

 **National Spherical Torus eXperiment Upgrade**

NSTX-U / Magnetic Fusion Science Meeting

Feb. 22, 2021

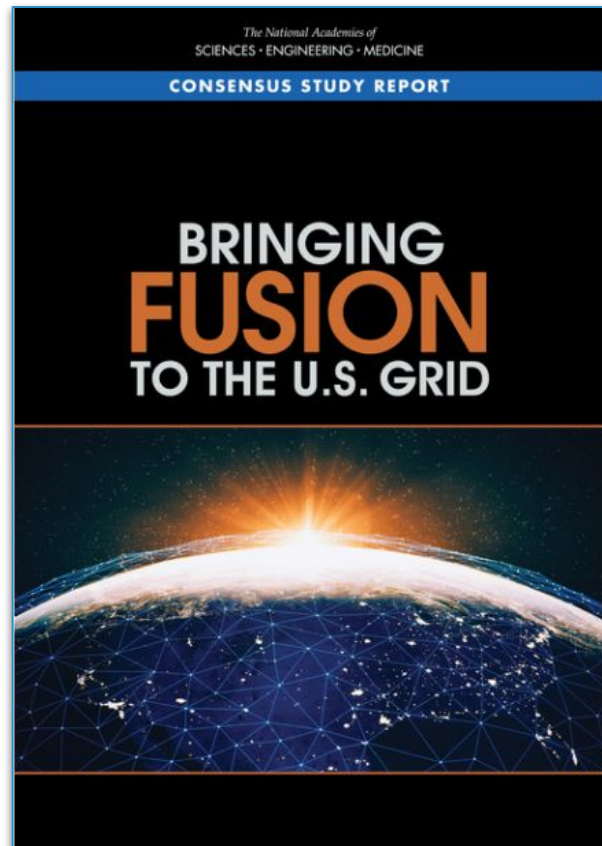
NASEM report released last week

“Bringing Fusion to the U.S. Grid”

<https://www.nap.edu/catalog/25991/>

From Executive Summary:

- **Recommendation:** For the United States to be a leader in fusion and to make an impact on the transition to a low-carbon emission electrical system by 2050, the Department of Energy and the private sector should produce net electricity in a fusion pilot plant in the United States in the 2035-2040 timeframe. *(from Chapter 2)*
- **Recommendation:** The Department of Energy should move forward now to foster the creation of national teams, including public-private partnerships, that will develop conceptual pilot plant designs and technology roadmaps and lead to an engineering design of a pilot plant that will bring fusion to commercial viability. *(from Chapter 5)*



Report structure

- **Chapter 1: Intro** (process, background, and approach)
- **Chapter 2: Role of the Pilot Plant on the Path to Commercialization**
 - Energy market needs, including policy and climate considerations
- **Chapter 3: Goals for a Fusion Pilot Plant**
 - Key requirements and goals for a fusion pilot plant
- **Chapter 4: Innovations and Research Needed to Address Key Fusion Pilot Plant Goals**
 - **Recommendation:** To meet the challenge of having a viable design by 2028 and initial pilot plant operation in 2035-2040, innovations in fusion confinement concepts and technology to extract fusion power and close the fusion fuel cycle should be developed in parallel. This will enable the engineering design of a pilot plant and the construction decisions to be accelerated by a combination of government and private funding.
 - **+ 15 other Recs.** reinforcing NAS 2018, CPP, and FESAC LRP recommendations
- **Chapter 5: Strategy and Roadmap for a Pilot Plant**
 - Discussion of FPP design, construction, and operation timeline, as motivated by market needs in Chapter 2

Some upcoming events

- April 19-23, 2021 (virtual), [US Transport Task Force](#)
 - March 8: deadline for plenary & contributed talks
- (???) Sherwood theory conference ???
- May 10-15, 2021 (virtual), [IAEA-FEC](#)
 - April 9, 2021: Conference “pre-prints” due
 - May 31, 2021: Nuclear Fusion manuscripts due
 - **If you haven't already, please let me know if you have results to be included in the NSTX-U Research Overview paper and poster** (talk is rapporteured)
 - Should be work that's new since FEC 2018 as published in Kaye et al. Nucl. Fusion 59, 112007 (2019): <https://doi.org/10.1088/1741-4326/ab023a>
 - **I intend to have a draft of the Nucl. Fusion paper done by March 26**
- June 21-25, 2021 (virtual), [EPS Plasma Physics Conference](#)
 - ~~New & updated contributed abstracts deadline: Feb. 21~~
- Sept 6-10, 2021 (virtual), [EU-US Transport Task Force](#)
- Sept 26 - Oct. 1 (virtual/Fukuoka), AAPPs-DPP ([invited nominations](#) due April 30)
- Nov. 8-12, 2021 (virtual/Pittsburgh), APS-DPP (invited nominations typically May)

NSTX-U Team talks

Feb. 8 - “Executive Summary” overview of NSTX-U Five Year Plan (2021-2025)

Feb. 15 - first 7 collaborator talks

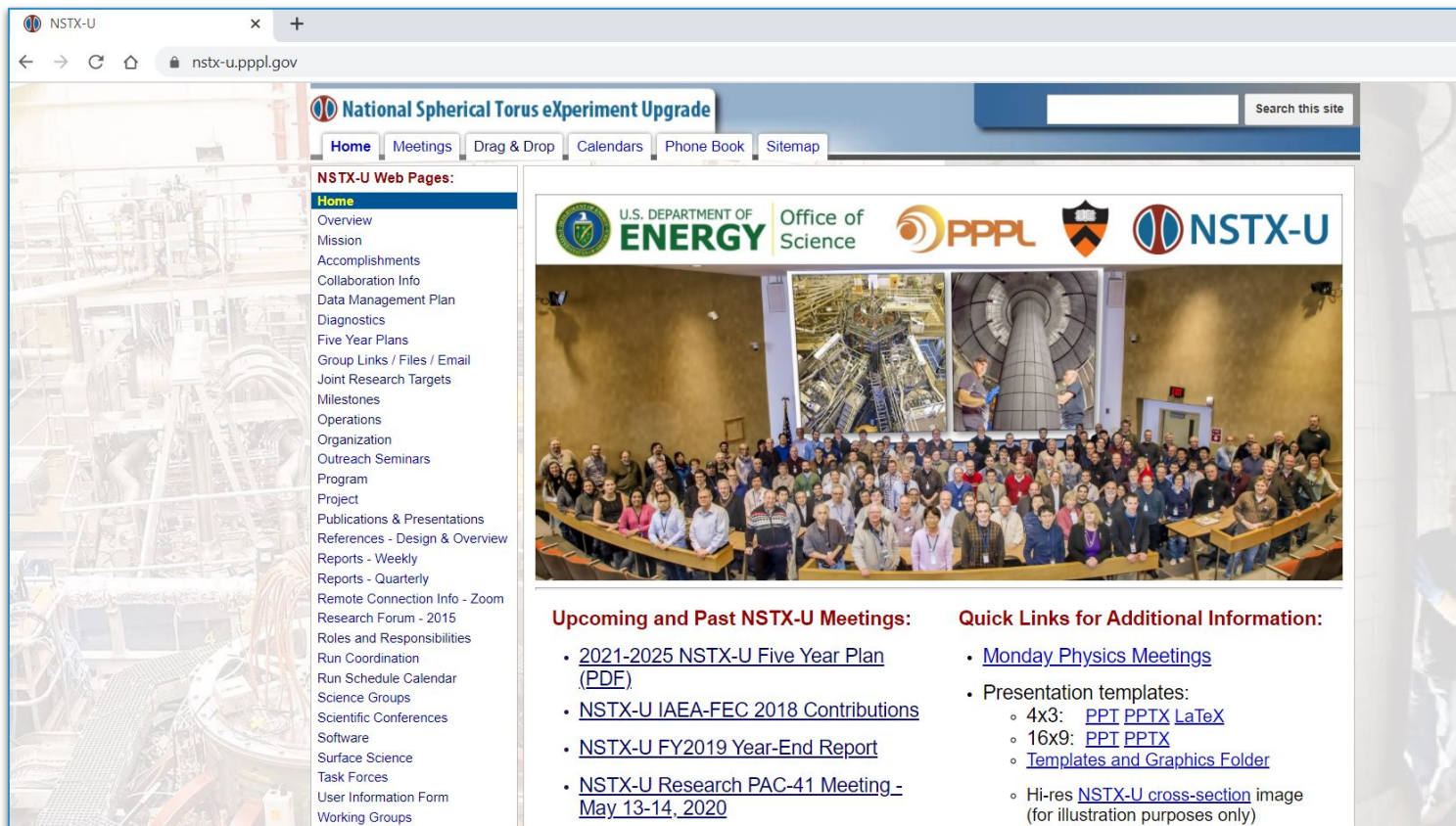
Next talks: March 1 & 8

- ~15 minute talks, suggested content:
 - An overview of the planned research & diagnostic activities for NSTX-U in this five year period (feel free to include progress since funding commenced)
 - Please highlight which Objective(s) and Thrust(s) from the [NSTX-U Five Year Plan](#) the research addresses
 - An estimated schedule of activities
 - Key needs or requirements, including on- and off-site personpower resources

Agenda for collaborator talks

Time (ET)	February 15	March 1	March 8
1:35	Thome	Schuster	Mordijck, Fitzpatrick
1:50	Sabbagh	Kolemen	Luhmann
2:05	Raman	McKee	Allain, Koel, Woller
2:20	Crocker, Lin	Rhodes	Baek
2:35	Heidbrink, Stagner	Brower	Levinton
2:50	Wirth	Soukhanovskii	Tritz
3:05	Unterberg		

FYI: Much information found at nstx-u.pppl.gov



The screenshot shows the NSTX-U website interface. At the top, there is a search bar and a navigation menu with links for Home, Meetings, Drag & Drop, Calendars, Phone Book, and Sitemap. Below the navigation is a large banner image of a group of people sitting at long tables in a conference room. To the left of the banner is a vertical list of links under the heading "NSTX-U Web Pages:". To the right of the banner are two columns of text: "Upcoming and Past NSTX-U Meetings:" and "Quick Links for Additional Information:". The website header includes the NSTX-U logo and the text "National Spherical Torus eXperiment Upgrade".

NSTX-U Web Pages:

- Home
- Overview
- Mission
- Accomplishments
- Collaboration Info
- Data Management Plan
- Diagnostics
- Five Year Plans
- Group Links / Files / Email
- Joint Research Targets
- Milestones
- Operations
- Organization
- Outreach Seminars
- Program
- Project
- Publications & Presentations
- References - Design & Overview
- Reports - Weekly
- Reports - Quarterly
- Remote Connection Info - Zoom
- Research Forum - 2015
- Roles and Responsibilities
- Run Coordination
- Run Schedule Calendar
- Science Groups
- Scientific Conferences
- Software
- Surface Science
- Task Forces
- User Information Form
- Working Groups

U.S. DEPARTMENT OF ENERGY Office of Science

PPPL

NSTX-U

Upcoming and Past NSTX-U Meetings:

- [2021-2025 NSTX-U Five Year Plan \(PDF\)](#)
- [NSTX-U IAEA-FEC 2018 Contributions](#)
- [NSTX-U FY2019 Year-End Report](#)
- [NSTX-U Research PAC-41 Meeting - May 13-14, 2020](#)

Quick Links for Additional Information:

- [Monday Physics Meetings](#)
- Presentation templates:
 - 4x3: [PPT](#) [PPTX](#) [LaTeX](#)
 - 16x9: [PPT](#) [PPTX](#)
 - [Templates and Graphics Folder](#)
 - Hi-res [NSTX-U cross-section](#) image (for illustration purposes only)