The US Marine Corps (USMC) is joining the US Army in an expanded vision for kinetic human-generated energy designs, also known as kinetic energy harvesting.

From the USMC perspective, the new vision is just one of many energy and logistics efforts being highlighted during the 2016 iteration of that service’s Expeditionary Energy Concepts (E2C) programme.

A continuation of the Experimental Forward Operating Base (ExFOB) project; meanwhile, the new name reflects a mind shift away from fixed forward operating bases toward an expeditionary operating environment.

The E2C team is led by the Marine Corps Expeditionary Energy Office and includes participation from the Naval Warfare Centers, requirements personnel, joint service partners and industry representatives.

Since the ExFOB programme’s establishment in 2009, the USMC has held eight demonstrations, with each one announced through a request for information (RFI) released in the December.

The RFIs specify particular areas of Marine Corps interest for the
demonstration to be held the following spring. To date, the RFIs have prompted more than 300 industry responses that were culled to more than 100 technologies demonstrated during the E2C (and earlier ExFOB) events.

Twenty six of those technologies have continued forward to field or laboratory experimentation, and five of the systems have become official programmes of record.

One of the efforts highlighted at E2C 2016 is an extension of ExFOBs in 2012 and 2014, and focuses on wearable, smart and central power management coupled with kinetic energy harvesting.

Now known as the Joint Infantry Company – Prototype (JIC-P) the new programme unites USMC and US Army efforts, along with other DoD stakeholders, to increase system interoperability.

Together with other elements such as a wearable ‘power vest’ and power manager, the JIC-P programme will integrate knee movement kinetic energy harvesters from Bionic Power and new energy-generating packs from Lightning Packs.

Engineers from Naval Surface Warfare Center – Dahlgren indicated that the programme targets 72-hour tactical missions, with the knee harvesters expected to generate roughly 5-10 Watts of power and the packs roughly 10-15 Watts.

However, they added that ‘with the right walking gait and the right amount of weight in the pack’ a marine or soldier ‘can generate a continuous 30 Watts of power.’

The expanded JIC-P designs will undergo further evaluations by both marines and soldiers in late FY16 and FY17, with those evaluations
informing power and energy requirements, investment and acquisition decisions.