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EMPOWERING INNOVATION: THE GATEWAY POWER AND PROPULSION ELEMENT  
PUBLIC-PRIVATE PARTNERSHIP

**Abstract**

This paper will provide an overview of the approach to Power and Propulsion Element (PPE) development as a public-private partnership and its fostering of commercial space innovation and expansion beyond low earth orbit. NASA has been advancing Gateway concepts in studies with the ISS International Partners and US Industry. Leveraging NASA investments in advanced Electric Propulsion technology and 50 kilowatt-class solar arrays, the PPE will be the first element of the Lunar Gateway extending human endeavors to the moon and beyond. PPE will be developed as a partnership with US Industry, addressing NASA needs, PPE partner needs, and the needs of Gateway's potential international partners.

Targeted for launch in 2022, PPE will showcase a high-powered, high throughput solar electric propulsion (SEP) system to support a broad range of applications including future human missions in deep space. PPE is being developed as a public-private partnership leveraging commercial spacecraft products capabilities and plans. In March 2018, five US companies completed studies addressing differences between SEP mission concepts, expected industry capabilities, and potential Gateway needs. These studies provided data on commercial capabilities potentially relevant to NASA's exploration needs as well as helped reduce risk for a new powerful and efficient SEP spacecraft.

Subsequently, NASA released a draft Broad Agency Announcement (BAA) in June 2018, conducted a dialog with industry through an Industry Day held in July 2018, and solicited comments on the draft. The Final BAA was released in September 2018 with proposals due in November 2018. In the BAA, NASA specified only its minimal set of unique requirements allowing the partner the freedom to innovate by completing the requirement set suiting their needs for future commercial spacecraft application. The partner would own and operate PPE through launch and a demonstration period lasting up to one year. After the demonstration period, NASA would have the option to acquire the PPE for its use as the first

Gateway element.