# UNLOCKING VALUE

## POWER STATION PROJECT DEVELOPMENT WITH INTEGRATED FUEL EFFICIENCY ENHANCEMENTS

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USP&E
POWERING BUSINESS. EMPOWERING PEOPLE

# BUILDING TRUST IN EMERGING MARKETS
# UNLOCKING VALUE THROUGH CONSULTING, EPC, AND O&M SERVICES

At USP&E, we believe that every power station project we have preformed has made us a better company and positioned us to help our clients unlock value and minimize risk. Our vision is to be the most trusted supplier of power station consulting services in emerging markets. So it makes sense we think that our specific area of focus across all of our divisions is to drive value through lowering our clients' operational costs. With our varied and extensive background in project planning and management, USP&E Consulting (North America, Africa and India) supports Owners and Executive Teams in major project development opportunities.

Well before a FID ("Final Investment Decision") triggers the project execution phase, called EPC ("Engineering, Procurement and Construction"), there are a number of steps that all infrastructure projects must take.

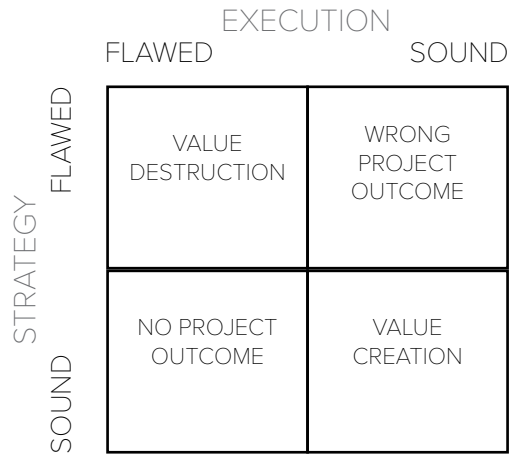
## STEP ONE: CONCEPTUAL FEASIBILITY

A feasibility study involves a technical and commercial examination of a project's potential for success. The main purpose for this study is to determine whether the project is viable given the infrastructure required and the resources available to the company.

The Conceptual Feasibility Study (CFS), or Class 5 estimate, is often prepared in the outset of the development phase of a project. During this scoping phase, all critical design alternatives are being examined and the preliminary project execution plan is established. The CFS is defined as an order of magnitude estimate, including contingency, that is accurate to +/- 20%. USP&E offers a robust CFS practice and can often complete a CFS in Africa in 30-60 days, depending on the level of detail required.

## STEP TWO: DEFINITIVE FEASIBILITY

USP&E's design engineering (EPC) practices create the kind of economic models that share-holders, banks, and investment committees require prior to a Financial Investment Decision (FID). Accurate to +/- 10%, our Definitive Feasibility Studies (DFS) provide professional fin ancial projections relative to the power station of each infrastructure project (mining, hospitality, oil and gas, manufacturing, etc). Ultimately, a DFS is a comprehensive, forward-looking, assumption-driven economic and technical project report to be used by the owner's executive team as it seeks to work with the Board of Directors (BOD) to determine the Net Present Value (NPV) of the proposed asset over it's life so as to reach a positive FID and achieve the organizations target outcome: enduring profitability.




"All courses of action are risky. So prudence is not in avoiding danger (this is impossible), but in calculating risk and acting decisively."
Nicoli Machiavelli

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## FEASIBILITY PROGRAM MANAGEMENT TEAM:

### INTEGRITY = HONESTY + EXPERTISE

In order to reach FID, each Definitive Feasibility Study is guided by a feasibility program management team that meets at the outset of the Study to set layout site conditions, Study deliverables, load lists, eTap reporting and transient simulation strategies, and a Target Outcome. It is important to the integrity of each study to maintain that the real outcome is always uncertain at the threshold of a Study, and targets and objectives may not be achievable. The Target Outcome is the potential project design that achieves a positive FID and collateralizes the infrastructure required to operate the venture. This Target Outcome is one where risks are regulated and operational efficiencies optimized in order that the Total Cost of Ownership (TCO) of the infrastructure is minimized and Net Present Value (NPV) maximized.

In the final recommendations section of each Study, USP&E chooses and highlights all aspects of the power station configuration with the most suitable technical and financial characteristics, starting with a review of all capital costs (CapEx) and detailing all operating costs (OpEx) over the life of the project. These DFS costs are built upon pricing quotes and specifications from manufacturing, shipping, construction, testing, maintenance, and fuel supply contractors and vendors. The objective is to clearly identify the most reliable, affordable, fuel efficient, renewable, ideally-suited power station configuration to each project in order to optimize the organizations ideal outcome: enduring profitability.

A +/- 10% DFS, or Class 2 Estimate, supplies the executive team with all basic design documents such as P&ID's, layouts, electrical single lines, construction schedules, and project execution plans. USP&E can typically complete a full DFS 3-6 months, depending on complexity and the range of variables unknown at the time of the DFS program management kick-off meeting.

## STEP THREE: FEED

Once the power station DFS is completed, it is time to begin the Front End Engineering Design (FEED). The FEED is a critical step where a EPC contractor is selected to perform the design engineering required in order to truly integrate the various aspects of the DFS-recommended power station solution including:

- Basic fuel farm design and integration
- Power station layout and site integration
- Civil works drawings, layouts and integration
- Control systems design and integration
- Full eTap load and transient simulations and associated reporting
- Fire protection, safety, and risk management design and integration

The FEED is a critical building block prior to going out to tender. However, if USP&E Consulting is hired for a comprehensive class 2 DFS assignment, the FEED can be incorporated into the DFS process in order to streamline the workflow and reach FID sooner, at the client's discretion. IF the DFS offers a power station solution that is compelling, with a low cost / kWh and high projected internal ROI, the FEED will be initiated to flesh out in more detail the electrical, mechanical, petrochemical, and thermal properties and layout of the proposed integrated solution.

## STEP FOUR: FID

In order to reach a Final Investment Decision on a major infrastructure project in the emerging world, the CFS, DFS, and FEED need to be in strategic alignment. But for the FID to be positive and the project to move forward, the project will often need to compare favorably to the other projects the organization is working with. Most importantly in emerging markets, the FID will be influenced by both the project's projected profitability and social impact. Social impact is driven by the project's potential to transform communities, economic systems, and lives through job creation, infrastructure improvements, and relief work.

Even when target outcomes are met and the DFS and FEED point towards a robust, profitable, and transformational project, sometimes the risks and uncertainty in certain frontier nations are simply too high when compared with current commodity spot rates or other market conditions. In this case, the Board of Directors may delay the FID until local or international political and market conditions change.

When the executive team and Board's target outcomes and Socio-economic and Transformational Opportunities for Restoration and Yield (STORY) are detailed and aligned, the positive FID triggers the project execution and engineering, procurement, and construction phase (EPC). Regardless of the delays to the FID, the winning EPC contractor will always be expected to commission the new assets in the shortest lead-time possible.

## STEP FIVE: EPC

When USP&E Consulting is given the opportunity to assist clients with their CFS, DFS, FEED and FID needs, tremendous trust and partnership is forged. Once the consulting engagement has concluded, USP&E Africa, our power station EPC and O&M firm is often engaged to build what we have so carefully worked to design.

USP&E Africa's EPC division is perfectly positioned to execute on the creative and customized power station designs that our independent and wholly-separate power station consulting division produces. Supported by our offices in Freetown, Johannesburg, and Dallas, we have experience working in Guatemala, all of North America, and in numerous countries across the continent of Africa. Our EPC practice is built upon the key USP&E pillars of world class construction:

- Safety 1st
- Quality control
- On time delivery of energy
- Risk management focus
- Clarity, Transparency, and Honesty in Communication
- Local National Advancement

> "A lot of people make money in Emerging Markets. It is an arbitrage between perceived and actual risk."
> Tidjane Thiam

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## STEP SIX: RISK MANAGEMENT & QUALITY CONTROL

Major infrastructure projects in heavy industrial applications in emerging markets have a spotty record in the area of estimating initial capital cost and operational performances, even though the standard of feasibility studies has improved in the last decade. Third party reviews rarely have time and funds for the due diligence required. This is where USP&E Consulting comes back in as an Owner's Rep when other EPC firms are hired. Through our risk management, controls design, eTap siumulations, and operations expertise, we can help prevent execution problems and keep risks in line.

## STEP SEVEN: OPERATIONS & MAINTENANCE

USP&E Africa is an award winning, world class Operations and Maintenance company. With our Center of Excellence located in Lunsar, Sierra Leone, USP&E Africa is focused on driving value by reducing fuel consumption in the harshest environments on Earth.

**Our expertise** covers all aspects of the power generation spectrum. USP&E successfully integrates equipment and subsystems manufactured by others into fully operational power generating stations.
We deliver excellence, strive for continuous improvement, and respond vigorously to change.
USP&E is 100 percent committed to serving our clients.

Our areas of expertise and the professional services we offer are shown below. Our experience is vast and comprehensive.

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# THE USP&E IN SUMMARY

Our vision is to be the most trust supplier of energy services in first world and emerging markets for major projects in the mining, oil/gas, hospitality, manufacturing, telecommunications, and others.

Founded in 2002, USP&E has successfully completed
over 150 project assignments in 22 countries.

Extensive and varied background in Power Stations, Project Consulting,
Project Management, DFS, FEED, EPC and O&M.

Email our CEO, Will Gruver, at will@uspeglobal.com to arrange a time to discuss your upcoming project and how USP&E can help you to drive value to FID and beyond.

* Please Note that a feasibility study is guided by a set of assumptions, a strategy, development conditions and a planned outcome. The outcome is uncertain and targets and objectives may not be achievable. Furthermore, there can be no assurance that such study recommendations or forward-looking information will prove to be accurate, and actual results and future events could differ materially from those anticipated. Important factors that could cause actual results to differ materially include: fluctuations in commodity prices and currency exchange rates; the need for co-operation of government agencies in the issuance of required permits and approvals; the possibility of delay in development work or in construction and uncertainty of meeting anticipated milestones; and other risks and uncertainties.

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