

Law of Substitution or Replacement: Some of your design projects have products that have never been on the market before, or products that are intermediate materials that are used, but not sold on the open market. You will not be able to obtain any pricing information for these products. However, you can use the Law of Substitution or Replacement. This law states that the purchaser of the product will not pay any more than the price of the product you are replacing. For instance, if you are producing biodiesel, the consumer will not want to pay any more for the biodiesel than they are currently paying for regular diesel. However, if your product has more value than the current product, then you might be able to charge more. You can also perform a sensitivity analysis with your cash flow and determine the maximum sale price required to meet the MAR for your project - this will provide a lower bound on this price.

Transfer Price: If you are purchasing a raw material or intermediate from a plant site already owned by your company, then you will need to negotiate a transfer price for that material. The transfer price is the money that is moved around on the company internal books and may or may not have any relationship with real money! The transfer price is always negotiated and may be larger or smaller than the current market price - usually it is smaller.

There are a number of reasons why the transfer price may be higher than the market price. The company may wish to move money around within the company, or there may be a reason based on income tax. Other reasons are possible.

You can also perform a sensitivity analysis with your cash flow and determine the maximum transfer price required to meet the MAR for your project - this will provide a lower bound on this price.

MAR or Hurdle Rate: Your design team has been assigned a minimum acceptable return (MAR) or hurdle rate for your design project. The usual value is from 15 to 20%. This does not mean that this will be the actual return when the plant is operating - 5 to 10% return is more likely (or even less). The high value is assigned mainly as a result of the confidence in estimating costs for the preliminary design. The less confidence there is in this, the higher the hurdle rate is set to insure success.

Project Life: You have been told that the project life for your design is ten years. This is actually the financial life of the project and not the life of the plant. This is similar to a mortgage on a house - a twenty year mortgage means you own the house at the end of twenty years and the mortgage is paid off. Likewise, at the end of your design project life, the plant will be paid off. This **does not** mean that the plant is torn down at the end of ten years!