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SECRETARY OF THE AIR FORCE**

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Special Management

OPERATIONAL ENERGY



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This instruction implements Air Force Policy Directive 90-17, Energy and Water Management, and is consistent with the Air Force Energy Flight Plan. It supersedes the following portions of Air Force Instruction 90-1701, Energy Management: Sections 1.2, 2.2, 2.3, 3.3, 3.4, 4.7, 6.2, 6.3, and 8.3 and Chapter 7. This publication applies to Regular Air Force, Reserve Component, and Air National Guard members and civilian appropriated and non-appropriated fund employees except where noted otherwise and can be supplemented at a lower level. The terms of this Air Force Instruction will be incorporated by reference into the contracts of all Air Force contractors unless waived by the waiver authority. Refer recommended changes and questions regarding this publication to the Office of Primary Responsibility using Air Force Form 847, Recommendation for Change of Publication; route Air Force Forms 847 from the field through the appropriate functional's chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See Air Force Instruction 33-360, Publications and Forms Management, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestors commander for non-tiered compliance items. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual 33-363, Management of Records, and disposed of in accordance with the Air Force Records Disposition Schedule located in the Air Force Records Information Management System.

Chapter 1

PROGRAM OVERVIEW

1.1. Overview. The Assistant Secretary of the Air Force for Installations, Environment, and Energy (SAF/IE) serves as Secretary of the Air Force's (SecAF) representative relating to energy management, acting as the Air Force Senior Energy Official and Air Force Senior Operational Energy Official. Day-to-day responsibility for the Air Force's operational energy program is delegated from SAF/IE to the Deputy Assistant Secretary of the Air Force, Operational Energy (SAF/IEN). This delegated authority grants operational energy program management to SAF/IEN with appropriate tasking and coordination authority for organizations throughout the Headquarters Air Force (HAF), and specifically charters SAF/IEN to oversee the operational energy program, implementing Air Force Policy Directive 90-17.

1.2. Operational Energy Definition. Operational Energy is defined as the energy required for training, moving, and sustaining military forces and weapons platforms for military operations. The Air Force Operational Energy program focuses on the energy required to operate aviation assets and aerospace ground equipment supporting those assets.

1.2.1. Aerospace ground equipment under the Operational Energy program includes those items of portable (trailer mounted with tow bar) engine or motor driven equipment used in servicing, handling and maintaining aircraft, as well as skid-mounted engine-driven generators and solid state frequency converters for aircraft. Energy consumed on Air Force installations and by vehicles and aerospace ground equipment for non-aircraft weapon systems falls within the Air Force Installation Energy program, managed by the Deputy Assistant Secretary of the Air Force for Environment, Safety, and Infrastructure (SAF/IEE) (see Air Force Instruction 90-1701, *Energy Management*).

1.2.2. Operational energy management involves the sustainment or enhancement of combat capabilities through achieving efficiencies in supply, demand, and resilience of operational energy supplies. These efficiencies also enable lower operating costs, improved training, and lower weapon system sustainment costs across the life cycle of operational aviation assets and aerospace ground equipment.

1.3. Encouraging Compliance. The Air Force may use training, awards, energy programs, and strategic communication to develop a culture that considers operational energy impact in all decisions.

1.4. Promoting an Operational Energy Aware Culture. Maximizing Air Force operational effectiveness and affordability requires a culture that is keenly aware of the opportunities associated with, and implications of, operational energy usage.

1.5. Scope. Successful execution of the Air Force operational energy program requires alignment with Air Force strategic priorities and objectives, the Air Force Energy Flight Plan (available from the Office of the Assistance Secretary of the Air Force for Installations, Energy, and Environment), and the Department of Defense (DoD) Operational Energy Strategy (available from the Office of the Assistant Secretary of Defense for Energy, Installations, and Environment). This guidance provides context for Air Force energy initiatives.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. The Assistant Secretary of the Air Force for Installations, Environment, and Energy (SAF/IE) is the Air Force Senior Energy Official and Senior Operational Energy Official. All responsibilities for operational energy are delegated to the Deputy Assistant Secretary of the Air Force, Operational Energy (SAF/IEN).

2.1.1. SAF/IEN will:

2.1.1.1. In addition to the duties listed in AFPD 90-17 paragraph 3.2, SAF/IEN will represent and, where appropriate, advocate for operational energy requirements and initiatives (i.e. Air Force Corporate Structure).

2.1.1.2. Support the Defense Operational Energy Board.

2.1.1.3. Chair the Air Force Operational Energy Board (hereinafter “Operational Energy Board”) and conduct its activities as outlined in [paragraph 3.7](#) of this instruction.

2.1.1.4. Develop operational energy goals and objectives traceable to Air Force strategic documents.

2.1.1.5. Coordinate the collection and analysis of operational energy data.

2.1.1.6. Ensure the requirement for energy key performance parameters and energy supportability analyses are addressed in the requirements and acquisition process.

2.1.1.7. Develop and maintain Air Force alternative aviation fuel use policy.

2.1.1.8. Collaborate with stakeholders on the development of operational energy-related management information systems.

2.1.1.9. Collaborate with stakeholders on sufficiency and viability of the operational energy supply chain.

2.1.1.10. Embed operational energy tenets in Air Force education and training to build an energy-aware Air Force culture.

2.1.1.11. Develop operational energy mission awareness.

2.1.1.12. Participate in wargames and other Agile Combat Support exercises, lessons learned, and studies, bringing operational energy equities to processes and procedures in Air Force Title 10 wargames.

2.1.2. SAF/IEE will advise SAF/IEN on issues and initiatives that may have an impact on the Air Force installation energy program.

2.1.3. The Deputy Assistant Secretary of the Air Force for Installations (SAF/IEI) will incorporate SAF/IEN equities into operational and other relevant criteria in the strategic basing process.

2.2. The Assistant Secretary of the Air Force, Financial Management and Comptroller (SAF/FM) will advise SAF/IE on budget execution or other financial matters related to operational energy management.

2.3. The Assistant Secretary of the Air Force, Financial Management and Comptroller (SAF/FM) will advise SAF/IE on budget execution or other financial matters related to operational energy management.

2.4. The General Counsel of the Air Force (SAF/GC) will advise SAF/IE on legal matters related to operational energy management.

2.5. The Deputy Chief of Staff for Operations (AF/A3) will advise SAF/IE on issues and initiatives that have or may have an impact on operational energy supply, demand, and resilience.

2.6. The Deputy Chief of Staff for Logistics, Engineering, and Force Protection (AF/A4) will advise SAF/IE on issues and initiatives that have or may have an impact on operational energy supply, demand, and resilience in logistics, engineering, and force protection.

2.7. The Deputy Chief of Staff for Strategic Plans, Programs, and Requirements (AF/A5) will:

2.7.1. Collaborate with SAF/IE to ensure energy key performance parameters and supporting energy supportability analyses are compliant with Joint Staff, Director of Logistics (J4) guidance.

2.7.2. When appropriate and necessary, ensure requests for waivers to energy key performance parameters are processed in accordance with J4 guidance and with SAF/IEN concurrence.

2.7.3. Integrate energy demand and supply, organic and commercial capabilities, and contested environment fuel logistics planning factors in Air Force Title 10 wargames in coordination with SAF/IE.

2.8. The Deputy Chief of Staff Studies, Analyses, and Assessments (AF/A9) will coordinate with SAF/IEN on analysis of operational energy and participate in operational energy governance as appropriate. Collaborate with SAF/IE, AF/A4, AF/A5, and AF/A8 to integrate energy demand and supply, organic commercial capabilities, and contested environment fuel logistics planning factors in Air Force Studies, Analyses, and Assessments.

2.9. All Major Commands (MAJCOM), Air National Guard, and Direct Reporting Units will:

2.9.1. Collect data designated by this instruction and by governance bodies outlined in Sections 3.7 and 3.8 from all operating units and report this data in accordance with Operational Energy Board established guidelines. **(T-1)**.

2.9.2. Partner with Lead Commands to develop and report operational energy metrics. **(T-1)**.

2.9.3. Optimize operational energy in mission planning and execution. **(T-1)**.

2.9.4. Advise SAF/IEN on unit-level efforts and proposals to improve operational energy efficiency. **(T-1)**.

2.9.5. Support education and training efforts involving operational energy. **(T-1)**.

Chapter 3

GUIDANCE AND PROCEDURES

3.1. Overview. Air Force Operational Energy Governance provides a structure to discuss, vet, and integrate operational energy issues for senior Air Force leadership consideration (see [Attachment 2](#)). This process provides a comprehensive awareness of operational energy policies and programmatic investments, provides opportunities for advocacy to the Air Force Corporate Structure, and complements MAJCOM efforts. This governance structure aims to ensure implementing operational energy initiatives is commensurate with war fighting mission needs and is in concert with U.S. Government, DoD, and United States Air Force (USAF) operational energy efficiency policies, standards, instructions, and charters.

3.2. Operational Energy Governance Process. The governance process supports prioritizing requirements, resources, and schedules to support operational energy priorities and objectives.

3.2.1. Governance decisions and recommendations should foster unity of direction among stakeholders and provide a vetted prioritization for other governance processes.

3.2.2. To properly represent operational energy requirements, operational energy governance meetings should be linked to key events within the program objective memorandum and acquisition cycles, and also into existing governance bodies and/or processes (e.g. Planning, Programming, Budgeting, and Executing and the Joint Capabilities Integration Development System, documented in publications by the Joint Chiefs of Staff). Additional meetings outside these cycles may convene as needed.

3.3. Scope. The governance scope extends to operational energy use across the Air Force, including alternative operational energy opportunities.

3.4. Organization. The Operational Energy Board and Operational Energy Working Groups are the governance bodies established to bring operational energy equities to existing processes and procedures, and analyze, vet, process, coordinate, prioritize, and recommend operational energy initiatives.

3.5. Membership. To operate effectively, operational energy governance requires support from HAF leadership and staff, MAJCOMs, and other stakeholders.

3.5.1. The Operational Energy Board is chaired by SAF/IEN and has the following core members: Director for Training and Readiness (AF/A3T), Director for Logistics (AF/A4L), Director of Civil Engineers (AF/A4C), and MAJCOM/A3s. Two-star/Senior Executive Service-level representation from AF/A5, AF/A8, AF/A9, SAF/AQ, SAF/FM, MAJCOM, and Air Reserve Component representatives may participate on an as needed basis appropriate to the proposed initiative(s). The Director of Public Affairs (SAF/PA), Deputy General Counsel for Installations, Energy and Environment (SAF/GCN), Director, Legislative Liaison (SAF/LL), and Congressional Budget and Appropriations Liaison (SAF/FMBL) or representatives from the offices serve as advisors to the Operational Energy Board. The Chair may tailor membership as required.

3.5.2. The Operational Energy Working Groups are chaired by the Principal Director, Operational Energy Policy, and have the following O-6/GS-15 core membership: representatives from MAJCOM A3s, AF/A3T, and AF/A4L. As needed, O-6/GS-15 members

may include representatives from AF/A5, AF/A8, AF/A9, SAF/FM, and SAF/AQ, and other stakeholders as required by the Chair. SAF/GCN serves as legal advisor.

3.6. Authority. The Operational Energy Board has the authority to task HAF, Lead Commands, Forward Operating Agency, and Direct Reporting Unit offices to accomplish special studies, report status and metrics on initiatives and programs, and serves as the primary voice on operational energy related matters both internally and externally to the Air Force.

3.7. Operational Energy Board. The Operational Energy Board, chaired by SAF/IEN, will:

3.7.1. Maintain enterprise-wide awareness of, and engagement with, Air Force programs to determine their operational energy impact.

3.7.2. Ensure operational energy considerations are included during the development of Air Force policy, strategic plans, key messages, and programing and budgeting exercises.

3.7.3. Where appropriate, advocate for Air Force Corporate Structure support for investments to help meet Air Force operational energy goals.

3.7.4. Provide guidance, direction, and oversight for the use and allocation of operational energy funding.

3.7.5. Provide oversight of operational energy goals, objectives, metrics, initiatives, plans, and policies.

3.7.6. Ensure operational energy insights from Joint and Service specific wargames are reviewed by the Air Force Corporate Structure, to influence Air Force strategic planning.

3.7.7. Provide policy, guidance, and support to MAJCOM Leads, and provide Air Force Corporate Structure advocacy, where appropriate, for MAJCOM programs with an operational energy impact.

3.7.8. Review, vet, prioritize, and recommend MAJCOM initiatives with an operational energy impact for consideration by the Air Force Corporate Structure.

3.7.9. In conjunction with the Air Force Learning Council and Air Education and Training Command, promote an operational energy-aware culture in the Air Force through targeted education, training and strategic communication campaigns.

3.8. Operational Energy Working Group. The Operational Energy Working Group, chaired by the Principal Director, Operational Energy Policy will:

3.8.1. Collaborate with MAJCOMs to develop operational energy goals, objectives, and metrics to measure operational energy achievements across the Air Force.

3.8.2. Identify programs with the greatest operational energy impact from a corporate Air Force perspective.

3.8.3. Maintain for consideration by the Operational Energy Board a prioritized list of materiel and non-materiel solutions necessary to meet the Air Force operational energy goals.

3.8.4. Provide a venue for cross-talk and advocacy with the existing science and technology review process so that science and technology programs with operational energy equity receive greater exposure.

3.8.5. Provide a venue for discussion and advocacy to facilitate energy key performance parameter and energy supportability analysis understanding at the MAJCOM level.

3.8.6. Validate existing operational energy policies/procedures and submit recommended revisions as necessary for incorporation in appropriate regulations.

3.8.7. Review, vet, prioritize, and recommend MAJCOM initiatives with an operational energy impact to the Operational Energy Board for their consideration and potential advocacy through the Air Force Corporate Structure.

Chapter 4

OPERATIONAL ENERGY INTEGRATION IN AIR FORCE CORPORATE STRUCTURE

4.1. Overview. Operational Energy integrates with functional programs across the Air Force, injecting operational energy equities in processes that include data collection, strategic basing, short- and long-term acquisition programs and planning, alternative aviation fuels, training and communication, and wargaming.

4.2. Operational Energy Metrics. To monitor the use of operational energy and the success of operational energy initiatives, the Air Force should systematically collect, retain, and analyze operational energy data.

4.2.1. SAF/IEN will advocate for necessary data collection and data collection continuous process improvement, and will work with AF/A3 and AF/A4 to ensure proper coordination across all appropriate Air Force stakeholders.

4.2.2. In collaboration with all key stakeholders, SAF/IEN will establish standardized methods to collect fuel consumption data. Fuel consumption data includes, at a minimum, on a sortie-by-sortie basis, mission profile, start fuel, shutdown fuel, air refueling on-load/off-load, and fuel jettisoned.

4.2.3. MAJCOMs, with the support of SAF/IEN, will collect, retain, and report fuel consumption data in appropriate systems of record to measure operational energy use in their fleets.

4.2.4. SAF/IEN will compile operational energy data to assess trends across the Air Force, and to make recommendations to senior Air Force leadership.

4.3. Strategic Basing. The Air Force Strategic Basing process, as described in Air Force Instruction 10-503, *Strategic Basing*, ensures operational energy is considered in basing actions as they are being developed. SAF/IEN will:

4.3.1. Attend the Strategic Basing Panel meetings and ensure that operational energy considerations are integrated into all applicable basing actions and decisions.

4.3.2. Attend the Strategic Basing Executive Steering Group meetings and provide operational energy expertise to applicable basing actions and decisions.

4.4. Energy Key Performance Parameter and Energy Supportability Analysis. Energy key performance parameters must be used in the requirements development process when modifying existing or developing new fuel consuming systems. To optimize future system effectiveness, initial analysis should occur during the concept development phase, using independent energy analysis, or during the capabilities-based assessment, with subsequent analysis informing planning and operations.

4.4.1. Energy Key Performance Parameter. SAF/IEN, in conjunction with the MAJCOMs, will ensure the energy key performance parameters meet the requirements of the Joint Capabilities Integration and Development System Manual. In the event the MAJCOM seeks a waiver to the energy key performance parameter requirement, SAF/IEN will coordinate as

needed within the HAF and the Joint Staff. During the energy key performance parameter development, SAF/IEN should provide expertise in lieu of direction.

4.4.2. The System Roles for the energy key performance parameter flow chart displayed in Enclosure D, Appendix F, of the Joint Capabilities Integration and Development System Manual, prescribe the requirements for an energy supportability analysis, and for the follow-on energy key performance parameter. In support of the MAJCOM requirement process, SAF/IEN will advise on the energy supportability analysis process. Program offices will coordinate energy supportability analyses or request waivers through SAF/IEN prior to formal coordination described in the Joint Capabilities Integration and Development System Manual (T-1). Additional guidance on the requirement and methods for energy supportability analyses can be found in [Attachment 3](#), as well as the Joint Capabilities Integration and Development System Manual.

4.4.3. SAF/IEN will coordinate with AF/A4 to ensure the Air Force Instruction 10-401, *Air Force Operations Planning and Execution*, directed Logistics Supportability Analysis, which assesses energy surge and sustainment, is developed to support Combatant Commanders' missions through appropriate acquisition.

4.5. Alternative Aviation Fuels. Alternative aviation fuels are those not derived exclusively from petroleum. SAF/IEN will:

4.5.1. Develop, maintain, and update policy on the use of alternative aviation fuels across the Air Force, in collaboration with the Air Force Petroleum Office and Air Force Research Laboratory.

4.5.2. Monitor evaluation and certification of technical and programmatic aspects of alternative aviation fuel and fuel additive processes to ensure cost competitiveness with conventional petroleum.

4.5.3. Coordinate with AF/A4 to ensure any alternative fuels in expeditionary environment do not significantly degrade weapon system performance and reduce overall risk to supply chain.

4.6. Training Integration. Successful integration of operational energy messages and initiatives into existing education and training programs requires close coordination with HAF and MAJCOM staffs, as well as with Air University and individual training course owners. MAJCOMs will integrate operational energy training goals and objectives in overall training programs as appropriate.

4.7. Communication Strategy. SAF/IEN is responsible for developing and maintaining the Air Force Operational Energy communications strategy. This strategy should include an analysis of stakeholders and communication gaps, key messages and multi-channel communications approaches, and the means to ensure consistent implementation. To implement the communication strategy, SAF/IEN will:

4.7.1. Coordinate with SAF/PA to develop priority messaging, news articles, press releases, campaigns (e.g. Energy Action Month), public speaking engagements, and media coverage at applicable DoD and industry hosted conferences.

4.7.2. Create and publish digital media content (e.g. social media platforms and public-facing websites), and implement long term planning of monthly themes and DoD campaigns, coordinating with SAF/IEE and SAF/PA where appropriate.

4.8. Wargames. In addition to helping inform organize, train, and equip decisions, Air Force Title 10 wargames should be designed to evaluate the aggregate capability of joint energy systems. This should include an assessment of the collective ability to meet the energy requirements of the force. SAF/IEN will work with AF/A4, AF/A5, AF/A8, and AF/A9 to confirm that contested environment logistics planning factors are fully integrated into Title 10 wargames and analyses, ensuring the incorporation of energy demand, supportability, interdiction, and attrition planning factors in wargame operational execution. SAF/IEN will also coordinate across the HAF logistics community to improve resolution and integration of logistics in wargaming, and design and implement logistics modeling and simulation for planning and adjudication across the Air Force Title 10 Wargame series.

Mr. John W. Henderson, P.E.
Assistant Secretary of the Air Force
(Installations, Environment, and Energy)

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

Air Force Energy Flight Plan, 6 January 2017

AFI 90-1701, *Energy Management*, 16 July 2009

Department of Defense Operational Energy Strategy, 2016

AFPD 90-17, *Energy and Water Management*, 18 November 2016

AFI 33-360, *Publications and Forms Management*, 1 December 2015

AFMAN 33-363, *Management of Records*, 1 March 2008 (certified current as of 21 July 2016)

Joint Capabilities Integration and Development System Manual, 18 December 2015

AFI 10-401, *Air Force Operations Planning and Execution*, 13 March 2012

AFI 10-503, *Strategic Basing*, 28 July 2017

AFPD 63-1/20-1, *Integrated Life Cycle Management*, 7 August 2018

AFI 90-802, *Risk Management*, 11 February 2013 (Certified Current on 15 May 2017)

AFPAM 90-803, *Risk Management (RM) Guidelines and Tools*, 11 February 2013 (Certified Current 3 March 2017)

Abbreviations and Acronyms

DoD—Department of Defense

HAF—Headquarters Air Force

MAJCOM—Major Command

SecAF—Secretary of the Air Force

USAF—United States Air Force

Terms

Agile Combat Support—The support that underpins the ability Air and Space Expeditionary Force to provide force capabilities that can rapidly respond by creating, sustaining, and protecting all air and space power capabilities to accomplish mission objectives. Agile Combat Support produces the combat support capabilities critical to decisive air and space power.

Air Force Corporate Structure—Embodies the corporate review process for HQ USAF. It does not replace the functional staff but, rather, enhances it by allowing time critical or time limited functional reviews at the appropriate levels. The deliberative components of the corporate structure are the Air Force Council, the Air Force Board, the Air Force Group, and the thirteen Mission and Mission Support Panels.

Air Force Energy Flight Plan—A comprehensive document that provides a framework for coordinating activities across multiple organizations and engaging thousands of individuals to

enhance mission assurance through energy assurance across the United States Air Force. Two keys to providing energy assurance are agility and inclusivity, which enables the Air Force to adapt swiftly to any situation or enemy action and to address energy challenges posing a threat to its operations.

Alternative Fuel—Fuel produced from non-conventional sources (e.g., biomass or coal) for any mobility-related use including ground transportation and aviation.

Defense Operational Energy Board—An OSD-level board co-chaired by the Assistant Secretary of Defense for Energy, Installations, and Environment ASD (EI&E), and the Joint Staff, Director for Logistics (J4), that uses the annual Planning, Programming, Budgeting, Execution process to prioritize, coordinate, and review activities aligned to OSD Operational Energy strategy, objectives and goals. (DoD 2016 Operational Energy Strategy)

Energy Key Performance Parameter—The energy key performance parameter is intended to ensure combat capability of the force by balancing the energy performance of systems and the provisioning of energy to sustain systems/forces required by the operational commander under applicable threat environments. (Joint Capabilities Integration and Development System Manual)

Energy Supportability Analysis—Analysis of the system's use of energy to accomplish mission requirements should form the basis of all energy performance attributes and the energy key performance parameter. (Joint Capabilities Integration and Development System Manual)

Lead MAJCOM—A type of MAJCOM that consolidates responsibilities for a particular function in a single MAJCOM, supporting the entire Air Force as applicable.

Life Cycle—The span of time associated with a system, subsystem, or end item that begins with the conception and initial development of the requirement, continues through development, fielding, sustainment, until the time it is either consumed in use or disposed of as being excess to all known materiel requirements. (Air Force Policy Directive 63-1/20-1)

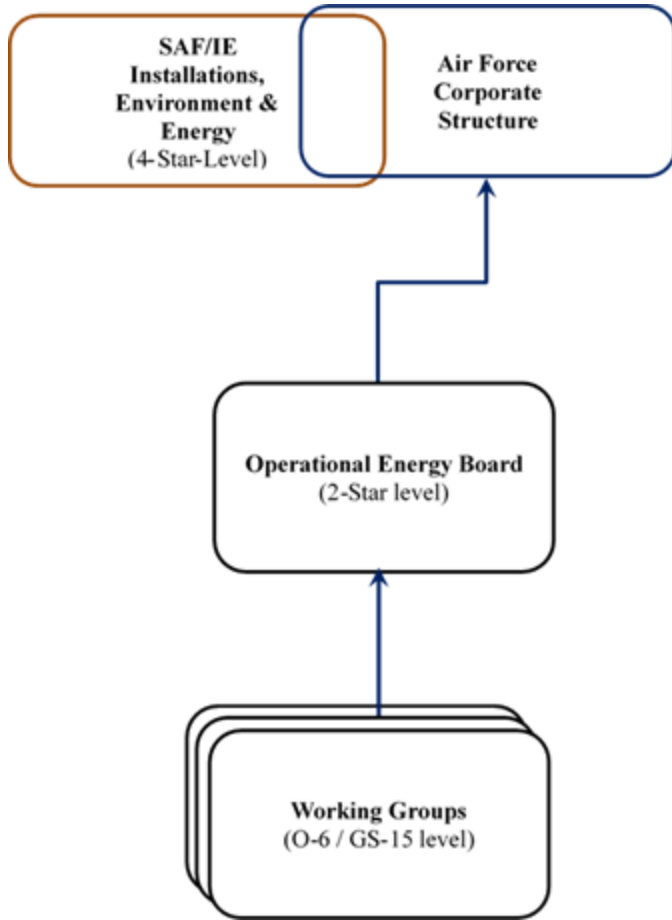
Operational Energy—The energy required for training, moving, and sustaining military forces and weapons platforms for military operations. This includes the energy used by tactical power systems and generators and weapons platforms.

Powered Aerospace Ground Equipment—Those items of portable (trailer mounted with tow bar) engine or motor driven equipment used in servicing, handling and maintaining weapon systems. These items include portable engine and motor-driven equipment in the following categories: generator sets, air compressors, self-generating nitrogen servicing carts, cabin leakage testers, blowers, hydraulic test stands, air conditioners (including air cycle machines), liquid cooling carts, ground heaters, light carts, gas turbine compressors, universal maintenance stands, hydraulic jacking manifolds, self-propelled bomblifts, and cranes. The exception to portable engine or motor driven powered aerospace ground equipment are solid state frequency converters and skid mounted engine driven generators used to supply electrical ground power to aircraft.

Title 10 Wargame—A Chief of Staff of the Air Force-directed, HAF-conducted wargame which explores current and future issues impacting doctrine, force structure and concepts (future, employment, operational, etc.). (Air Force Policy Directive 90-17)

Attachment 2

AIR FORCE ENERGY GOVERNANCE STRUCTURE



Attachment 3

GUIDANCE ON PREPARING AN ENERGY SUPPORTABILITY ANALYSIS

A3.1. The energy supportability analysis is an iterative analysis process designed to guide the development of weapon systems. It entails analyzing the weapon system's overall impact on energy supply and demand, in general operations and in specific battle space scenarios. During the concept development of a new weapon system, an initial energy supportability analysis helps inform the system's energy key performance parameter. In this initial energy supportability analysis, the general mission requirements and energy supply chain associated with existing weapon systems are analyzed to understand overall risks to mission operations, due to energy supply limitations. Existing controls to mitigate those risks may include changes to operations, alternatively the risks may be accepted, potentially posing limitations on overall mission effectiveness. The initial energy supportability analysis is used to develop recommendations for the energy key performance parameter, with the overall objective of limiting risk to mission operations due to energy demand from the platform.

A3.2. As the capabilities and energy requirements of the new weapon system are established, the energy supportability analysis is revised and expanded to examine not only the baseline risks of the energy supply system, but also the changes in risk that may occur in general operations and in highly stressed specific scenarios due to the shifts in demand required to employ the new platform. Proposed new or modified risk controls at this stage help the Air Force understand what changes to basing, operations, or plans may be required to support the capabilities provided by the new weapon system.

A3.3. Overall, the energy supportability analysis is designed to assess the overall energy supply capacity for the mission operations to be performed by the weapon system, the demand of the current weapon system and the changes in demand expected for the new weapon system, and the risks to mission associated with the energy supply chain linked to the weapon system demand. The general operations of the weapon system, including basing and training operations, should be assessed as part of the energy supportability analysis.

A3.4. As specified in the Joint Capabilities Integration and Development System Manual, the energy supportability analysis should include an analysis of the employment of the weapon system in a specific scenario. It should use the logistics assets programmed for the future force, and should use the most-stressing scenario (from an energy demand perspective). The scenario analysis must be derived from Support for Strategic Analysis products that include not only the operation of the system but also the energy related logistics and force protection required in contested operational domains, including options for operating "off-grid" for extended periods of time. The scenario must be of sufficient duration (multiple days to weeks) to demonstrate the effect of realistic opponent effects on our forces. It must also include the logistics forces required as well as realistic threats and disruptions to logistics tails. The scenario must account for availability of logistics assets, non-hostile attrition (including reliability), and attrition due to red action against blue logistics systems.

A3.5. Risks and controls should be identified and assessed with regard to mission operations (e.g. risk to mission, personnel, or equipment) using the operational risk management framework specified in Air Force Instruction 90-802, *Risk Management* and detailed in Air Force Pamphlet 90-803, *Risk Management (RM) Guidelines and Tools*.

A3.6. The energy supportability analysis template below includes both components of the initial energy supportability analysis as well as additional sections and analyses added once characteristics of the new weapon system have been established (in bold).

Figure A3.1.

Section	Section Heading	Contents
1	Executive Summary	<p>Platform description (including missions)</p> <p>Changes to energy demand</p> <p>Risks and opportunities</p> <p>Controls</p>
2	Introduction	<p>Purpose and scope – Reason or need for the energy supportability analysis and the parameters of the study</p> <p>Program overview – Describe how the study fits into the overall acquisition program</p>
3	Platform Description	<p>Overview of weapons system, including missions – List each weapon systems currently executing missions and key characteristics of each. List weapon systems that will replace current platforms and the key characteristics of each</p> <p>Changes improvements to existing system capabilities – Highlight changes to existing systems</p> <p>Timeline of delivery – Describe expected availability of the weapon systems and a description of how it will be delivered over time</p> <p>Energy demand, including changes from existing systems – Describe energy demand parameters of the existing weapon systems. Describe expected energy demand parameters of the new weapons systems. Highlight changes to existing systems.</p>
4	General Operations	<p>Basing – Describe where the platform is currently based and list available or expected basing options for the new platform.</p> <p>Operations – Describe where current operations are conducted and where expected operations will be conducted for the new platform.</p> <p>Supply chain summary – List sources, transmission systems, etc. that currently service operational energy for this platform/mission.</p> <p>Changes to supply requirements – Highlight the changes to supply required by the new platform.</p>
5	Defense Planning Scenario	<p>Scenario description – Describe the defense planning scenario selected.</p>

		<p>Baseline assumptions – Without a new weapon system, list the baseline assumptions about energy use for the existing weapon systems during employment.</p> <p>Weapons system employment assumptions – List the assumptions about energy use for the new weapon systems during its employment.</p> <p>Supply chain summary – List sources, transmission systems, etc. expected to service the current weapon systems employed in the baseline case. List sources, transmission systems, etc. expected to service the new weapon system, when it is employed.</p> <p>Changes to supply requirements – Highlight the changes to supply required by the new platform.</p>
6	Risks	<p>General operations risks (to include changes over the baseline) – List risks present to supply in the general operations of the platform and the severity, probability, and overall risk to operations. Describe how risk ratings are expected to change with the new weapon systems.</p> <p>Defense planning scenario risks (to include changes over the baseline) – List risks present in the employment of existing platforms during the defense planning scenario and the severity, probability, and overall risk to operations. Describe how risk ratings are expected to change with the new weapon systems.</p> <p>Opportunities (if applicable) – Describe new capabilities available because changes in demand.</p>
7	Controls	<p>General operations controls – Lists controls that mitigate risk with current operations. List recommended controls to mitigate risk with new weapon system.</p> <p>Defense planning controls – Lists controls that mitigate risk with the current weapon systems. List recommended controls to mitigate risk with new weapon system.</p> <p>Accepted Risk – Describe current accepted risk and risk accepted with the new weapon system.</p>
8	Conclusion	<p>Discussion of risks and controls.</p> <p>Energy key performance parameter recommendation – Describe risks recommended to be encoded in an energy key performance parameter.</p> <p>Recommend follow-on studies.</p>