

USMC Expeditionary Energy



Joint Committee On Tactical Shelters (JOCOTAS)

03 Nov 11

Maj Sean Sadlier, USMC

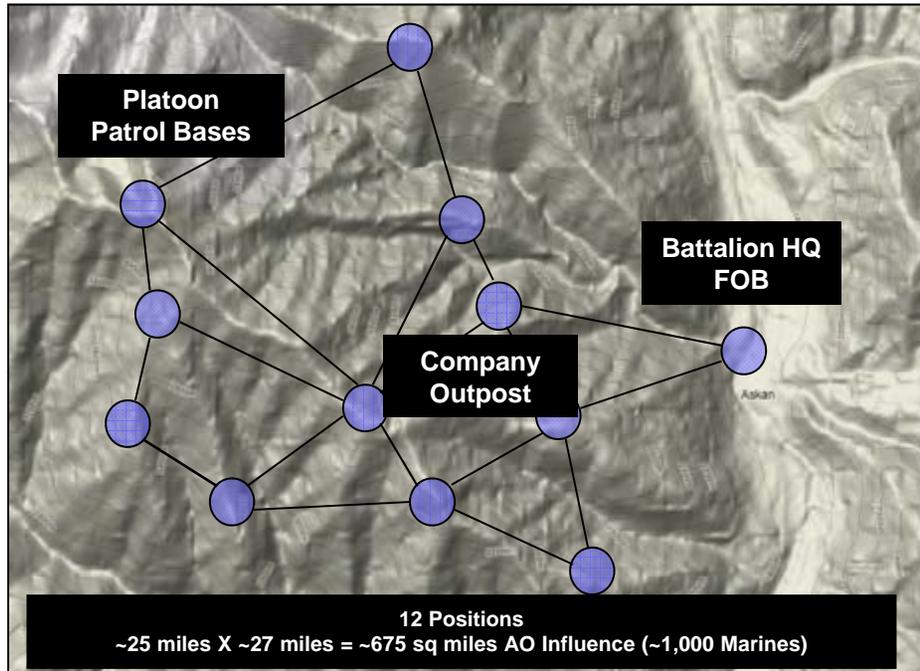
Logistics Analyst, Expeditionary Energy Office (E²O)

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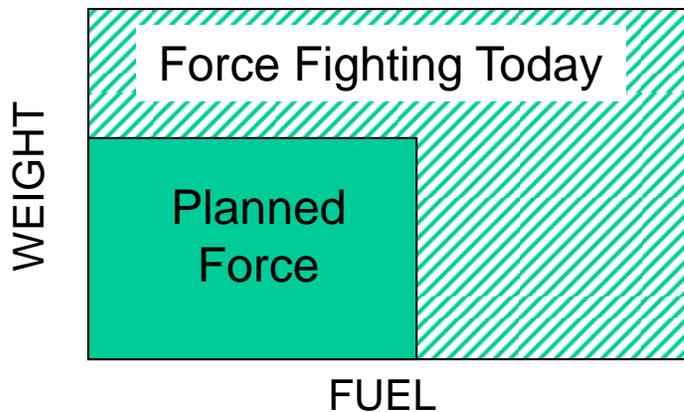


Distributed Operations

“Enabled By Technology Advances”



- 250% Increase in Radios
- 300% Increase in IT/Computers
- 200% Increase in # of Vehicles
- 75% Increase in Vehicle WGT
- 30% Decrease in MPG
 - MTRV – 4.3 MPG
 - HMMWV – 8.0 MPG
 - MRAP – 4.0 MPG



Increased Risk and Dependence

24 Mar 10 – 30 Jun 10
299 Fuel/Water Convoys (98 Days)
6 Marines WIA hauling Fuel/Water
1 Marine WIA per 50 Fuel/Water Convoys

We can't afford to continue business as usual.



Lighten the Load, Don't Give up Lethality



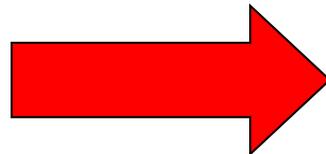
Batteries Alone:

380% Weight Increase

2,400% Cost Increase



Vietnam



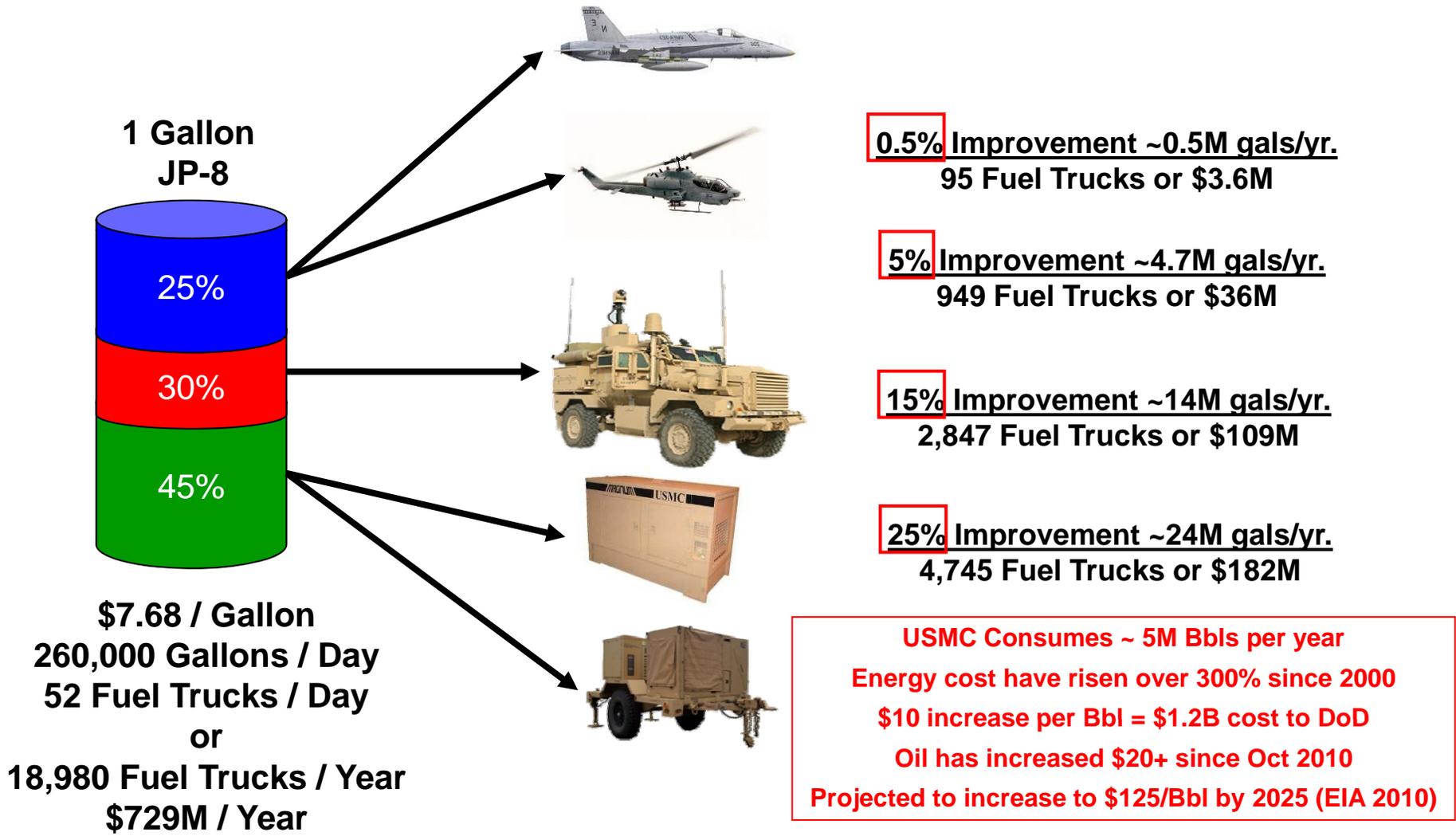
Today



Today's Deployed MAGTF



Small Improvements in Energy Efficiency...Big Impact!



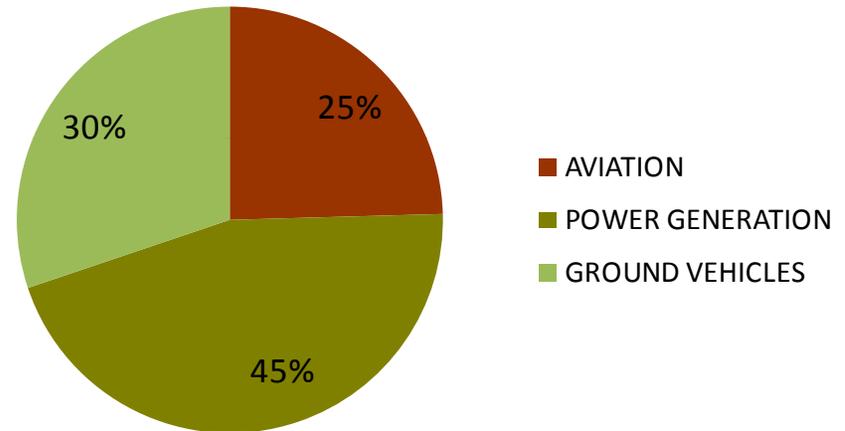
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Expeditionary Energy Goals “A Starting Point”



- 25% Doctrine, Training, Organization, and Leadership = Behavior Change “Expeditionary Ethos”
- 10-15% Increased Efficiency of Ground Vehicles and Equipment
- 5-10% Renewable / Alternative Energy
- 10% Increased Efficiency in Aviation



Starting Baseline
OEF 2010

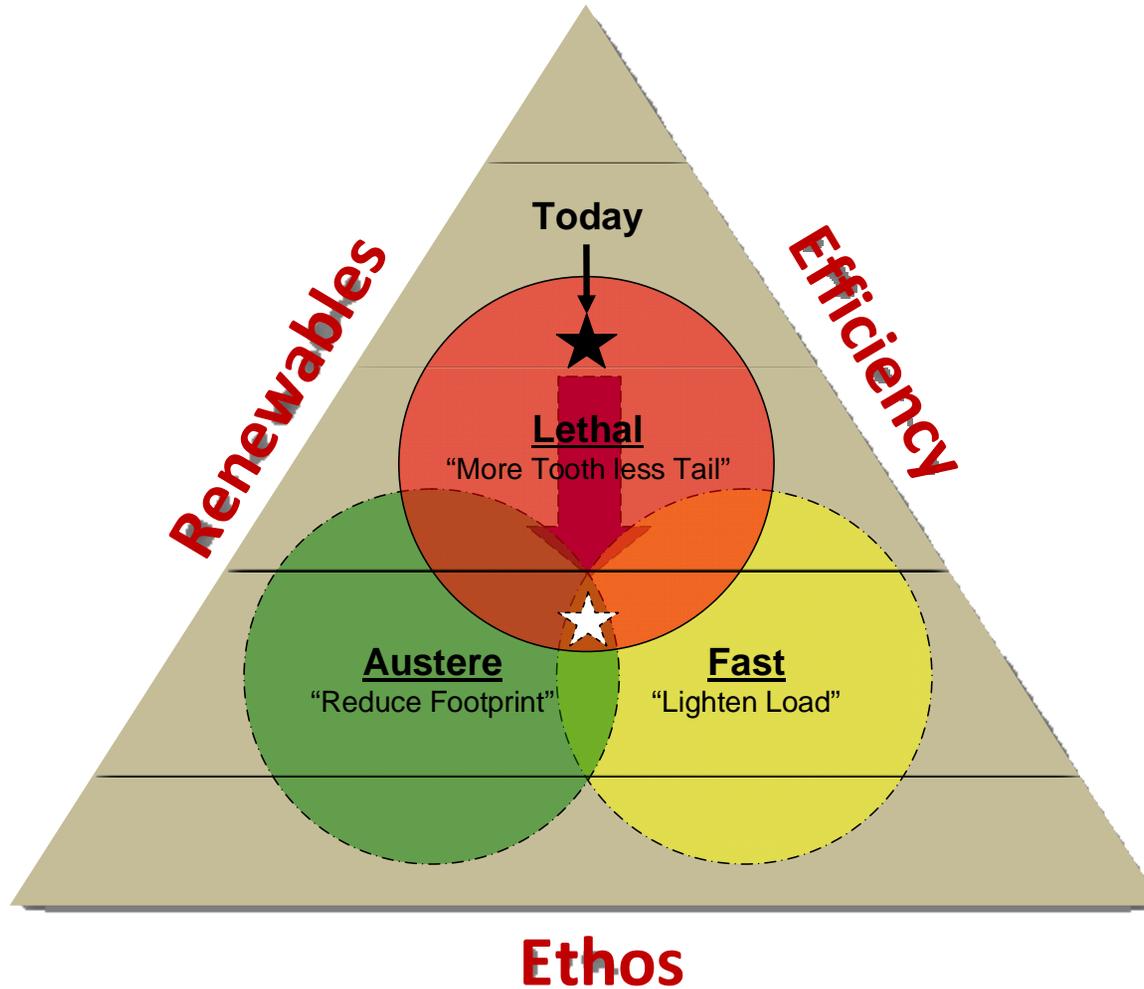
(Will be adjusted as we gain greater insights into actual use across the MAGTF)

~50% Reduction by 2025

Creating a more Capable MAGTF, Today and Tomorrow



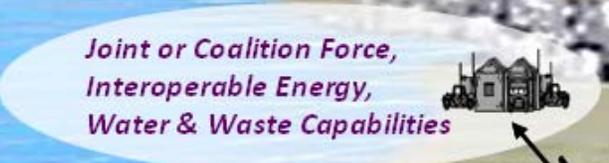
Increasing Effectiveness Reducing Risk



Unclassified



Self - Sufficient COP/PB -
Renewable Energy
Powered
COC & Life Support,
Locally Sourced Water
Renewable Energy,
Water Purification



Self -Sufficient FARP -
Water & Energy
Alternative Fuel



Common Operational Energy Picture
Monitor, Analyze, Manage



Self -Sufficient Bn FOB -
Renewable Energy
Powered COC & Life
Support,
Locally Sourced Water
Minimum Footprint
Ashore

Plan for Energy, Water,
& Waste Efficiency



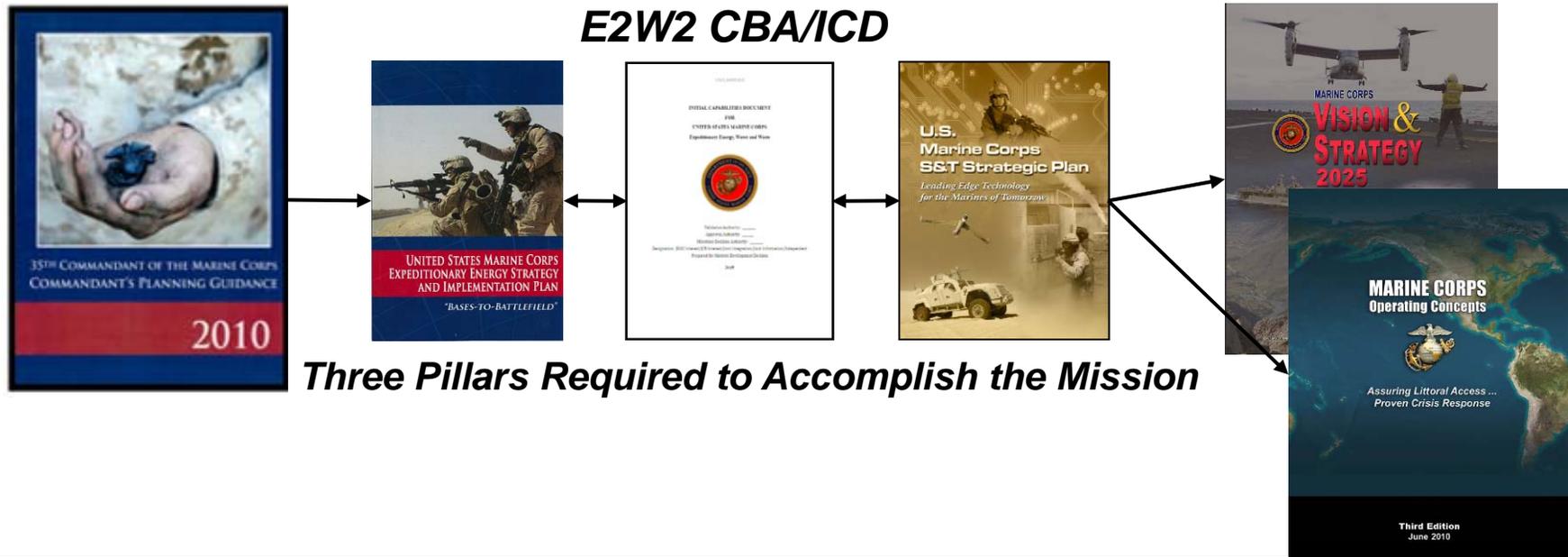
Dismounted Ops -
Reduced Battery &
Water Load &
Resupply
Renewable Energy,
Water Purification



Strategic Framework to Create a More Capable MAGTF



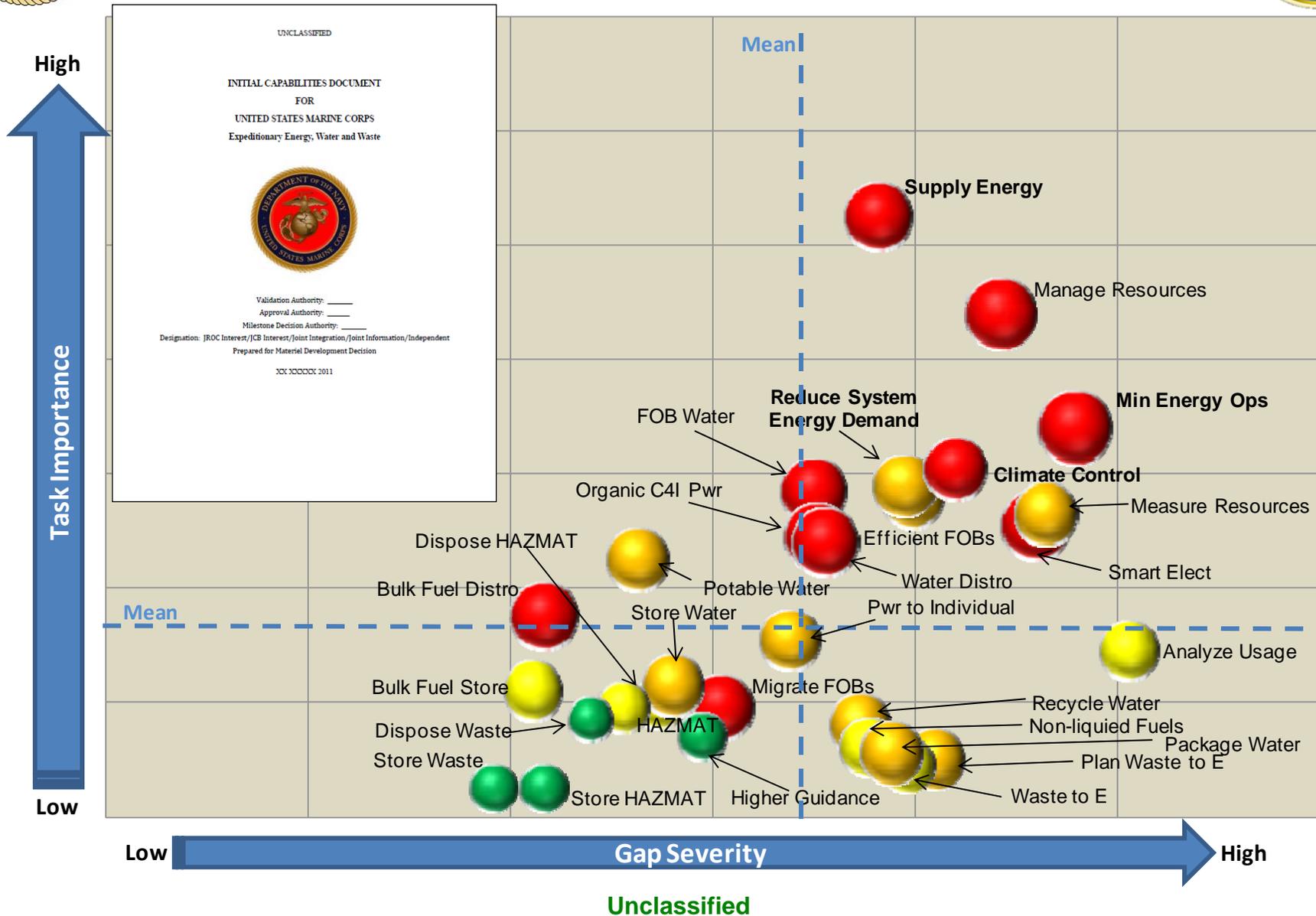
Mission
By 2025 we will deploy Marine Expeditionary Forces that can maneuver from the sea and sustain C4I and life support systems in place; the only liquid fuel needed will be for mobility systems which will be more energy efficient than systems are today.



Energy Strategy and Supporting Requirements Documents Written in Parallel to Achieve CMC's Priority; ...to "Implement New Capabilities..."



"Expeditionary Energy, Water, and Waste ICD Gaps"



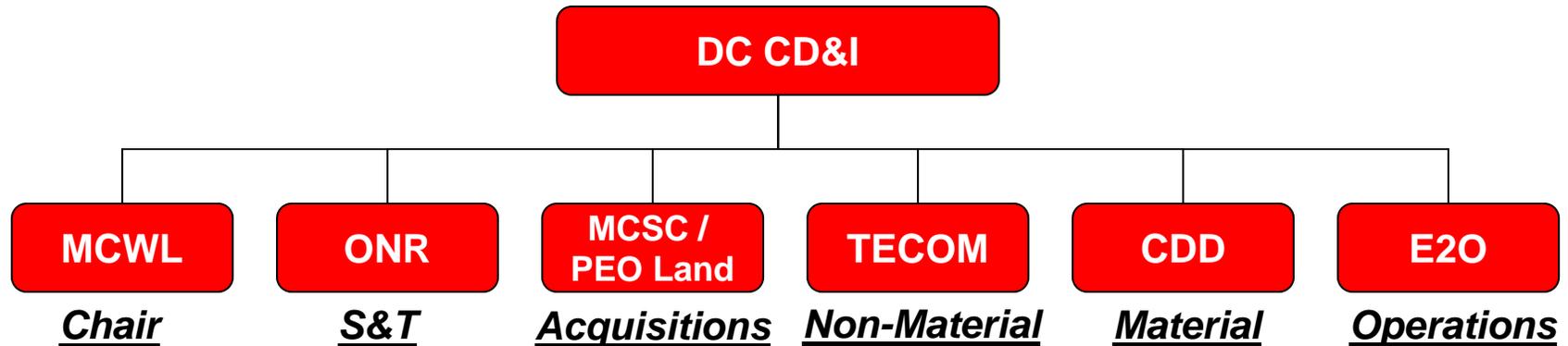
ExFOB Update



Unclassified



ExFOB Team



- **ExFOB executed Aug (West Coast)**
 - Additional ExFOB 30 Apr – 4 May (East Coast)
- **Operational Planning Team – Weekly**
- **Executive Board Meets Quarterly**
- **MROC Brief Annually**
- **E²O administrative oversight, scheduling, and budgeting**

Informs Requirements / Mitigates Investment Risks / Builds Confidence in New Technology



ExFOB To Date



Dec-09

RFI
95
Technologies

Mar-10

ExFOB
16
Technologies
Quantico, VA

Apr-Jul 10

Eval/Train
8 (-2)
Technologies

Oct-10

Deployed
6
Technologies

Jul-11

Accelerated
4
Technologies

1st ExFOB

Apr-10

RFI
28
Technologies

Aug-11

ExFOB
15
Technologies
29 Palms, CA

May-Jul 11

Eval/Train
3
Technologies

Aug-11

Deployed
3
Technologies

TBD

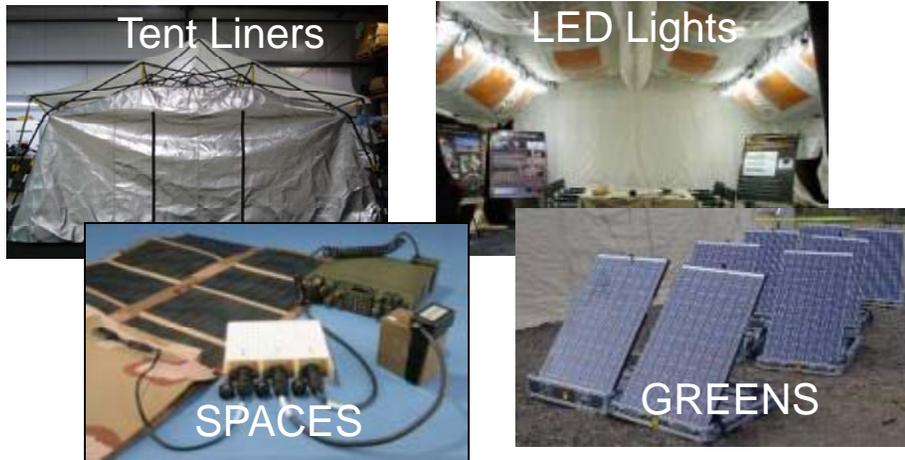
Accelerated
TBD
Technologies

2nd ExFOB

Unclassified



1st ExFOB Deployment Accelerating Technologies to OEF



Cost & Savings:

- Cost \$25M
- Projected Savings
 - Est. \$40.9M / Year
 - Est. 9M lbs / Year
 - Est. 450 MV-22 Sorties
 - Est. 180 Fuel Trucks

Fielding 10 Sets Each :

- 75 x Shelter Liners for BASE-X 305
- 75 x LED Lights
- 96 x Solar Portable Alternative Communications Energy System (SPACES)
- 20 x Ground Renewable Expeditionary Energy Network System (GREENS)

Operational Impact:

- Reduced fuel and battery requirements, reduced load
- Improved quality of life with efficient shelters
- Quiet, easy to maintain systems



2nd ExFOB Deployment PB Boldak



Hybrid Power System

- **Greater Than 80% Fuel Savings**
- **Break Even Weight approx. 3 Months**
- **Break Even Fuel Cost approx. 1 Year**
- **Concerns : Complexity / Weight**

Direct Current Air Conditioner

- **Great Than 70% Fuel Savings**
- **Break Even Cost Immediately**
- **Concerns : Durability / Heating**





Non-Material Solutions Update



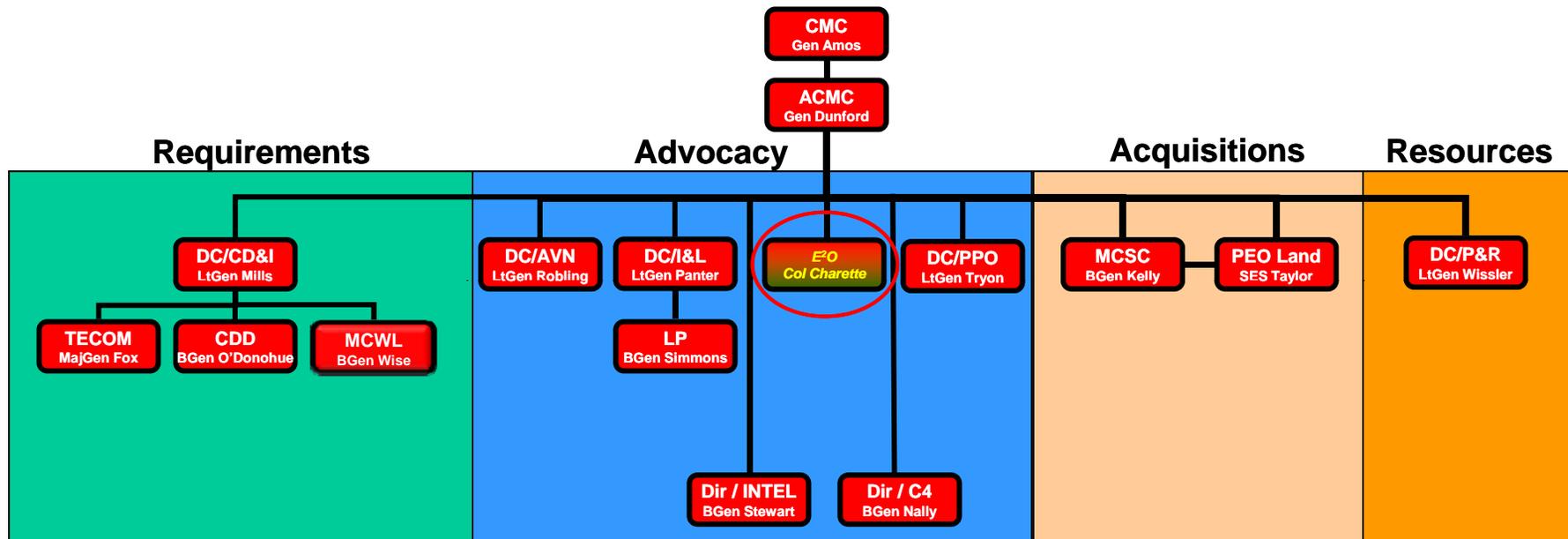
- Common Skills Program “Expeditionary Ethos”
 - Under review at TECOM
 - Camp Commandant Pilot Training Program
 - MCES In-Work
 - Doctrine Review
 - Ongoing
-
- NPS New Energy Curricula
 - 3 Students







USMC Operational Energy Leadership



“The Marine Corps Expeditionary Energy Office (E²O) will analyze, develop, and direct the Marine Corps’ energy strategy in order to optimize expeditionary capabilities across all Warfighting functions.”

Col Bob “Brutus” Charette
Director, Expeditionary Energy Office

