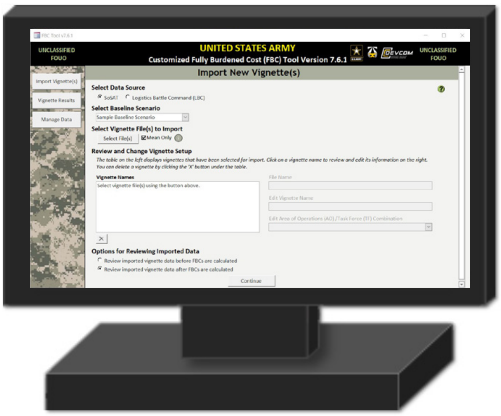
ESG ENERGY & SECURITY GROUP | FBC Tool

Established in 2002, Energy and Security Group (ESG) is a small professional services company that provides the Defense Department cost effective solutions to some of the toughest national security challenges by providing cost analysis, decision support tools, advanced modeling, operations research analysis, analytical software development, and innovative research to reduce risk and enhance DoD capabilities and decision making.

Fully Burdened Cost Tool (FBC Tool): Creating Cost Savings and Efficiencies for DoD Logistics in Support of the Warfighter

We understand the cost and complexities associated with providing our forces the necessary supplies to both compete globally and fight and win our nation's wars. The ability to find cost savings and trusted solutions to increase our operational reach by identifying efficiencies within the supply chain is crucial. The Fully Burdened Cost Tool provides DoD critical information to more efficiently manage the global defense supply chain, providing cost-effective solutions and improving commanders' **decision making and responsiveness to our strategic priorities**. Our team worked directly with key logistics stakeholders to develop this modeling tool to compute monetary and non-monetary costs from the point of acquisition through sustainment.

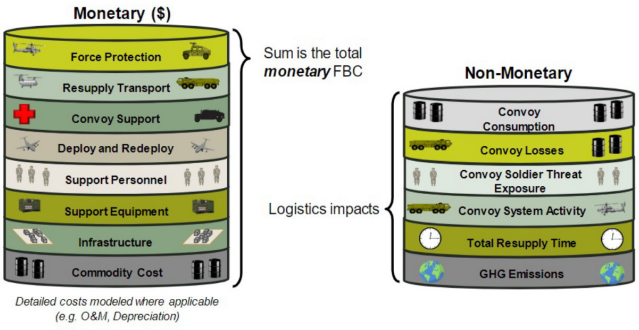


The **Fully Burdened Cost Tool** is a US Army-owned decision support tool that models military scenario logistics and calculates a suite of **monetary and non-monetary costs** associated with resupply activities for fuel, water, ammunition, and Class-VII. The FBC Tool enables operational impact analysis of materiel and non-materiel solutions, including technology swaps, changes in transportation options, force structure, base camp operations, and policy updates. **All FBC Tool analysis is scenario-based**, allowing the customer to select and shape necessary parameters for each specified course of action. FBC Tool cost data is sourced from authoritative Army and DoD databases.

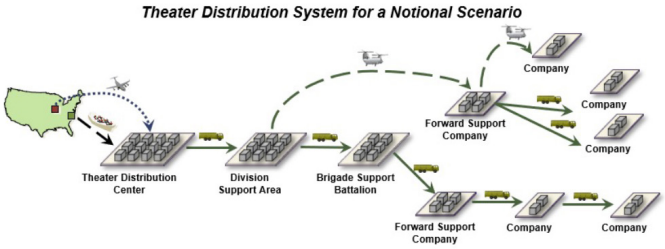
The FBC Tool can **operate as a standalone model or in tandem** with select modeling and simulation (M&S) tools. The current version (v7.6) calculates cost estimates for the following commodities: Fuel (FBCF), Water (FBCW-Bulk and FBCW-Bottled), Ammunition (FBC-A), and Class VII-Transport (FBC-VII). Key model inputs are FBC Tool updates are **driven by customer needs** and internal recommendations for improving analysis processes. The tool passed a rigorous independent verification and validation (IV&V) process by the U.S. Army Materiel Systems Analysis Activity (AMSAA) in 2015. FBC Tool costing methodology complies with Office of the Secretary of Defense (OSD) policy on the fully burdened cost of fuel (FBCF) as defined in the Duncan Hunter National Defense Authorization Act (NDAA) of 2009.

Moving forward, we are postured to expand the FBC Tool to a myriad of customer requirements, such as modeling new energy and power sources for combat systems, incorporating additional classes of supply, expanding the FBC Tool library of scenarios, and enabling fuel price sensitivity analysis. We understand the complexities and challenges in need of innovative solutions to increase the readiness and combat power of our forces, particularly in a distributed logistics environment. We built an **innovative and adaptable** tool to address these challenges and offer a nimble and experienced team that approaches solutions as systems – not as solutions for single issues.

- **Energy Analysis Support II for U.S. Army Tank-Automotive Research, Development and Engineering Center** March 2023 (4 years): ESG continued FBC Tool enhancements and supported analyses for US Army Combat Capabilities Development Command (DEVCOM) Ground Vehicles Systems Center (GVSC), including the XM-30 Analysis of Alternatives (AoA). Additional analyses included computing FBCs for the OECIF Army Vehicle Electrification Study.
- **Energy Analysis Support for U.S. Army Tank-Automotive Research, Development and Engineering Center** March 2018 (4 years): ESG continued FBC Tool enhancements and supported analyses for US Army Combat Capabilities Development Command (DEVCOM) Ground Vehicles Systems Center (GVSC), including the Future Vertical Lift (FVL) and Operationally Manned Fighting Vehicle (OMFV) Analysis of Alternatives (AoAs). Additional analyses included computing FBCs for a trailer fleet analysis, calculating personnel impacts for Modular Autonomous Vehicles (MAV), and a lightweighting analysis for the v3 Abrams and modified lightweight Bradley.
- **Fully Burdened Cost Tool Scenario Expansion Follow-On, U.S. Army Tank-Automotive Research, Development and Engineering Center** November 2016 (1.5 years): ESG provided analytical support pertaining to scenario-specific cost analysis for fuel, bulk water, and bottled water using the FBC Tool, including an analysis of FBCF and FBC-A for the Mobile Protected Firepower (MPF) AoA. ESG also supported general operations and maintenance of the FBC Tool.



- **Fully Burdened Costs of Intra-Theater Resupply Distribution of Classes I, II, IV, V, VIII, IX, U.S. Army Logistics Innovation Agency** April 2014 (1.5 years): ESG identified data sources and defined and demonstrated a methodology for estimating the FBCs of Class I, II, IV, V, VIII, and IX materiel in a theater distribution system. The methodology included development of a framework to apply Army FBC Energy guidance across supply classes and expanded associated FBC metrics.



- **ESG has conducted FBC analyses in support of:** ARCENT, DEVCOM, Logistics Innovation Agency (LIA), NSRDEC, TARDEC, TRAC-LEE, TRAC-WSMR, PM-Heavy Tactical Vehicles, the Operational Energy Analysis Task Force (OEATF), and ASA IE&E, among others.

FBCT Technical Reports available on https://discover.dtic.mil/

- Fully Burdened Cost Tool Scenario Expansion (2018)
- Operational Energy Analysis Task Force Data Synchronization (2016)
- Fully Burdened Cost of Intra-Theater Resupply Distribution of Classes I, II, IV, V, VIII, and IX Estimation (2015)
- Methodology and Analysis for Water Security in Military Operations (2014)
- Incorporating the Fully Burdened Cost Tool into Combat Modeling (2014)
- Fully Burdened Cost (FBC) Tool: Greenhouse Gas Emission Impacts (2013)
- Fully Burdened Cost of Water in the Army: Methodology and Capability (2013)
- Methodology and Analysis for Energy Security in Military Operations (2011)

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