

White Paper

# Component Cost Estimator



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### Component costing and alternate component sourcing saves both time and money

Component Cost Estimator (CCE) is a component costing tool for Bill of Materials (BoM) analysis and alternate source identification developed for designers, product line managers and procurement professionals. CCE is one of Lytica's Knowledge Power Tools for the supply chain. These licensed tools provide critical decision making information (knowledge) quickly and efficiently.

CCE is web based, easy to use and effective. It provides estimates of market leading, average and "sweet spot" pricing for each matched electronic component submitted for analysis. It also identifies alternate sources of high likelihood drop in replacements for the components specified. A "sweet spot" price is the market price you should be paying for a component.

CCE is available as both a Subscription and Pay Per Use service. Pay Per Use customers get their first 25 submitted component matches for free. The results of the first 25 matched components uploaded, either individually or as an excel file, are displayed on the results page and may be exported in Excel. Starting with the 26<sup>th</sup> matched component, result summaries will be shown and clients can decide if they want to pay for these component results or not. The report can be charged to Visa, MasterCard, Amex or Discovery credit cards. You are not charged for unmatched components or for matched components where there is insufficient information to make a statistical estimation of pricing. If alternate components are known, they will be shown for all matched components regardless of whether price information is presented.

Security is important to us and we employ appropriate site security measures on all of our websites to protect client information. Where required, we use Secure Sockets Layer (SSL) software with 128 bit minimum to 256 bit encryption strength. For credit card transactions, Lytica relies on secure payments through PayPal (<https://www.paypal.com/webapps/mpp/paypal-safety-and-security>).

CCE is intended to shorten the new product introduction (NPI) interval by providing valuable cost and sourcing information to development teams and their management. CCE is an application for predicting production level pricing. NPI pricing is supplier dependent and can range from free samples to many times the production price. Corporations are usually most interested in estimating the cost of a new product at volume production levels. If a company is too conservative in their cost estimates it may choose not to bring a product to market, too aggressive and the product may not reach the profitability levels that the corporation demands. CCE, a very effective cost estimating tool, helps users avoid these extremes.

A clear picture of the market value of a new product's materials is made visible by CCE. It characterizes the pricing of commercial components, not custom ones. Development teams see their components cost at real market prices. At the component level, supplier quotation comparisons to CCE estimates can identify which are appropriately priced and which are not. Management will see their product's cost accurately positioned in the marketplace and purchasing professionals will have per component price targets for negotiation. No need to waste time on internal debates over costs when market pricing and second sourcing information is at your fingertips.

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As the Component Cost Estimator is an industry first, some of the concepts behind the application require elaboration. This whitepaper details this new application and answers three common questions about CCE. They are:

- Why benchmark?
- How does Component Cost Estimator work?
- How will I benefit from it?

### Why Benchmark?

Benchmarking allows a company to determine, in absolute terms, how its performance compares to others using an external frame of reference. Most other measures of company performance, particularly those in the supply chain, are relative. For example, most companies measure cost performance against their historical results giving them relative, not necessarily relevant, information. Assessing a supplier's quotation against standards, the last quotation or the current price paid may be useful but not meaningful if your competitor is buying the same materials at half your price.

The traditional method of costing a new product is through an RFQ process or 'catalogue lookups'. These methods cannot be depended upon to determine appropriate pricing. While quotations are a necessary part of the purchasing process, they do not provide insight into whether a price is good or bad. Lytica is privy to many situations where companies have been paying well beyond market price. Had they known, they could have negotiated for much better pricing.

Quotations represent a supplier's starting position in a negotiation. Sometimes the quotation contains good pricing; other times not. Most of the time, without benchmarking from Freebenchmarking.com or Component Cost Estimator, the negotiator has no reference against which to gauge fair market prices.

The idea of a frame of reference is taught in most high school physics classes. Someone walking from the back to the front of the plane may be moving at 2 miles per hour with respect to the plane but, if the plane is flying at 500 miles per hour, they are moving at 502 miles per hour with respect to the ground. Quotations and internal comparisons only look at the 2 miles per hour walking speed. The world, and your competitors, may be moving much faster.

The CCE application makes use of external benchmarks, the prices being paid by others, to characterize the market pricing of individual components. CCE estimates your price using a price competitiveness factor derived from a characterization of your spending. This characterization is a form of benchmarking and is important for two reasons; first, it quantifies how your company is doing in the market place against potential competitors and second, it allows CCE to calculate pricing that is appropriate for you. If you have a competitiveness level of 65%, you should be paying 65<sup>th</sup> percentile prices. If you don't know your price competitiveness level, how do you know what you should be paying for components? If you are not using an independent reference, how can you judge a salesperson's guidance on price?

CCE provides benchmarks, not quotations. Lytica is not a component supplier; we operate independently of suppliers and manufacturers. Lytica has a policy and practice of not accepting fees or commissions from suppliers related to the sale of components to a client. We are completely objective and uncompromised in our supply chain recommendations. No suppliers will be calling as a result of using this, or any other, Knowledge Power Tool application.

### How does Component Cost Estimator work?

CCE makes use of Lytica's Freebenchmarking.com database which is the world's largest independent reference of current electronic component pricing. Freebenchmarking.com is another Knowledge Power Tool from Lytica. The CCE process uses this reference dataset at the individual component level to make statistical estimations of component prices. For each matched commercial component it estimates the market leading commercial price, the average commercial price and the "sweet spot" price your company should be paying.

The database is created through data obtained from Freebenchmarking.com clients. All of the reference data is cleansed, filtered, matched, tested and verified using proprietary tools and techniques before it becomes part of the reference dataset. All data is time stamped when received and prices used in the price distributions are current to 3 months. The part number data used to form match groups is not time sensitive.

Component price distributions are formed using groups of like components called match groups. A match group is a grouping of components deemed equivalent by Lytica's component engineers; they are functionally equivalent, drop in replacement components. Freebenchmarking.com's client data is screened and tested using proprietary tools to ensure our reference data does not consist of components with mixed specifications (mixed tolerance, voltages, footprints).

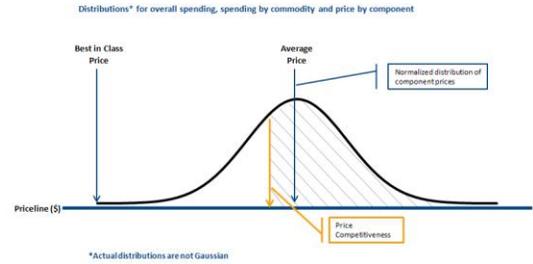
Mapping manufacturer's part numbers to each other is complex and often fraught with problems. It is important to ensure that our match groups contain truly equivalent components. Lytica's Knowledge Power Tools (including CCE and Freebenchmarking.com) have a high degree of IP that ensures match integrity for the customer. Our tools do the majority of the matching and map the components of different suppliers to the appropriate match group. Lytica's veteran component engineers create the algorithms and undertake ongoing quality audits of results. The initial matching of components comes from our customers' approved vendor list (AVL) where clients are using components as alternate sources (drop in replacements). Additional match integrity is assured as all components are analysed by Lytica's proprietary Parameter Interrogation Tool (PIT) which extracts the primary electrical and mechanical parameters for each component (voltages, tolerances, power, package types, etc.) to ensure exact parametric and footprint matching (form, fit and function). The set of primary parameters to be used for comparison in each commodity is selected by our component engineering team. All components within a match group must match exactly on all primary parameters.

In CCE each submitted component is analysed against its match group. Lytica sets standards for the number of samples that a distribution must contain before an estimate can be made. As a result, Lytica will not report results for all components submitted as there may be insufficient unique price points in their distribution that meet our sample size criteria.

All prices reported by Lytica's Knowledge Power Tools are statistical estimates. Raw data received from Freebenchmarking.com customers is confidential and never shared. We do not reveal the names of our customers nor do we disclose any of the data provided to us. Our reference library is created from Freebenchmarking.com clients, not those of CCE. CCE does not collect any company's pricing data; it is a one way exchange of information based on submitted manufacturer's part numbers. We do not request price or volume information with CCE. Lytica does collect information on CCE match rates as a quality metric.

## Component Cost Estimator

The details of Lytica's calculations for average, market leading and "sweet spot" pricing are proprietary. Some insight into how the calculations are made can be obtained with the use of a Gaussian curve as shown at right. Recognize that the distributions of real component prices are not Gaussian and the explanation that follows is meant to be illustrative, not exact or accurate.



The estimation concept is similar to a probability calculation using a Gaussian (or normal) curve. As with probability calculations, if the mean and standard deviation of a distribution are known along with a position along the "X" axis, the area under the curve to the right of "X" axis position can be calculated. As the total area under the curve represents 100%, the area to the right of the "X" axis position in probability calculations is the probability of occurrence. In our case, this area represents your price competitiveness value for a component when its price is positioned on the "X" axis in a price distribution of like components.

Statistically derived price competitiveness is a ranking expressed as a percentile where 100% represents best in class spending performance. A 50<sup>th</sup> percentile company would be average, companies ranked less than 50% would be worse than average.

In actual distributions, the average does not align with the median or mode and the right hand side of the curve is very elongated. Lytica has developed proprietary algorithms and formulas for determining these key statistical parameters. Estimates from our characterization method have proven accurate when tested in actual price negotiations and to be reliable for non-registered component pricing. Our algorithms are validated by Lytica's success both when our negotiation services are contracted by clients and independently by our customers who are able to achieve our estimated prices in negotiations.

Lytica characterizes a company's price competitiveness by analysing the company's spending using the statistical method described above. The price competitiveness setting in CCE allows the user to estimate their company's specific "sweet spot" prices and have them reported along with the average and market leading values when the user inputs an appropriate competitiveness level.

The price that any company pays for a component depends on a number of factors. Some of these factors are total commodity spending, payment days, payment performance, channel and geography amongst others. One interesting discovery from Freebenchmarking.com is that pricing and volume aren't as strongly correlated as the many in the industry think. The best pricing levels have the strongest correlation with successful negotiations. Since not all of these price influencing factors are available, and their significance varies from company to company as well as from supplier to supplier, price competitiveness is an excellent proxy from which targets can be derived. Competitiveness integrates the effect of all of these factors and enables reasonably accurate company specific predictions of pricing.

Devices with low production volumes most often have their price determined by the commodity spending rather than at the individual component volume level. If the component is low volume within a larger volume commodity, then the CCE estimate is reasonable. If all components within a commodity are low volume the competitiveness level would be low and the price estimates would reflect this fact.

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The CCE tool is meant to give the customer a 'real world' substantiated idea of what they can expect this pricing level to be. Lytica's Knowledge Power Tools – Freebenchmarking.com and Component Cost Estimator - are the only tools that benchmark against real world prices.

Competitiveness levels can be calculated at the overall spending level, the commodity level or for individual components. The estimation of a "sweet spot" price uses the individual component's price distribution and the competitiveness level demonstrated to be achievable from a company competitiveness characterization at the commodity level. The "sweet spot" for each component is the price associated with the company's commodity competitiveness within the individual component's price distribution.

Users of Lytica's Freebenchmarking.com reports will know their price competitiveness level from their Gold or Silver reports which can be used as the competitiveness setting in the CCE application. Freebenchmarking.com Silver reports are available free of charge through the freebenchmarking.com website for any company that wants to assess its price competitiveness.

An alternate method of approximating price competitiveness requires entering 10 to 20 production components into CCE and adjusting the competitiveness setting until the estimated price matches the price that you are currently paying. While this is time consuming, averaging these competitiveness levels for each component will provide a reasonable approximation for your company to use with your NPI BOM assessment. Competitiveness is set in the tool after the matches are completed and results are displayed. On the results page of the application, there is a drop down menu of price competitiveness settings from 30% to 90% in 5% increments. By choosing the appropriate level, the application will present a price appropriate for you.

### How will I benefit from it?

There is no need for designers and supply management to argue about suitable component pricing or struggle to identify reliable second sources. This information is quickly accessed in CCE, which performs a real-time analysis of 500 unique components in about one minute and provides high component match rates.

Our clients are finding significant savings by addressing mispriced components in both their production and new product bills of materials. One specific area of critical importance to new product costing and price negotiation is to get the pricing on high intellectual property sole sourced components set correctly. Knowing your benchmark price for these components lets you agree to the price before the design award is made. Once the award is made your supply chain is most likely registered and you will have no negotiating leverage.

You also benefit by having access to high likelihood alternate sources so that new designs get introduced with a high level of security of supply.

The bottom line is that our customers are saving money in significant ways. Experience how some of the world's premier companies and your competitors are gaining competitive advantage in new product introduction time and cost. The CCE BoM costing and alternate sourcing application is a "must have" tool for electronic designers.



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