

Center for Advanced Research Computing (CARC)

Patrick Bridges
Director



Fiscal Year 2024-2025 Annual Review of Category 3 Research Centers/Institutes | 02.30.2026

Mission

To lead and grow the computational research community at UNM and provide support to researchers at UNM as an R1 research institution.

To fulfill our mission, we will:

- Provide access to high-end computing resources and associated infrastructure;
- Offer specialized expertise and technical support;
- Coordinate and collaborate with other UNM programs that support the community; and
- Grow the collaborative user community through education, workshops, and outreach events.

FY 2024-2025 Goals and Status

Goal: Create Cost Model to Allow Charging for HSC Projects and Users

Status: We have finalized and received approval for a new cost model with rollout beginning in January 2026 and have started to receive subscriptions.

Goal: Expand research computing-related educational initiatives provided by the Center

Status: In addition to expanding the offering of our HPC Course for undergraduate and graduate students, we offered a statewide Quantum Workshop and are designing additional Quantum computing educational initiatives in collaboration with QNM-I.

Goal: Move forward with system refreshes and updates with an increased emphasis on security and improving resources for researchers

Status: Utilizing an RFP and grant funding from the Department of Education, the center successfully deployed the Easley cluster, our newest combined CPU/GPU cluster system

Membership of Advisory Committee

Membership List

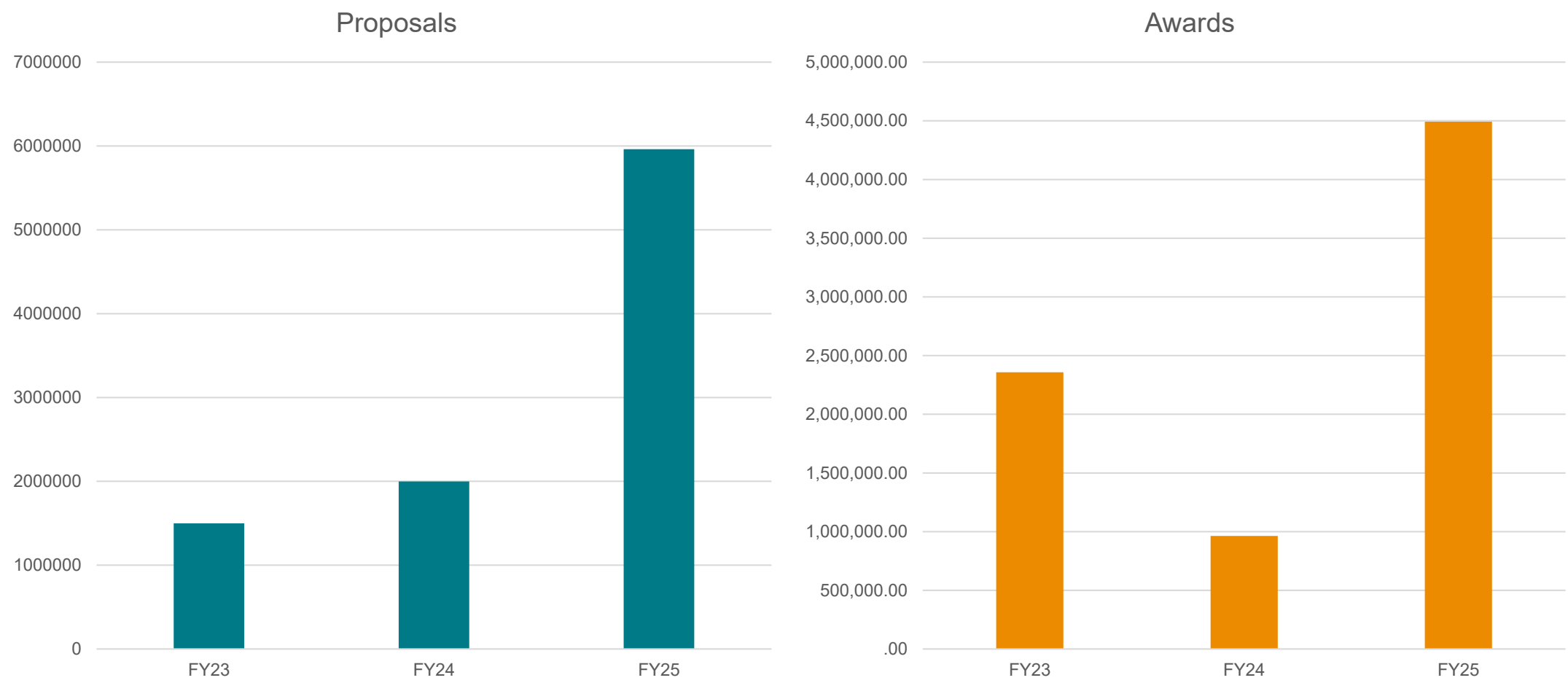
- Susan Atlas, Ph.D. - Research Professor, Physics and Astronomy
- Karl Benedict, Ph.D. - Associate Professor & Director of Research Data Services, College of University Libraries and Learning Sciences
- Jeremy Edwards, Ph.D. - Professor, Chemistry
- Hua Guo, Ph.D. - Distinguished Professor, Department of Chemistry and Chemical Biology, and Department of Physics and Astronomy
- Jane Lehr, Ph.D. - Professor, Electrical and Computer Engineering
- Keith Lidke, Ph.D. - Associate Professor, Physics & Astronomy
- Christopher Lippitt, Ph.D. - Associate Dean for Research, Arts & Sciences; Associate Professor, Geography and Environmental Studies
- Monika Nitsche, Ph.D. - Professor, Mathematics and Statistics
- Marek Osinski, Ph.D. - Distinguished Professor, Electrical & Computer Engineering; Center for High Technology Materials
- Brian Pietrewicz, MBA - Deputy CIO, Information Technologies
- Ylva Pihlström, Ph.D. - Professor, Physics & Astronomy
- Andrea Polli, Ph.D. - Mesa Del Sol Endowed Chair of Digital Media Professor, Fine Arts and Engineering University of New Mexico Department of Art and Art History
- Edl Schamiloglu, Ph.D. - Distinguished Professor, Electrical and Computer Engineering; Associate Dean for Research, School of Engineering
- Gregory Taylor, Ph.D. - Director, Long Wavelength Array; Director, Center for Astrophysical Research and Technology; Professor, Department of Physics and Astronomy
- Lee Taylor, Ph.D. - Associate Professor, Biology
- Tom Turner, Ph.D. - Interim Associate Vice President for Research; Professor, Biology
- Katie Witkiewitz, Ph.D. - Director, Center on Alcohol, Substance use, And Addictions (CASAA); Distinguished Professor, Department of Psychology, University of New Mexico

FY25 Annual Review was held Wednesday June 4th, 2025 3:30-5:00 MST

FY 2024-2025 Highlights

- Cost Model Redevelopment
 - Began redevelopment of our internal service center (ISC) cost model to allow charging for HSC users. This will be fully implemented in FY26
- New System Deployment- Easley
 - Funded by a Department of Education grant, Easley's RFP was awarded to Dell with nodes arriving beginning in March. Easley is to be fully implemented and stood up in the first half of FY26.
- SC24 Booth
 - CARC continued to forge connections and work alongside other nationally recognized HPC centers at Supercomputing 2024 in Atlanta, Georgia.
- New Quantum Computing Workshop
 - CARC Applications Scientist and Research Faculty Matthew Fricke developed a Quantum Computing workshop to meet demand for education in the state
- Director Search
 - CARC Director, Patrick Bridges, announced his planned departure from CARC at the Internal Advisory Board meeting in June. This kicked off the new director search which will continue into FY26

Proposals and Awards



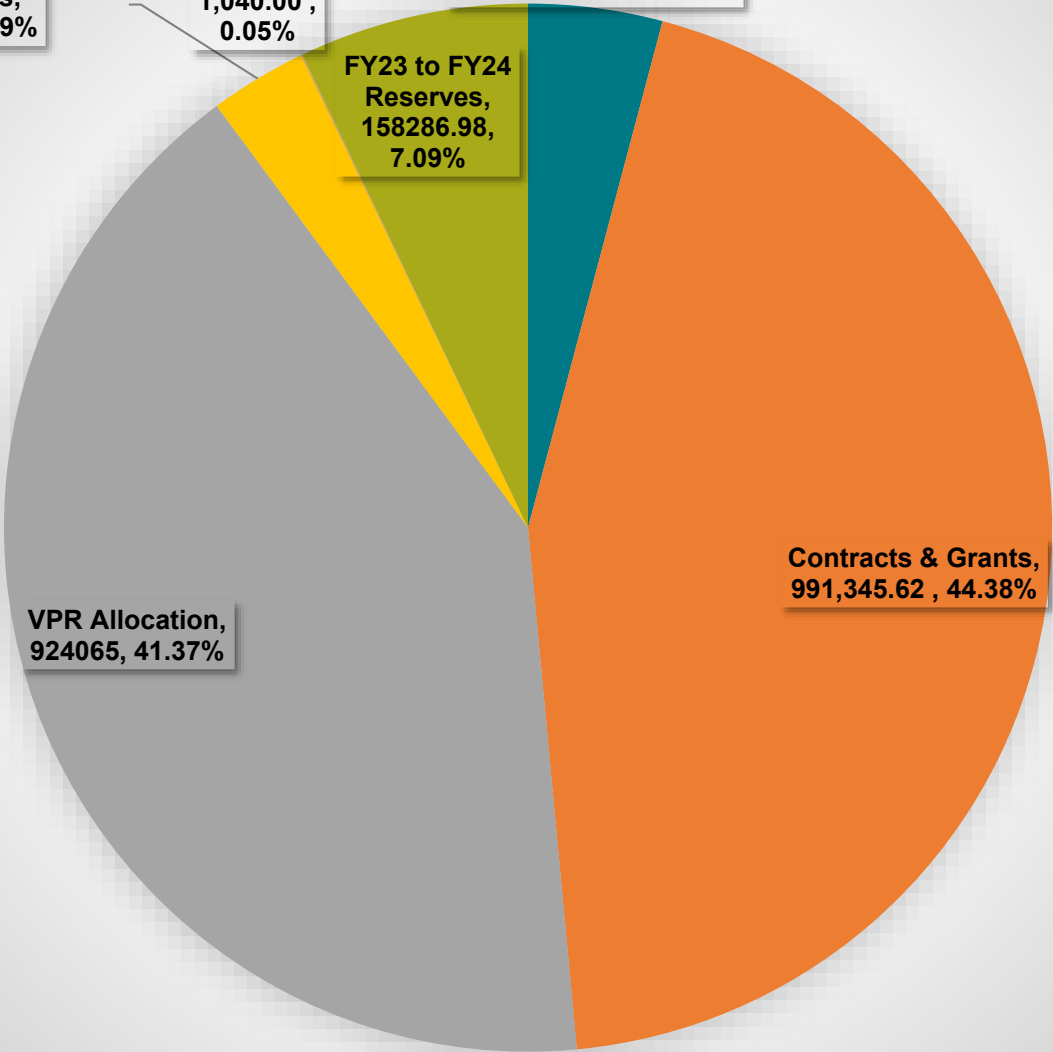
CARC Revenue Details FY24

Internal Service
Center Sales,
66791.93, 2.99%

Other,
1,040.00 ,
0.05%

F&A Return, 92370.47,
4.13%

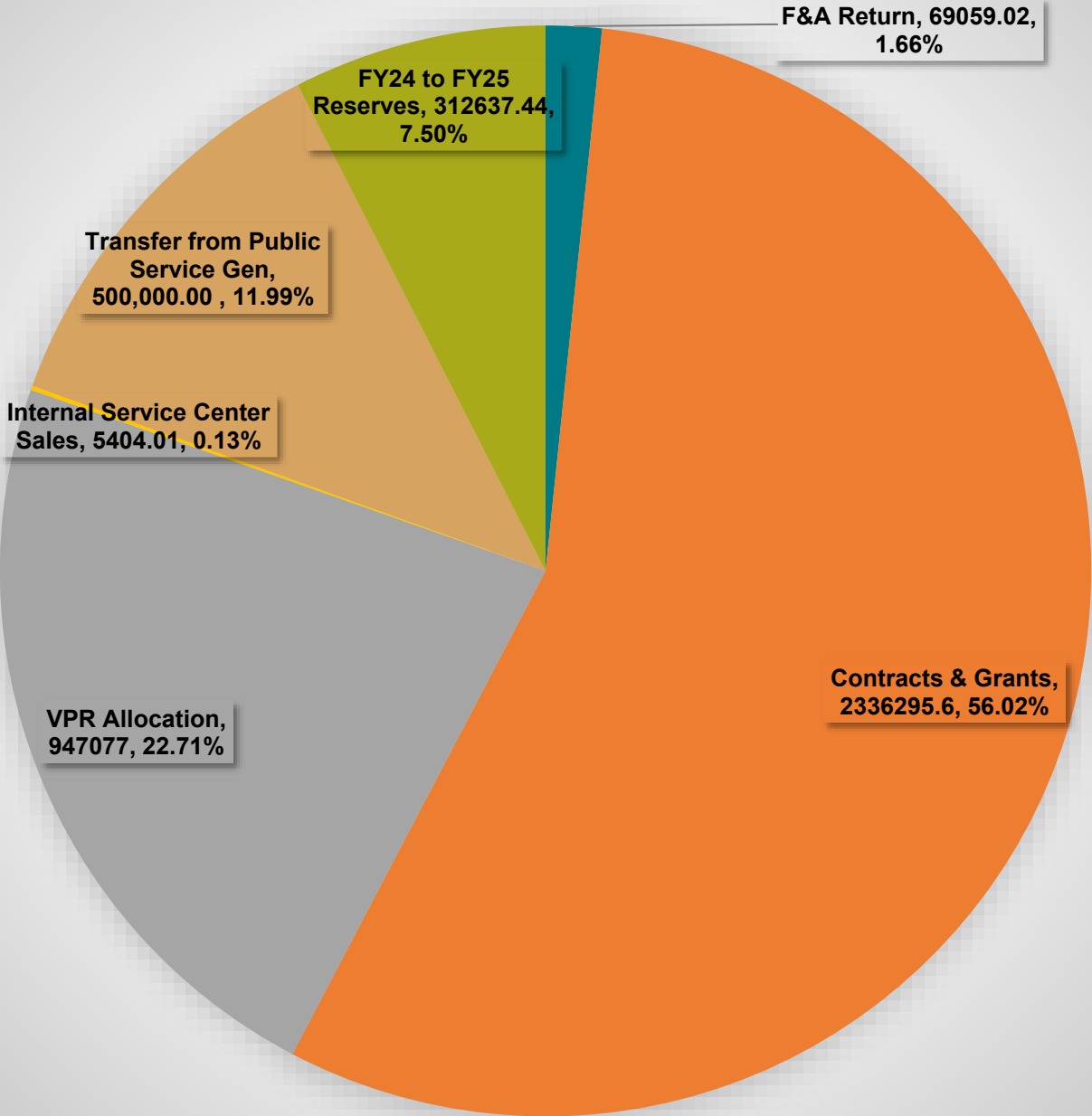
FY23 to FY24
Reserves,
158286.98,
7.09%



FY24 Sources of Revenue

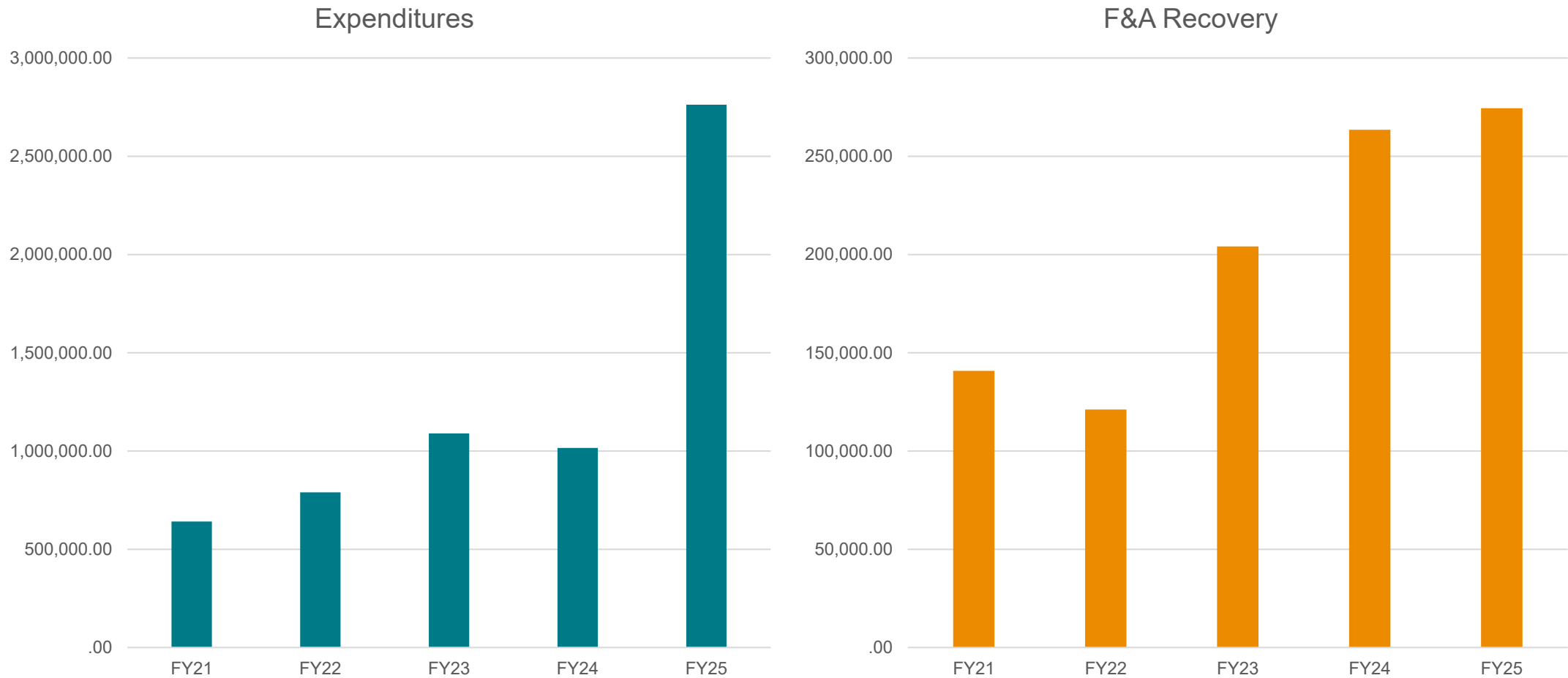
F&A Return	92,370.47
Contracts & Grants	991,345.62
VPR Allocation	924,065
Internal Service Center Sales	66,791.93
Other	1,040.00
FY23 to FY24 Reserves	158,286.98
Total	2,233,900.00

CARC Revenue Details FY25

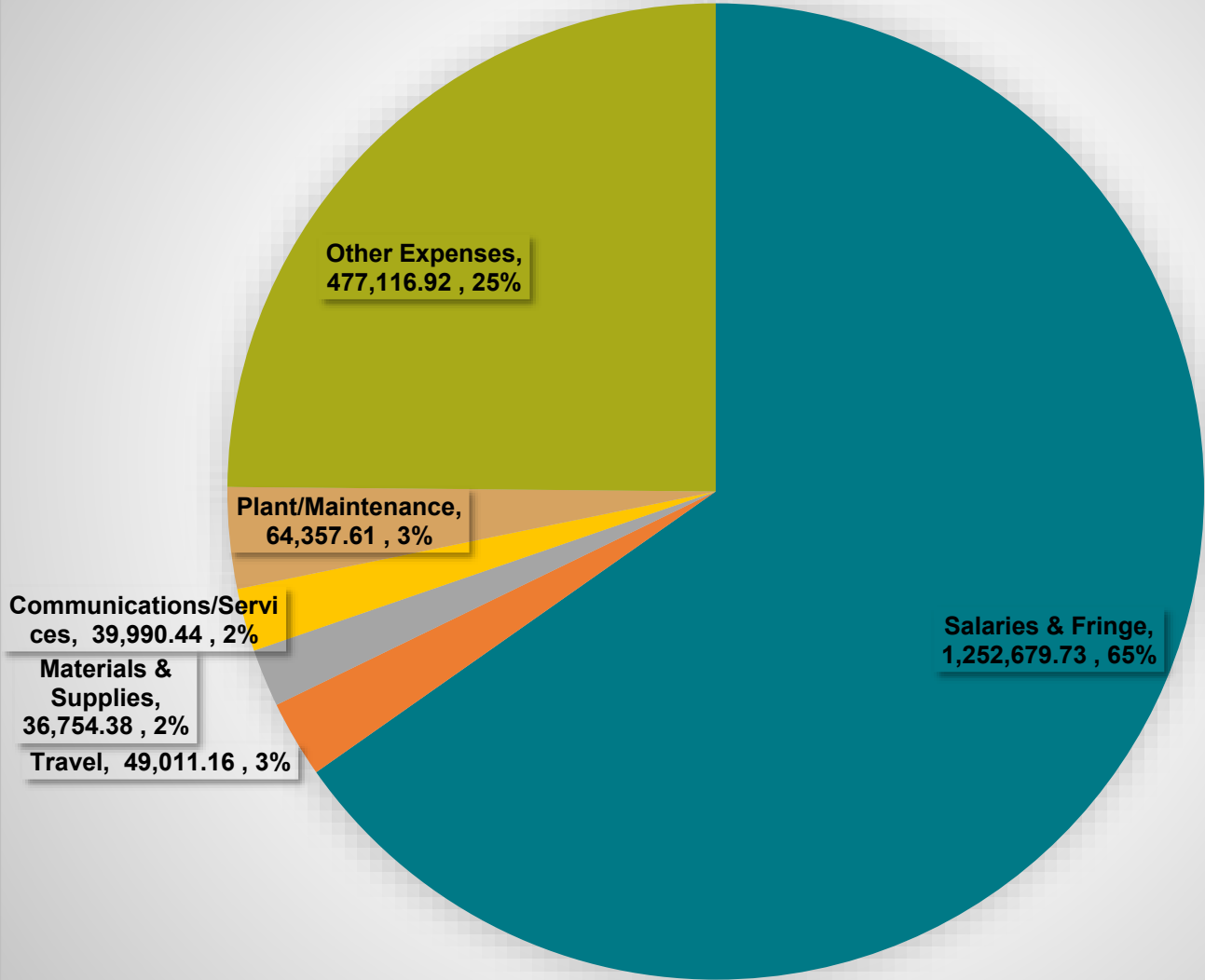


FY25 Sources of Revenue	
F&A Return	69,059.02
Contracts & Grants	2,336,295.60
VPR Allocation	947,077
Internal Service Center Sales	5,404.01
Transfer from Public Service Gen	500,000.00
FY24 to FY25 Reserves	312,637.44
Total	4,170,473.07

Research Expenditures and F&A

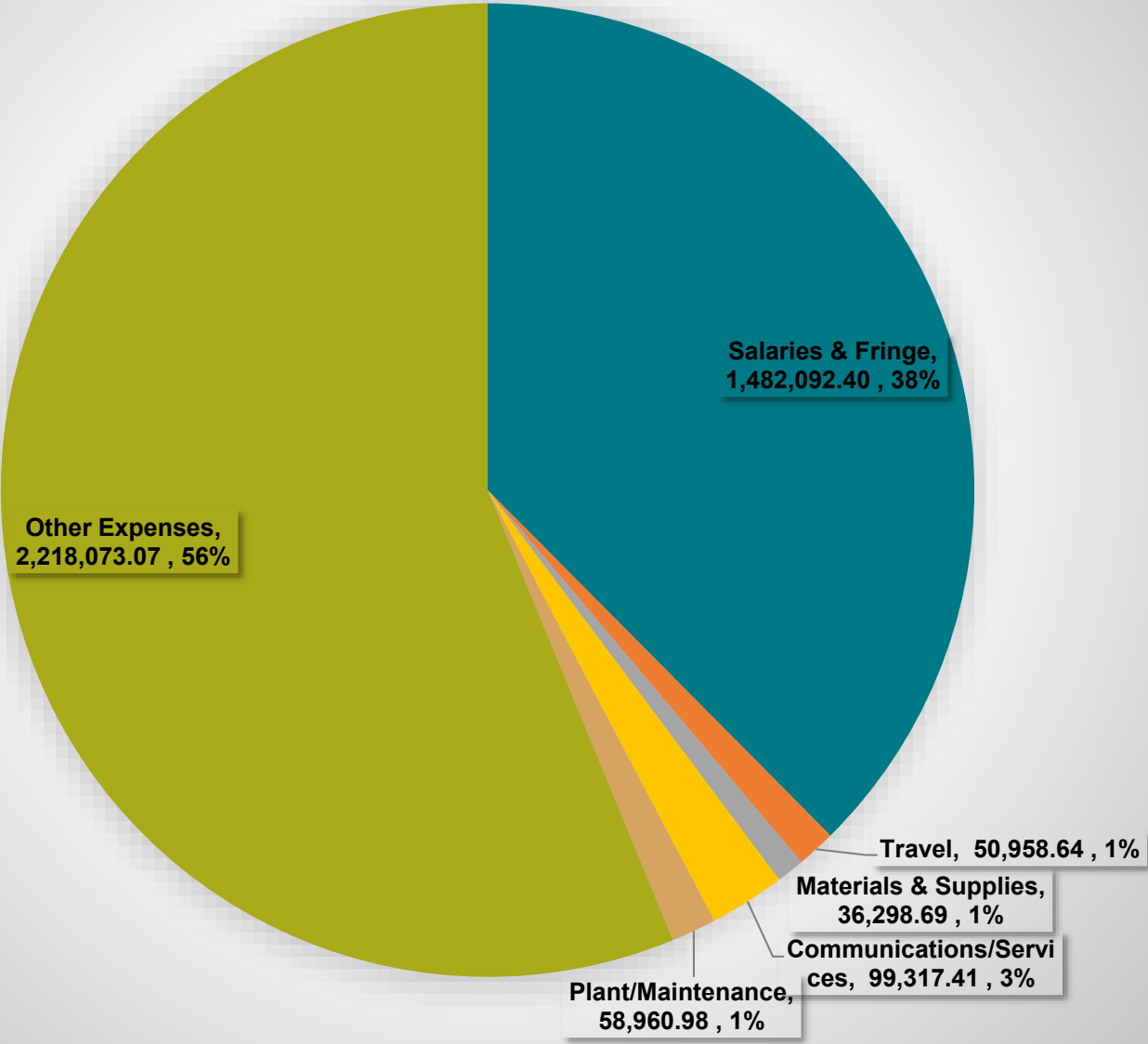


CARC Expenditure Details FY24



FY24 Expenditures:	
Salaries & Fringe	1,252,679.73
Travel	49,011.16
Materials & Supplies	36,754.38
Communications/Services	39,990.44
Plant/Maintenance	64,357.61
Other Expenses	477,116.92
Total	1,919,910.24

CARC Expenditure Details FY25



FY25 Expenditures:	
Salaries & Fringe	1,482,092.40
Travel	50,958.64
Materials & Supplies	36,298.69
Communications/Services	99,317.41
Plant/Maintenance	58,960.98
Other Expenses	2,218,073.07
Total	3,945,701.19

Research Center Impacts

- Advanced computing services provided to 104 active PIs and 789 active users
- Supported sponsored awards totaling over \$50M
- Provided Linux-based research support to Arts and Sciences researchers in Math, Earth and Planetary Sciences, and Interdisciplinary Sciences
- Taught workshops on advanced research computing for classes, individual students, and researchers to improve research computing proficiency
- Offered application support for CARC users and groups to provide specialized insight into software applications needed by specific groups
- Deployed state-of-the-art hardware for use by UNM researchers in cutting edge areas including AI and quantum computing

Return on Investment

137 publications between 2023-2024, in publications such as Bulletin of the American Physical Society, Journal of Computational Chemistry, Environmental Research, and many more

- Served 104 active PIs and 789 active users
- 169 active projects
- 58 new projects
- 311,841 jobs completed
- 20,693,278 CPU hours provided
- 56,154 GPU hours

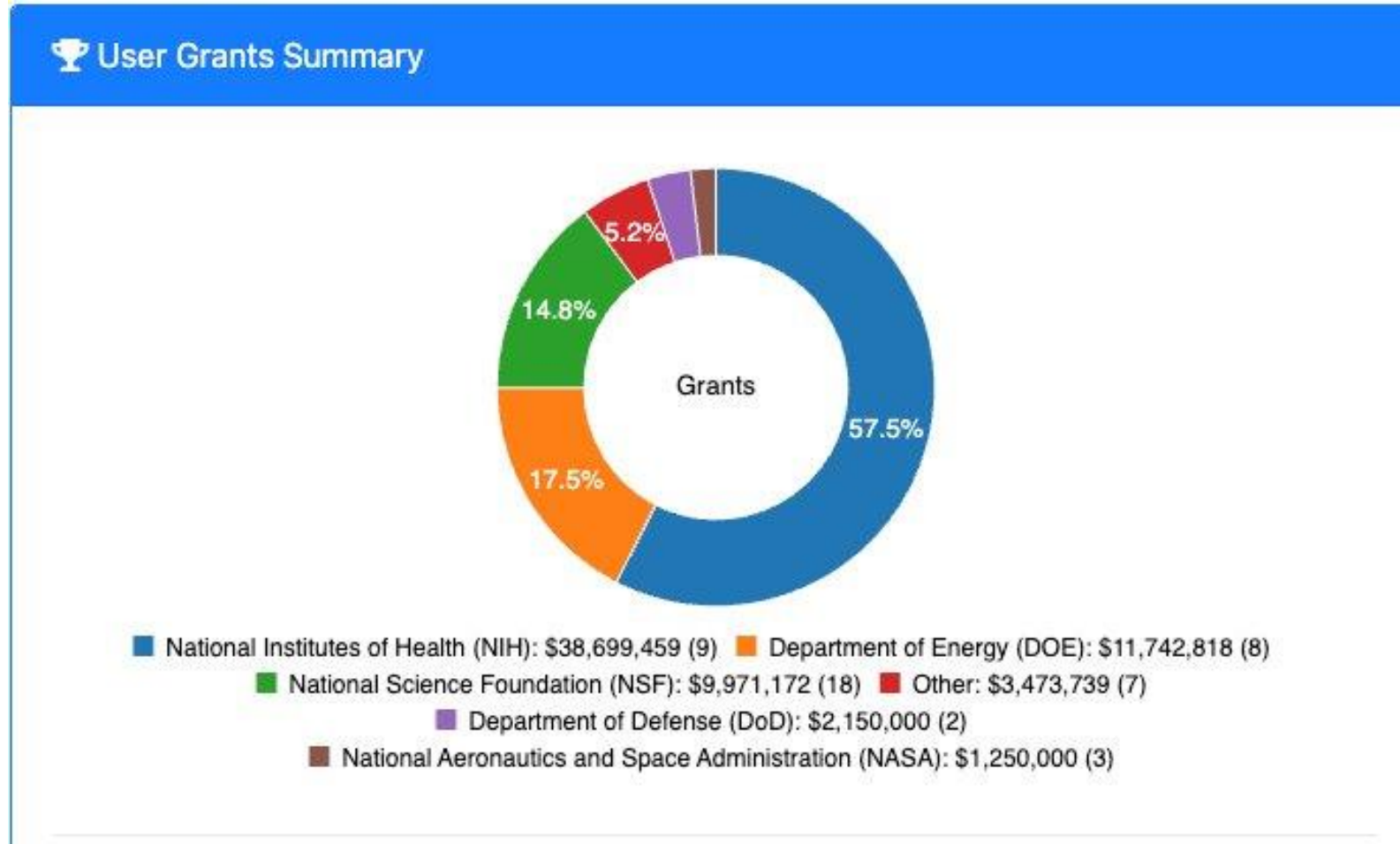


Return on Investment (continued)

- Held two user meetings each with 30 researchers in attendance to address current projects and recent developments
- Held 10 user training workshops and 204 one-on-one user meetings (in FY25)
- Created and taught CS491HPC administration class to 50 students over two semesters
- Mentored Student Cluster Competition Team at SC 2023 and SC 2024

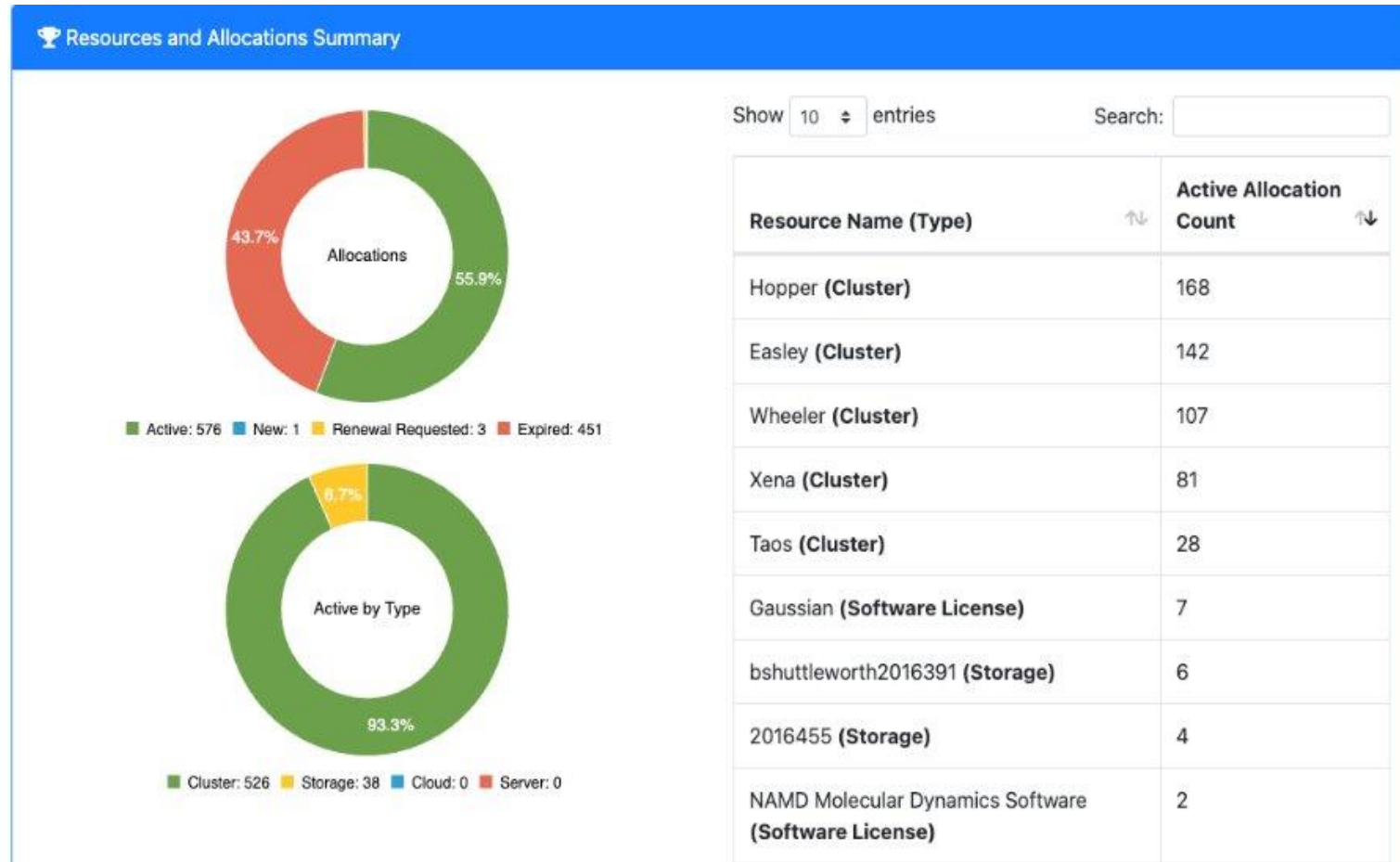


Return on Investment (continued)



User grants summary

Return on Investment (continued)



User allocations summary

Staff and system support for research and education across the breadth of UNM's

Systems with state-of-the-art hardware for supporting modern research computing needs

STRENGTHS

Reliance on F&A funding given changes in federal funding availability

Limited depth in system support, particularly for enterprise storage, networking, and virtualization systems that underly CARC's HPC systems.

Limited staff capacity for developing or collaborating on new education and outreach programs

Lack of systems, services, and expertise in research with high data intensity or long-running low-intensity computing requirements

WEAKNESSES

Demand for staff and computing support in high-impact areas such as quantum and AI computing.

Need for platforms and systems that support new federal data management and compliance requirements, for example research on NIH controlled genomic data

Upcoming funding opportunities in CARC's core areas of strength, for example the recently-announced DOE Genesis mission

Potential for collaboration on systems and educational efforts with institutional partners from QNM-I, HSC, and University Libraries

OPPORTUNITIES

Fragility, lack of growth capacity, and continued institutional delay/decision paralysis in addressing data center infrastructure needs

Escalating hardware prices preventing continued purchases of state-of-the-art hardware

Potential deployment of departmental/unit-scale infrastructure because of lack of support for compliance-oriented and data-intensive research

THREATS

Looking Ahead to Fiscal Year 2026 and 2027

- System growth and expansion
 - Continue to expand Easley through collaborative efforts via grant funding
 - Broaden systems and services offered, including support for more data-intensive research and research on controlled information
 - Explore collaboration with UNM and HHS IT for core enterprise computing infrastructure
- Partnership with HSC and with Non-Profit, Government, and Commercial Entities
 - Expand advanced computing services to and increase collaboration with additional partners, and draw new revenue from a variety of partners
 - Diversify funding streams
- Educational growth opportunities
 - Develop and deploy quantum computing education courses and outreach opportunities
 - Collaborate with main campus partners from Computer Science and University Libraries on introductory research computing education and training opportunities
- New Director – Conducting national search for new director to start FY27
- Data Center Planning - Continued work with institutional partners to agree on and begin executing a plan for enhanced data center facilities

Summary

- CARC is primed to continue expanding in multiple areas including in AI/Machine Learning and Quantum Computing.
- Developing and deploying a new cost model to diversity center funding, broaden user base, and expand collaborations with UNM health sciences and external entities.
- Continuing need and opportunities for upgrading and improving infrastructure and systems to support a broader range of research computing needs