

Current Status of NASA Evolutionary Xenon Thruster - Commercial (NEXT-C). M. Dolloff¹ and J. Jackson²,
¹NASA – Glenn Research Center (matthew.d.dolloff@nasa.gov), ²Aerojet Rocketdyne (jerry.jackson@rocket.com)

Introduction: The NASA's Evolutionary Xenon Thruster (NEXT) ion propulsion technology was developed by the NASA In-Space Propulsion Technology Project, within the Science Mission Directorate (SMD), for use in a wide array of planetary science missions including Discovery, New Frontiers and Flagship classes. A NEXT ion propulsion system consists of a gridded ion thruster, Power Processing Unit (PPU), thruster gimbal, a xenon propellant feed system, and a control interface captured either in a dedicated unit or distributed between the ion propulsion system and the spacecraft. NEXT has very high fuel efficiency and flexible operations making it ideal for many classes of science missions.

NASA's Planetary Science Division (PSD) has committed to the completion of the flight fidelity design, qualification, and fabrication of two PPUs and Thruster for use in future planetary science missions. These two thrusters and PPUs will be available in early 2019, well in advance of use for a New Frontiers-4 mission.

In addition to developing the two flight thrusters and PPUs for near-term use, NASA has a goal of NEXT becoming a commercial product for purchase by NASA and non-NASA customers. Aerojet Rocketdyne, and their major sub-contractor ZIN Technologies, was selected through a competitive process to perform this work and retains the rights to produce the system, known as NEXT-C for future commercialization. When developed for commercial use, the NEXT-C system will be the highest power ion engine qualified to date, enabling support to missions with varying gravitational fields, long life requirements and high delta-V.

Current Status: NASA SMD offered the NEXT-C thruster as GFE for the 2014 Discovery Announcement of opportunity. NEXT-C was not part of any of the selected missions for Step 1, but Planetary Science has continued to support the development of the thrusters and PPUs for use on a future NASA mission that is still to be determined.

NEXT-C completed its System Requirement Review (SRR) in July 2015, and will be holding its Preliminary Design Review in February 2016. Flight hardware delivery to NASA is slated to be completed in early 2019.

Work continues to progress on the final design as well as on the final analysis of the Long Duration Test (LDT) of the NEXT technology project that was the predecessor to the NEXT-C project and demonstrated the capabilities of the NEXT thruster.