

Question & Answer Session –Mobile Electric Hybrid Power Sources (MEHPS)

Thursday 31 January 2013, 1200-1400 EST

The Clubs at Quantico, 3017 Russell Road, Quantico, VA 22134

Q1: If the AoA hasn't wrapped up, will it still inform the FY15 budget?

A1: Yes. The money is already there in the budget.

Q2: Will there be interface standard issues for remotely controlling AMMPS or TQG cabling, connection, etc.?

A2: Yes. We've made the decision to go with AMMPS, but AMMPS does not currently have the remote control capability. This is something we need to continue to work out internally, particularly for the Micro-Grid Medium and Micro-Grid heavy systems.

Q3: Timing for MEHPS Micro-Grid Medium and MEHPS Micro-Grid Heavy?

A3: This really depends on the AMMPS timeline. We're working with the Army on this, and while we're focused on moving out aggressively with MEHPS Lightweight and MEHPS Medium, we are still interested in the other two heavier systems. We're doing early Micro-Grid R&D with ONR, still working through things.

Q4: For the MEHPS systems using LTTs - specifically MEHPS Medium - is the intent to have all the MEHPS components deployed off the trailer or integrated into the trailer?

A4: We're not sure yet. That's why we're doing the RDTE contract. We'll find out which one works better.

Q5: In a 120 day deployment, would you rather transport 1000 lbs of generators or 1000 lbs of fuel? Or is there no difference?

A5: MEHPS analysis of weight and straight cost of fuel vs. hybrid system, the weight pays back much faster than the cost pays back.

Q6: Regarding PV Solar requirements (2-5 kW), is this peak output? Were cloudy days considered?

A6: This is why our modeling focused on two different locations in different seasons - so we equally value good and poor solar conditions. We captured the variability of PV solar through HOMER model. HOMER gives you info on a particular location, and each day looks a little bit different. So we take the aggregate. That's also why PV is also only 1 component of the hybrid system.

Q7: [*Multiple questions about desired range of PV Solar*]

A7: This is not about specs. It's about KPP development and sending a signal to industry - some performance level for them to shoot for. The exact amount of solar will be determined during the RDT&E, EMD phases.

Q8: Will the battery system be the same for MEHPS Lightweight, MEHPS Medium, and MEHPS Micro-Grid Medium (i.e. 1 batter for all systems)?

A8: We used GREENS 1.2 kWh battery for our modeling because that's what we have in our inventory today. We don't know what the future battery looks like. Again, we'll figure this out during the RDT&E phase.

Q9: Is iron phosphate the only battery chemistry you are considering for MEHPS?

A9: Not necessarily, but that's what we know is the art of the possible today.

Q10: Are the RFPs going to replace the use of the 3 kW TQG and AMMPS gen sets exclusively, or will industry be able to offer other gen sets if improved fuel savings are possible over TQG and AMMPS set?

A10: Our intent right now is to use the generators we have, but we'll re-evaluate this as we go through the R&D phase.

Q11: Has a fundamental decision been made to pursue Solar PV vs. Solar Thermal / Concentrated Solar /other renewable technologies?

A11: We have looked at all renewables (solar thermal, fuel cells, wind). Right now, the energy density is not there in other renewables. PV solar is the only thing that gets us there. ONR has a concentrated solar effort underway, but that's several years out. We haven't ruled out other renewables in the future, but today solar PV is the only one that makes sense for us.

Q12: What are the plans to use the AMMPS control rather than an external control?

A12: We want to minimize externalities, so the ideal solution is to directly integrate with AMMPS. But again, this is something we'll look at during the R&D Phase.

Q13: How efficient are the ECUs that were modeled?

A13: The Marine Corps is taking a holistic approach to energy, water, and waste issues. MEHPS is not our only effort. Demand reduction is critical as we move forward. We're looking at things like efficient ECUs, tent liners, and cooling individuals directly rather than cooling the tent. Nothing we're doing is in isolation.

Q14: What level of solar efficiency makes solar viable at the mid- and large- levels?

A14: Look at the open Solar RFP on www.fbo.gov – that's where USMC is going. There are specs in there.

Q15: What battery unit was used?

A15: GREENS 1.2 kWh battery. This is not the final answer, it's just what we have right now.

Q16: I don't see a Spring profile on your demand charts. Is that an oversight?

A16: Spring and Fall are both red – they are the same profile. The RC-SW report, released last summer, contains more detail on all of the profiles. [*You can view the Report on E2O's website, www.hqmc.marines.mil/e2o, under "Resources" (doc. name: Expeditionary Energy Data Collection within Regional Command Southwest, Afghanistan).*]

Q17: Did I understand you to say that the current POR (diesel engine) generators are all you need?

A17: Yes, for right now. As we learn of new technology, as industry innovates, we'll evolve.

Q18: [*Several questions about subcomponents – i.e. inversion technology – and whether this factored into the analysis*]

A18: Yes, model incorporates all of this. For inverters we kept it level.

Q19: What was the degradation of lead acid battery in your model?

A19: We went off of the spec sheet lifespan of the battery.

Q20: [*Question about load shed*]

A20: How you prioritize load is something we'll look at as we get into the R&D phase, particularly with Micro-Grids. What we know today is that hybrids are leveling the playing field. They give us a wider range. We may come to find that load shedding is not as important in the future.

Q21: Where will the May ExFOB take place?

A21: ExFOB 2013-1 will take place at Twentynine Palms, CA. The RFI is now available on E2O's website (www.hqmc.marines.mil/e2o) and on www.fbo.gov. Due to space and testing constraints, the RFI only targets the first three categories of systems. This doesn't mean that we're not interested in Micro-Grid Heavy! You may see us partner with the Army for an ExFOB-like event focused on the Micro-Grid Heavy category at a later date.

Q22: How do you capture the tradeoffs between batteries and solar?

A22: Keep in mind, we're not only looking at fuel reduction, we're also looking at other impacts of storage. It's about the amount of hours we want the generator to turn off. Solar reduces fuel required, . So it depends on capability we're going for. Also cost drivers, but that comes out with MCSC during the R&D phase.

Q23: Does USMC plan to augment solar with wind? Do you have concerns with wind?

A23: We do have concerns with wind – specifically variability and location. We don't have these concerns with solar. The tower of wind is also a concern – shows where we are on the ground like a target on our forehead. Wind is tall; solar can be on the ground. But, the heat signature of solar is a vulnerability so that's a concern as well.

Q24: In KPPs, how far do you stretch the realistic actual parameters? Who pays for the stretch?

A24: The Initial Capabilities Document (ICD) is a joint document, agreed to by Army, Navy, Air Force, and the Joint Chiefs of Staff. The ICD includes parameters needed to close the 152 identified gaps. Everything we briefed today ties back to the ICD. We (the military) pay for that stretch.