

**Terms of Reference
Future Fuels
NRAC Summer Study 2005**

Objective

Identify, review, and assess technologies for reducing fuel consumption and for militarily useful alternative fuels, with a focus on tactical ground mobility. Technical maturity, current forecasts of “market” introduction, possible operational impact and S&T investment strategy should be considered. Two main focus areas to be considered in this effort are alternative fuels, and improving fuel efficiency (to include examination of alternative engine technologies).

Background

Lessons learned from OEF/OIF, as well as analyses of future warfighting concepts such as Enhanced Networked Seabasing and Ship-To-Objective Maneuver, have identified fuel consumption and distribution as being among the most critical aspects of projecting and sustaining a combat credible force. Future naval forces must have a secure fuel supply to be effective. Innovative approaches must be devised for the responsive and flexible delivery of required fuels to ground, surface and air forces maneuvering throughout the battlespace.

This effort is designed to focus on the consumption part of that equation. Alternative fuels offer potential not only for ground, sea and air vehicles but also for fuel cells to power portable electronic systems. Marine Corps operating forces need long-shelf-life, high-capacity, longer-lasting, lightweight, renewable, environmentally-friendly, multi-application energy sources.

The technical maturity of future alternative fuels and conversion technologies must be objectively quantified to better understand not only the realistic capabilities of each technology and the probable timeframe in which it can practically be deployed, but to guide the Navy’s S&T investment strategy in relationship to other industry and government organizations. Establishing an effective strategy that could optimize/leverage the cooperative research among industry, DoE, DoD and other government organizations should be considered.

Specific Taskings

This study will specifically:

- Identify, review and assess technologies for fuel consumption reduction, to include alternative engine technologies,

- Identify alternative fuels and assess readiness for introduction to Naval forces,
- Evaluate relevant Commercial-Off-The-Shelf (COTS) technologies for operational utility and suitability,
- Identify candidate high-payoff S&T areas for further study, development and fielding by naval forces,
- Recommend guidelines for establishing an effective strategy that could optimize/leverage the cooperative research among DoD, DoE, and industry.