

Completion of IMSR® Standard Design Approval Prelicensing Reviews with NRC to Support Advanced Reactor Licensing Framework

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Abstract

Terrestrial Energy USA, Inc. (TEUSA), a Delaware C-Corp founded in August 2014, is a U.S. majority-owned company with corporate offices in Charlotte, NC and Greenwich, CT. TEUSA's business objective is to develop, license, construct, commission and demonstrate the commercial operation of the Integral Molten Salt Reactor (IMSR®) nuclear power plant in the United States in the next decade. TEUSA is actively engaged with the U.S. Nuclear Regulatory Commission (NRC) on a broad spectrum of IMSR® pre-licensing technical and regulatory topics. In addition, TEUSA is engaged in a number of active projects with US industry, government, and academia to support IMSR® licensing and future deployment.

TEUSA is the only domestic Generation IV design vendor pursuing a Standard Design Approval (SDA) under 10CFR Part 52, Subpart E. The SDA is specifically for the Core-unit of the IMSR® power plant. TEUSA is implementing this licensing approach to 1) demonstrate that an incremental licensing process (or phased licensing) for a design will achieve a reduction of overall licensing risk; 2) support NRC regulatory efforts to apply a presently untested portion of Part 52; and, 3) support future customer options during a construction permit application process.

The objectives of this project are:

- 1) Complete and submit to the NRC a select set of IMSR® prelicensing topical reports that are essential to preparing an SDA application.
- 2) Facilitate a timely and efficient NRC review of each topical report.
- 3) Complete and submit revisions of each topical report incorporating feedback received from the NRC.
- 4) Obtain from the NRC, a Safety Evaluation for each topical report.
- 5) Initiate preparation of the SDA application for the Core-unit of the IMSR®.

Successful completion of the project objectives will 1) enable TEUSA to advance the development of its license application for an IMSR® Core-unit SDA, 2) provide the advanced reactor industry, including advanced SMR and microreactor design vendors, with a prelicensing framework for a phased licensing approach, 3) support the NRC's efforts to develop a comprehensive regulatory framework for licensing non-LWR designs, and 4) provide valuable review opportunities for the NRC staff to exercise its review guidance.

