



# CAPEX Estimation and Economic Justification For Masterplan Study

Capital Expenditure, commonly known as CAPEX, are funds used by a company to acquire, revamp, maintain, and construct physical assets such as property, buildings, equipment and industrial plant.

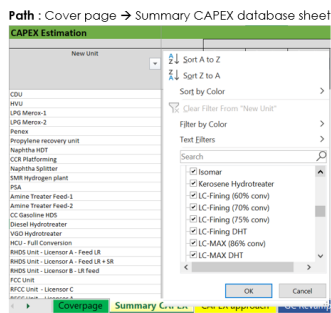
In the Masterplan study project where the Refinery and Petrochemical assets have to be assessed according to all competitiveness challenges in order to determine **the most economical investment option** to achieve business aspiration of site for long term sustainability, as a result, the new assets may be arisen or even the existing assets may need to be revamped in term of capacity and utilization rate. In this circumstance, there is always a question whether the investment of Masterplan study options (e.g. new assets, revamping, etc.) is economically feasible, which will lead to further project stage gates including Basic Design Package (BDP), detailed engineering design study and investments.

**PTTES performs the Masterplan study** for our clients in many projects both in Thailand and abroad. For each project, we evaluate and propose the most suitable investment option to our clients, which is the best fit to achieve their business aspiration, while meet the target return on investments. To do so, CAPEX and Net margin of various study options is important. PTTES has embedded the process of CAPEX estimation in the Masterplan study, which allow us to cover all perspectives in pertinent to capital investments. In term of Net margin, our methodology includes not only energy cost but also Non-Energy Cash Cost (NECC) such that the Margin obtains from each study option is more accurate. Thereafter, PTTES will do ranking for that of study options based on return on investment, Pros and Cons of each option before jointly select with client on the best fit investment option.

**On CAPEX estimation**, based on experience from the many projects in the past and various source of technical papers as well as data from various Technology providers, PTTES has structurally developed **"CAPEX database"** and methodology for estimating and proportionating CAPEX to meet desire design capacity of assets, commonly known as **"CAPEX approach"**. The CAPEX cost structure, for example; ISBL to OSBL ratio, interest rate, contingency, escalation, and owner cost ratio can be proportionated and modified to meet project requirement. As a result, PTTES can estimate magnitude of CAPEX with +50% accuracy, which is normally used for the Masterplan study to screen and select the preferred investment option before further proceeding to next phases of project.

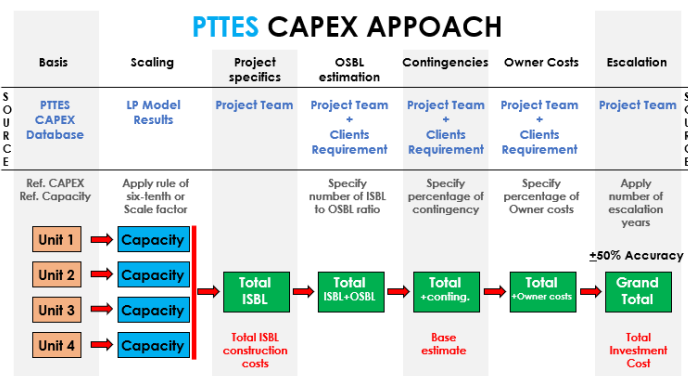
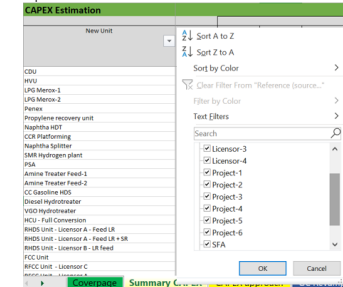
**On the Incremental Net margin**, apart from the Gross margin that PTTES obtains from LP planning models (PTTES can use both PIMS and Spiral tools depended on client requirement), we do estimation of the Non-Energy Cash Cost (NECC) from multiplication between EDC (Equivalent Distillation Capacity) and NECC cost (\$/EDC). As a result, the Net margin can be determined, which will be used together with CAPEX to evaluate minimum return on investment or simple payback period.

Lastly, the ranking of various study options will be done based on return on investment as well as Pros and Cons of each option. The infographic below is an example on various study option ranking showing CAPEX, Net incremental margin, and Simple Payback period.

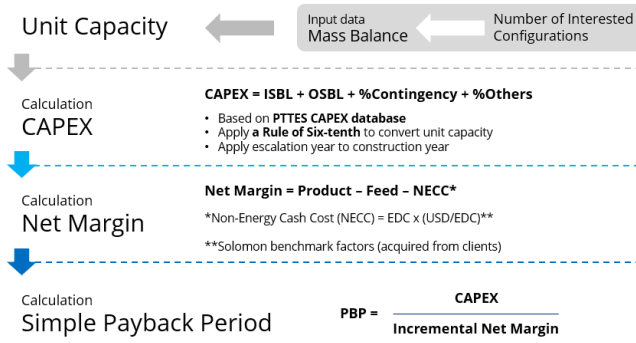


## CAPEX database

**Access to your desire**  
Filter options will help user to access to desire operation unit. The database can be sorted by type of operation unit or source of reference.



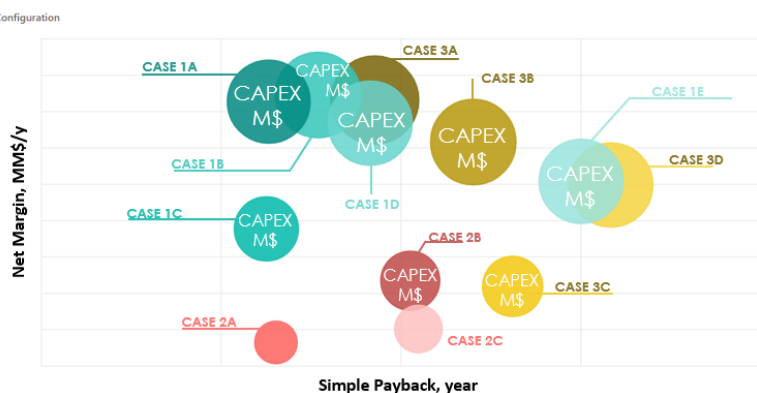
## CAPEX & Economic Justification Approach Methodology



## Configuration Ranking

Based on calculated Simple Payback Period, Pros and Cons of each configurations

Back to Report | CONFIGURATION COMPARISON



As a result of employing all above methodology, **PTTES successfully deliver valuable information and key message to clients** which is helpfully contribute clients on decision making on technology screening and selection of their Masterplan project

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