Overview of Expeditionary Power Systems
Marine Corps Systems Command
Warren Clare

Joint Service Power Expo
August 25, 2015
• Marine Corps Acquisition Overview
• Expeditionary Power Systems Overview
• Power Drivers
• Current USMC Power Programs
  – Near term, Long term
• Conclusion
MCSC’s Acquisition Areas of Expertise:

- Command, Control and Communications
- Information Technology and Networking Infrastructure
- Battlespace Management and Air Defense
- Training Systems
- Infantry Weapons Systems
- Combat Equipment and Support
- Armor and Fire Support
- Ground Transportation and Engineering Systems
- Intelligence, Surveillance and Reconnaissance
- Systems Engineering
- Ammunition
- Lifecycle Logistics
“Shoot, Move, Communicate.” Marine Corps ground forces depend on these three fundamentals of combat effectiveness. The Program Manager for Combat Support Systems directly supports the MAGTF and these critical functions through a broad portfolio of products and capabilities. PM CSS enables Marines to clear minefields and to bridge water and land obstacles; provides robots to dispose of explosive ordnance; allows for the timely delivery of military supplies through the provision of various combat containers; provides the warfighters with drinking water and field messing capability; equips Marine Corps units with necessary tools and test equipment to keep all combat systems operating; and meets the power needs of our Marines, from batteries and generators to solar power.
Environmental Control

Units

Special Customer

ECUs

Field Refrigeration

Water Chilling / In-Field Ice Making
(food service, mortuary affairs)

Tools / Customer Support
Fuel And Water Systems

Water Purification and Distribution

- Images of water purification equipment and distribution systems.

Fuel Analysis and Distribution

- Images of fuel analysis equipment and distribution systems.

DISTRIBUTION A. Approved for public release: distribution unlimited.
Radio Power Adaptors

Power Supplies

Renewable Energy

Hybrid Systems

Battery Management / Sustainment Systems

Advanced Power
• Larger than SOF / More expeditionary than conventional Army units
• Able to engage and respond quickly – often from the sea.
• Strategically mobile, middleweight force
• Optimized for rapid crisis response and forward-presence
• Back to Amphibious / Expeditionary Roots
• New focus on Pacific Theater
Why is Power/Energy Important?

Getting Fuel and Water to the “Tactical Edge” is Expensive in Human and Capital Costs
By 2025 we will deploy Marine Expeditionary Forces that can maneuver from the sea and sustain its 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.
Future Capability (sizing to mission)

- **Greens**
- **SPACES**
- **MEU Insert**
- **120 Day**
- **Renewables**
- **365 Day**
- **10 W**
- **100 W**
- **1 KW**
- **RSEP**
- **10 KW**
- **100 KW**
- **1 MW**
- **Fuel Fired**
- **Grid**
- **Hybrid**
- **TQG/AMMPS**
- **ITEG**
<table>
<thead>
<tr>
<th>Year</th>
<th>AMMPS</th>
<th>LAMPS</th>
<th>STEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td><strong>Autostart Upgrade</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td><strong>Grid Storage</strong></td>
<td><strong>Intelligent Power Management</strong></td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td><strong>Micro Grid</strong></td>
<td><strong>Individual Water Purification</strong></td>
<td><strong>Platoon Water Purification</strong></td>
</tr>
</tbody>
</table>

AMMPS – Advanced Medium Mobile Power Sources  
LAMPS – Large Advanced Mobile Power Sources  
STEP – Small Tactical Electrical Power
DISTRIBUTION A. Approved for public release: distribution unlimited.

SPACES – Solar Power Adaptor for Communications Equipment System (30 Watt continuous)
GREENS – Ground Renewable Expeditionary Energy Network System (300 Watt continuous)
MHEES – Medium Hybrid Expeditionary Energy System
MEHPS – Mobile Electric hybrid Power System
Energy Storage

Water Purification

Power Management / Micro Gridding

Experimentation, Modeling, and Tools
<table>
<thead>
<tr>
<th>Title</th>
<th>Funding</th>
<th>RFP Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Electric Hybrid Power System (MEHPS)</td>
<td>RDT&amp;E</td>
<td>Fall 2015</td>
</tr>
<tr>
<td>Energy Storage for Micro Grids</td>
<td>RDT&amp;E</td>
<td>Future</td>
</tr>
<tr>
<td>Advanced Battery Charger</td>
<td>PMC</td>
<td>Fall 2015</td>
</tr>
<tr>
<td>Platoon Water Purification System</td>
<td>-</td>
<td>Future</td>
</tr>
<tr>
<td>Individual Water Purification System</td>
<td>PMC</td>
<td>Summer 2017</td>
</tr>
<tr>
<td>Renewable Energy in Covered Locations SBIR</td>
<td>RDT&amp;E</td>
<td>Now</td>
</tr>
<tr>
<td>Light Weight Hybrid Systems SBIR</td>
<td>RDT&amp;E</td>
<td>Now</td>
</tr>
<tr>
<td>Small Light Weight Water Purification SBIR</td>
<td>RDT&amp;E</td>
<td>Now</td>
</tr>
<tr>
<td>Battery Maintenance Capability</td>
<td>PMC</td>
<td>Summer 2018</td>
</tr>
<tr>
<td>MEHPS Production</td>
<td>PMC</td>
<td>Fall 2017</td>
</tr>
<tr>
<td>Tech Refresh of Systems</td>
<td>-</td>
<td>various</td>
</tr>
</tbody>
</table>
Email questions to:
PM_EPS@usmc.mil

Find more programmatic information:
http://www.marcorsyscom.marines.mil/ProgramOffices/EPSHome.aspx
www.onr.navy.mil
http://www.hqmc.marines.mil/e2o/E2OHome.aspx

Current / Future Solicitations:
www.fedbizopps.gov

Any questions about on-going solicitations:
Must contact the listed Contracting Officer in the solicitation
QUESTIONS