

DOD Project Manager Mobile Electric Power



Mobile Electric Power for *Today and Tomorrow*

**Joint Service Power Expo
25 April 2007**

**Paul Richard
Acting DOD Project Manager Mobile Electric Power**



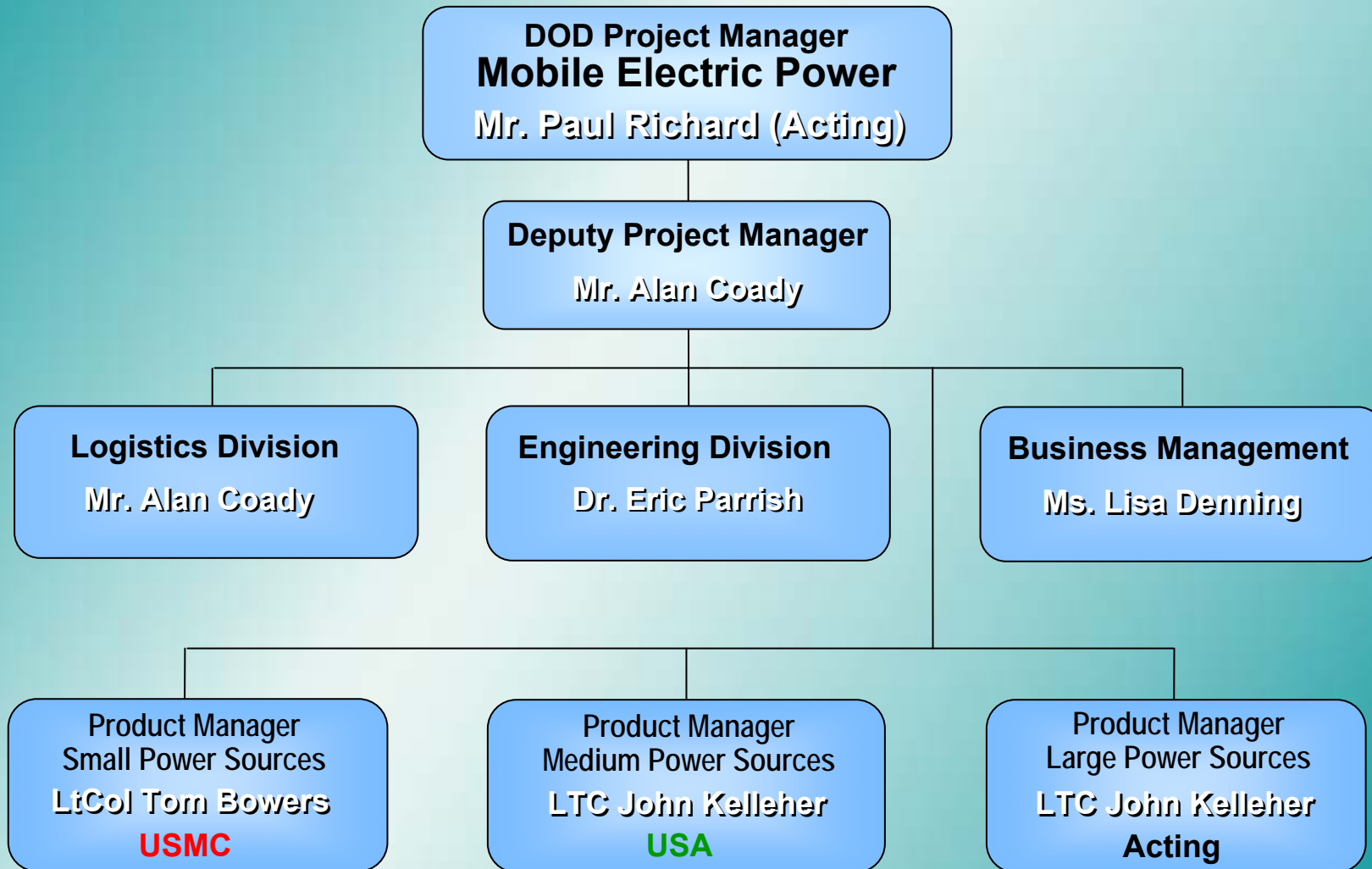
Presentation Outline

- ★ PM MEP Organization/Systems
- ★ Requirements & Challenges
- ★ Major Initiatives
- ★ Technology Thrusts





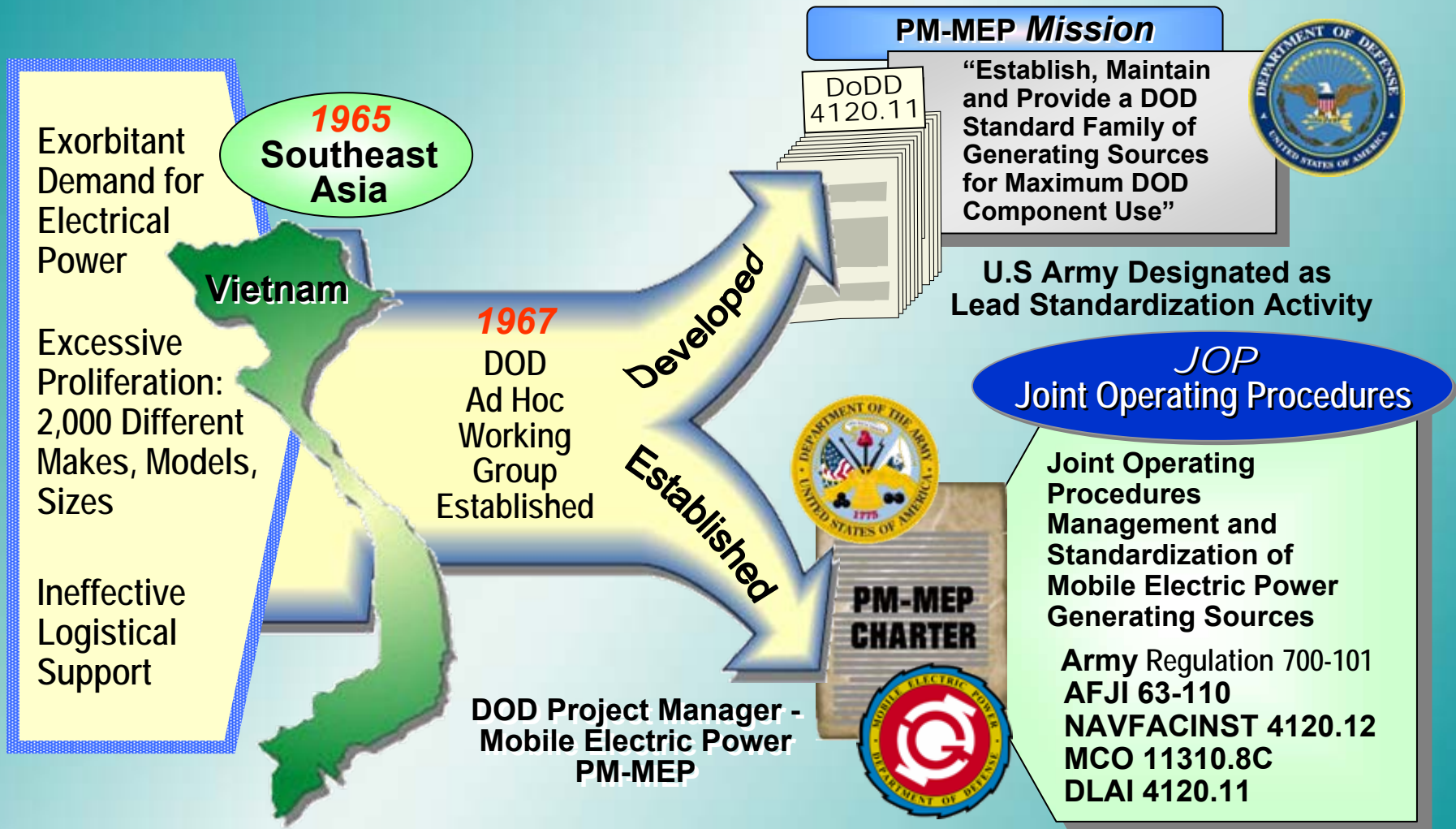
PM MEP Organization



USAF Position
to be filled May 2007



Mobile Electric Power History



DFAR Requirement for PM MEP Approval for Non-standard Power Equipment



Military vs. Commercial

No Commercial Generator Set Meets Military Worldwide Requirements*

All Tactical Electric Power Generator Sets are Made from Commercial Components

Critical Military Features

- Diesel/JP-8 (DoD Policy)
- Operate at all Environmental Extremes
- Excellent Power Quality
- High Reliability
- Battlefield Mobility
- Ruggedized
- 24 Volt
- Enhanced Battlefield Survivability
 - NBC
 - IR
 - Aural
 - EMP Hardening
- Rated Power at Altitude
- Organically Supported



Less Cost
Less Weight
Less Capable



* Market Surveys; 1989; 1999, 2003



Mobile Electric Power Managed Items

Small Sets

- 2kW Military Tactical Generator, Manportable/Skid Mounted, Diesel/JP8 Fueled, AC(60Hz) and DC(28VDC)
- 3kW Tactical Quiet Generator, Skid Mounted, Diesel Fueled (60 Hz and 400Hz)



Medium Sets

- 5kW, 10kW, 15kW, 30kW, and 60kW, Skid Mounted, Diesel Fueled Tactical Quiet Generator, 60Hz and 400Hz
- AMMPS – Advanced Medium Mobile Power Sources



Large Sets

- 100kW and 200kW Tactical Quiet Generator (TQG), Skid Mounted, Diesel Fueled, 60Hz
- 840kW Deployable Power Generation and Distribution System (DPGDS), Diesel Fueled



Power Unit/Power Plant (PU/PP)

- Trailer Mounted Tactical Quiet Generators in the 3kW, 5kW, 10kW, 15kW, 30kW, 60kW, 100kW, and 200kW Power Ratings.
- 20 Different Models That Use 4 Different But Standardized TACOM Trailer Models



Power Distribution Illumination System Electric (PDISE)

Man-portable, Reliable, Modular, Quick Assembly Standardized Electrical Management and Distribution System Components

- 40 AMP/PHASE DISTRIBUTION SYSTEM
- 60 AMP DISTRIBUTION SYSTEM
- 100 AMP/PHASE FEEDER SYSTEM
- 200 AMP/PHASE FEEDER SYSTEM
- UTILITY RECEPTACLE AND LIGHTING KIT



HI-POWER

Hybrid Electric Intelligent Power Management

Develop a Tactical Hybrid-Electric Power System for use at Forward Operating Bases to minimize logistics fuel consumption related to power generation.



Improved Environmental Control Units (IECU)

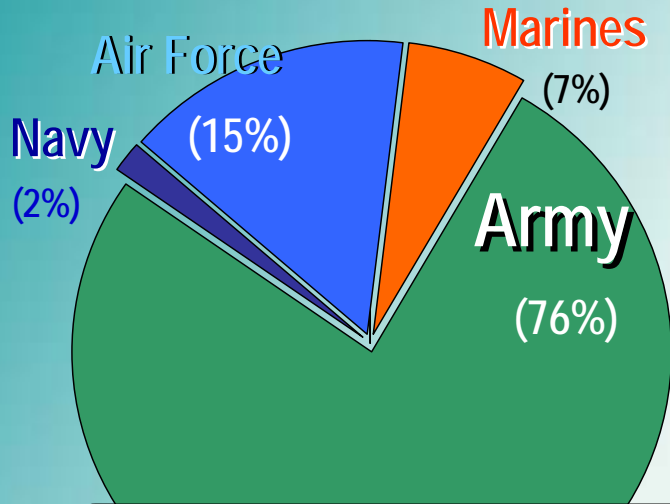
New Generation of ECUs Utilizing Zero Ozone Depleting Refrigerants. Ruggedized Form, Fit, and Function Replacement Systems with Embedded Diagnostics.

9K, 18K, 36K, and 60K BTUH sizes.



***Requirements
and
Challenges***

Department of Defense Tactical Electric Power Requirements



<u>Size</u>	<u>Army # Req'd*</u>	<u>% Army Total</u>	<u>Qty Fielded</u>	<u>% Size Fielded</u>
2kW	9,576	14%	8,609	90%
3kW	19,122	29%	9,901	52%
5kW	14,779	22%	9,143	62%
10kW	12,001	18%	9,189	77%
15kW	4,370	7%	3,186	73%
30kW	3,085	5%	2,623	85%
60kW	2,950	4%	1,826	62%
100/200/DPGDS	568	1%	25	4%
	66,451		44,502	67%

* BOIP05

2kW thru 840kW Generator Sets

Requirements

Army	66,451
Navy	1,540
Air Force	13,340
Marines	6,552
Total	87,883

Fielded

	MIL-STD	TQG
Army	21,949	44,502
Navy	676	864
Air Force	3,451	9,889
Marines	0	6,552
Total	26,076	61,807

Data Thru Feb 07

Current Army Priorities

- GWOT
- TOC Central Power
- Modularity
- Modernization

MIL-STD = Military Standard
First Generation Gasoline and Diesel Engine Generator Sets

TQG = Tactical Quiet Generator
Second Generation, Modernized, Diesel Engine Generator Sets



Tactical Electric Power Families / Generations

Department of Defense Standard Family of Mobile Electric Power Generating Sources

MIL-STD Military Standard

Aging, First Generation DOD Standard Family of Mobile Electric Power Generating Sources

- 37 Generator Set Models
- Sizes 0.5kW Through 750kW
- Gasoline, Gas Turbine, and Diesel Engines



Average Annual Cost Per Generator **\$13,347**

MIL STD (Military Standard)

TQG

Tactical Quiet Generators

Modernized, Second Generation DOD Standard Family of Mobile Electric Power Generating Sources

- 18 Generator Set Models
- Sizes 2kW Through 920kW
- All Diesel Engines
- R&D On-going for Some Models



Average Annual Cost Per Generator **\$9,582**

TQG (Tactical Quiet Generator)

Next Generation Power Sources

AMMPS

Advanced Medium Mobile Power Sources

- 12 Generator Set Models
- 5kW through 60kW Sizes
- Procurement 2009

LAMPS

Large Advanced Mobile Power Sources

- 100kW through 1mW Sizes
- Procurement TBD

STEP

Small Tactical Electric Power

- Less Than 3kW Sizes
- Procurement ~2013

- Leverage Commercial Technologies
- Minimize Number of Sizes and Models
- Use Proven Technologies
- Replace Entire DOD Generator Fleet Approximately Every 15 Years
- Maximize Competition

AMMPS Projected Average Annual Cost Per Generator **\$8,143**

Next Generation

1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020 2025

Improved Environmental Control Units (IECU) Requirements

IECU Procurement Quantities

9K (115V, 1PH, 50/60Hz)	3,180
18K (230V, 1PH, 50/60Hz) and (208V, 3PH, 50/60Hz)	3,767
36K (208V, 3PH, 50/60Hz)	<u>1,577</u>
Army Total	8,524
<hr/>	
60K (208V, 3PH, 50/60Hz)	Army 4,960
	Air Force <u>787</u>
Total	5,747

Unvalidated Requirements

- TOCs
- JNN
- Patriot
- UAVs
- Others

IECU Challenge

(Improved Environmental Control Unit)

- Approximately 17,800 MIL-STD ECU Systems currently fielded in sizes 9k, 18k, 36k and 54k BTUH
- Current ECUs do not comply with the Clean Air Act 2010 Mandate for Ozone Depleting Refrigerants
- IECUs will comply with EPA Clean Air Act
- Only 60k BTUH IECU currently funded
- 9k, 18k, 36k BTUH IECUs funded for development
 - Procurement funding to be added in FY10-15 POM



Electronic systems will overheat and fail without the critical cooling ECU's provide

Major Initiatives

TOC Central Power & Power Assessment

What it Is

Program to Assess and Optimize the use of Tactical Electrical Power Production and Distribution in the Field

What it Does

- Significantly Reduces Logistics Footprint
- Increases Operational Availability
- Reduces Fuel Consumption
- Reduces Transportability Requirements
- Determines Most Efficient Use of Resources

Consolidates Power Sources in TOCs

Provides Back-up for Mission Critical Systems

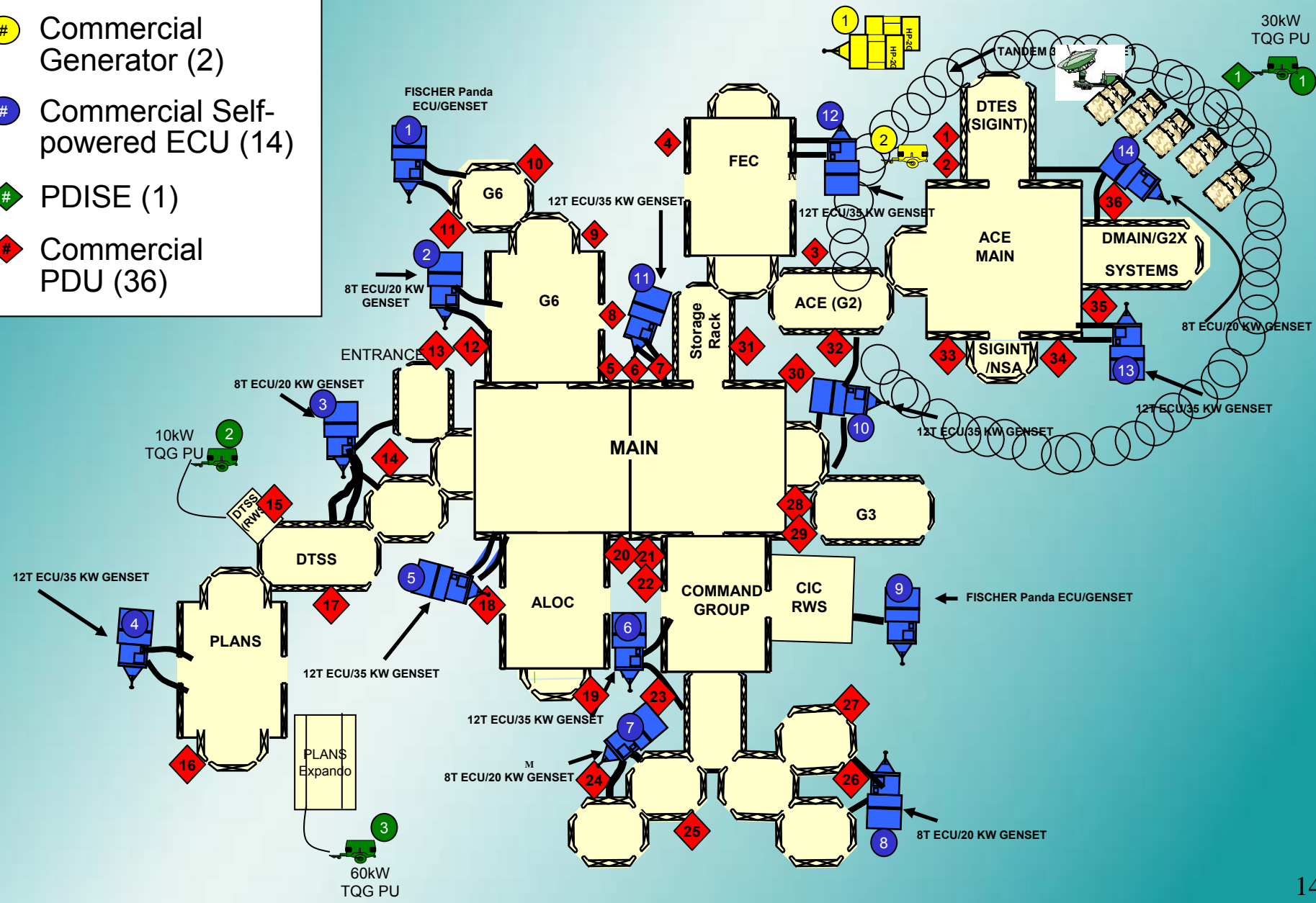
Decreases Logistics Footprint of TOCs



“Right Number and Right Size Generator Sets”

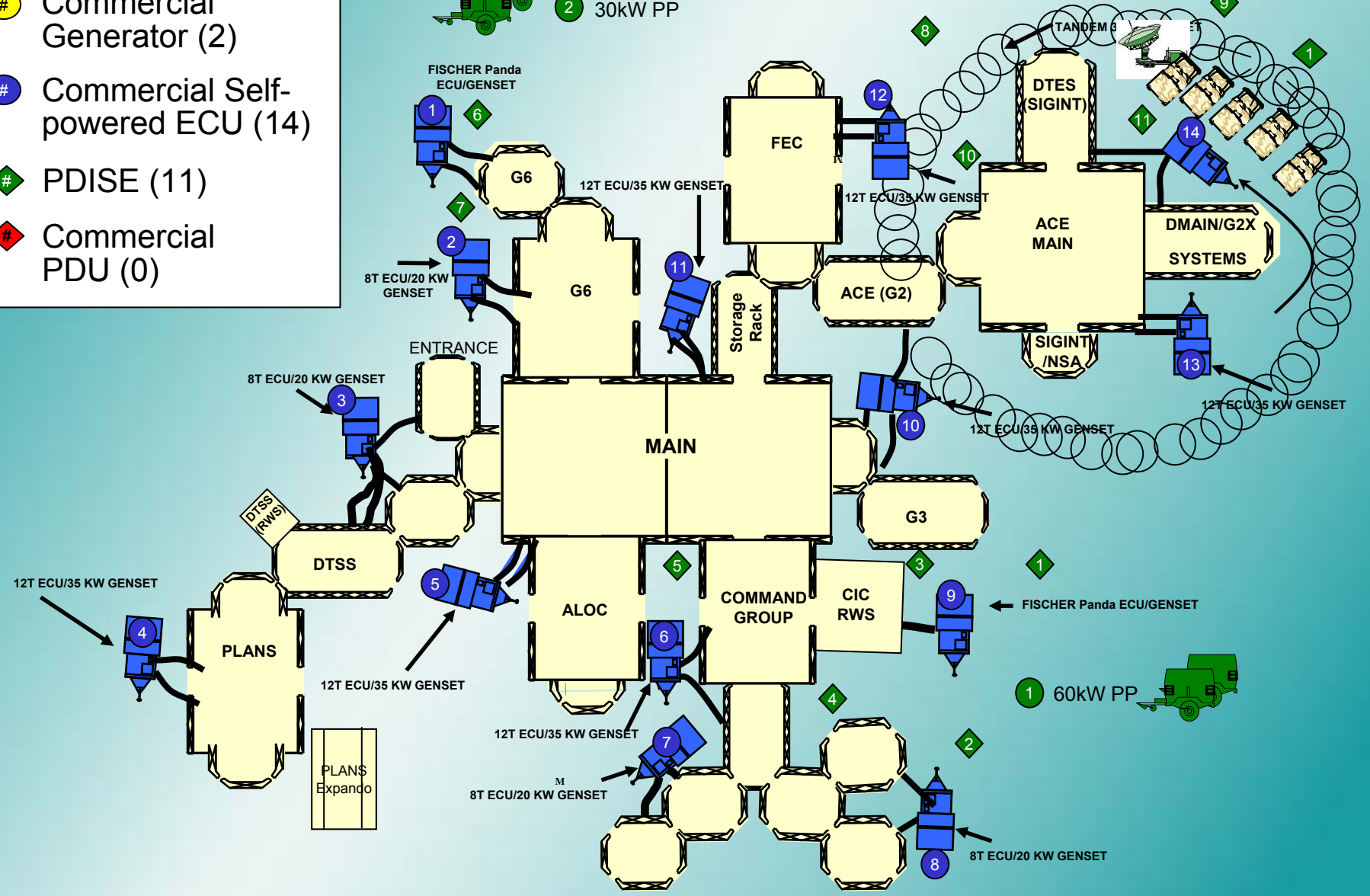
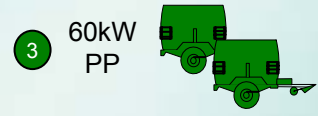
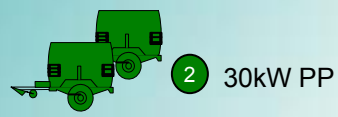
4ID DMAIN As Seen

- Legend**
- TQG (3)
 - Commercial Generator (2)
 - Commercial Self-powered ECU (14)
 - ◆ PDISE (1)
 - ◆ Commercial PDU (36)



4ID DMAIN Recommendation

- Legend**
- TQG (3)
 - Commercial Generator (2)
 - Commercial Self-powered ECU (14)
 - ◆ PDISE (11)
 - ◆ Commercial PDU (0)



Power Assessment Benefits and Savings

Optimized power grid for:

- Soldier safety
- 24/7 operation of mission-critical equipment
- Better reliability, supportability and readiness
- Minimum footprint and increased transportability
- Reduction of Non-standard Commercial Hardware
- Organic Support by Soldiers

When Central Power Design Applied to 4ID Main TOC MTOE,
Savings are:

- **Generator Sets** 11
- **Fuel Reduction** ~ 200 gal/day
- **Weight** 23,353 lbs (~ 12 tons)
- **Volume** 4,735.2 cu ft
- **Reduced Pintle Requirement** HMMWV 5
FMTV 3
- **First Year Savings** \$384,146.35

Not Including Savings for Reduced Contractor Field Support



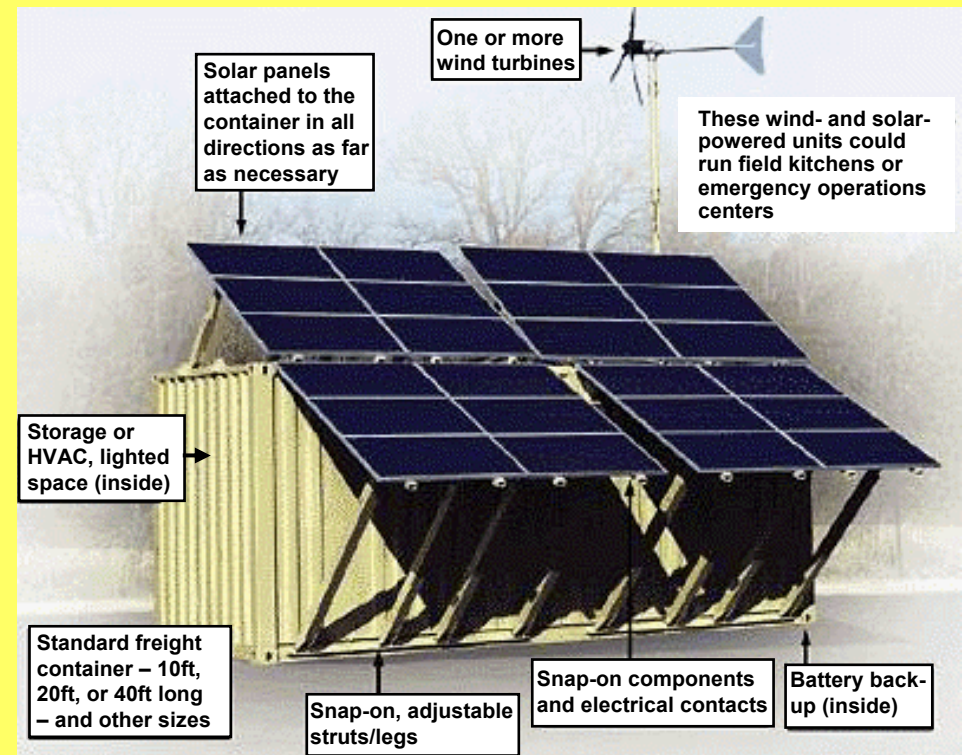
HI-POWER

Hybrid Electric Intelligent Power Management

3kW Hybrid Electric System



SkyBuilt Hybrid Electric System

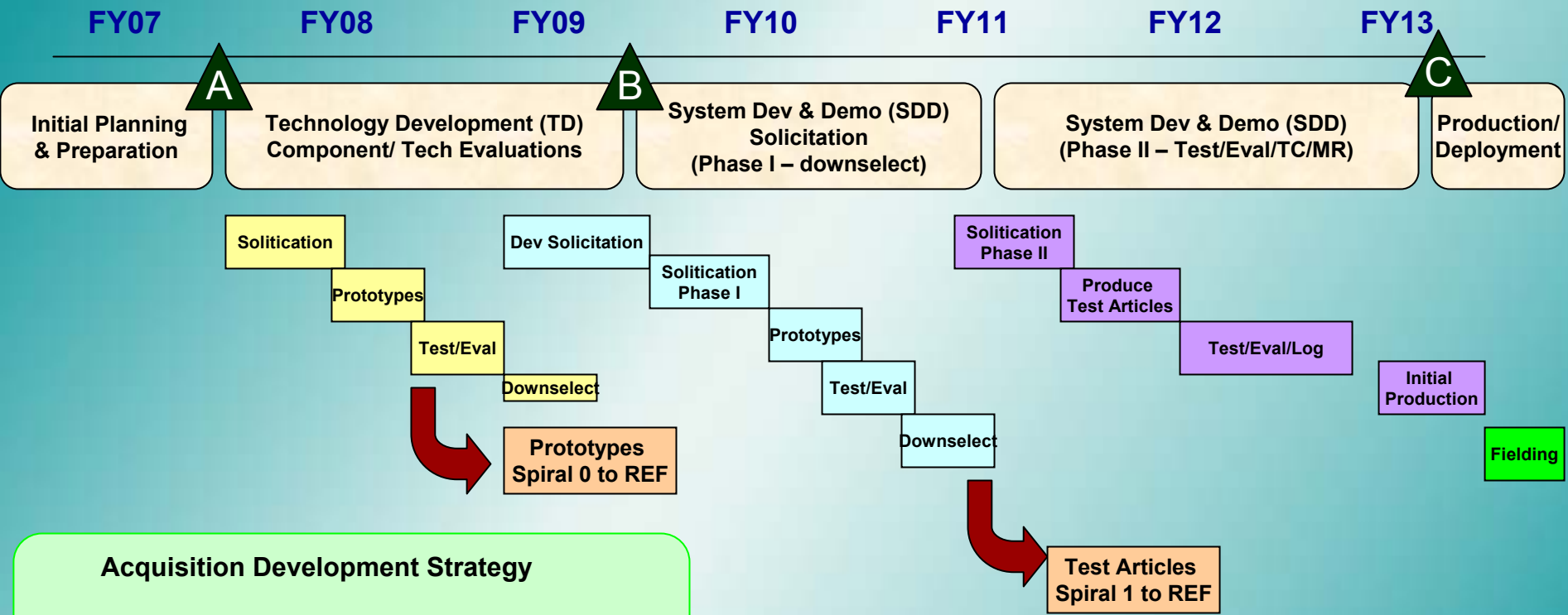


Develop a tactical hybrid-electric power system for use at Forward Operating Bases to minimize logistics fuel consumption related to power generation.

Objectives Of HI-POWER Program

- **Develop tactical transportable hybrid electric power sources**
 - ❖ To reduce logistics fuel consumption related to power generation
 - ❖ To meet niche operational capabilities for remote reliable power
 - ❖ Minimizes logistics or operational impacts
- **Validate HI-POWER concept**
 - ❖ Evaluate real-world utility (cf, REF SkyBuilt and USMC DREAM)
 - ❖ Identify and document requirements for systems (TRADOC)
 - ❖ Establish analytical business case (cost-benefit analysis)
- **Develop strategy that**
 - ❖ Establishes HI-POWER as Joint Standard Mobile Electric Generating Source (IAW DoDD 4120.11)
 - ❖ Supports current military and commercial protocols and standards (esp., MIL STD 1332B)
 - ❖ Provides opportunities for near-term spiral insertions for quick-reaction capabilities (if required)
 - ❖ Ensures supportable systems within the military logistics system

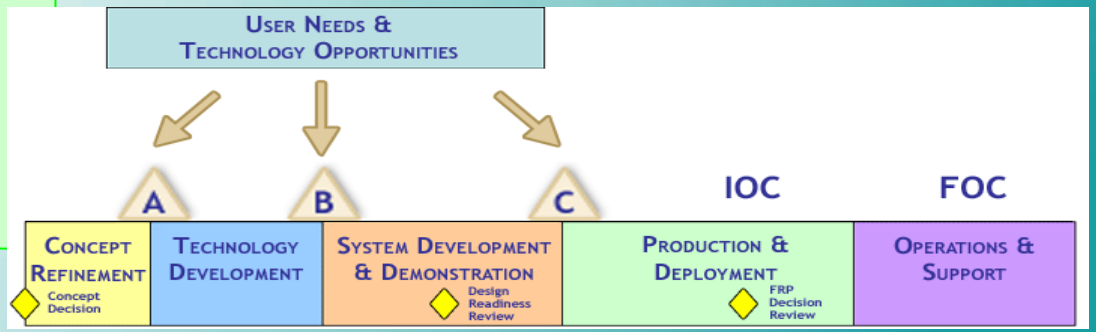
HI-POWER Program Acquisition Summary



Acquisition Development Strategy

- Two step process –technology validation & system development
- Tech Dev to validate technologies and integration strategies
- Competitive shootoff (“fly before buy”) strategy in SDD
- Spiral Development to accelerate quick reaction to field
- Ensure standardized, logistically supportable, Joint Service capable systems

DOD Acquisition Lifecycle Model



Technology Thrusts

Technology Thrusts

Where We Need To Push the Envelope

Easier Deployment

(More per aircraft/ship)

- **Less Weight per kW**
 - Increased power density
 - Lightweight materials
- **Less volume per kW**
 - Increased power density
 - Improved packaging/integration

Easier Sustainment

(Less supplies and manhours needed to operate)

- **Less Fuel Consumption**
 - Increased efficiency
 - Better load management/power distribution
- **More Reliable**
 - Fault tolerant design
 - Embedded prognostics/diagnostics
 - Less maintenance hours

Less Life Cycle Cost

- **Less Initial Cost**
 - Increased use of commercial components
 - Modularity
- **Less Fuel Consumption**
- **More Reliable**
- **Longer Life**
 - Improved reliability
 - Improved efficiency

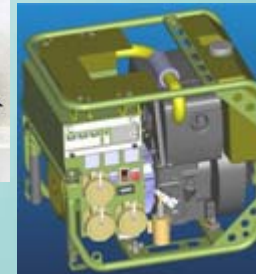
Improved Capability

- **Less Weight**
 - Easier/faster to move
 - Easier to move off road/non-prepared positions
 - More vehicle payload in APU/trailer applications
- **Less Noise**
 - Use further forward
 - Less communication/rest interference
- **Less Fuel Consumption**
 - Runs longer on same fuel
 - Fewer fuel trucks doing convoys/fewer soldier manhours spent refueling
- **More Reliable**
 - Runs longer between shutdowns
 - Prognostics predict impending shutdowns; allows scheduled shutdown versus unexpected shutdown
- **Less than 1kW**
 - New units to go where power was previously not available
 - Manportable

We are relying on Industry to bring innovation forward.

Potential Technologies

- **Advanced High Speed Diesel Engines**
- **Advanced Environmental Control Systems & Combined Power / ECU Systems**
- **Power Electronics & Digital Controls**
- **Composite Materials & Lightweight Alloys**
- **Diagnostic & Prognostic Controls**
- **Microturbines**
- **Battery Technology**
- **Stirling Engines**
- **Direct Energy Conversion**
 - Thermophotovoltaics
 - Fuel Cells
- **Tactical Inverters (Vehicle & Shelter)**
- **Permanent Magnet Alternators**
- **On-Board Vehicle Power**



**Technologies Must Satisfy
Operational Needs**



DoD Project Manager Mobile Electric Power Information / Points of Contact

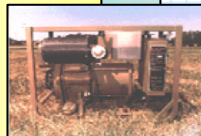
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Chief, Logistics Division



www.pm-mep.army.mil





PM-MEP *Home Page*

- DOD Directive 4120.11
- TQG Technical Data
- “What’s New”
- Safety of Use Messages
- Organization and Points of Contact
- DOD Generator Master Plan
- Manuals, Tools, PLL/ASL
- PS Magazine Articles
- References
(i.e. MIL-STDs, ARs, etc.)

MORE !



www.pm-mep.army.mil

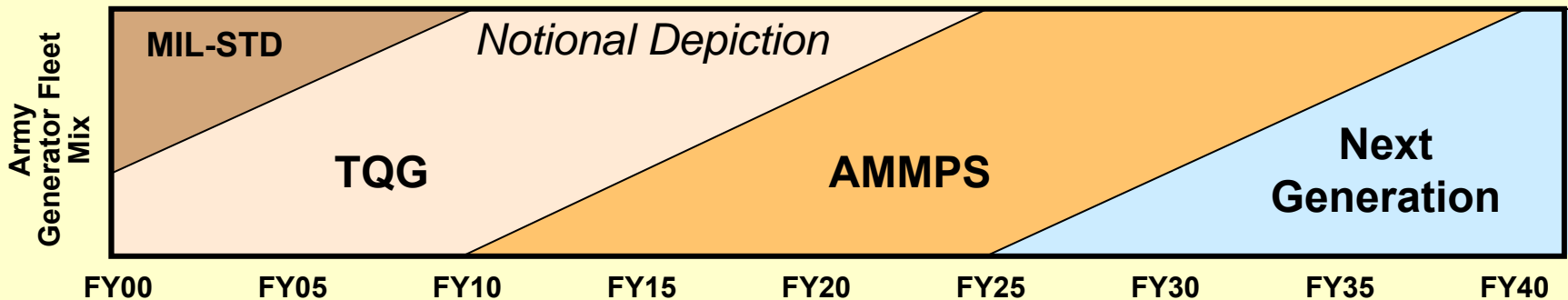
Comments / Recommendations Solicited

Back Up

Joint Service Power Expo

April 2007

Tactical Electric Power Acquisition Strategy



15 Year Buyout Plan

PROS (Benefits):

- Maintain hot production base for wartime conditions
- Supports Industrial Base by leveling requirements
- Maintains Only Two Generations of Hardware in the field at one time
- Reduces O&S Costs
- Maintains Average Age of Fleet at Economic Useable Life Reducing O&S Costs
- Supports Continual Modernization of Army TEP Fleet

CONS:

- Keeps Technology in Field for 30 year period

Near Term Business Opportunities

◆ Distribution Illumination System Electric (DISE)

- Solicitation Release
3Q – 4Q FY07



◆ Switchboxes for Power Units / Power Plants

- Solicitation Release
1Q FY08

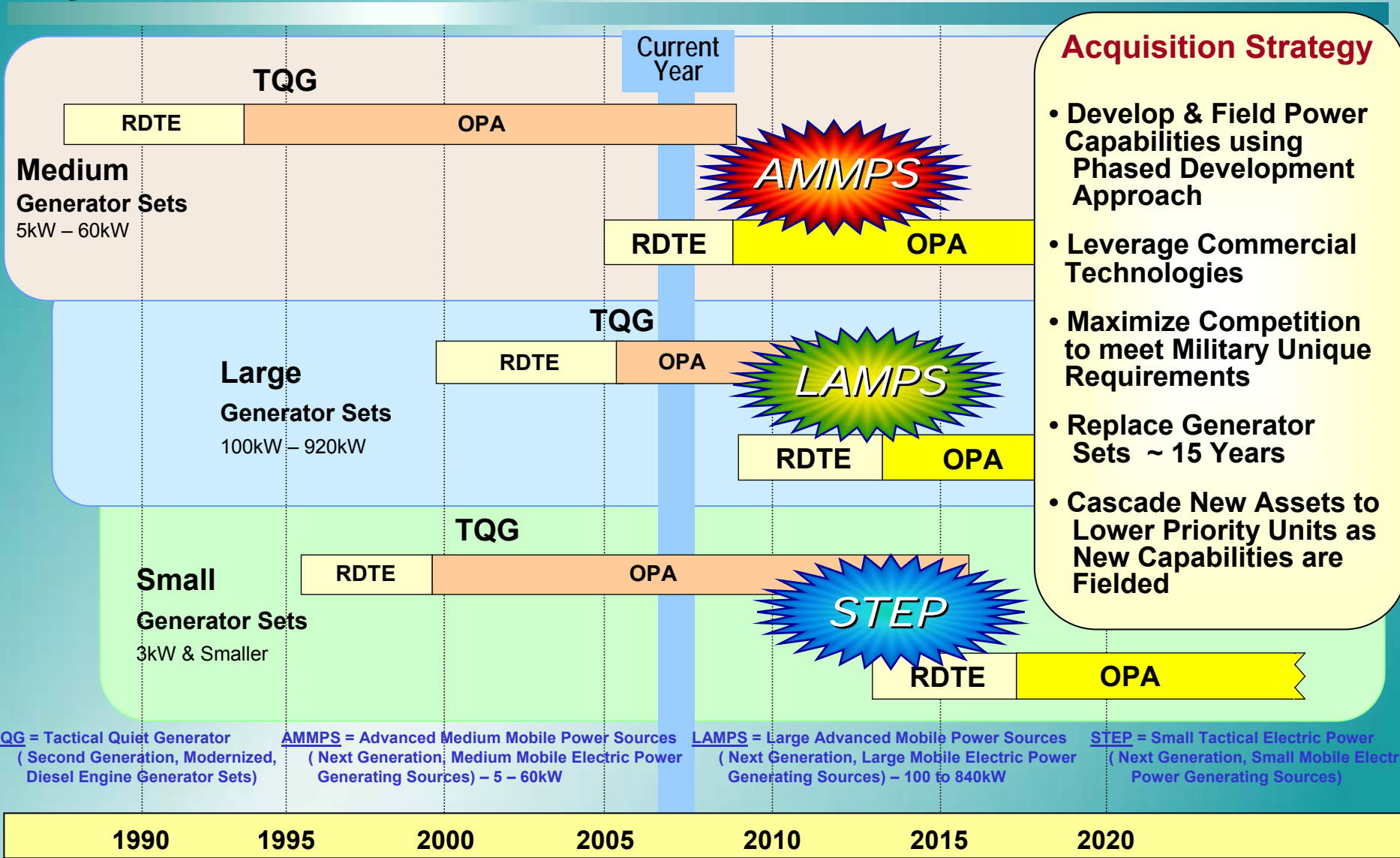
◆ Improved Environmental Control Units (IECU)

- 9k, 18k, 36k, BTUH sizes
- Solicitation Release 1Q FY08

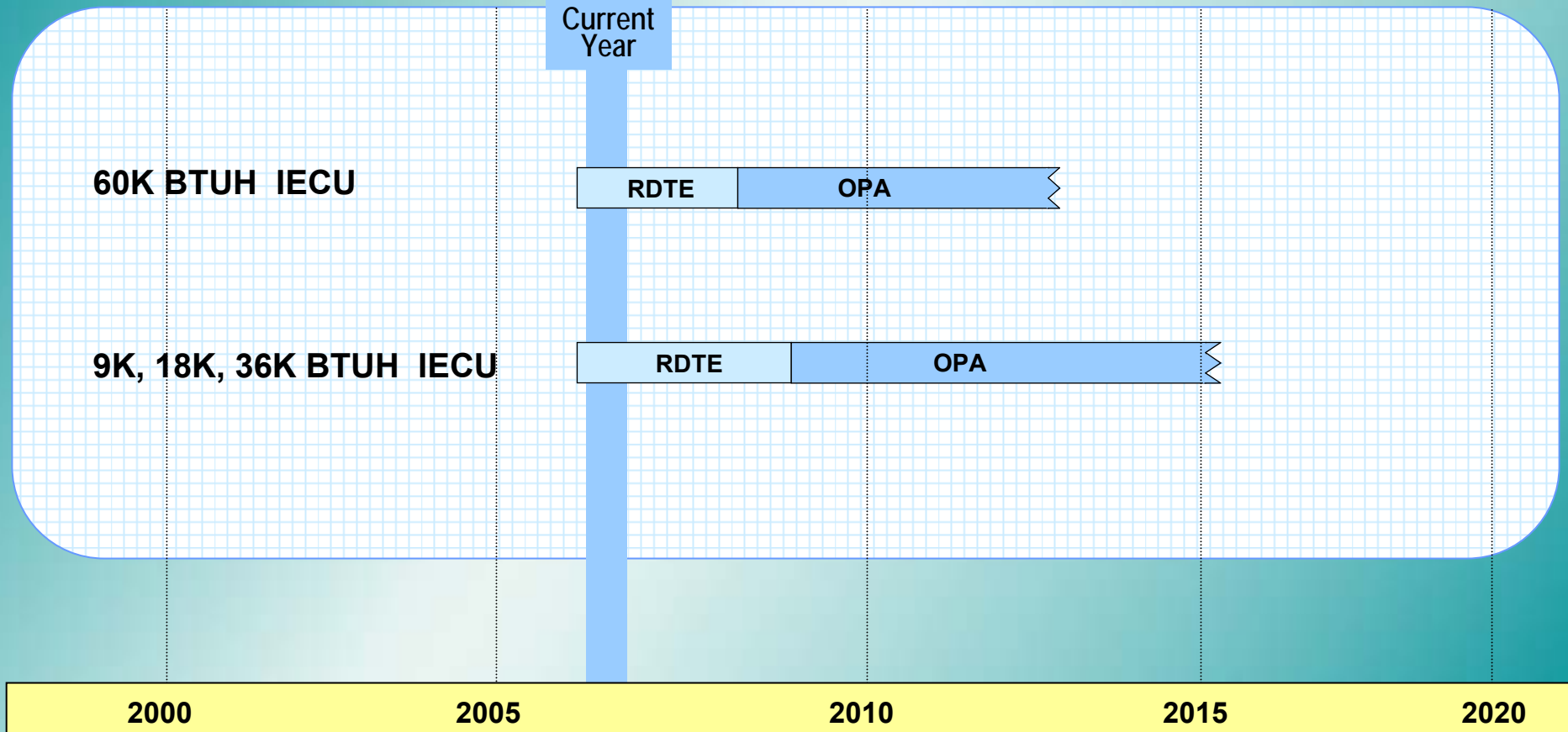




Tactical Electric Power Development Strategy



Improved Environmental Control Unit (IECU) Development Strategy



Iraq/Afghanistan Lessons Learned

Generator Sets and ECUs

- Power distribution – training/equipment/procedures
- High temperature operation critical
- Sand/dust impacts
- Solar loading (especially on displays)
- Preventive maintenance paramount (but not being done)
- Inadequate parts support – sluggish, but improving
- Requirement for systems assessments
- Military vs. commercial – warfighting vs. base operations

Environmental Impacts & MEP Actions

- TQG Master Switch –
Developed Dust Proof Form, Fit, and Function Replacement Master Switch
- TQG Computer Interface Module (CIM)
Overheating Failures Resolved by Operational Techniques to Reduce Effects of Incoming Solar Radiation (Insolation)

Analog

Digital



CIM

Designed to Operate in All Environmental Conditions



Medium Power Sources

LTC John Kelleher

Product Manager



Description-

5kw, 10kW, 15kW TQG: Primary Power Source on the Battlefield (TOCs, C4ISR, etc.)

CHARACTERISTICS/PERFORMANCE:

Fuel Diesel/JP-8
 Noise 70 dBA @ 7m
 Reliability 600 hrs MTBF
 Operating Temp -25° to +120°F
 Altitude Full Rating @ 4000ft/95°F

PRIME CONTRACTOR:

5, 10, 15kW: DRS - Fermont,
 Bridgeport, CT
 30 & 60kW: L3, Tulsa, OK

	<u>5kW</u>	<u>10kW</u>	<u>15kW</u>	<u>30kW A/B</u>	<u>60kW A/B</u>
Weight (lbs)	888	1182	2124	3006/3040	4063/4200
Fuel Consumption (gal/hr)	0.56	0.97	1.44	2.43/2.60	4.51/4.70
Size (Cu ft.)	34	41	77	88/88	103/103

ORD - Feb 88

Benefits/Capabilities

- 5 – 60 kW TQG
- Multi-Fuel
- Reduced Noise and IR Signature Levels
- More Reliable
- Less Weight
- HAEMP Protected
- Reduced Fuel Consumption
- Total Package Fielding (Organically Supportable)
- Power Units/Power Plants
- Less Cost (Procurement, Support Cost)
- Transportable

From: Required Operational Capability (ROC)

Requirements Documents

**ROC and O&O Plan for the Commercial Generator Sets and Assemblages (CGSA) –
 25 February 1988, Revised 10 July 1995**

Milestones Achieved/Scheduled

	<u>5,10,15kW and 30 & 60kW A Models</u>	<u>30 & 60kW B Models</u>
Milestone III	July 1992	Aug 2000
Type Classification	July 1992	Aug 2000
Production Release	July 1992	Aug 2000
Materiel Release	Nov 1993	May 2001
FUE Fort Bragg	Dec 1993	
Europe		Sep 2001

10 yr Production Contract (FY97 through FY07)

Advanced Medium Mobile Power Sources AMMPS

LTC John Kelleher – Product Manager

Photo
NA

Description- **AMMPS:** Future DOD Standard Family of medium (5-60kW) generator sets in 48 different configurations.

Desired CHARACTERISTICS/PERFORMANCE:

TEP ORD Thresholds	TEP ORD Objectives (Compared to TQG)
10% Lighter	25% Lighter
15% More Fuel Efficient	25% More Fuel Efficient
3 dBA Quieter	6 dBA Quieter
20% More Reliable	50% More Reliable
Maint Ratio: 0.025	Maint Ratio: 0.015
EPA Compliant Engines	EPA Compliant Engines

SPECIAL FEATURES MAY INCLUDE:

- Digital Controls, Diagnostics/Prognostics
- Variable Speed Diesel Engines
- Advanced Structural Materials
- Modular Components

KEY CONTRACTORS:

- ONAN Corp./Cummins Power Generation
- DRS - Vermont

Benefits/Capabilities

- 3kW Through 200kW
- Multi-Fuel (JP-8, JP-4, JP-5, DF-1, DF-2, DF-A)
- Reduced Noise and IR Signature Levels
- More Reliable
- Less Weight
- HAEMP Protected
- Reduced Fuel Consumption
- Total Package Fielding (Logistically Supportable)
- Power Units/Power Plants
- Less Cost (Procurement, Support Cost)
- Transportable (EAT, 5 & 10 kW Air Drop, etc.)

Requirements Documents

<u>Title</u>	<u>Date</u>	<u>App'd by</u>
Tactical Electric Power Operational Requirements Document (TEP ORD)	24 March 2004	JROC

Milestones Achieved/Scheduled

MS B	1QFY04
MS C	3QFY08*
Full Materiel Release	1QFY09*
FUE	2QFY09*

*Pending revision based on Phase II/III contract award.

Large Power Sources

LTC John Kelleher
Product Manager



Description-

100kW & 200kW TQG: Replaces the current 100kW & 200kW MIL-STD gen sets. Available in both skid and trailer mounted. Typical units – Medical, COSCOMs, Hospitals, Homeland Defense.

100kW & 200kW CHARACTERISTICS/PERFORMANCE:

Fuel	Diesel/JIP-8
Noise	70 dBA @ 7m
Reliability	840 hrs MTBF
Operating Temp	-25°F to +120°F
Altitude	Rated pwr to 4000ft/95°F

	100kW	200kW
Weight (lbs)	5,800	9,100
Fuel Capacity (gal)	60	120
Fuel Consumption (gal/hr)	7.8	13.9
Size (Cu ft.)	160	250

ORD - CGSA ROC (100kW), Mar 88/Jul 95

PRIME CONTRACTOR: DRS - Fermont, Bridgeport, CT

DPGDS CHARACTERISTICS/PERFORMANCE:

Fuel	Diesel/JIP-8
Noise	< 85 dBA
Reliability	TBD
Weight (Wet)	28,560
Size (cu ft)	1,907
Operating Temp	-25°F to +125°F
Altitude	Rated up to 4,000/95°F
Fuel Capacity	120 gal
Fuel Consumption	60 gph
ORD	AFORD (Aug 96)

PRIME CONTRACTORS:

DRS-Fermont, Bridgeport, CT (Contract Ends March 08)
Radian, Inc., Alexandria, VA (Contract Ends March 08)

Benefits/Capabilities

- 100kW, 200 kW and 840 kW (DPGDS)
- Multi-Fuel
- Reduced Noise and IR Signature Levels
- More Reliable
- Less Weight
- HAEMP Protected
- Reduced Fuel Consumption
- Total Package Fielding (Logistically Supportable)
- Power Units/Power Plants
- Less Cost (Procurement, Support Cost)
- Transportable

From: Required Operational Capability (ROC)

Requirements Documents

- ROC and O&O Plan for the Commercial Generator Sets and Assemblages (CGSA) – 25 February 1988, Revised 10 July 1995
- Joint ORD (USAF / USA) CAF-USA 316-92-I/II-E for a NEW FAMILY OF BARE BASE ELECTRONIC POWER GENERATION & DISTRIBUTION SYSTEMS - 29 August 1996, Commander, Air Combat Command

Milestones Achieved/Scheduled

100kW & 200kW TQG MS C 3QFY04
Materiel Release: Sept '06

DPGDS: USAF-Managed Program. Currently being fielded to 249th Engr. Bn (Prime Power)



Power Units / Power Plants (PU/PP)

Ms. Sidi Mathews

Description PU/PP: Provide Tactical Quiet Generators (TQG) in trailer-mounted configurations in sizes 3kW, 5kW, 10kW, 15kW, 30kW, and 60kW.

CHARACTERISTICS/PERFORMANCE:

- **Power Unit (PU)** One Generator Set mounted on one trailer
5kW, 10kW, 15kW, 30kW, and 60kW TQGs mounted on HMT, 1T, or 2½T trailer, towed by HMMWV or 2½T truck (10 separate models)
- **Power Plant (PP)** Two Generator Sets with switchbox and ancillary equipment mounted on one or two trailers (depending on generator set size and weight)
3kW, 5kW, 10kW, 15kW, 30kW, and 60kW TQGs mounted on HMT, 1T, 1½T, 2½T or 5T trailer, towed by HMMWV, 2½T or 5T truck (11 separate models)

KEY CONTRACTORS / Gov't Activities:

- Schutt Industries, Inc, Clintonville, WI
- Turtle Mountain Manufacturing Co., Belcourt, ND
- Silver Eagle Manufacturing, Portland, OR
- DOL Ft Drum, NY
- DLA Tobyhanna Army Depot, PA
- CECOM Ft Monmouth, NJ & Tobyhanna, PA
- PM-Trailers, Warren, MI

Benefits/Capabilities

- Provide mobility capability for 3-200kW TQG fleet
- Configurations towable behind HMMV, 2 ½ T and 5T trucks
- Trailer platforms reliable and supportable

Requirements Documents

- ROC and O&O Plan for the Commercial Generator Sets and Assemblages (CGSA) – 25 February 1988, Revised 10 July 1995
- ORD for the Less-Than-3kW (LT3kW) Generator – 14 July 1992, Amended 7 March 1996
- Tactical Electric Power Operational Requirements Document (TEP ORD) 24 March 2004

Milestones Achieved/Scheduled

Driven by TQG milestones

Small Power Sources

LtCol Tom Bowers, USMC, Product Manager



2kW MTG



3kW TQG

Description-

2kW MTG: Smallest set in DOD Standard Family. Replaces 1.5kW Gasoline MIL-STD set. Derived from FCT of Canadian design. Very versatile, diesel/JP-8 fueled, man-portable generator set.

CHARACTERISTICS/PERFORMANCE:

Fuel	Diesel/JP-8
Noise	79 dBA
Reliability	500+hrs MTBF
Weight (Wet)	138 lbs DC 158 lbs AC
Size	5.95 cu ft
Operating Temp	-50° to +120°F
Altitude	2kW @ 4000ft/120°F derated up to 8000ft
Fuel Capacity	4 hours @ 100% Load
Fuel Consumption	.33gal/hr

ORD -LT3kW 14 Jul 1992

SPECIAL FEATURES:

- Diesel / JP-8 Fuel
- Man-portable
- High Reliability
- Supports MKT modern burner unit (MBU); TUAV / EPLRS / AHS / HIMARS / Woodworking Set / Army Air Traffic System

3kW TQG: Most technically advanced generator set PM-MEP has fielded to date. Replaces gasoline and diesel MIL-STD generator sets.

CHARACTERISTICS/PERFORMANCE:

Fuel	Diesel/JP-8
Noise	70 dBA @ 7m
Reliability	>560 hrs MTBOMF
Weight (Wet)	326 lbs
Size	15.05 cu ft
Operating Temp	-25° to +120°F
Altitude	3kW @ 1000ft/107°F de-rated up to 8000ft
Fuel Capacity	8 hours + Auxiliary
Fuel Consumption	.33gal/hr

ORD – CGSA ROC w/Revision 1995

SPECIAL FEATURES:

- Variable Speed Diesel Engine
- Permanent Magnet Alternator
- Digital Controls

Benefits/Capabilities

- Multi-Fuel (JP-8, JP-4, JP-5, DF-1, DF-2, DF-A)
- Reduced Noise and IR Signature Levels
- More Reliable
- Less Weight
- HAEMP Protected
- Reduced Fuel Consumption
- Total Package Fielding (Logistically Supportable)
- Less Cost (Procurement, Support Cost)
- Transportable (EAT, 5 & 10 kW Air Drop, etc.)

Requirements Documents

- ROC and O&O Plan for the Commercial Generator Sets and Assemblages (CGSA) – 25 February 1988, Revised 10 July 1995
- ORD for the Less-Than-3kW (LT3kW) Generator – 14 July 1992, Amended 7 March 1996

Milestones Achieved/Scheduled

2kW

Re-Buy Production
Award Sep 01
10 Year Contract

3kW

Re-Buy Production
Award Sep 01
10 Year Contract

PDISE Components



Power Distribution Illumination System Electrical (PDISE) LtCol Tom Bowers, USMC, Product Manager

Description: A set of man portable power distribution components allowing the distribution of power within a tactical unit. The components consist of four different distribution boxes plus associated cables and a lighting system.

Characteristics/Performance:

Two feeder systems (M200 and M100)
Two distribution systems (M40 and M60)
Utility receptacle and lighting system (M46)
Operating Temp -25°F to +120°F

	M200	M100	M40	M60	Utility Kit
Weight (lbs)	140	77	55	45	85

Future Operational Improvements:

Ability to manage power distribution.
Disconnect low priority loads.
Bring generators on-line as power demands increase.

KEY CONTRACTORS:

- Federal Prison Industries (thru 2013)
- Tobyhanna Army Depot (FY05 contract)

Benefits/Capabilities

Expeditionary Attributes

- Distribute Power
- Ruggedized
- Uses Military Standard Connectors

Quality Power

- Consolidates Power Sources

Requirements Documents

<u>Title</u>	<u>Date</u>	<u>App'd by</u>	<u>Status</u>
Performance Specification For PDISE MIL-REF-53126	20 April 1992	CECOM	Requires Update

Milestones Achieved/Scheduled

FY05 - 06

- Placed production order with Tobyhanna Army Depot
- Completed fielding to 4th ID and SBCT 1-6 to enable TOC Central Power
- Completed Power distribution evaluation program (CERDEC)

FY07

- Award competitive five year contract
- Field to SBCT-7
- Field to 101 ABN

Improved Environmental Control Unit (IECU)

LtCol Tom Bowers, USMC, Product Manager



Description-

The Family of IECUs will provide cooling, heating and dehumidification to soldiers and materiel systems in Combat, Combat Support, and Combat Service Support units. The IECU requirement is derived from the Clean Air Act Amendments of 1990, which bans the use and production of ozone-depleting substances used in existing military standard ECUs by 2030 and bans the production of the current ECUs in 2010. The IECUs have Joint Service applications.

- New generation of ECUs to replace the current Military Standard (MIL STD) family of ECUs.
- IECUs utilize zero ozone depleting refrigerants.
- Form, fit and function replacement to current MIL-STD ECUs.
- Procurement based on performance based requirements vs. technical data package drawings.



Benefits/Capabilities

- Reduced system weight by 10 – 15%
- Reduced power consumption by 25%
- Soft start (i.e. reduced inrush current)
- Increased reliability: MTBF = 2100 vs. 960 hrs
- Increased supportability due to readily available commercial components
- Logistics footprint is greatly reduced by lighter-weight IECUs that require much less electrical power and, consequently, less fuel and potentially downsized generators.
- IECUs utilize zero ozone-depleting refrigerant.
- IECUs are designed for "military environment". Able to survive "military" handling and transportation requirements.
- NBC filtration compatible and EMP/EMI protected
- Operate at wider operating temperatures
- More ruggedized than commercial ECUs.
- Embedded diagnostics.
- Automatic safety controls.
- Remote control capability.

Requirements Documents

<u>Title</u>	<u>Date</u>	<u>App'd by</u>	<u>Status</u>
ORD for IECU CARDS #16123	Oct 2004	Army G-3	Approved

Milestones Achieved/Scheduled

- 60K IECU -

- Awarded 60k IECU SDD contract – Apr 06
- Logistics Demonstration – May 07
- PQT Completion – Jul 07
- TM Val-Ver; User Evaluation – Aug 07

- 9/18/36K IECU -

- Award SDD Contract – Mar 08