensure completeness of data provided via Google Sheet bulk templates.

In April 2025, the NOAA Science Council accepted a recommendation to sunset the NRDD due to insufficient funding to continue the NRDD's operations and maintenance. The NRDD was sunset on April 8, 2025. In this process the NRDD site and data were archived and parked, and offices had the opportunity to receive a copy of their own NRDD data for office-level use.

Section I. Background

About the NRDD

The NRDD, an online repository that served as a single access point for data on R&D projects conducted by NOAA and NOAA-funded external partners, supported NOAA in monitoring its research and development (R&D) portfolio. The NRDD supported the implementation of NAO 216-115B by helping capture consistent and comprehensive information on NOAA's R&D investments.

The NRDD was populated with information from all NOAA line offices (LO) that conduct R&D activities. It included the following data for each project:[2]

Category	Mandatory Data Fields	Optional Data Fields
Owners	Project title, accountable office, point of contact, principal investigator	Executing office (for collaborative projects), project team members
Project Goals	Project status, project dates	Deliverables, milestones, line office (LO) performance measures
Description	Description, benefits	Outcomes, project documents, URLs, keywords, linkages to special projects
Transitions	Current readiness level, transition plan status, transition adopters, transition types, transition date[3]	Planned readiness levels, readiness level dates
Partners	NOAA partners, external partners	Project stakeholders
Strategic Plans	None	Linkages to goals in Department of Commerce Strategic Plan, NOAA Strategic Plan, NOAA R&D Plans
Resources[4]	None	Funding lines, grant numbers, planned and actual project cost, leveraged resources

The NRDD standardized project metadata to enable discovery and access of R&D information across NOAA. The NRDD housed information on over 5,500 R&D projects, information which could be accessed by any NOAA federal or contract staff with an NRDD account.

The NOAA Science Council coordinates all matters of R&D within NOAA (as per NAO 216-115B) and was the sole executive sponsor for the NRDD. The Procedural Handbook for NAO 216-115B

[2] Not all NRDD data fields/types were mandatory. See the NRDD Fields List for information on which data fields were required and historical changes in mandatory field requirements.
[3] Transition adopters, types, and date were conditionally required if a transition plan for a project existed. If the project did not have a transition plan, then these fields were optional.
[4] Resource information data fields were optional and only visible for certain NRDD users.

established that 1) the RDEC, a working committee under the NOAA Science Council, provide oversight for the NRDD and 2) the NRDD management team manage the overall design and functional integrity of the NRDD from a technical perspective.

NRDD Purpose and Scope

The NRDD aimed to support NOAA's R&D enterprise and project management by improving the transparency and coordination of R&D activities, facilitating research transitions, and assisting with strategic planning efforts. The NRDD provided a unique benefit to NOAA in that it contained R&D project information from across NOAA, allowing access to information on R&D efforts of multiple NOAA line offices in a single, consistent location.

More specifically, the NRDD supported **enterprise management** by providing:

- A data collection tool for monitoring NOAA's R&D portfolio in specific topical areas and responding to special R&D taskers (assigned tasks or activities to be completed within a designated time frame) and Congressional Inquiries;
- Support for NOAA's ability to transition research to operations, applications, commercialization, and other uses by tracking readiness level progression, completed transitions, and providing a repository for all signed transition plans; and
- A means of collecting information on accomplishments, internal and external collaborations, and integration across NOAA.

In terms of **project management**, the NRDD:

- Enabled individual labs, programs, and science centers to keep track of their respective project milestones and metrics;
- Provided cross-NOAA visibility to individual labs, programs, and their R&D progress;
- Enabled recognition and attribution of lab and program scientists and their contributions to NOAA's R&D portfolio; and
- Facilitated opportunities for conversations between principal investigators (PIs), NRDD data enters, and project managers on NOAA priorities and strategic goals.

The NRDD housed information on R&D projects from across NOAA line offices. While new project record additions were made to the database each year, the NRDD did not represent the organization's full portfolio, as participation and engagement varied by NOAA line office and over time.

In this report, we highlight how the NRDD was used in 2024, including project updates, uses of the website and NRDD application, and requests for NRDD data. We also discuss user engagement activities and improvements made to the NRDD during 2024.

Section II. NRDD Usage & Analytics

NRDD Website & User Analytics

The NRDD website, previously at researchprojects.noaa.gov, hosted the NRDD application, which included tools for creating and editing projects, project search, project summaries, user dashboards, and Query Builder, an NRDD tool for searching and exporting project data.

In addition to the application itself, users could access the website for general NRDD information, announcements, training materials, technical reports, and NRDD account registration. In 2024, the NRDD team created 80 new NRDD user accounts. As of February 2025, the NRDD had a total of 751 registered users.

With Google Analytics, we can track user behavior and assess usage of the NRDD application. In this report, we focus our analysis on NRDD application pages that require an NRDD login, rather than public-facing pages (Documents, Announcements, etc.)

The total number of users and average monthly sessions using NRDD search tools (Project Search and Query Builder) and NRDD project editing tools (Create a Project, Edit Project, and My Dashboard) in 2024 are summarized in Table 1.

Table 1: *Total number of users and average monthly sessions of NRDD search tools (Project Search and Query Builder) and NRDD project editing tools (Create a Project, Edit Project, My Dashboard) in 2024 according to site Google Analytics.*

Type	Page	Total # Users in 2024	Average Sessions per Month
NRDD Search Tools	Project Search	336	207.8
	Query Builder	163	78.5
NRDD Project Editing Tools	Create a Project	113	54.1
	Edit Project	255	293.9
	My Dashboard	202	178.8

The Edit Project page (used for editing and submitting projects) received the most traffic, with an average of 293.9 sessions per month. The second and third most visited pages were Project Search and My Dashboard. These patterns are consistent with trends from previous years.

We can also track trends in visitation and usage of specific pages on the NRDD site over the course of the year (Figures 1 and 2). Use of the NRDD project editing pages in 2024 peaked around the NRDD data call deadlines in March and July.

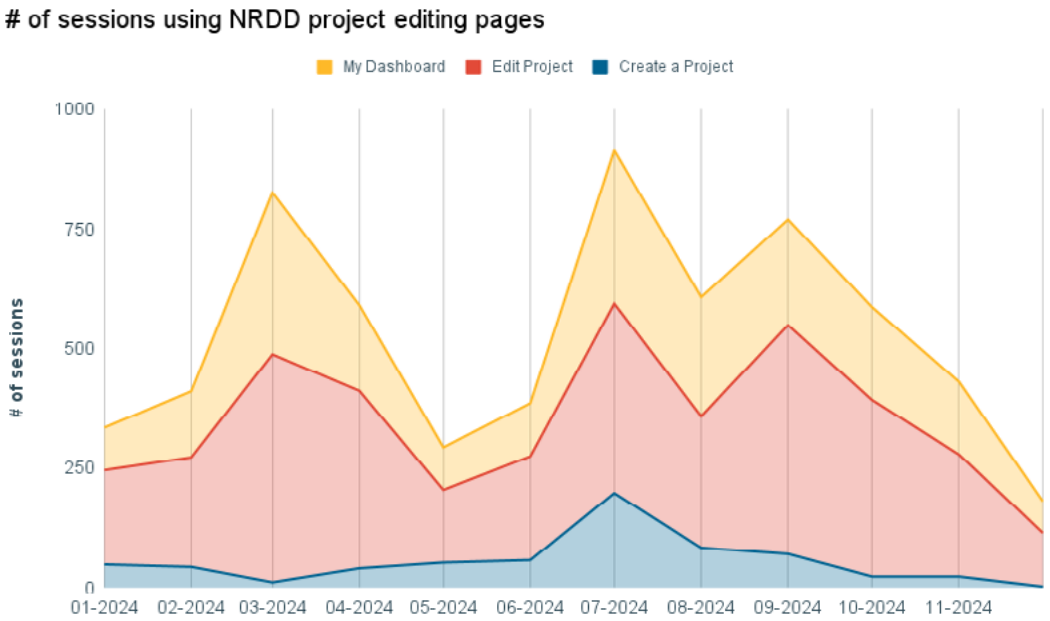

Figure 1: *Monthly number of user sessions for NRDD project editing pages (My Dashboard, Edit Project, and Create a Project).*

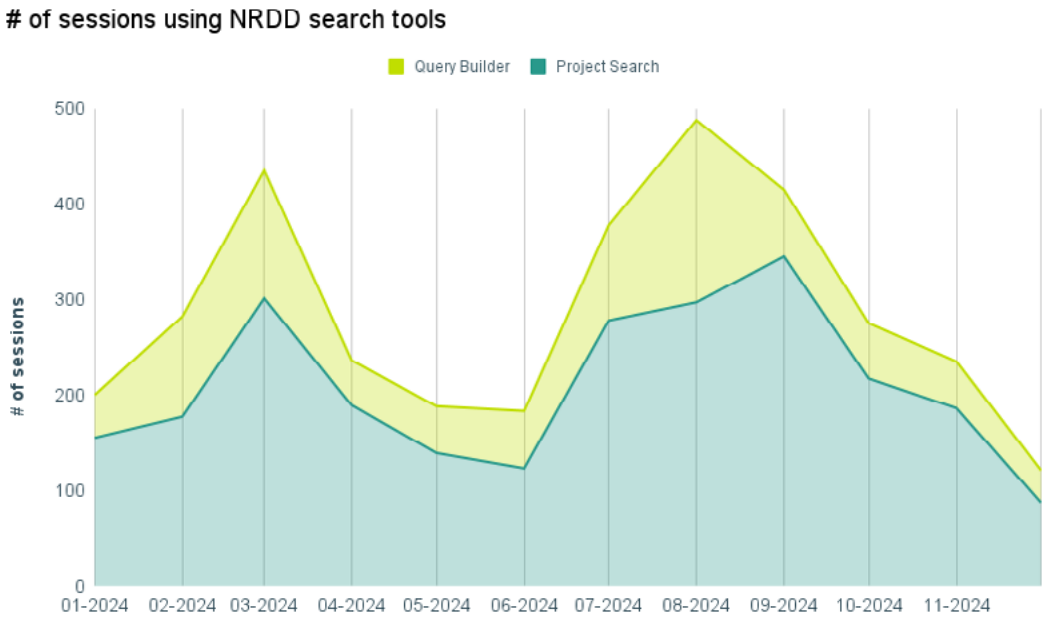

Figure 2: *Monthly number of user sessions for NRDD search tools (Query Builder and Project Search).*

The use of NRDD search tools (Query Builder and Project Search) in 2024 followed similar patterns of use, with peaks in usage near NRDD data call deadlines in March and July (Figure 2).

Project Data - Imports and Updates

Each year, the NOAA RDEC established timelines for two NRDD data calls:

1. **Project Plans Data Call** in which users were asked to enter new projects that were still in the planning phase or ongoing/older projects that had not yet been entered into the database. The FY24 Project Plans Data Call took place from May 1st, 2024 to July 31st, 2024.

2. **Project Actuals Data Call** in which users were asked to update existing project entries in the database with actuals information, including changes to project statuses, readiness levels, or project dates. The FY24 Project Actuals Data Call took place from November 18th, 2024 to March 31st, 2025.

The NRDD team monitored imports and updates to the database to track response levels and to help mitigate issues related to data entry.

New Project Entries

Users added and approved 230 new R&D project entries in the NRDD during FY24. This was a lower number of imports compared to prior years, potentially due to a variety of factors. The annual and line office-level distribution of project inputs can be seen in Figure 3.[5]

The amount of data ingested into NRDD fluctuated year-to-year due to varying levels of office participation. Large bulk imports including several years' worth of data could also lead to 'spikes' in yearly totals of new projects with lower levels in years when bulk contributions did not occur.

Furthermore, it is likely that the limited access to bulk import templates due to the new NRDD funding model[6] reduced project inputs in 2024. FY24 marked the first Project Plans Data Call under the new funding model where access to bulk templates was restricted to offices from paying line offices (OAR and NESDIS). Of the 230 projects added to the NRDD in 2024, 28% were imported using bulk templates and 72% were input via the NRDD web editor (available to all line offices).

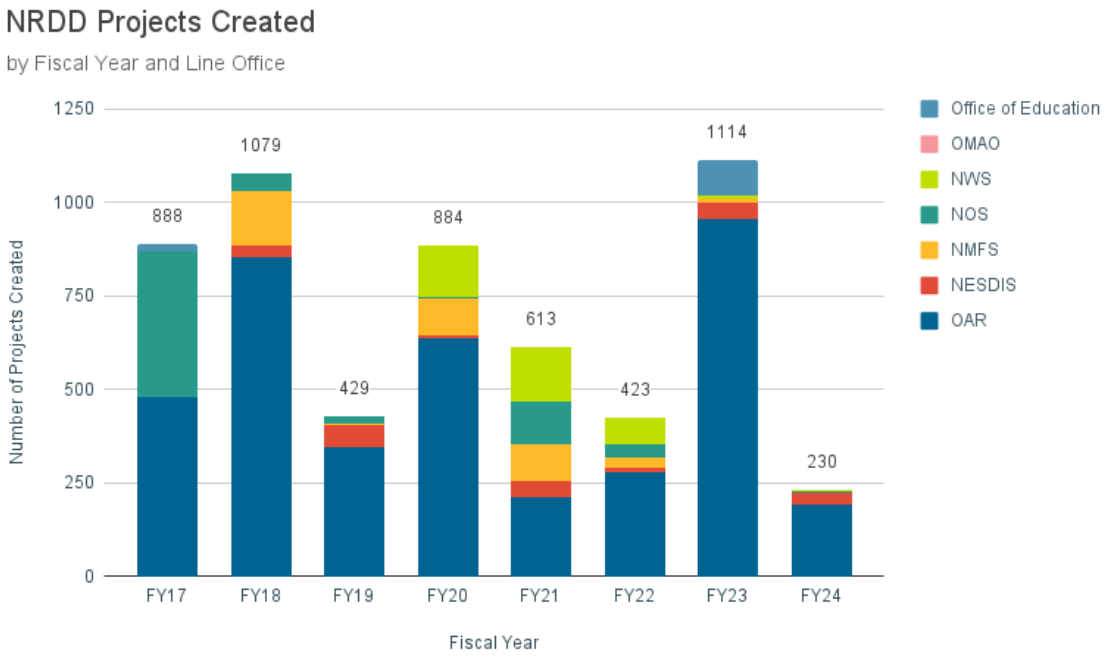

Figure 3: *Approved new project entries added to the NRDD by fiscal year and line office. This information was determined from the project 'Creation Date.'*

[5] Totals by year may be slightly lower than prior reports as projects that have been deleted from the database are not included.

[6] Starting October 2023, with the new NRDD funding model, only paying line offices received access to certain services including access to import and export templates for bulk entry and updating of project data. In FY24, only OAR and NESDIS users had access to templates as part of this model. All line offices continued to have access to the NRDD website/application.

Project Updates

Users made and approved updates to 334 existing projects during the FY24 Project Actuals Data Call (conducted from November 1st, 2024 to March 31st, 2025). Table 2 lists the number of projects updated by each line office and how much they contributed to the line office's total portfolio.

Not all projects were expected to have changes during the Project Actuals Data Call, as each project experiences a unique process and timeline.

Table 2: *Column 2 reflects the total number of projects updated and approved in each line office during the FY24 Project Actuals Data Call. Column 3 lists the total number of approved projects in the NRDD for the line office. Column 4 reflects the percentage of the line office's portfolio updated during the data call.*

Line Office	FY24 Updates to Actuals	Total Projects per Line Office	Percent of Line Office Portfolio Updated
NESDIS	45	237	19.0%
NMFS	24	385	6.2%
NOS	0	620	0.0%
NWS	1	366	0.3%
OAR	264	3987	6.6%
OMAO	0	1	0.0%
Office of Education	0	115	0.0%

2024 NRDD Data Use

In 2024, the NRDD team received seven requests to query and extract NRDD data. These requests provided data for a variety of objectives and included requests from NOAA leadership, cross-NOAA initiatives, and organization-level requests. Examples included:

- The OAR Assistant Chief Data Officer requested information on OAR projects involving geographic information systems (GIS) to include in a presentation on GIS work for the NOAA GIS Working Group. An NRDD query showcased 80 OAR R&D projects focused on or using GIS, geographic data, and/or spatial analysis.
- The OAR Program Coordination Officer (PCO) requested information on projects related to or using Amazon Web Services (AWS) to help provide background information to the NOAA Administrator for an upcoming meeting with industry stakeholders. The search yielded information on over 20 projects referencing AWS or Amazon in their description, milestones, or deliverables.
- The Ocean Acidification Program (OAP) requested information on 'omics projects in the NRDD. This query aimed to help respond to a request from the Office of Management and Budget (OMB) to identify relevant activities on biotechnology and biomanufacturing to inform policies and implementation efforts in these areas. The NRDD query yielded information on 97 projects with 'omics keywords.

In addition to NRDD team-facilitated search and export of NRDD data, users could search and export data on their own using NRDD's Project Search and Query Builder tools. The NRDD team does not have information on the specific searches conducted by users, but information on the overall usage of these tools can be found in the NRDD Website & User Analytics section.

Examples of NRDD Applications in 2024

We asked some of our users to share their experience using the NRDD in 2024. Two examples of office-level uses of the NRDD, one by the Office of Research Transitions & Applications (ORTA) and one by the Global Systems Laboratory (GSL), are shared below.

NRDD Data Jumpstart Office of Research Transitions & Applications Report on NOAA Research Transitions

NOAA's Office of Research Transitions & Applications (ORTA) facilitates the transition of NOAA's research to real-life applications to help maximize societal benefits from NOAA's R&D. In July 2024, ORTA was tasked by the OAR Deputy Assistant Administrator (DAA) for Science to provide metrics on transition planning for all OAR labs.

The request initially seemed like an enormous task; the ORTA team knew that most information sources had gaps, so there was no single location for compiling all data. More manual processes would require identifying and reaching out to points of contacts who then would need to track down information for each of OAR's labs and programs. This was time consuming and subject to inputs (or lack thereof) from each person the request trickled down to.

To help jumpstart ORTA's data compilation efforts, the NRDD team queried NRDD data on projects for the 16 OAR labs and programs, including associated dates, statuses, readiness levels, and transitions. From this, ORTA was able to build a spreadsheet with tabs for each lab and program. Primary points of contacts then only needed to verify the information or fill in the gaps, as needed.

Being able to query the NRDD was crucial in making it possible for the ORTA team to respond to the request in the time they had. "It saved us 50% of the work," estimated Ken Vierra, former ORTA Transition Support Specialist. Without the NRDD, the process of finding information would have required numerous taskers, with requests dispersed to individuals throughout the labs and programs. "It would have been undoable in the timeframe required by OAR Leadership if we started from zero," Ken added, "It would have taken months and months…The fact that we had the NRDD as a springboard was crucial."

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>
> - Kenneth Vierra, former ORTA Transition Support Specialist

The ORTA team compiled the data and shared the final product, including charts and stats on every OAR lab and program's projects, transition plans, and readiness levels with the OAR DAA. The report showed a snapshot in time of OAR projects and programs, but also demonstrated challenges of project information management across the organization.

"We knew that there was no one-size-fits-all database…and we knew that databases are only as good as the data that are in them," Ken explained. This could be a challenge with the NRDD as it is with other systems at NOAA. Despite these challenges, the centralized nature of the NRDD and its data proved to be invaluable for generating the snapshot of R&D transitions and the eventual benefits of NOAA research to society.

Global Systems Laboratory Develops Custom Internal Database Aligned with NRDD

Global Systems Laboratory's (GSL) research helps improve environmental predictions, develop decision support tools, and support NOAA's work in enabling a Weather-Ready Nation. Matt Mahalik joined GSL as Program Management Lead in 2023 with a focus on using project management practices to better understand, track, and implement GSL's research portfolio. It quickly became clear that GSL projects had many different funding sources, milestones, and schedules, making it difficult to trace projects with the systems they had available.

Spearheaded by Matt, the GSL Program Management Office launched a year-and-a-half effort to create its own internal project management database in SmartSheet, using the NRDD as a springboard to develop the system. The team was able to align data fields with NRDD requirements and use existing NRDD data to populate much of their database, while building out additional fields and workflows to best fit the needs of GSL and its scientists.

"The NRDD was good for identifying projects that didn't appear in any of our existing project management tracking sheets," Matt explained. The NRDD revealed older, legacy projects that weren't listed elsewhere, enabling the team to ensure nothing got missed. "We would have had more projects fall through the cracks if the NRDD did not exist."

> **"We would have had more projects fall through the cracks if the NRDD did not exist.**
>
> - Matthew Mahalik, GSL Mission Support Branch Chief

To maintain its database, the GSL team introduced workflows to leverage existing reporting requirements and reduce duplicate requests for information. When project leads submitted progress reports required by grants and other funding requirements, they filled out a form which inputted information directly into the GSL internal database. The GSL Program Management Office copied the information into the NRDD, so that relevant data was available to the broader NOAA community. GSL is able to use the information gathered in its database throughout the year to respond to taskers without adding extra burden to its science teams.

GSL is now using its internal database to understand and manage its portfolio. "The exercise [of building out an internal database] has helped us think about different ways of considering projects and how to design transition plans and transitions to operations," Matt said. "This has helped us wrangle all the different scopes of work that are out there." Already, the team has increased their understanding of the GSL portfolio, such as quantifying the number of projects that use IT resources like high-performance computing and virtual machines. This helps leadership to make strategic decisions about investing in those resources..

Visualizing GSL's portfolio data has also revealed nuances of how different divisions operate and changes to GSL's portfolio over time. "It has been an interesting first look at relationships," Matt said. For instance, textual analysis revealed a sharp increase in usage of the words "fire," "observations," and "precipitation" over the past five years. Meanwhile, terms such as "FV3" and "ensemble" have become less common. This information reflects GSL's shift in strategic direction and can be used to ensure that the lab's research is in alignment with its strategic plan.

While the GSL team has just begun exploring the potential of their internal database, their efforts showcase how one office has found a way to create a system that works for their needs, while contributing to the NRDD goal of sharing information across NOAA for improved transparency and coordination of NOAA R&D.

Section III. User and Stakeholder Engagement

During the year, the NRDD team maintained ongoing communications with its users to provide key updates, troubleshoot issues, offer support, and gather feedback. Communication and engagement activities throughout the year included meetings, emails and announcements, and training sessions and presentations for various stakeholders.

In 2024, major user and stakeholder engagement activities included quarterly user forums, OAR listening sessions, a training series, and the development of new NRDD communication materials.

NRDD User Forum

The NRDD User Forum was an optional email distribution group available to NRDD users. Members of the group were invited to quarterly "NRDD user forum" meetings and received monthly announcement emails with updates, reminders, and other NRDD information. About 37% of the NRDD's 751 users were part of the NRDD User Forum as of February 2025.

In 2024, the NRDD team held four user forum meetings to update users on system changes, solicit feedback, and address topics of interest. In addition to ongoing updates and reminders, special topics covered during the 2024 user forum meetings included:

- Demonstration of the NRDD Application Programming Interface (API)
- Presentation and discussion on potential change request to restrict visibility of transition plans uploaded to the NRDD
- Discussion on what to expect with the NRDD site's cloud migration in August 2024
- Presentation and discussion on the Line Office Transition Manager Committee's (LOTMC) proposed new annual report process using NRDD data

The number of attendees at the quarterly forum meetings ranged from 13 to 23, with participants from OAR, NESDIS, NMFS, NOS, and NWS.

OAR Listening Sessions

Between June and October 2024, the NRDD team held listening sessions with 18 OAR offices, programs, and labs, and one NOAA headquarters office, engaging with 109 attendees in total. In the sessions, users were asked to share feedback on their experience with the NRDD, including what worked, what didn't, and thoughts on potential improvements. The sessions had an open format to allow users to focus on the topics most important to them.

Afterwards, the NRDD team organized and coded session notes, grouped takeaways into common findings, and shared the insights from the sessions with leadership and the NRDD user community. These findings included:

- **The burden of data entry had been reduced, but not by enough.** Reduced requirements and templates for bulk data import were helpful, but data entry still took significant time and effort. Some found the administrative work hard to justify, resulting in delayed or no data inputs. Those who provided regular updates wished for improved functionality and coordination with other reporting processes.
- **Lack of alignment in reporting requirements resulted in redundant work.** Users mentioned frustration with duplicative requirements between NRDD and other reporting requirements (e.g. annual operating plans). Better alignment and coordination between reporting efforts may have helped to reduce burden.
- **Technology could improve NRDD utility and user experience.** A more streamlined NRDD interface, automating data exchange with other systems, and more robust search capabilities would improve user experience. Users pointed out the potential for integrating with existing NOAA systems or technologies being trialed at NOAA.
- **Data were not always reliable enough to meet certain user needs.** Inconsistent or incomplete data inputs across the agency led to uncertainty about data quality and accuracy. As a result, some people did not seek information from NRDD. While some users found useful insights from the NRDD, data format or type did not always meet all user needs.
- **NRDD was perceived to benefit leadership more than offices or labs.** Users expressed an understanding of the NRDD's value to upper leadership and at a NOAA-wide level, but often felt that there was limited return on investment in time they spent providing data at the office/lab level.
- **Misconceptions or knowledge gaps may have limited NRDD use.** Users held several misconceptions and knowledge gaps regarding the NRDD. Uncertainty may have limited inputs and NRDD use since users were unsure about what data should be added, how to do so, and how the NRDD system worked.
- **Users need to hear from leadership.** Users wanted to know current leadership perspectives on the NRDD, with some offices stating that data input would not be prioritized unless leadership signaled otherwise. Others desired more vocal leadership support and direction to ensure more consistent participation across offices.

NRDD Training Series

In November 2024, the NRDD team hosted an NRDD training series, which was open to anyone at NOAA. The three-part series included the following sessions:

- **NRDD 101:** broad introduction to what the NRDD was, its goals, history, who was involved, and how it could be used.
- **NRDD Data Entry & Updates:** for programs or individuals submitting R&D project data to the NRDD, with information on types of data entry, tips for using the web editor/bulk templates, and project entry workflow.
- **NRDD Searching & Querying:** guidance on how to use the NRDD Project Search and Query Builder tools to find and export information of interest.

The sessions had an average of 13 attendees each, with a total of 25 individuals trained across the series. The materials from the training series were posted to the NRDD Training Materials page to serve as a resource for other users.

Development of New Materials

Over the course of the year, the NRDD team developed several new communication materials to help improve understanding at NOAA about the NRDD and support users with data entry, including:

- **NRDD Factsheet** - Two-page overview with information on the NRDD's background, data, and links for getting started.
- **10 Use Cases of the NRDD** - Slidedeck with 10 examples of past NRDD searches and uses, to illustrate how and why NRDD data gets used at NOAA and types of searches users might conduct.
- **Data Call Guidelines** - Guidance on NRDD data calls, including what they are, who is responsible, and how to respond to data calls.
- **Guide to Bulk Templates** - Information on what Google Sheet NRDD bulk templates are and how they can be used to upload or update project information in the NRDD.

All new NRDD materials were posted to the site's Documents and/or Training Materials pages.

Section IV. NRDD System Developments and Enhancements

In 2024, the NRDD team implemented several improvements to address evolving requirements, ensure alignment with updated NOAA systems, and improve data entry and data access These included a new interactive project dashboard in Looker Studio, the migration of the NRDD site to a cloud-based environment, adjustments to the visibility of transition plan documents, changes to format requirements for NOAA funding lines, and improvements to bulk templates for NRDD data imports.

For information on NRDD developments and improvements prior to 2024, see Appendix C: NRRD

Evolution & Improvements 2016-2024.

Interactive Project Dashboard

In February 2024, the NRDD team released a new interactive dashboard based in Looker Studio. This project dashboard allowed users to search, filter, and drill down into specific aspects of NRDD data (e.g. by line office, deliverable type, readiness level, etc.), a feature lacking in previous NRDD data visualization tools. The dashboard had thematic tabs with general project information, external partners, R&D transition info, R&D deliverables, and NOAA R&D Vision Areas. The NRDD team refreshed the dashboard on a monthly basis with the most recent NRDD data.

Users of the dashboard shared appreciation for the tool as a user-friendly way to explore different aspects of NRDD data. In particular, users frequently mentioned the external partners tab's map visualization, which showed locations of external partners associated with projects, as a useful way to see at a glance if NOAA had partnerships in a given region.

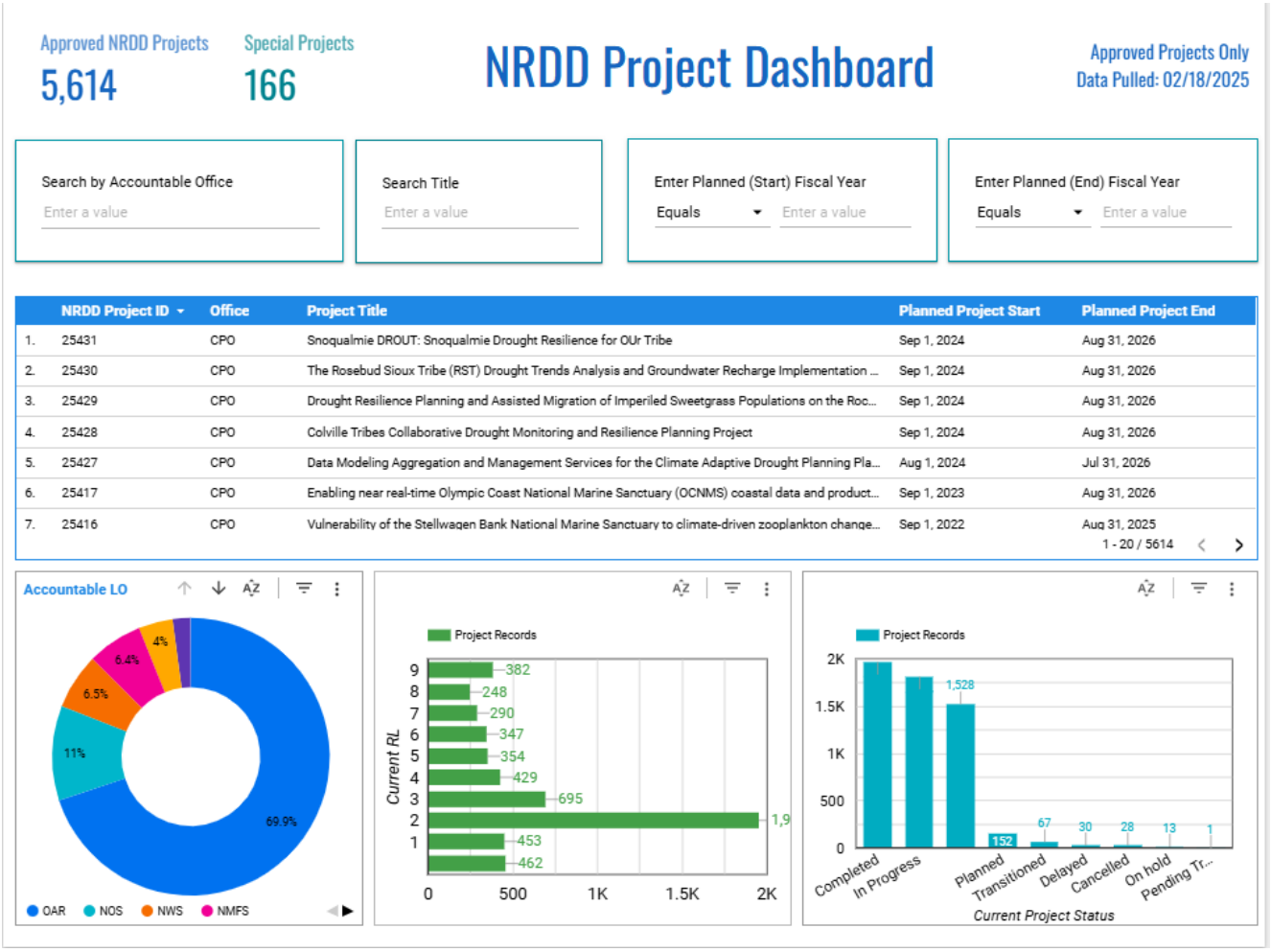

Figure 4: *Snapshot of the NRDD Project Dashboard as of February 2025. The dashboard includes key statistics and charts about NOAA R&D projects in the NRDD.*

.NET (Cloud) Migration

In 2024, the NRDD web development team migrated the NRDD site from its former content management system (DNN) to the .NET development platform, allowing the site to be hosted in an

AWS cloud-based environment. The migration helped align the NRDD with OAR IT's cloud migration strategy, improve site security, and open the door to future enhanced development capabilities and cloud-based integrations. Furthermore, the migration away from DNN would help reduce costs as the DNN license cost had increased significantly over the last several years with minimal added benefits.

The migration process involved developing the site in the new environment, extensive testing, communications and user support to plan for the site's temporary outage during the migration, the migration itself, and troubleshooting to identify and fix issues post-migration. In August, the NRDD web development team successfully completed the migration, with the NRDD site fully operational in its new cloud environment.

Transition Plan Visibility Changes

Due to concerns over access and sharing of sensitive information such as intellectual property or PII/BII that may be found in some transition plan documents, the NRDD team implemented a change request to limit transition plan visibility in the NRDD. The request was submitted by ORTA and approved by the RDEC.

As a result of this change, users could see whether an NRDD project had an uploaded transition plan, but could no longer download transition plan files to view their contents. Users who wished to view certain transition plans could submit requests to ORTA via a Google Form linked on the project summary page. In addition, new permissions were developed to allow the ORTA team access to the NRDD 'Transition Plans Module,' which allowed for the bulk download of transition plan files from the NRDD.

Changes to Format Requirements for NOAA Funding Line Data

The NRDD team updated format requirements for the NOAA funding line data field to reflect format changes with the implementation of Business Applications Solution (BAS) at NOAA. Information previously entered into the NRDD was left as-is, but users who added or edited NOAA funding line data after the change needed to use the new 12-digit BAS format (XX-XX-XX-XX-XXXX).

Bulk Template Improvements

In preparation for the FY24 Project Actuals Data Call, the NRDD team made improvements to bulk templates, Google sheet templates that allow users to add or update NRDD projects in bulk. Improvements included:

- Standardized formatting, with conditional formatting and highlighting to flag required fields and data entry errors;
- Improved instructions tab and updated instructions to individual data fields;
- Updated year options for resource data;
- Fix to a prior issue with export and updating of collaborative project data; and
- Automation to populate external partner organizations into the partners tab if they were listed as a PI affiliation but not included as a partner by the data enterer.

These improvements aimed to streamline data entry processes, reduce user confusion, and ensure completeness of data provided via bulk templates. The updated templates were made available to users in November 2024.

Section V. NRDD Sunset

At its March 24, 2025 meeting, the NOAA RDEC, the governing body for the NRDD, discussed a recommendation to sunset the NRDD due to an upcoming lapse in funding support to maintain the operations and maintenance of the database. After careful consideration, the RDEC approved the recommendation to move forward with NOAA Science Council approval. The NOAA Science Council approved the decision to sunset the NRDD April 8, 2025.

Through the NRDD sunset process, the NRDD site was archived/parked following standard IT procedures. A redirect was set up so that users attempting to visit researchprojects.noaa.gov would be redirected to an informational page about the NRDD sunset, hosted on the NOAA Office of Science Support website.

The NRDD team conducted a one-time download of all NRDD project data and transition plans. Offices were offered the opportunity to request a copy of their office's data. Through this process, the NRDD team fulfilled 40 office-level requests for NRDD data.

To ensure that institutional knowledge and lessons learned from the NRDD's implementation are retained, the Office of Science Support will continue to manage NRDD internal documents stored on shared and Google drives. In addition, the NRDD Annual Operating Reports, including this one, are available to the public as technical memorandums in the NOAA Institutional Repository.

Conclusion

The 2024 NRDD Annual Operating Report illustrates the efforts of many individuals who contributed to the NRDD in 2024.

In the NRDD's eight years of operation, NRDD data providers created and updated over 5,500 project records, which were used by a number of users across NOAA to pre-populate taskers, respond to information requests from leadership, and streamline reporting processes. User engagement and feedback over the years also contributed to numerous improvements to the NRDD system.

While the NRDD has been sunset, it has resulted in an impressive collection of agency-wide R&D data and yielded numerous lessons learned that can inform the future of R&D information management and accountability at NOAA.

Appendix A: Glossary of Terms

API	Application Programming Interface, a set of code that facilitates the transfer of data between one database or software application and another.
AWS	Amazon Web Services, a subsidiary of Amazon that provides on-demand cloud computing platforms.
BAS	Business Applications Solutions, an integrated suite of financial and business management applications implemented at NOAA in 2023 as part of a U.S. Department of Commerce modernization initiative.
Bulk template	Google sheet templates used to add new project data to the NRDD ("Import templates") or update existing project data in the NRDD ("Export templates").
Collaborative projects	R&D projects collaboratively implemented by two or more NOAA offices.
Data call	Identified period for entry or updates to new and existing R&D project entries. NRDD data calls are issued by the NOAA RDEC twice a year, one for new project entries ("Planned") and the other for updates to the existing project records ("Project Actuals").
DNN	Web content management system and web application framework based on .NET framework, previously used for managing NRDD website content.
Export template	Google sheet template containing data extracted from the NRDD, which users can use to update existing project records in the NRDD in bulk.
Import template	Google sheet template that allows users to submit data for new NRDD projects for bulk import into the NRDD.
Looker Studio	Google-based online tool for creating customizable, data-based reports and dashboards.
NAO	NOAA Administrative Order, an intra-agency directive covering substantive program matters and administrative management policies, procedures, requirements, and responsibilities at NOAA.
.NET	Free open-source computer management framework that can be used for building applications, websites, and cloud-based systems. The post-migration NRDD website is based on the .NET system.
NOAA Funding Line	Specific code or identifier used to track and manage funding for a particular project or activity within the NOAA's budget.

NRDD management team	Provides user support and manages the overall design and functionality of the NRDD from a technical perspective.
PII/BII	Personally Identifiable Information (PII) and Business Identifiable Information (BII).
Query	Request for NRDD project data according to specified search parameters.
Query Builder	NRDD tool that allows users to create and export customized searches of NRDD data.
RDEC	NOAA's Research and Development Enterprise Committee, a committee that is a NOAA Science Council standing committee, which serves as the governing body for the NRDD. The NOAA RDEC has representatives from each NOAA line office who collectively make decisions about NRDD requirements, enhancements, improvements, and overall strategy.
Transition plan	A living document that provides the vision for proposed transition efforts of R&D activities toward uses to meet mission requirements (operation, application, commercialization, other uses).
Transition plan module	Tool on the NRDD website that enables NRDD administrators to download transition plan files in bulk directly from the NRDD.

Appendix B: Definition of "Project" in the NRDD

A project is defined as: *a sequence of tasks that must be completed to attain a certain finite output.*

In the purview of NOAA research and development, a project is further defined as: *a planned effort that develops novel knowledge, or improves upon technology or otherwise aims to describe, predict, or explain some specified phenomena and includes hypothesis-driven research.*

A project is temporary and has a definite beginning and end. It can be managed by one or more people, depending on the complexity.

Programs differ from projects in that programs contain multiple projects, though the definition of program and project will continue to be refined as enhancements are made to the NRDD on how projects can be clustered for oversight and information.

To be included in the NRDD, a project must meet all of the following criteria:

1. Defined objective(s), final deliverable(s), and output(s)
2. Defined timeline/endpoint (generally up to 4 years, but can be longer for some projects)
3. Defined budget, personnel working on the project, and/or other leveraged resources (e.g., ship or aircraft time)
4. Single designated Readiness Level at the beginning of the project and expected Readiness Levels at the end of the project. (See NAO 216-105B for the definition of Readiness Levels).

Operational systems (e.g., observing systems that are operational) are not considered R&D projects, even if effort or funds are spent to maintain these systems, and even if they are generating scientific data. However, each hypothesis-driven endeavor that uses the resulting data to answer a specific scientific question would be entered into the NRDD as its own project. Similarly, any effort to improve upon the operational system technology would be entered as an NRDD project.

Appendix C: NRRD Evolution & Improvements 2016-2024

Overall site development | NRDD application improvements | Changes to data fields | Bulk import templates

User engagement activities | Communications activities | Data summary & use features | NRDD Funding

2016

Development of the NRDD begins, following a unanimous vote by the NOAA Research Council to implement the database (then called Project Database Management System). A Memorandum was sent out by Chief Scientist Rick Spinrad requiring NOAA-wide participation.

2017

OAR provides NRDD's operational funding; OAR invested $1.09 million between 2017 and 2023 in the creation and maintenance of the NRDD, providing this service to all NOAA line offices.

NRDD site launched, intended to be populated with input from all of NOAA's R&D units, directly and/or through data imports from other systems. At its launch, only a small subset of NRDD data fields were mandatory.

NRDD team begins outreach efforts to socialize the new system and encourage data inputs. Efforts included briefings, coordination/ discussion with labs and programs to discuss data imports, and creation of communication materials**.**

NRDD team hosts its first 'users brief' to report results of the first NRDD data call and next steps to NRDD users.

2018

NRDD team continues user outreach and engagement to socialize the NRDD, request data for ongoing data calls, and gather user feedback.

2019

NRDD site redesign in which the site interface, database architecture, and data fields were redesigned to improve user experience and data completeness, and better meet the needs of NOAA leadership. The redesigned site was launched in August 2019.

Number of mandatory data fields increased, making most NRDD data fields required, where only a subset of the fields had been required before.

Development of Bulk Import Templates allowing for collaborative data collection in a spreadsheet and simultaneous upload and approval of multiple projects into the NRDD. The NRDD team makes updates and improvements to the templates each year.

2020

NRDD releases a promotional video featuring Deputy NOAA Administrator Tim Gallaudet, which emphasizes the value of NRDD to NOAA.

NRDD team begins publishing annual reports to highlight use cases and applications of NRDD data from the prior year, beginning with the 2019 NRDD Annual Report.

NRDD team begins hosting a monthly NRDD user forum, an optional session open to all NRDD users, featuring NRDD updates and open discussion to address user questions and comments.

Addition of new data fields including project status, reasons for no transition plan (if applicable), reasons for external partnerships, expansion to final deliverable options, and strategic plan linkages for new R&D Vision Areas.

Standardization of affiliation and external partner organization data fields from open text fields to standardized dropdown menus.

Query Builder module launched, which allows users to search the NRDD's database and generate a custom export of NRDD data, which can be downloaded and manipulated/used for analysis.

2021

Project Search tool expanded within the 'Project Search' and 'Edit Project' tabs to communicate the true scope of each NOAA Organization's contributions to NOAA's R&D.

Creation of My Dashboard module, a custom user dashboard that displays projects for which the user is listed as the creator, data enterer, and/or approver.

Error-checking procedures built into NRDD Application and bulk import templates to improve the completeness, consistency, and accuracy of entered and imported R&D data.

1st NRDD Field Guide produced, providing a comprehensive overview of data fields and guidance to ensure that project entries are consistent across NOAA.

Single Sign-On Identity, Credential, and Access Management (ICAM) capability added by RDEC request, enabling users to sign in to the NRDD using their NOAA Common Access Card (CAC).

2022

Annual reports replaced with annual operating reports, starting with the 2021 Annual Operating Report. The new approach focuses on activities, analytics, and improvements to the NRDD.

User Forum meetings reduced from monthly to quarterly, supplemented with monthly email announcements to provide NRDD users with timely updates.

Updates to Strategic Plan data fields to reflect the goals in the 2022-2026 Department of Commerce Strategic Plan and NOAA 2022 - 2026 Strategic Plan, Building a Climate Ready Nation.

Additions to special projects tracking fields, allowing users to identify projects funded through 2021 and 2022 supplemental appropriations bills.

Bulk update process developed, allowing users to update multiple projects at once using Bulk Export/Update Templates. This benefits offices that need to update actuals for a large number of existing projects in the NRDD.

Process for backend error checking of templates updated to process and validate errors in bulk, rather than incrementally, saving data processing time for users, admins, and developers.

Application Programming Interface (API) prototype created for the NRDD Query Builder, enabling client applications to extract NRDD data into their systems.

Development of a Transition Plan module, enabling NRDD administrators to download transition plan files directly from the NRDD, avoiding longer waiting periods and saving developer hours.

Data use surveys and analysis, in which the RDEC surveyed the NRDD user community to understand current NRDD data field use and ongoing challenges to data entry.

2023

New Live Data Dashboard launched, offering a dynamic high-level view of NRDD data and a snapshot of NOAA's R&D portfolio. The new dashboard improved on the previous 'Live Charts' feature on the NRDD website.

Collaborative Projects data fields introduced, making it possible to attribute NRDD projects to multiple NOAA offices, which streamlines data entry and provides recognition to cross-organizational collaborations.

Mandatory data field reduction in which the number of required data fields for NRDD project entries was reduced from 74 to 20, aiming to ease burden on data providers and enterers, while improving the quality of required data fields that support NOAA enterprise needs.

NRDD Field Guide 2.0 released with updated information on NRDD data fields and requirements.

Bulk error checking improvements made for bulk data ingestion templates, which allow users to check and correct data validation errors themselves, increasing transparency of NRDD data requirements and streamlining bulk data import processes.

OAR adopts a new LO funding model for NRDD, requesting LO support through a three-tier model, in which LOs can elect to contribute funding to the NRDD and benefit from increased support and the use of bulk data imports. Bulk import/export templates no longer available to users from non-paying LOs.

2024

Launch of interactive Data Dashboard in Looker Studio, which provides access to summary data from the NRDD and interactive capabilities to explore or drill down into data by specific fields.

NRDD team conducts listening sessions with 19 OAR and NOAA HQ offices and labs to gather user feedback on the NRDD.

Migration of site from DNN content management system to .NET platform, in which the NRDD site and associated tools were migrated from their former server-based environment, to an Amazon Web Services (AWS) cloud environment in alignment with OAR IT's cloud migration strategy.

Visibility of transition plans uploaded to the NRDD restricted to reduce concerns over access and sharing of sensitive information that may be found in some transition plan documents.

Formatting requirements for NOAA Funding Line data in the NRDD updated to align with new format requirements with NOAA's implementation of Business Application Solutions (BAS).

Improvements made to bulk templates to streamline data entry processes, reduce user confusion, and ensure completeness of data provided via templates.

Appendix D: NRRD Funding Model

From the launch of the NRDD in 2017 to 2023, OAR provided the NRDD's operational funding, investing $1.09 million in the creation and maintenance of the NRDD as a service to all NOAA line offices over that period.

In June 2023, OAR made changes to the NRDD funding model, after informing the NOAA RDEC that it was unable to continue its current level of customer support with the existing funding model. Starting in October 2023, with the new NRDD funding model, only paying line offices receive access to certain services including access to import and export templates for bulk entry and updating of project data. All line offices, whether paying or not, continue to have access to the NRDD website/ application for project entry and updates.

During FY24, OAR and NESDIS provided funding for the NRDD. As such, they were the only two line offices with access to bulk import and export templates during the FY24 data calls.