

APSUO STEERING COMMITTEE AND PARTNER USER COUNCIL MEETING



DENNIS MILLS

Deputy Associate Laboratory Director for X-ray Science
Photon Sciences Directorate

November 11, 2021

Argonne National Laboratory

OUTLINE

- Action Item/Question from Previous Meeting
- APS User Carbon Footprint 2018 - 2020
- A subset of slides from the 2021 DOE Operations review of APS
 - General User Statistics
 - Collaborative Access Teams (CATs)
 - Industrial and National Security Use of the APS
 - APS Code on Conduct
 - Feedback from the User Community
 - User Office Activities
 - Summary

ACTION ITEM

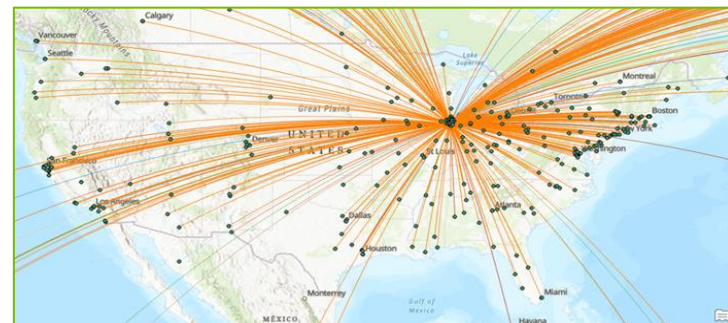
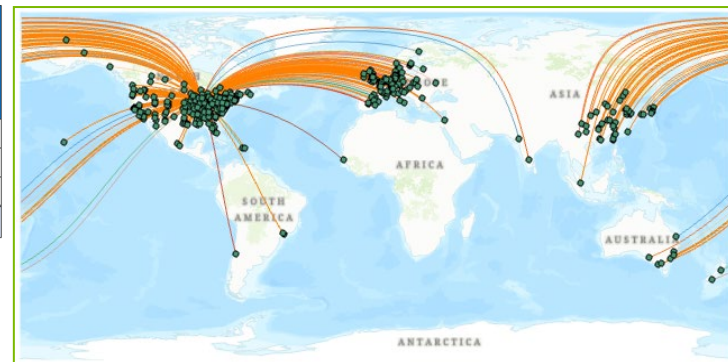
- Posting Minutes to the APSUO.org website:
 - Will work on refining minutes to make them clearer and post the minutes in a bulleted format of minutes along with slides from the meetings to the APSUO.org site.
- UO reply:
 - The UO is working on logistics of where to post creation of the link on APSUO.org webpage. Will have minutes from November meeting bulleted to kick off the posting of meeting highlights.

ESTIMATED APS USER CARBON FOOTPRINT: 2018-2020 (COURTESY OF ALEC SANDY/RAWG)

Year	APS User Aviation Miles (>300 miles traveled)	APS User Aviation Emissions MTCO ₂ e	APS User Vehicle Miles (<300 miles traveled)	APS User Vehicle Emissions MTCO ₂ e	Total APS User Miles Traveled	Total APS User Emissions MTCO ₂ e	Argonne Employee Commuting Miles*	Argonne Employee Commuting Emissions* MTCO ₂ e
2018	30,639,318	5,130	703,255	244	31,342,573	5,373	26,023,810	10,273
2019	27,081,154	4,534	711,306	246	27,792,460	4,780	30,148,150	11,901
2020	4,761,569	797	321,984	112	5,083,553	909	19,192,038	7,576
Totals	62,482,041	10,461	1,736,544	602	64,218,585	11,062	75,363,998	29,751

*As reported in the DOE Sustainability Dashboard

- APS User carbon footprint increased ANL's total carbon commuting footprint by roughly
 - 50% (CYs 2018 and 2019)
 - 10% (2020)
- From CYs 2019 to 2020:
 - ANL employee carbon footprint decreased 36%
 - APS User carbon footprint decreased 81%



Data provided by AES-IS from the APS ESAF system and analysis performed by Catherine Hurley and Karyn Andersen from the ANL Sustainability Office.

USER PROGRAM, COVID IMPACT



2021 U.S. DEPARTMENT OF ENERGY OPERATIONS REVIEW OF THE ADVANCED PHOTON SOURCE



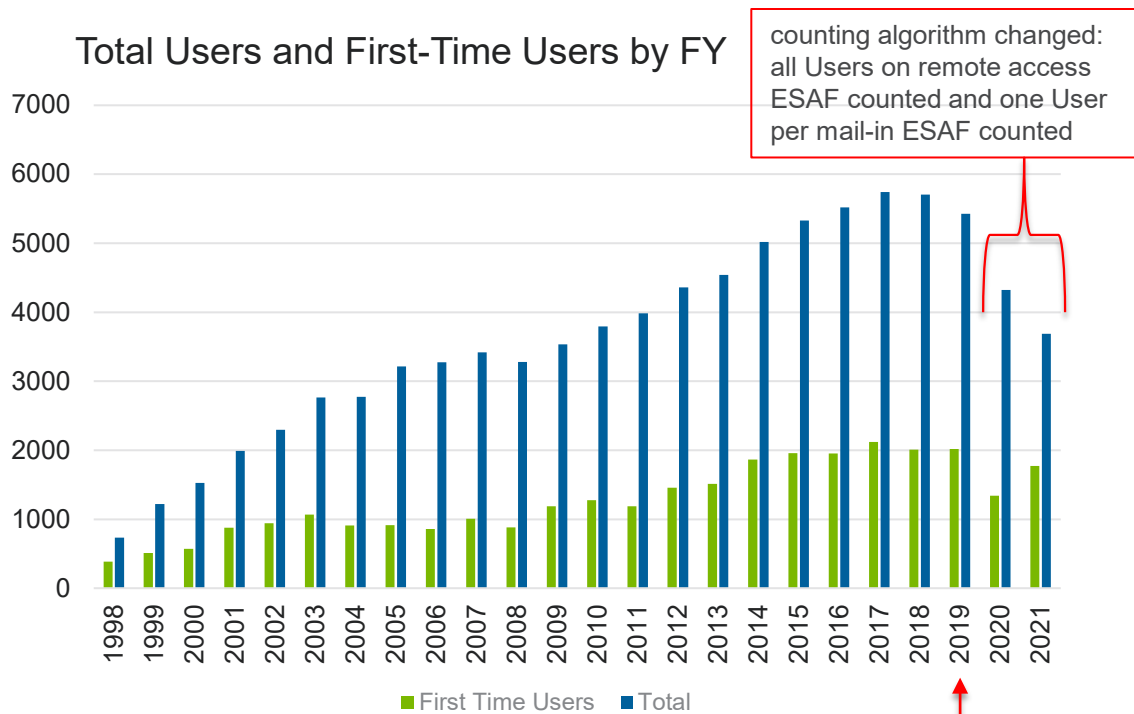
DENNIS MILLS

Deputy Associate Laboratory Director for X-ray Science
Photon Sciences Directorate

November 11, 2021

Argonne National Laboratory

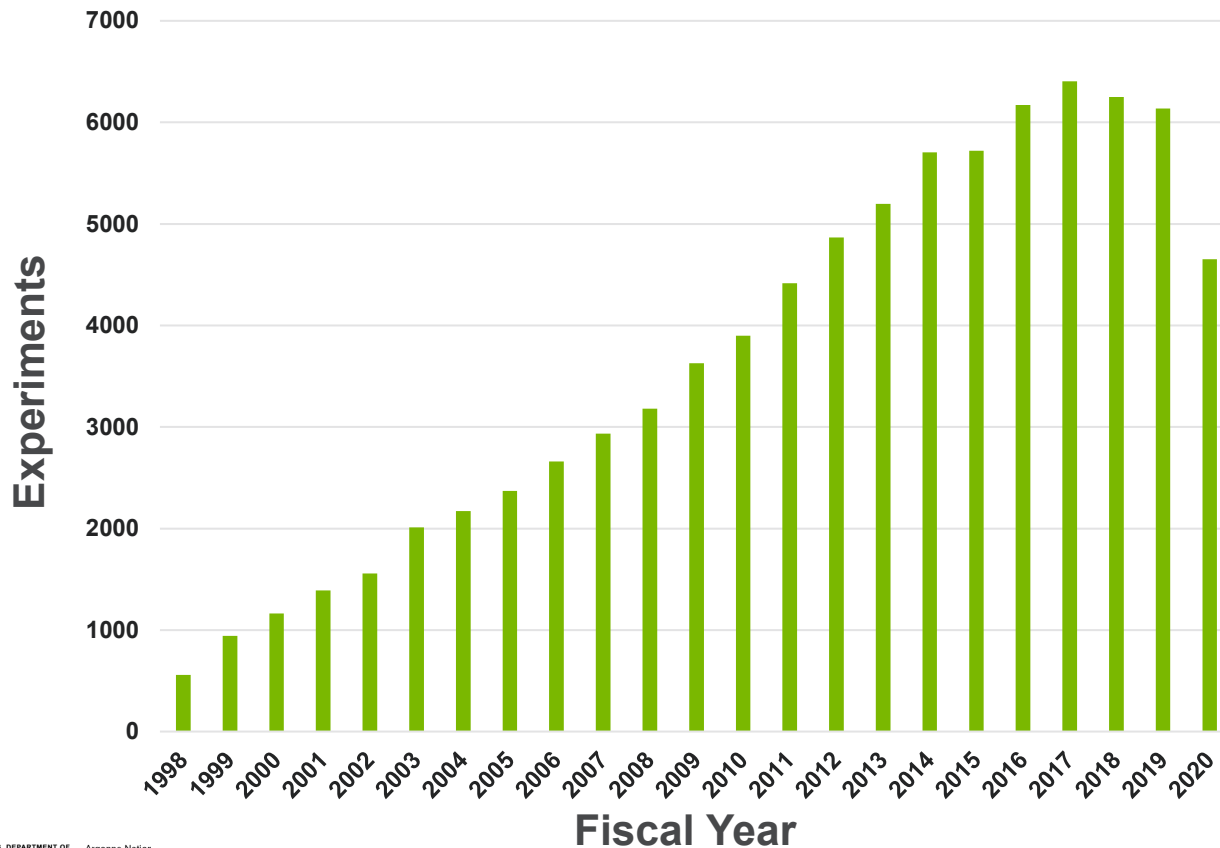
TOTAL USERS AND FIRST-TIME (FY98-FY20)



- Both the total number of users and first-time users started to plateau around FY17.
- For FY17 through FY20, the percentage of first-time users was 37%, 35%, 37%, and 31% respectively.
- New users require more support from scientists than do experienced users; we need to focus on training for first-time users.

counting algorithm changed: only 1 User counted per remote/mail-in ESAF

NUMBER OF EXPERIMENTS AT THE APS (FY98-FY20)



The number of experiments is following a similar trend as the number of users, peaking in FY17.

BEAM-TIME REQUESTS (BTRS) GROW

The percentage of allocated BTRs remains relatively stable despite steady increase in the number of BTRs submitted (*with exception due to covid-19).

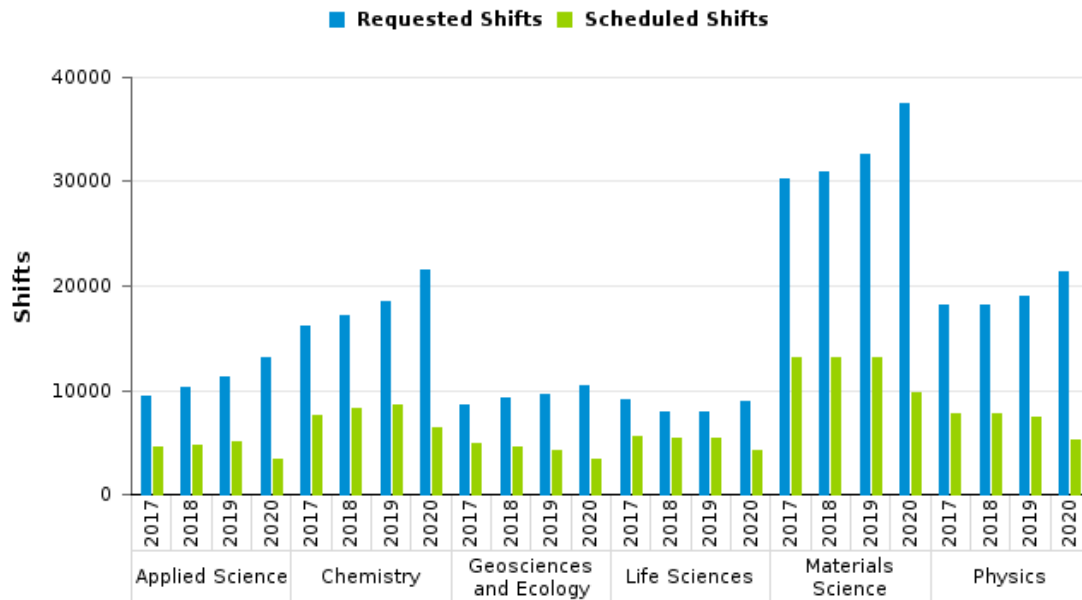
Calendar Year	Beam-Time Requests Submitted	Beam-Time Requests Allocated	BTRs Allocated	Operating Beamlines (in Fiscal Year)
2011	3862	2367	61%	64
2012	4271	2500	59%	63
2013	4655	2660	57%	66
2014	4689	2942	63%	66
2015	5000	3203	64%	68
2016	5343	3291	62%	67
2017	5467	3405	62%	68
2018	5481	3332	61%	68
2019	5746	3382	59%	68
2020	6376	2475	39%*	65

There has been a 65% increase in BTRs from 10 yrs ago while the number of beamlines remained relatively constant.

SHIFTS REQUESTED & SCHEDULED (VIA GUP) BY AREAS OF RESEARCH

- Another way to look at user demand is shown in the plot of 8-hr shifts requested and scheduled by science discipline.
- A significant increase in the number of requested shifts in the areas of applied science, chemistry, and materials from FY17 to FY20.
- Slightly slower growth in the number of requested shifts for life sciences, geosciences / ecology, and physics during that same time.

Requested and Scheduled Shifts by Discipline



COLLABORATIVE ACCESS TEAMS (CATs)

CAT	Home Institution of Staff	BLs	Technique(s) Supported	GU Time (%)
DuPont/Northwestern/Dow (DND) Materials Research (MR)	Northwestern University	3	SAXS / Diff / Spec	25
GeoSoilEnviro (GSE)	Illinois Tech	2	Diff / Spec	25
BioCARS	University of Chicago	5	HP Diff / Spec	100
Chemistry & Materials (ChemMat)	University of Chicago	2	TR MX & Scattering	100
High Pressure (HP) ^a	University of Chicago	1	SAXS / WAXS / Diff	100
Industrial Macromolecular Crystallography Association (IMCA)	XSD/APS	4	HP Diffraction	25
BioCAT	Hauptman-Woodward Medical Research Institute	1	MX	25
Structural Biology Center (SBC) ^b	Illinois Tech	1	SAXS / WAXS	25
Life Sciences (LS)	XSD/APS	2	MX	100
Southeast Regional (SER)	Northwestern University	3	MX	25
General Medicine/Cancer (GM/CA) ^c	University of Georgia	2	MX	25
Northeastern (NE)	XSD/APS	2	MX	42
Nanoprobe ^d	Cornell University	2	MX	100
Lilly Research Labs (LRL)	CNM and APS, ANL	1	Nano-imaging	80
Dynamic Compression Sector (DCS)	Eli Lilly & Company	1	MX	25
	Washington State U.	1	Shock Physics	25

- The CATs brought in >\$36M in non-BES funds in FY20 to support beamline operation.
- The CATs make additional resources and expertise available to users in a wide variety of disciplines including life science, pharmaceutical research, geo- and enviro-science, high-pressure studies, and shock physics to name a few.

^a Staff are XSD members, ops funded by NNSA

^b Staff are XSD members, ops funded by BER

^c Staff are XSD members. ops funded by NIH

^d Ops funded by BES/CNM and BES/APS

INDUSTRIAL USE OF THE APS

Industry is a small but important part of the APS community.

- Several CAT beamlines have industry involvement
 - Industrial Macromolecular Crystallography Association (IMCA) – 100% industry supported
 - Lilly Research Labs (LRL) – 100% industry supported
 - DuPont / Northwestern / Dow (DND) – partial industry support
 - Materials Research (MR) – partial industry support
- 3.4% of our unique users listed industry as their home institution and 4.6% stated their source of support comes from industry in FY20. (For FY16, the numbers were 3% and 5%.)
- Industrial Measurement Mode
 - The industrial measurement mode provides a way for industry users to perform one-time, usually nonproprietary measurements to investigate specific problems (e.g., production or performance issues). The intent is to make time available for proof-of-concept experiments that may lead to other avenues of interaction.
 - Users must fulfill the same legal and safety requirements as all other users. Reviews are made by APS management and beamline staff.
- Industry outreach is achieved primarily via APS tours and presentations during industry visits to the Lab organized by the Argonne Science and Technology Partnerships and Outreach Directorate.

DEVELOPING AN APS CODE OF CONDUCT

- At the November 2018 Scientific Advisory Committee (SAC) meeting, a SAC member asked if the APS had a Code of Conduct – *the answer was no*.
- APS looked at the Code of Conduct at other facilities (RHIC and AGS), Labs (ORNL, PNNL, etc.), and institutions (American Physical Society, AAAS for example).
- ANL has a set of Core Values (<https://www.anl.gov/our-core-values>), but APS was looking for something a bit more concise that could be posted on bulletin boards, hutches, etc., that would contain contact information should a problem arise.
- APS drafted a code of conduct and ran proposed wording by the APS Users Organization (APSUO) / Partner User Council (PUC) and the APS DEI Committee for comments / feedback.

Impact We think creatively, pursue innovative ideas, and deliver excellence to positively change our community, nation, and world.	Safety We take personal responsibility for the safety, security, and well-being of ourselves, those around us, and our environment.	Respect We embrace diversity, value the perspectives and contributions of others, and act professionally toward all.	Integrity We are honest, keep our commitments, and take responsibility for our actions and outcomes.	Teamwork We include and inspire others, share and communicate openly, and celebrate success as one Argonne team.
--	---	--	--	--

ANL Core Values

APS CODE OF CONDUCT

- The Advanced Photon Source is committed to providing a safe, welcoming, and inclusive environment and culture to support scientific discourse and discovery that operates in accordance with **Argonne's Core Values**.
- **Everyone is responsible** for maintaining an environment that is free from harassment (including sexual harassment), discrimination, and retaliation.
- **Retaliation** of any kind against anyone who makes a good faith report is inconsistent with Argonne's Core Values.
- Behavior that is inconsistent with Argonne's Core Values may result in **suspension or revocation** of Argonne access privileges; a user's home institution will be notified.

USERS AND EMPLOYEES

SPEAK UP

If you see or suspect unethical or illegal behavior, you may report your concerns via the mechanisms below.

877-587-2449

<https://anl.tnwreports.com>

This webpage is not part of the Argonne National Laboratory website or intranet and provides an anonymous mechanism for reporting unethical or illegal activity. All calls are confidential to the greatest extent possible.

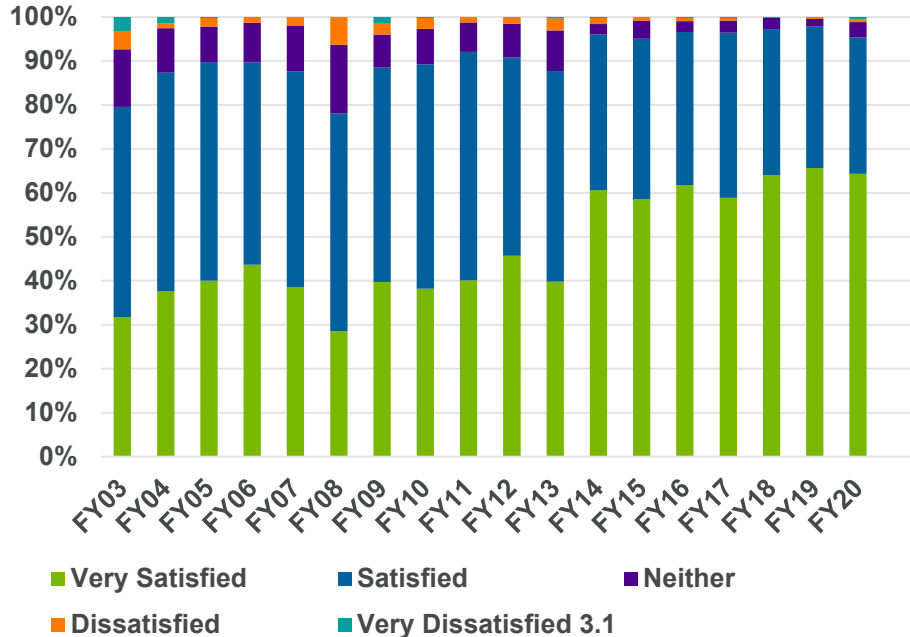
- Available 24 hours a day, 7 days a week
- Any time, from any location
- You **do not** have to provide your name
- Reports submitted will be handled promptly and discreetly
- If you wish to speak to an Argonne representative, call Argonne's Employee Relations Office at 630-252-5864.

<https://www.aps.anl.gov/aps-code-of-conduct>

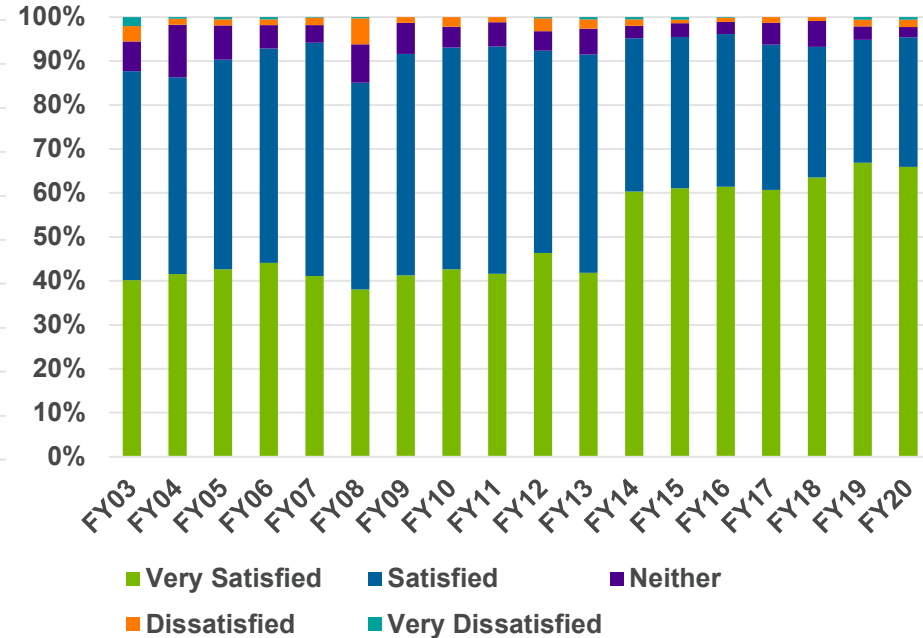
USER FEEDBACK: SATISFACTION SURVEYS

The BES Annual User Satisfaction Survey is sent to the list of unique users for that year.

1. How satisfied were you with the fraction of the year that the facility operates?



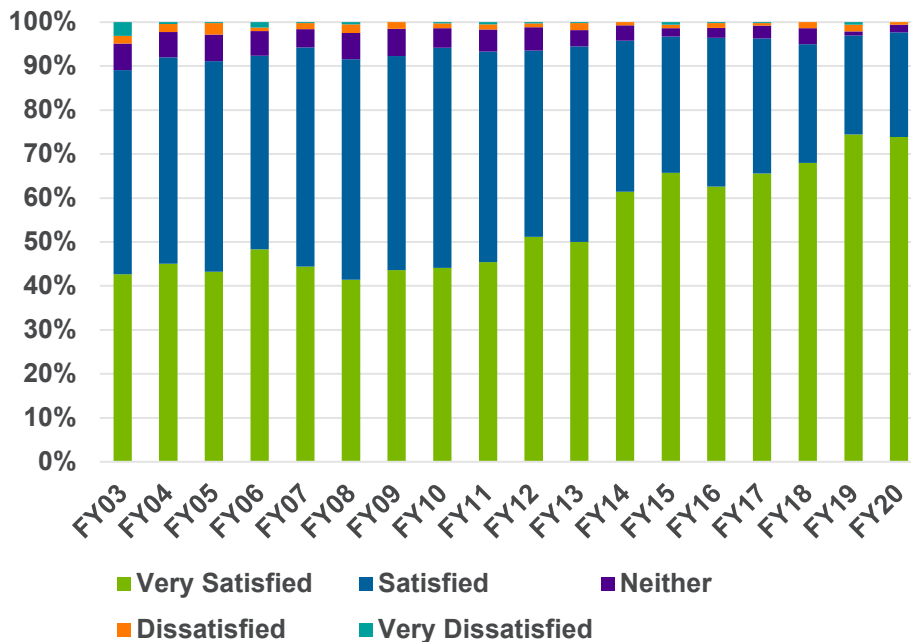
2. How satisfied were you with the schedule or service?



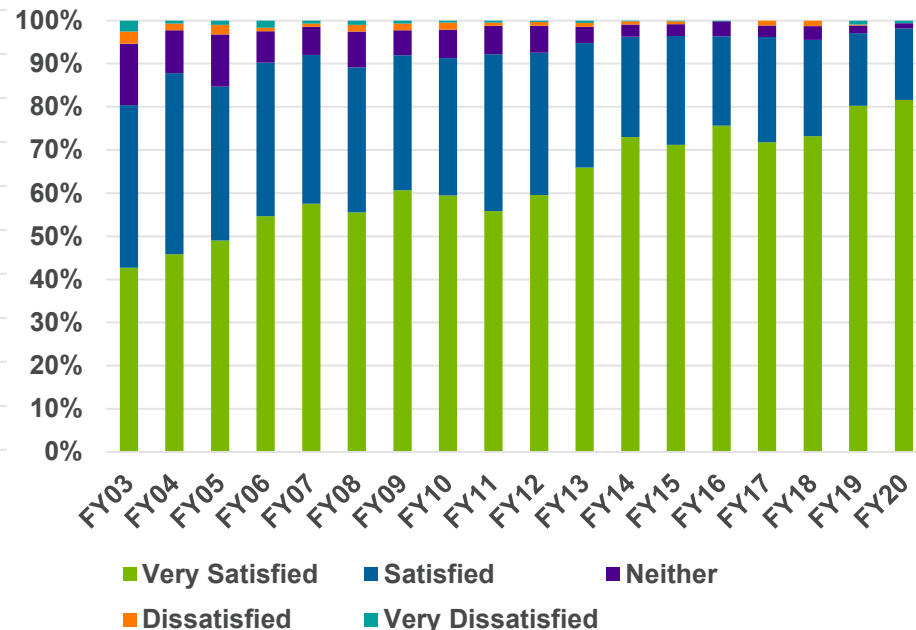
USER SATISFACTION SURVEYS (CONT.)

Users scores of “Very Satisfied” continue to grow.

3. How satisfied were you with the performance of the facility?



4. How satisfied were you with the support for users provided by the facility staff?



USER OFFICE ACTIVITIES BY THE NUMBERS

- Transitioned all meetings in 2020 to virtual; the 2021 APS / CNM Users Meeting was the first-ever APS user meeting held fully virtually and garnered over 1000 registrants
- Conducted an internal review of APS proposal, ESAF, and scheduling software systems and platforms required to determine future-state software and platforms after the APS Upgrade
- ORCiDs were implemented within the user registration process.
- The general user proposal system was enhanced to expand the mail-in rapid-access powder diffraction process to accommodate three additional beamlines: 11-BM, 11-ID-E, and 17-BM.

FY	GUPs Submitted
2017	2627
2018	2643
2019	2710
2020	2986

Meetings per Year	Meeting Name
1	APS/CNM Users Mtg
2	SAC
2	Beamline Reviews
3	PRPs (14 panels)
3	BAC
4	APSUO
4	PUC

FY	Total Registrations (U.S. +non-U.S.)	Non-U.S.	T4 Submitted/ Approved
2017	4984	2544	44/4
2018	5028	2437	39/6
2019	5318	2726	25/3
2020	4084	3111	21/3

FY	New User Agreements
2017	143
2018	106
2019	139
2020	84

LOOKING FORWARD

- Universal Proposal System
 - Common system being developed and funded by APS, NSLSII, LCLSII – APS leading the process
 - Similar look and feel for users submitting proposals plus cost sharing for facilities
- Review of General User (GU) Program
 - APS is currently in the process of reviewing GU policies and procedures
 - 3 subcommittees, made up of various stakeholders, are reviewing different aspects of the current policies and procedures
 - Planning survey to be sent to user community to get a broader perspective
 - Would like to have a report with recommendations by the end of the year so improvements could be implemented during the APS-U dark time (April 2023 – April 2024)
- Transition of the User Program from Operations to Dark Time and Back
 - Communications with user community on beamline closures, beamline program changes, calls for GU proposals, etc.
- Partnership Models after the Dark Time
 - Working with BES / SUF and CAT managers to define and implement new partnership models for CATs when APS comes out of the dark time (April 2024)

SUMMARY

- The APS has a robust and well-respected process for scientific access.
 - But there is always room for enhancements / improvements and we recently initiated a review of the APS General User Program.
- When submitted GU proposals and BTRs are used as indicators, demand is still rising.
- Over-subscription averages about 2, but some beamlines experience much higher demand (in some cases approaching 5).
- The user community is very satisfied with the services and support provided by both the APS and CATs as indicated by surveys / questionnaires.
- COVID-19 pandemic initially caused a pause in the use of APS (except for COVID-related research), but the beamline staff's rapid response to implement remote access / mail-in capabilities allowed many APS beamlines to support a limited user program.
- APS and the user community will be ready for the turn-on of the new APS MBA lattice.



QUESTIONS



U.S. DEPARTMENT OF
ENERGY

Argonne National Laboratory is a
U.S. Department of Energy laboratory
managed by UChicago Argonne, LLC.