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Price Analysis
The Rules and the “Art”

Breakout Session #I01

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Date: July 29. 2020
Time: 2:45 PM – 3:45 PM EST

Learning Objectives

- Understand price analysis policies, terminology and methods
- Identify and apply appropriate price analysis methods
  - Comparison of proposed competitive prices (adequate price competition)
  - Comparison with historical pricing information
  - Use of parametric or cost estimating relationships
  - Comparison with published price information
  - Comparison with the government's independent cost estimate
  - Comparison with market research price information
  - Using other than certified cost or pricing data provided by the offeror
- Adjusting cost or prices for time, quantity and other differences

Pricing Policy (FAR 15.402)

- If certified cost or pricing data are not required, obtain data necessary to establish a fair and reasonable price; using this order of preference:
  - No additional data from the offeror, if the price is based on adequate price competition
  - Data related to prices available within Government
  - Data related to prices from sources other than the offeror
  - Data related to prices from the offeror (e.g., sales of same or similar items)
  - Cost data from the offer to the *extent necessary* to determine F&R price
- Obtain the type and quantity of data necessary to establish a fair and reasonable price, but not more data than is *necessary*
  - Requesting unnecessary data can lead to increased proposal costs, extended acquisition lead time, and wasted government & contractor resources

Price Analysis (FAR 15.404-1(a)&(b))

- Price analysis: examining and evaluating a proposed price without evaluating its separate cost elements or profit
  - Objective: to ensure agreed to prices are fair & reasonable
- Price Analysis *shall* be used when certified cost or pricing data does not apply
- Price analysis should also be used to verify cost analysis performed
  - Example: Joe's Garage could build you a Chevy Impala…for $2.3M
- Analytical techniques and procedures described in FAR may be used, singly or in combination with others

Price Analysis Methods (FAR 15.404-1(b))

- CO may use various techniques and procedures, including:
  - Comparison of **proposed prices received** in response to a **competitive** solicitation*****
  - Comparison of proposed prices to **historical prices paid***
  - Use of **parametric estimating** methods/application of "rough yardsticks"
  - Comparison with competitive **published price lists**, published market prices
  - Comparison of proposed prices with **independent Government cost estimates**
  - Comparison of proposed prices with prices obtained through **market research**
  - Analysis of data **other than certified cost or pricing data** provided by the offeror
- These are "examples" other methods may be used!

* The first two methods are preferred

Adequate Price Competition

- Preferred method for determining prices to be fair and reasonable
- Criteria: Two or more responsible offerors, competing independently, submit priced offers; price is a substantial factor in selection for award
  - "Responsible" offer must meet seven standards (FAR 9.104), of note:
    - Have a satisfactory record of performance (lack of past performance not a bar)
    - Have a satisfactory record of integrity and business ethics
    - Have necessary operational controls and technical skills (or ability to attain)
    - Have necessary production, facilities and equipment (or ability to attain)
    - Be otherwise qualified (approved source) and eligible (not an excluded party)
  - "Competing independently"
    - Firms are independently owned and operated business entities
    - There is no collusion among, or pre-agreements made between the competitors
- Do **not** compare prices of non-qualified or non-responsible offerors

Adequate Price Competition (cont.)

- Keep in mind that competition can exist yet not be “adequate” or adequate but not actually “effective”
  - Distributors proposing the same manufacturer’s product?
  - Vendor market dominance – no other viable competitor
- Multiple firms solicited; only one offer received (15.403-1(c)(1)(ii))
  - Reasonable expectation that two or more responsible offerors, competing independently, would submit priced offers
    - Contracting officer can reasonably conclude that the offer was submitted with the expectation of competition, e.g., circumstances indicate that --
      - Offeror believed at least one other offeror capable of submitting offer, and
      - No reason to believe other potential offerors did not intend to submit
    - The determination that the proposed price is based on adequate price competition and is reasonable must be approved at a level above the contracting officer

Adequate Price Competition (cont.)

- DFARS 215.371 additional restrictions when only one offer is received
  - Assess whether requirements should be revised to promote more competition
  - Seek and document feedback from interested sources that did not respond
  - Use feedback to consider action(s) to overcome barriers to competition
  - If less than 30 days allowed for receipt of proposals, resolicit allowing 30 days
  - If only offer again results, the CO *shall* negotiate price as if action is sole source
  - Applies to DOD buys above the simplified acquisition threshold
- Potential alternatives to address “only one offeror” concerns
  - Critique/question overly restrictive requirements
  - Use market research to ensure capable sources are interested in responding
  - If only one response is likely, contact potential offerors before solicitation closes
  - Use additional method(s) of price analysis to evaluate single offer’s price

Price Analysis Based on Historical Prices

- The second most preferred method but essential to understand the basis for determining the historical prices to be fair and reasonable
  - Ideally, the historical prices were established based on adequate price competition
  - Prices for the same or similar items may be considered—if similar, consider price impacts related to differences in attributes/characteristics
  - Prices paid by government and non-government buyers may be considered
- Consider recency of the historical prices used for comparison
  - Ideally, one year or less but depends on the degree of market stability/volatility
  - May need to adjust for economic or quantity differences (more on this later)
- Historical vendor pricing is a good method for evaluating commercial items
  - Established commercial prices evidenced by a history of sales made to government and non-government customers—a fair market price if all customers pay the same
  - Technical analysis may be required to address any modifications to commercial items

Price Analysis Based on Parametric Estimates

- Cost estimating relationships (CERs) can be developed, or existing CERs used; relate prices to product physical or performance characteristics
  - A common example is price per square foot of a type of building
  - Buying activities can develop their own CERs based on an established history of buying the same or similar items or widely accepted market-based CERs may exist
  - Reliable CERs are based on many independent transactions and are validated through periodic testing against actual prices paid
  - Data used to create a CER should be current or adjusted for economic impacts
  - CERs should only be used within the "range of relevant data" because relationships may differ outside of that range
- May also be a good method for evaluating prices of commercial items, if competitive price lists are available to develop and validate the CER
  - Example: continuous AC/DC power transformers—price per volt-ampere power rating

Price Analysis Based on Competitive Price Lists

- Method is based on publicly available catalogs or price lists that evidence established market prices for commodities or types of products/services
  - Generally, competition should exist in this environment, but vendor products may still be unique in terms of specific attributes, resulting in little or no competition
  - Markets that publish price information provide transparency for buyers; sellers must remain competitive to stay in business; each tries to differentiate based on quality
  - Can consider offeror price lists and/or competitor price lists; market prices for commodities may also be published by independent sources
  - Uses published information provided by vendor or collected through market research
- Analysis/negotiation must also consider typical discounts or rebates and any differences in the contracting situation
  - For example: customarily provided services with a product, warranties, etc.; if government requires/receives less, it should also pay less

Price Analysis Based on Government Estimate

- A price comparison method which may be useful, but it is important to understand the basis of the independent government estimate (IGE)
  - Value analysis: detailed bottoms-up by cost element, estimating quantities and types of material and labor along with typical rates more useful
  - Visual analysis: inspects the item or drawings to estimate probable value—generally subjective expert opinion, helpful as an order of magnitude check
  - Estimates based on prior purchases/market pricing may not be very helpful –better to compare to directly compare prior purchases or market info
- Comparing proposed prices with the IGE can be a good additional check when using adequate price competition and only one offer is received

Price Analysis Based on Market Research

- Data collected from market research for the same or similar items can be useful
  - Internet is a terrific resource to quickly find price information—the more usable reference points the greater confidence in reasonableness conclusions
  - Industry associations may provide average market prices for certain types of products or services
  - Existing government ordering contracts (ID/IQ or requirements) can be used including DOD Corporate or DLA contracts and GSA Federal Supply Schedules
  - Must consider pricing from multiple sellers, not just one seller's price
  - Government supply/purchasing data bases also provide potential comparative price information for similar parts; important to understand prior price basis
- Ideally, technical experts will assess product differences for similar items and provide estimates of applicable cost differentials

Price Analysis Based on Cost/Price Information

- If no other reliable source can be found to support price analysis, buyers may need to obtain "other than certified cost or pricing data" including:
  - Detailed information from vendor regarding prior sale prices and customers
  - Other internal corporate information which supports the proposed price
  - Information and rationale to support differences in prices for similar items
  - Cost breakdowns summarizing major elements of overall costs and additional support for specific areas of concern
  - Could be the same as certified cost or pricing data just without certification
- Requests for this kind of information should be limited to specific areas of concern based on initial price analysis
  - Information should be accepted in a format selected by the offeror

Adjusting Prices or Costs for Comparison

Reasons for Adjustment

- When conducting price analysis, analysts will often compare other prices to proposed prices to assess reasonableness
- Adjustments may be necessary for valid comparisons due to differences in
  - Market conditions
  - Quantity or size
  - Geographic location
  - Purchasing power of the dollar
  - Extent of Competition
  - Terms and Conditions
  - Technology
  - Features and attributes

General Steps for Adjusting Cost/Price

- Identify and document price-related differences, considering the factors affecting comparability
- Factor out price-related differences using quantitative techniques and assigning a dollar value to identified difference(s)
- A variety of sources are available for quantifying estimated adjustments
    - Government labor surveys
    - Government or commercial price indices
    - Other representative prices for similar products and services
- Judgement often required; if difference can't be quantified, use subjective analysis; at a minimum, estimate a plus or minus price impact on price
- Establish a range of reasonableness to assess proposed cost or prices
- Document the results of analysis, methods used and sources of information

Adjusting for Market Conditions

- Markets change over time due to changes in supply, demand, technology, product designs, pricing strategies, and laws and regulations affecting costs
  - Comparing two prices separated by 5 years considering only inflation may not produce a meaningful result
  - Generally select the most recent prices available or, even better, look for prices that were established under similar terms and market conditions
  - Some commodities may experience seasonal variations; market knowledge is key
- Consider and quantify cost/price impacts on similar items if more price related information is available for those items
- Technical evaluations may be required from subject matter experts who understand unique market conditions or product attributes
- If unable to estimate impacts, only compare prices known to be based on similar market conditions

Adjusting for Quantity or Size

- For supply purchases
  - Larger quantities typically result in lower prices but sometimes increases will tax vendor capacity and could result in higher prices
  - For commercial items continually produced in large quantities, larger buys may have little or no impact on purchase price
  - If two or more previous procurements of different quantities exist, price-volume analysis may be used to estimate fixed and variable aspects of price (next slide)
- For service procurements
  - Differences in size can sometimes be dealt with by reducing the comparison to price per square foot, price per productive labor hour, or some other factor
  - If that approach is not effective, try to factor out size or quantity variations by using only similarly sized comparisons

Quantity: Price – Volume Analysis

- All production efforts include fixed costs (start-up, facilities, etc.), variable costs (material, labor), and semi-variable* (supervision, utilities)
- Given two known purchase prices at different quantities (assuming a linear relationship) fixed and variable costs can be estimated to project prices
- The formula to estimate variable cost per unit is: $\dfrac{P_1 - P_2}{Q_1 - Q_2} = V_u$
- Where:
  - P1 = Total price for purchase 1
  - P2 = Total price for purchase 2
  - Q1 = Total quantity for purchase 1
  - Q2 = Total quantity for purchase 2
  - Vu = Variable cost (price) per unit

* Treated as variable costs when using this estimating method

Price – Volume Analysis (continued)

- Using one of the purchase prices, calculate estimated total fixed cost

$$FC = TP - (V_u \times Q)$$

- Where:
  - FC = Fixed Cost
  - TP = Total Price (for known quantity)
  - Vu = Variable cost (price) per unit (calculated on previous slide)
  - Q = Quantity (associated with the total price used)
- Use the same formula (rearranged) to estimate the total price for a different quantity: $TP = FC + (V_u \times Q)$
- Method is generally not reliable outside of the range of relevant data

Cost/Price – Volume Analysis (continued)

- Example:
  - Purchase 1: 100 units @ $15.00 each = $1,500.00
  - Purchase 2: 400 units @ $11.25 each = $4,500.00
- Calculate estimated variable cost per unit: $\dfrac{\$4{,}500 - \$1{,}500}{400 - 100} = \$10.00$
- Calculate estimated fixed cost: FC = $4,500 – ($10.00 x 400) = $500
- Estimate total and unit price for 250 units: TC = $500 + ($10.00 x 250)
  - Total price = $3,000, Unit price = $3,000 / 250 = $12.00
- Method can also be used by graphically plotting the two known purchases and identifying the total price for the current purchase

Cost/Price – Volume Analysis (continued)

- Linear equation:
  - $TC = FC + (V_u \times Q)$
  - $TC_x = \$500 + (\$10 \times Q_y)$
- X intercept = $500
  Fixed Cost
- Slope = $10 x Quantity
- Range of relevant data:
  - Qty >100 and <400

Adjusting for Geographic Location

- Geography can have a range of effects on comparability factors include
  - Extent of competition in the geographical region
  - Prevailing labor rates due to higher cost of living or labor supply shortages
  - Freight, shipping or other transportation costs
  - Facility rent/lease or ownership costs and utility costs
- Prices for nationally advertised products will, generally, not vary much from place to place
- Service contracts can be significantly impacted by prevailing wage differences
- Ideally use only prices for the same or similar areas for comparison
- If not possible, consider adjustments using government data such as wage surveys or commercial market survey data

Adjusting for Purchasing Power

- Inflation undermines comparability by eroding the real value of money since prices are based on the same units of currency (i.e., dollars and cents)
- These impacts can be factored out by using price indices, but it is important to select an index that is representative for the item being purchased
  - Price index numbers measure relative price changes from one time period to another
  - Most readily available and commonly used indices are the Department of Labor’s Producer Price Indexes (PPI) for specific commodity groupings and products
    - PPI (https://www.bls.gov/ppi/home.htm) measures average change in prices received by producers for output; monthly sample of 100,000 selling prices
    - Thousands of index values are published monthly by the Department of Labor
    - PPI Series codes correspond to NAICS industries (www.census.gov/naics) (e.g., 3364XX = Aerospace Product and Parts Manufacturing)

Example Using PPI Indexes to Adjust Prices

- A current (Jun 2019) proposal of $1,030 each for a Boeing 737 aircraft strut
- You find a prior competitive price paid of $958 for the same item in Dec 2017
- You need to adjust the prior price to the current time period to make a comparison
- You find the part is properly classified as NAICS 336413, “Other Aircraft Parts and Auxiliary Equipment Manufacturing”
  - Dec 2017 Index = 181.2
  - May 2019 (preliminary) Index = 185.7
- The formula to project a price is: P2 = (I2 / I1) x P1
  - Where: P1 is the historic price, P2 is the projected current price, I1 is the index for the period of the historic price, and I2 is the current (most recent) index
- P2 = (185.7 / 181.2) x $958 or 1.0248 x $958 or $981.79 (~2.5% increase)
- Proposed price exceeds the estimated “should pay” price by $48.21 (about 5%)

Adjusting for Extent of Competition

- When comparing one price to another, consider any differences in the competitive environment and potential impacts
- If a prior price was established without competition, assess conditions to identify any unique conditions which may have applied
  - For example: urgency, poorly written specifications, other uncertainties, etc.
  - Unless those same conditions apply to the current buy, the comparison may be meaningless
  - The current price could be the same, or even less, and still not be reasonable
- Ideally, the competitive environment should be equivalent for the prices being compared; it this is not possible, consider other pricing methods

Adjusting for Terms and Conditions

- Terms and conditions related to a contract include things like packaging, delivery, financing, discounts, payment terms, warranties, etc.
- The analysis must account for such differences prior to comparing prices
- Examples:
  - Prices for routine delivery may be lower than those with expedited schedules
  - Products offered with extended warranties may cost more
  - Supplies packaged for international delivery may cost more than domestic destinations
  - A contract with no financing may cost more than one with government financing
- Again, best comparisons are prices with comparable terms and conditions
- If not possible, attempt to estimate likely cost impacts associated with differences

Adjusting for Changes in Technology

- Prices from “dying” industries can increase because of smaller production quantities and parts obsolescence
- While technology advances in growth industries can rapidly drive prices down –laptops, computers and accessories are a classic example
  - Often greater performance capabilities can be obtained for less the prior buy
- In either case, leveraging competition is key to controlling cost growth or taking advantage of decreasing prices
- Expert market knowledge may be used to understand the relationship between technology differences and price
- Basic consumer knowledge may also be helpful if items are sold commercially to the general public

Adjusting for Features & Attributes

- When comparing prices between similar products or services, the analysis must consider the cost/price impacts of differences between deliverables
- Start by describing any known physical, functional, and performance differences
  - Consider size, weight, materials, capability and performance differences
- Input from subject matter experts may be very valuable for estimating cost/price impacts associated with the differences
- Parametric methods may be helpful

Conclusion

It’s a tough job, but someone’s got to do it!

Conclusion

- All government purchases must be determined to be fair and reasonable
  - Price analysis based on adequate price competition is the preferred method, but many other price analysis methods may be used (even if not identified in the FAR!)
  - It all comes down to demonstratable facts and sound judgment applied by the CO
- If a proposed price is not reasonable, negotiations must be conducted
- Documentation must “tell the story” regarding price analysis
  - Micro-purchases generally assumed to be reasonable even without competition
  - Simplified acquisitions require less documentation than over threshold actions, but analysis and conclusions must be supported
  - Major procurements require more robust analysis, negotiations and more extensive documentation
- Reviewers may disagree (in hindsight) but the CO is responsible for making the determination; ensure your analysis and rationale is well-documented

Useful Information Sources

- DOD's comprehensive five-volume set of cost and pricing reference guides
  - Volume 1: Price Analysis
  - Volume 2: Quantitative Techniques for Contract Pricing
  - Volume 3: Cost Analysis
  - Volume 4: Advanced Issues in Contract Pricing
  - Volume 5: Negotiation Techniques
- Market Research and Commercial Item Pricing Guides
  - SD-5 Market Research – Gathering Info About Commercial Items (DSPO)
  - Commercial Item Determinations Guidebook – Part A (DOD)
  - Commercial Item Pricing Guidebook – Part B (DOD)
- These and other pricing and cost estimating guides are posted on our website at: https://daytonaero.com/defense-acquisition-library/