

30th Space Wing

Vandenberg Air Force Base

Facility Energy Auditing



Integrity - Service - Excellence



Agenda



- Introduction
- Background
- Vandenberg AFB
- Survey experience
- Lessons Learned
- Summary



Integrity - Service - Excellence



Vandenberg Air Force Base



- **99,000 acres along 42 miles of the central coast of California**
 - **Space Command Base**
 - **Tenants with restricted access**
 - **Difficult to access**
 - **Classified areas**
 - **Unmotivated tenants**
 - **Cat Z facilities**
 - **28 Megawatt peak load**
 - **EMCS backbone under construction**
 - **Past Audit Experience**
 - **Free Utility**
 - **ESPC**
 - **No Cost, Low Cost**
 - **Renewable Feasibility Study (Planned)**
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Integrity - Service - Excellence



Utility Provided



■ Pros

- Free
- Coordinated with rebate programs
- Possibly coordinated with UESC

■ Cons

- Large supporting effort
- Limited scope flexibility
- Executive Summary type report
- No supporting documentation
- Marketing ploy?



No-Cost/Low-Cost



■ Pros

- Inexpensive
- Easy preparation
- Coordinate with awareness program
- Learning experience for new / inexperienced energy staff

■ Cons

- Executive Summary type report
- No supporting project documentation
- Tells you what you already know



Third Party Financed



■ Pros

- Free ?
- Coordinate with ESPC/UESC contract
- Same contract from survey through construction

■ Cons

- High Cost?
- Can be very proprietary
- Contractual obligation
- Large supporting effort
- Executive Summary type report??
- No supporting project documentation??



Fully Funded



- **Air Force Civil Engineering Support Agency**
 - **Scope: Over 307 buildings, over 4 million square feet**
 - **Period of performance: ~300 days**
 - **Base Level Guidance**
 - **Technology specific project packaging**
 - **Bang for the buck, focus on SIR**
 - **Less focus on renewables due to ongoing initiatives**
 - **Focused on direct appropriated execution**
 - **Include project documentation: 1391s, SOW, BLCC**
- **Pros**
 - **Audit what you want**
 - **Can dictate report format / deliverables**
- **Cons**
 - **Money – up-front**
 - **Contract development**



Survey Results



- 19 technology specific projects
- \$3 million annual savings
- \$20 million in project cost
- Building inventory for future planning



Projects Identified



- **Motors / VFDs**
- **HVAC Upgrades, Controls, Replacements**
- **Boiler Enhancements & Replacements**
- **Lighting, Lighting Controls**
- **Evaporative Coolers**
- **Retro-commissioning**
- **Programmable Thermostats in buildings w/o EMCS**
- **High Efficiency Transformers**
- **UPS Replacements**
- **Frequency Converter Replacements**
- **Water Conservation**



Lessons Learned



- **Building List – screen / pre-visit**
- **Audit Preparation**
 - **Meter Data**
 - **Drawings**
 - **Access**
 - **Escorts**
- **Longer POP is better**
- **Allow for logging, invasive metering**
- **Dedicate a technician with clearance**
- **Smaller percentage of total facility**
- **Automate building inventory**





More Lessons Learned



- **Specific Guidance**
 - SIR vs. sexy projects
 - Renewables
- **Project Grouping**
 - Technology Focused vs. Whole Building Concept
 - Fewer large tech focused are easier to manage
 - Large cost of groups – may limit funding options
- **Statement of Work suitable for solicitation**
 - Programming documents
 - Detailed cost estimates
 - Detailed saving justification
- **Skip Audit in favor of retro-commissioning**
 - Duplicate effort
 - Survey / adjust settings / minor repairs / future work list (project ID)



Questions



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