



## Military Leadership In Defending the Climate Against all Enemies

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### ***Stop Worrying – Start Panicking Fear Climate Change!***

- Faster than Predicted
- Abrupt & Irreversible
- Ending Prosperity
- Threatening War
- Disappointing Children



## Abrupt Climate Change Risks

- Disappearance of Arctic Sea Ice
- Rapid Loss of Greenland Ice Sheet
- Collapse of the West Antarctic Ice Sheet
- Overturn of Atlantic Thermohaline Circulation
- Melting Kilimanjaro, Himalayan and other Glaciers Supporting Vast Human Populations
- Methane Release as Tundra Melts

## First Impacts of Climate Change

- Higher Surface and Ocean Temperatures
- Rising Sea-Levels
- Changing Precipitation
- Fresh Water in Peril
- Health and Property Impacts
- Threatened Food, Fiber & Forests
- The Only Uncertainty is When and Where

## Headline News

- National Research Council: :National Security Implications of Climate Change for U.S. Naval Forces
- US DoD 2010 Quadrennial Defense Review warns of climate change and urges action
- Brigadier General Steven M. Anderson (retired) NY Times Editorial: “Save Energy, Save Our Troops”
- UNFCCC Executive Cristiana Figueres calls for military leadership on technology to protect climate
- Military technology: hybrid trucks & ships, battlefield energy, aviation biofuels, light-weighted cargo, integrated facility heating, cooling, wind & solar

## Energy Dependence: Economic Threat Multiplier

- Every \$10 increase in oil price costs DoD \$1.2 billion/day (for the 300K barrels/day)
- Oil profits finance enemies of freedom
- Oil logistics cost lives and draw resources
- Calling into question the wisdom of depending on unstable foreign states for US energy supply

## Visionary Military Climate Strategy

- Pursue Self-Sustaining Energy at the Battlefield
- Regional Cooperation, Where possible
- Stewardship and Destruction of Surplus ODSs, HFCs, SF6 and PFCs
- Military Tiger Teams -- Formed to Act Confidently and Decisively with Influence and Unequivocal Success

## Headline News:

### EPA HFC Phaseout in MACs

- Last week EPA granted the petition to “un-SNAP” HFCs in mobile ACs (MACs)
  - Petitioned by the Natural Resources Defense Council (NRDC), the Institute for Governance & Sustainable Development (IGSD), and the Environmental Investigation Agency (EIA)
- [http://igsd.org/news/documents/PR\\_EPAHF\\_C-134petition\\_long\\_23March11.pdf](http://igsd.org/news/documents/PR_EPAHF_C-134petition_long_23March11.pdf)
- [http://www.epa.gov/ozone/downloads/NRDC\\_petition\\_responses.pdf](http://www.epa.gov/ozone/downloads/NRDC_petition_responses.pdf)

## HFCs Obsolete & Unwanted

- New vehicle air conditioning
  - 30+% of global HFC use and emissions
  - GWP<150 for cars sold in the EU from 2011
  - EPA will un-SNAP HFC-134a (GWP=1440)
  - GM's choice is of HFO-1234yf (GWP=4)
  - Dozens more automakers endorse HFO-1234yf
- HFC phasedown under the Montreal Protocol supported by US, Canada, Mexico, FSM and 90+ nations
- With incentives, transition in vehicle AC can be completed within 4 years

## Military Strategy on HFCs

- Lead, not follow, in applications where HFOs satisfy stringent military performance criteria
  - Military centers of excellence are part of the solution
  - Global military technical networks & partnerships
- Document mission-critical applications where HFOs are unsuitable
- Forward-engineer systems to anticipate superior refrigerants, foam-blowing agents, and solvents
- Sponsor best experts on Montreal Protocol Technology & Economic Assessment Panel (TEAP) and its Technical Options Committees (TOCs)

## Elements of a Military Climate Strategy

- Reduce energy intensity of military operations at installations and by operational forces
- Incorporate climate change effects into force planning and infrastructure investments
- Stewardship and Destruction of non-energy GHG, such as surplus ODSs, HFCs, SF6 and PFCs
- Opportunities for military-to-military cooperation in non-traditional areas
  - Climate scenarios such as humanitarian relief
  - Measuring, monitoring and managing greenhouse gases from installations and land management and possibly operations
  - New energy technologies for installations
- Military Tiger Teams to conduct energy and GHG audits and recommend technology and management solutions

## Emerging Solutions - Many Sources

- US NRC “National Security Implications of Climate Change for U.S. Naval Forces”
  - [http://www.navy.mil/search/display.asp?story\\_id=59021](http://www.navy.mil/search/display.asp?story_id=59021)
- UK National Security Strategy
  - [http://interactive.cabinetoffice.gov.uk/documents/security/national\\_security\\_strategy.pdf](http://interactive.cabinetoffice.gov.uk/documents/security/national_security_strategy.pdf)
- “National Security and the Threat of Climate Change”
  - <http://securityandclimate.cna.org/report/>
- “The Importance of Military Organizations in Protecting the Climate”
  - <http://www.igsd.org/conferences/Paris2008.php>

## Full Tool Box

- Energy Use Inventory and Performance Standards
- Life-Cycle Climate Performance (LCCP) and Comprehensive Environmental Assessment
- Carbon “Bootprint” Accounting and Measures of Emissions Reductions
- Global Case Studies
- Networks and Working Groups (including UNEP)
- Partnerships
  - Green Weapons Advocates
  - Ministries of Environment and NGOs
  - Foreign Offices & International Development Departments
  - Military research and development cooperation
  - Innovative public-private partnerships (e.g., ICOLP)

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