**NE-24-33435 – Thermal Energy Storage with sCO2 Power Conversion for Low-Cost Micro Modular Reactors – Heat Transfer and sCO2 Power Cycle Assessment**

Kanata America, Inc., located in Cheyenne, WY, is a developer, builder, owner, and operator of decarbonization intellectual property and infrastructure assets. Kanata was created as an indigenous-led approach to climate action.

The Kanata Thermal Energy Storage (TES) solution can provide large energy storage using solid particle-based TES modules and one or more small Supercritical Carbon Dioxide (sCO2) power cycle skids. The challenges are to maximize the heat transfer coefficient in the solid particle-based TES to transfer heat more efficiently to the embedded sCO2 pipes. Another challenge is to assess the impact of the back pressure that leads to a pressure drop in the embedded sCO2 pipes on the Brayton power cycle efficiency.

Sandia National Laboratories (SNL) has a robust history in particle-based TES as well as sCO2 power cycles. Since the 1980s the SNL National Solar Thermal Test Facility (NSTTF) has pioneered TES technology. In addition to furthering Kanata commercialization efforts, this technology is very well suited for pairing with Micro-Modular Reactors (MMRs).