



Thermal Hydraulics

Professional Division

Officers

Chair: Annalisa Manera
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 Vice-Chair: Igor Bolotnov
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 Secretary: Steve Bajorek
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 Treasurer: Ferry Roelofs
roelofs@nrg.eu
 Immediate Past Chair:
 Bao-Wen Yang
bwy01@deltaenergygroup.com

Executive Committee

Terms expiring 2024:

Xiaodong Sun
 Dillon Shaver
 W. David Pointer
 Hyoung Kyu Cho
 Musa Moussaoui

Terms expiring 2025:

Yassin Hassan
 Maria Avramova
 Jun Liao
 Bob Martin
 Marilyn Delgado

Terms expiring 2026:

Fan-Bill Cheung
 Chul-Hwa Song
 Izabela Gutowska
 Donna P. Guillen
 Ling Zou

A Message from the Chair



Dear colleagues,

I am deeply honored to serve as Chair of our Division for the 2023-2024 term and I wish to thank the division colleagues for all their support. We live in very exciting times. Countries across the globe are acknowledging the pivotal role nuclear power plays in establishing a clean energy mix, driven by the global effort to reduce CO₂ emissions. The United States is witnessing strong bipartisan support for nuclear – not only for research but for support towards vendors for reactor development and licensing. Europe has witnessed the formation of the EU Nuclear

Alliance, a coalition of 16 countries with an ambitious goal of achieving 150 GW of nuclear energy in the EU energy mix by 2050. Nuclear expansion is strong in Asia, with China leading the way, but also with India, Japan and South Korea commitment to increasing the share of nuclear energy in their energy mix. It is encouraging to note that several countries are reconsidering their past decisions of abandoning nuclear energy or reducing its role. A substantial figure of 40 nations have nuclear power plants either under construction or planned for near future development, with 11 of them venturing into the nuclear realm for the first time. Further, the governments of 16 other newcomers countries are in the decision-making phase for deploying nuclear. New reactor types are being introduced to the market, from large nuclear power plants to small modular reactors, and to the very novel microreactors. NASA, and other space agencies worldwide have launched nuclear programs for propulsion and electricity generation. All these developments signify an exciting time in our field.

This year we celebrated the first in-person NURETH conference post-COVID-19. The success of NURETH-20 was outstanding and I must express deep gratitude to the Technical Program Committee Chair, Dr. Steve Bajorek.

A Message from the Chair	1
Conference Selection Committee	3
Technical Program Committee	3
Honors and Awards	4
Scholarship Committee	5
Nominating Committee	5
Webmaster Report	6
Membership report	6
Financial Report	7

Standing Committees

Technical Program Chair: Dillon Shaver

Honor & Awards Chair: Xiaodong Sun

Scholarship Chair: W. David Pointer

Nomination Chair: Bao-Wen Yang

Webmaster: Trevor Kent Howard

Membership Chair: Matthew D. Zimmer

Conference Screening Chair: Fan-Bill Cheung

YMG Liaison: Matthew D. Zimmer

His relentless hard work, attention to details, and admirable organizational skills were the backbone of the strong conference's success. Highlights of NURETH-20 will be subject of a special panel session at the upcoming ANS winter meeting. This celebrating session is complemented by two other panels, one to honor the significant contributions of Dr. Hans Fauske, whose recent loss deeply saddened us.

On a sobering note, our membership has continued to decline with a 9.5% drop since last year, most notably among those under 40. We are restructuring our efforts to better engage this age group, enhance the involvement the international community, and foster industry ties. Through the establishment of liaisons with industry leaders and the international community, we aim at nurturing a culture of engagement and encourage the expansion of memberships within these alliances. These liaisons, initiated by my predecessor, stems from our commitment to fostering a diverse community that is reflective of all the facets of our industry, inclusive of age, professional background, and geographical diversity.

Transitioning to a brighter note, it is my pleasure to announce that the THD honors and award committee has selected Professor Seungjin Kim of Purdue University as the recipient of the 2023 Thermal Hydraulics Division Technical Achievement Award. The Lawrence E. Hochreiter and Vincent J. Esposito student scholarship applications are currently open. With this we aim at promoting and fostering young talent. Students are invited to visit our webpage to apply.

The modernization of our division webpage continues thanks to Trevor Kent Howard's dedicated efforts. The website provides comprehensive details about our activities and upcoming events. In particular, the Executive Committee meeting for the Winter Meeting will take place on Sunday, November 12, in person at 15:30-17:30 EST. Meeting location details are viewable on our webpage (thd.ans.org/meetings/).

We continue to uphold strong technical conferences of which ICAPP2024 and NUTHOS 2024 are the next in line. Excitingly, the NUTHOS conference will be held in-person after a five-year break in Vancouver, Canada in August 2024. The NURETH-21 conference is scheduled for 2025 in Busan, Korea.

On behalf of the Division and committee members, I extend my deepest gratitude to you all for your dedication and support. Please reach out if you want to contribute more directly to our activities or if you have new ideas for what THD should do.

I wish you all a successful year and fruitful discussions at the upcoming ANS Winter Meeting in Washington DC., 2023.

Annalisa Manera
ANS 2023-2024 THD Chair
maneraa@ethz.ch

Conference Selection Committee

The Conference Screening Committee (CSC) of the ANS Thermal Hydraulics Division has selected the Korean Nuclear Society (KNS) to host NURETH-21 in the city of Busan, Korea, in August 31-September 5, 2025. Preparation for the conference is now well underway.

The next series of the conference, i.e., NURETH-22, is scheduled to take place in 2027 in the United States. The CSC plans to issue a Call for Proposals along with the criteria for proposal evaluation in July 2024.

Technical Program Committee

The THD program committee is pleased to welcome everyone to Washington, D.C., for the 2023 ANS Winter Meeting. The technical program for THD will include a total of 50 summary presentations in 12 technical sessions (out of which 2 are co-sponsored with the ANS MSTD). Also included are 3 THD panel sessions on the Highlights from NURETH-20, Thermal Hydraulics Activities and Opportunities in Industry, and In Memorium: Dr. Hans Fauske. All technical sessions (including panels) sponsored or cosponsored by THD are listed in the table on the right.

We are still looking for volunteers to serve as session chairs or co-chairs, so if you are planning to attend and wish to volunteer, please contact us! A total of 50 summaries were submitted to THD with 132 reviews completed by 42 reviewers. We had an average of 2.64 reviews per submission with reviewers contributing on average 3.14 reviews each of those who participated. Notably, two reviewers contributed 10 or more reviews and we

Winter Meeting 2023 Technical Sessions

November, 12-15 2023

Session	# of papers	Time Slot (EDT)
Highlights from NURETH-20	panel	Monday 1:00pm
Thermal Hydraulics Activities and Opportunities in Industry	panel	Monday 1:00pm
Computational Fluid Dynamics: I	4	Monday 3:15pm
In Memorium: Dr. Hans Fauske	panel	Monday 3:15pm
Computational Fluid Dynamics: II	4	Tuesday 10:00am
Young Professional Thermal Hydraulics Research Competition: I	4	Tuesday 1:00pm
Young Professional Thermal Hydraulic Research Competition: II	3	Tuesday 3:15pm
General Thermal Hydraulics: I	5	Wednesday 8:00am
Experimental Thermal Hydraulics	4	Wednesday 8:00am
General Thermal Hydraulics: II	5	Wednesday 10:00am
Computational Thermal Hydraulics: I	4	Wednesday 10:00am
Computational Thermal Hydraulics: II	4	Wednesday 1:00pm
Advances in Material Science and Thermal Hydraulics for Lead Cooled Fast Reactors: I	4	Wednesday 1:00pm
Thermal Hydraulics of Advanced Reactors	5	Wednesday 3:15pm
Advances in Material Science and Thermal Hydraulics for Lead Cooled Fast Reactors: II	4	Wednesday 3:15pm

would like to take this opportunity to thank the session organizers and reviewers for their efforts.

The call for papers for the upcoming 2024 ANS Annual meeting in Las Vegas, NV is now open. We expect to have an exciting program with summaries on the following topics:

- General Thermal Hydraulics
- Computational Thermal Hydraulics
- Experimental Thermal Hydraulics
- Experimental Two-Phase Flow
- Computational Two-Phase Flow
- Advanced Reactor Thermal Hydraulics
- Hi-2-Low Multiscale Modeling

- Thermal Striping
- Fluid-Structure Interaction and Multiphysics Coupling
- Machine Learning and AI for Thermal Hydraulics
- Verification, Validation, and Uncertainty Quantification of Machine Learning Models (P)
- CFD and System Code Validation for HTGR Applications Leveraging HTTF Data (P)
- Enabling TH Technologies for Digital Twins (P)
- Thermal Hydraulics: Lightning Talks

The full call for papers can be found [here](#). The meeting will be held June 9th - 12th and summaries are due February 2nd.

At the 2023 ANS Winter Meeting, the THD Program Committee meeting will be held online on Sunday November 5th from 9:00am – 11:00am (EST). It can be accessed [here](#) via Zoom. The Password is **THDPC2023**

As always, we would like to encourage our members to actively participate by attending our meetings, submitting paper summaries, volunteering to organize sessions, and supporting the peer-review of the papers.

Thank You,

Izabela Gutowska
Oregon State University
THD Assistant PC Chair

Dillon Shaver
Argonne National Laboratory
THD PC Chair

Honors and Awards

2023 THD Technical Achievement Award

The Honors and Awards Committee selected Professor Seungjin Kim of Purdue University as the recipient of the 2023 Thermal Hydraulics Division Technical Achievement Award (TAA). Dr. Kim, Professor and Head of the School of Nuclear Engineering at Purdue University, received this award *“In recognition of his outstanding contribution towards advancing two-phase flow experimental capabilities, fundamental understanding of two-phase flow transport phenomena, and reactor thermal-hydraulic analysis.”*



Prof. Seungjin Kim

Prof. Kim will be recognized at the THD Award Ceremony at the upcoming 2023 ANS Winter Meeting (scheduled to immediately follow the Computational Fluid Dynamics: I session on Monday afternoon November 13, 2023). As a tradition, Prof. Kim is invited to deliver a TAA lecture at a THD-sponsored conference in the near future.

The THD Honors and Awards Committee encourages and welcomes nominations for the TAA. The next deadline for nomination submission is August 1, 2024. The details including the award form can be found at <http://thd.ans.org/awards/technical-achievement-award/> and <https://www.ans.org/honors/award-techachieve/>.

In addition to the TAA, the THD Honors and Awards Committee plans to make the 2023 Best Paper Award selection from the papers presented at the recent NURETH-20 conference. Furthermore, THD re-established a service award, the THD Meritorious Service Award, to recognize an individual for sustained and exemplary service to the nuclear thermal-hydraulic profession. The next deadline for the service award nomination submission is March 1, 2024 (<http://thd.ans.org/awards/meritorius-service-award/>). These award selections will be reported in the

THD 2024 Spring Newsletter, and the awards will be presented at the 2024 ANS Annual Meeting in Las Vegas, NV.

Finally, we would like to take this opportunity to thank the THD Honors and Award Committee members and all the nominators for their dedicated work! Congratulations to our well-accomplished and deserving colleague!

Xiaodong Sun
2021-2024 THD Honors and Award Committee
Chair
xdsun@umich.edu

Chul-Hwa Song
2023-2024 THD Honors and Award Committee Vice
Chair
chsong@kaeri.re.kr

Scholarship Committee

The American Nuclear Society Thermal Hydraulics Division awards two annual graduate student scholarships: the Lawrence E. Hochreiter Graduate Scholarship and the Vincent J. Esposito Graduate Scholarship.

The **Lawrence E. Hochreiter Scholarship** was established by the ANS THD in 2019 and first awarded for the 2020-2021 academic year. The scholarship honors Dr. Lawrence E. Hochreiter, pioneer in nuclear thermal hydraulics modeling and nuclear safety analysis at Westinghouse Electric Company and the Pennsylvania State University, who was an active member of the Thermal Hydraulics Division. The scholarship is awarded to a graduate student in nuclear science and engineering who is studying topics related to nuclear thermal hydraulics. This \$3,500 scholarship is awarded to one recipient annually.

The **Vincent J. Esposito Scholarship** was established by the ANS THD in 2020, with the generous support of the Esposito family, and will be first awarded for the 2022-2023 academic year. The scholarship honors the ongoing contributions of Dr. Vincent J. Esposito, who is an Adjunct Professor at the University of Pittsburgh, former Vice President of the Nuclear Fuel Business Unit of Westinghouse Electric Company, and the 2013 American Nuclear

Society Glenn T. Seaborg Congressional Fellow. The scholarship is awarded to a first-year graduate student in nuclear science and engineering who is studying topics related to nuclear thermal hydraulics. This \$3,000 scholarship is awarded to one recipient annually.

Eligible students should apply using the ANS Scholarship Program General Application and select the appropriate scholarship(s).

ANS Scholarship Important Dates:

November 1, 2023	Program Announced
November 15, 2023	Applications Open
February 1, 2024	Application Deadline

Nominating Committee

The THD Nominating Committee (NC) is responsible for selecting candidates for the division's Executive Committee (EC), standing committees, and division officers. The NC consists of the current Division Chair (Annalisa Manera), Vice Chair (Igor Bolotnov), Program Committee Chair (Dillon Shaver, Ex-officio) and the Immediate Past Division Chair, who serves as the Chair of the Nomination Committee (Bao-Wen Yang).

We welcome anyone who is interested in serving the division in any capacity to contact the division leadership and actively participate in the division activities and volunteer work. We especially encourage the members of the Program Committee (PC) who have shown their dedication and contribution to the PC or other standing committees to apply for the EC positions and other senior roles.

The following is the list of nominations for the 2024 term:

Division Officers Nominations (2024-2025):

Vice Chair/Chair-Elect: Steve Bajorek (NRC)
Secretary: Ferry Roelofs (NRG)
Treasurer: Dillon Shaver (ANL)

[Webmaster \[2024-2027\]: Trevor Howard \(OSU\)](#)

[EC Member Nominations \(Term Expires June 2027\):](#)

Subash L Shama (UML), Xu Wu (NCSU), Elia Merzari (PSU), Sierra Tutwiler (VCU), Rui Hu (ANL)

Honors and Awards Committee:

- Chair [2024-2027]: Fan-Bill Cheung (PSU)
- Members [2024-2027]: Hisashi Ninokata (POLIMI), Yassin Hassan (TAMU)

Conference Screening Committee Nominations:

- Term Expires [2024-2028]: Xiaodong Sun (UMICH), Van Tichelen Katrien (SCK)

Scholarship Committee

- Chair [2024-2027]: W. David Pointer (ORNL)
- Term Expires [2024- 2027]: Victor Coppo-Leite, Ling Zhou (ANL)

Membership Committee

- Chair [2024-2027]: Subash L Shama (UML)
- Members [2024-2027]: Yue Jin (Missouri), Emre Tatlie (Westinghouse), Prashant K. Jain (ORNL), Guanyu Su (UCB), Wei Ji (RPI), Jun Wang (Terra Power), Baris Sarikaya (Constellation).

Bao-Wen Yang
Chair, ANS THD Nomination Committee (2023-2024)

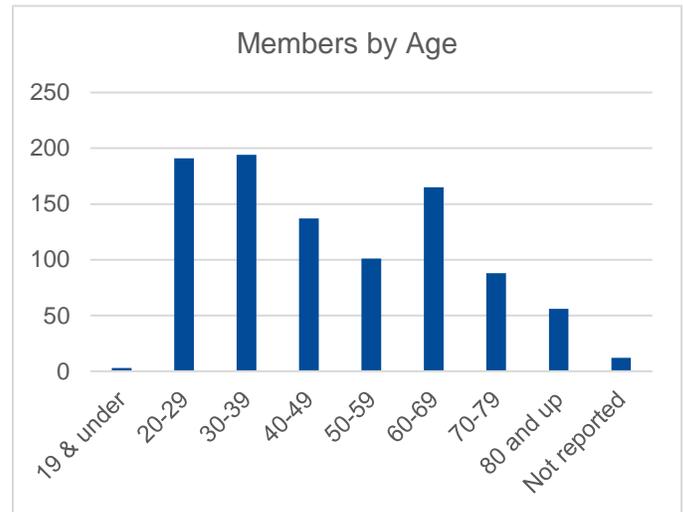
Webmaster report

Over the past six months, the division website has continued to be updated for improved visuals, as well as providing updates to upcoming conferences, deadlines, and events as they relate to the division.

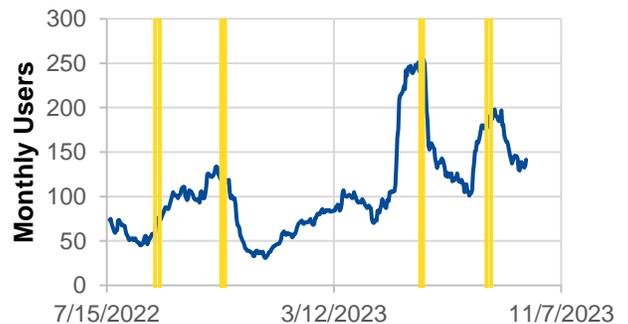
Recent changes were made to the home tabs to simplify the structure and content of the information available on the website. As ANS continues to transition to the new website format, several more changes will be made to the existing website to better serve the needs of the THD community.

Usage statistics contribute to what content goes on the webpage and how it is organized. For over a year now, data has been collected to determine community engagement. During this time, engagement with the website has nearly tripled, and

will hopefully continue to increase as the website changes to better meet the needs of our community.



A graph of monthly engagement is presented with THD conference dates (NUTHOS-13, ANS Winter 2022, ANS 2023, NURETH-20) in yellow.



In the past 6 months, the ANS summer meeting and newsletter contributed greatly to website engagement as well as the NURETH-20 conference.

I am excited about what the next six months has in store!

-Trevor Kent Howard
ANS THD Webmaster

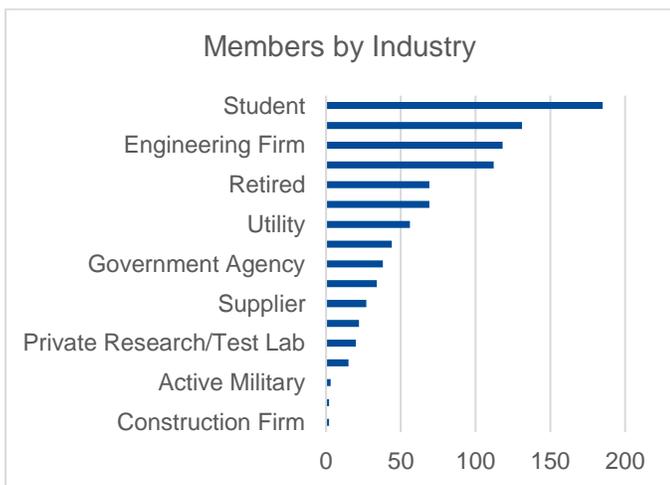
Membership report

THD membership currently sits at 947. Membership has dropped ~9.5% since the last newsletter. Based on data from previous years, the largest drops in membership are in the younger age groups (ages 19-39) and student body. These demographics

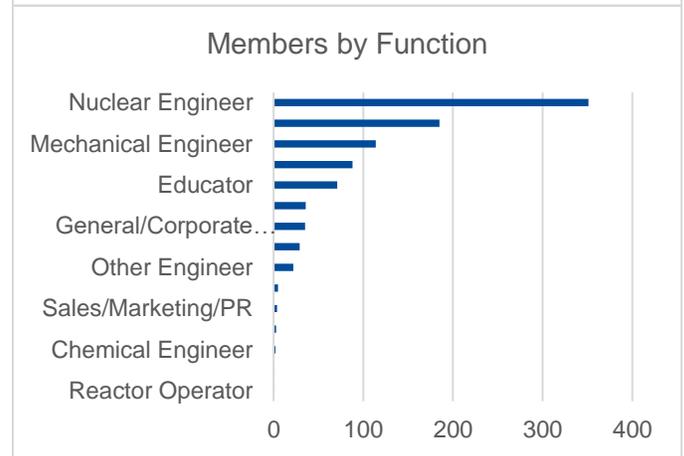
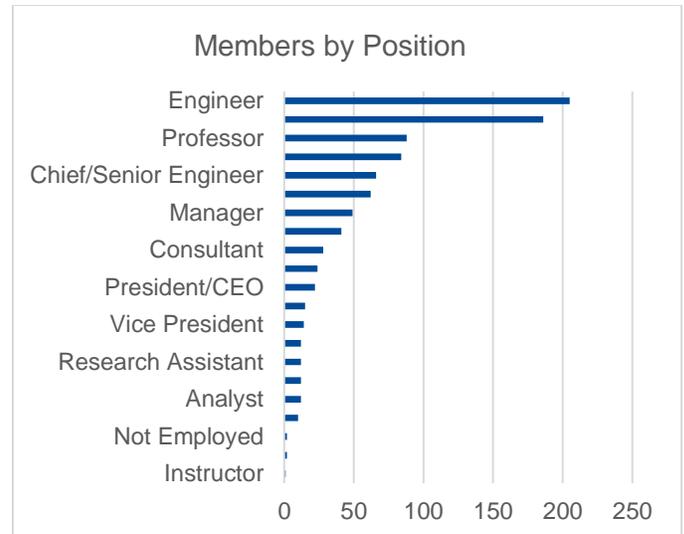
make up the vast majority of THD membership and are crucial to the success of the division. Therefore, THD would encourage continued outreach to young members/students within the reader’s organizations. Young members are the future of the division, and their continued involvement is highly valued within.

It is also noted that the international and industry demographics are relatively small compared to the United States and academic groups, respectively. At ANS meetings the international and industry communities are very actively present and represent a significant number of technical papers submitted. There is an opportunity to grow the division by better integrating these communities into the membership. In fact, recent efforts have been initiated to do so by starting liaison programs for each. We hope to see these number grow in the coming years.

Country	Count	Percent of Whole
United States	798	84.27%
South Korea	17	1.80%
Japan	16	1.69%
Canada	15	1.58%
Italy	15	1.58%
Germany	10	1.06%
France	8	0.84%
United Kingdom	8	0.84%
China	7	0.74%
Sweden	7	0.74%



Finally, to all members, if you are interested in becoming more involved with the Thermal Hydraulics Division, please reach out or attend an executive committee meeting at the next conference. These meetings are open to all and your



feedback on any discussions would be much appreciated.

Matt Zimmer,
Membership Committee Chair

Financial Report

The budget for 2024 has been proposed and approved by the THD EC. Table 1 summarizes the budget and shows how it has changed since 2022. The proposed budget for 2024 does foresee a small loss. This is due to the expected lack of income from our flagship conference NURETH which will not be organized in 2024.

Table 1:

	2022	2023	2023	2024
	Actual	Proposed	Projected	Proposed
Balance Forward from Previous Year	\$43,654	\$60,502	\$60,502	\$82,034
Budget Funds				
Member Dues Allocation (\$2/ full dues member; \$1 / reduced dues member)	\$1,545	\$1,536	\$1,536	\$1,500
Division Income	\$18,123	\$24,746	\$24,746	
Total Income	\$19,668	\$26,282	\$26,282	\$1,500
Budget Expenses				
Newsletters, Website				
Awards & Plaques	\$1,304	\$1,250	\$1,250	\$1,250
National Meeting Costs				
Topical Meeting Costs				
Division Officer Expenses				
Student Support	\$1,000	\$3,000	\$3,000	\$3,000
Future Activity				
Scholarship/NEED Funding	\$500	\$500	\$500	\$500
YMG Support				
Other Expenses	\$16		\$1,500	
Total Expenses	\$2,820	\$4,750	\$6,250	\$4,750
Net	\$16,848	\$21,532	\$20,032	(\$3,250)
Total Year End Funds	\$60,502	\$82,034	\$80,534	\$78,784

Table 2 shows all four award funds. Explanations on the status of these award funds have already been provided in the spring newsletter (note that some small typos have been corrected). Of note is that even after a difficult year with respect to the investment gain/loss, all award funds are in good shape.

Table 2

Income	Hochreiter	TAA/Service	Esposito	Seghal
Balance 12/31/2021	\$91,843	\$80,826	\$86,248	\$23,761
Investment gain/loss	-\$16,908	-\$14,881	-\$15,878	-\$4,374
Contribution B-W Yang	\$0	\$2,000	\$0	\$0
Total Income	\$74,935	\$67,945	\$70,370	\$19,387
Expenses				
Awards	-\$3,000	-\$5,000	-\$3,000	\$0
Plaques	\$0	-\$546	\$0	-\$73
Other Expenses	\$0	\$0	\$0	\$0
Net change	-\$19,908	-\$18,427	-\$18,878	-\$4,447
Total Funds 12/31/2022	\$71,935	\$62,399	\$67,370	\$19,314