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Phase I Development of Neutral Beam Injector Solid-State Power System[1] JAMES PRAGER, TIMOTHY ZIEMBA, KENNETH E. MILLER, ILIA SLOBODOV, SETH ANDERSON, Eagle Harbor Technologies, Inc. — Neutral beam injection (NBI) is an important tool for plasma heating, current drive and a diagnostic at fusion science experiments around the United States, including tokamaks, validation platform experiments, and privately funded fusion concepts. Currently, there are no vendors in the United States for NBI power systems. Eagle Harbor Technologies (EHT), Inc. is developing a new power system for NBI that takes advantage of the latest developments in solid-state switching. EHT has developed a resonant converter that can be scaled to the power levels required for NBI at small-scale validation platform experiments like the Lithium Tokamak Experiment. This power system can be used to modulate the NBI voltages over the course of a plasma shot, which can lead to improved control over the plasma. EHT will present initial modeling used to design this system as well as experimental data showing operation at 15 kV and 40 A for 10 ms into a test load.

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