

6. GATHERING AND EVALUATING DATA FOR PRICE ANALYSIS

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6.1 PRICE DATA OVERVIEW

This chapter addresses sources of price data, price data considerations, and the evaluation of price data elements. Generally, data are classified in one of two ways: 1.) cost and pricing data or 2.) information other than cost and pricing data. For the purpose of discussion throughout this chapter, the general term “data” is utilized and refers to both of these types of data. When a distinction between the two types of data is necessary, the specific terms will be used. Table 6-1 provides definitions and examples of essential price data terms.

Table 6-1 Definitions and Examples of Price Data Terms

Term and Definition	Examples
<p>Cost and Pricing Data: All facts that, at the time of the price agreement, the seller and buyer would reasonably expect to affect price negotiations. Cost and/or pricing data are data requiring certification. Cost or pricing data are factual, not judgmental data, and are therefore verifiable. [Federal Aviation Administration Acquisition Management System (FAA AMS, Appendix C (Definitions))]</p>	<ul style="list-style-type: none"> • Vendor quotations • Nonrecurring costs • Information on changes in production methods and in production or purchasing volume • Data supporting projections of business prospects and objectives and related operation costs • Unit-cost trends such as those associated with labor efficiency • Make or buy decisions • Estimated resources to attain business goals • Information on management decisions that could have a significant bearing on costs
<p>Information other than Cost and Pricing Data: Any type of information that is not required to be certified and is necessary to determine price reasonableness or cost realism. (FAA AMS, Appendix C)</p>	<ul style="list-style-type: none"> • Pricing, sales, and cost information • Cost or pricing information which is determined inapplicable after submission
<p>Cost: The amount of money expended in acquiring a product or obtaining a service, or the total of acquisition costs plus all expenses related to operating and maintaining an item. [Armed Services Pricing Manual (ASPM)]</p>	<ul style="list-style-type: none"> • Direct labor • Direct materials • Other Direct Costs • Indirect expenses (i.e., G&A, overhead, cost of money, etc.)
<p>Price: The cost plus any fee or profit involved in the procurement of a good or service. [FAA AMS, Appendix C]</p>	<ul style="list-style-type: none"> • Catalog prices • Commodity prices • Vendor quotes

6.1.1 Price Data Requirements

Government acquisition policy concerning price data requirements has changed significantly. The purpose of this change is to minimize the burden experienced by both the Government and the contractor that is associated with gathering and reviewing certified cost and pricing data. As a result, a hierarchical approach for requiring price data has been developed. When utilizing this approach, the analyst must determine whether adequate competition is present (this process is discussed in Chapter 5, "Price Analysis"). If adequate competition exists, the offeror need only provide minimal price data for a good or service and should not be asked to submit additional cost or price information.

Hierarchy of Price Data Requirements:

- | | |
|-----------|---|
| Level 1.) | No further information is required from the contractor if the price is based on adequate competition. |
| Level 2.) | Information other than cost and pricing data. |
| Level 3.) | Cost and pricing data. |

6.1.2 General Price Data Considerations

The preceding chapter, "Price Analysis", explained the concepts, techniques, and issues relating to price analysis. Data are essential components of that analysis. There are three sources of data:

- Offeror-supplied data,
- Government data, and
- Industry and company-specific data.

Within each of these sources there are several types of data. Deciding which sources to use, how much and what kind of data to collect, and how to organize and use data are the goals of the data gathering task. Table 6-2 is an adaptation from the ASPM (Volume 2, Chapter 16, 1987) which outlines various issues to be considered when gathering price data.

Table 6-2. Concerns for Price Data

Type of Product	Type of Market
<ul style="list-style-type: none"> • Is the product a basic commodity with established trading organizations? Raw materials, foods, and other staples are often sold on exchanges for which excellent market data exists. These data may help when making bulk purchases. • Is the product a general-purpose commercial item with major retail and wholesale markets? Products may be sold at established catalog prices. Retail or wholesale catalogs may indicate fair and reasonable prices. Publications such as Producer Price Index (PPI) and <i>Consumer Reports</i> may provide useful information on price and quality issues. A competitive market may be expected. The primary source of data may be the bids themselves. • Is the product built to Government specifications? 	<ul style="list-style-type: none"> • Is the market stable or fluctuating? In a stable market, historical data are useful (adequate competition is likely to have existed and changes in relative values of prices are fewer). In inflationary markets, Government price indices help determine realistic escalation rates. For technologically advancing markets, journals often report product improvements and price decreases due to obsolescence. In markets threatened by foreign competition prices are often affected. • Is the market broad-based or does it tend toward monopoly? The existence of many suppliers reduces the need for data since competition should drive price to the lowest level. Failure of suppliers to respond may indicate a problem with specifications. An independent technical review may be required. • Are there other buyers?
Agency Expertise	Time of purchase
<ul style="list-style-type: none"> • Is the product within the requisitioner's area of expertise? If the requisitioner repeatedly relies on a given market, confidence in the Government estimate can increase. If the activity is buying outside its mission or for a new mission, outside technical assistance and the experience of other agencies may help. 	<ul style="list-style-type: none"> • What is the time of the purchase? Market data from published sources may indicate a potential for countercyclical buying (buying when demand is down and supply is up). Trade journals may indicate unusual price increases caused by brand-name popularity. Identification of other products may be necessary. Government indices, market surveys, and trade journals may forecast price changes and thus indicate a buying strategy of either stocking up to hedge against shortages or delaying purchase until a price decreases.

6.2 SOURCES OF DATA

The source of data is an important consideration when evaluating the validity and reliability of data. The following sections examine the three sources of obtaining data (Offeror-supplied data, Government data, and industry and company-specific data) and point out the issues to bear in mind when utilizing each.

6.2.1 Offeror-Supplied Data

Offerors submit proposals for an acquisition which contain considerable amounts of data. To ensure essential data are supplied, specific data requirements should be included by the FAA in the solicitation for proposals. If cost and pricing data are not required, submitted data should include, at a minimum, prices and quantities at which the same or similar items have been sold previously.

EXAMPLES OF OFFEROR-SUPPLIED DATA

- Past prices
- Past quotations
- Data regarding commercial products, submitted on a form SF 1412, or equivalent, can be used to support an exemption from the requirement to submit cost or pricing data
- Data regarding past contracts for similar work (often required to demonstrate responsibility)
- Line-item prices to analyze whether a balanced proposal has been submitted
- Supplier catalogs and subcontractor data offered, for example, to support an "or equal" determination

Depending upon the procurement situation, the analyst may need to review offeror-supplied data as part of determining fairness, reasonableness, and realism. However, the goal of these offerors--to maximize profit while seeking to remain within a competitive range--should be considered by the analyst when evaluating the validity and reliability of such data.

6.2.2 Government Data

Data from Previous Contracts

Data from previous contracts include past quotations, offers, and prices. However, comparability of products under the proposed and previous contracts and applicability of past prices to current prices must be considered. These data are subject to the same scrutiny as all historical data. These criteria are discussed in section 6.3.

Many contracting offices do not have uniform, automated databases of contracting cost and price information. Some offices maintain either manual or automated systems which may be indexed by commodity or service.

Other offices may organize data by contract number or by contractor. These situations make data gathering and comparison very time-consuming. In these instances, experienced contracting officers or other personnel with

EXAMPLES OF GOVERNMENT DATA

- Purchase request estimate
- Government cost estimate
- Past prices paid for the same or similar requirement
- Past offers
- Government catalogs
- Federal Procurement Data System
- Federal supply schedules

detailed program knowledge are valuable resources.

Estimates

Sometimes Independent Government Cost Estimates (IGCEs) are available. (See Chapter 5 for information regarding IGCEs). Before using an IGCE, the analyst must know the basis for it; have an idea of the reliability of the estimate and how the estimate was made; what information and tools were used; where the information came from; and how earlier estimates compare to resulting contract prices. If available, the purchase request estimate can be used to identify discrepancies in the IGCE.

Catalogs/Databases

There are two types of catalogs: Government catalogs (many of which are catalog arrangements) and contractor catalogs. Catalog arrangements are similar to commercial catalogs and cover prepriced spare parts (material for separate supply and replacement for required maintenance, overhaul and repair of equipment). Two examples of catalogs are the General Services Administration (GSA) and Government Technology Services, Inc. (GTSI) catalogs. Similar to catalog arrangements are federal supply schedules that identify commercial products or services on schedules at a competitive price and with favorable terms. All of the above are acceptable sources of data.

The Federal Procurement Data System is an automated database which identifies current Government contractors, what was purchased, and whether the purchase was competitive. It also has information that might be used as a source for past procurements of the same or similar supplies or services. The Federal Procurement Data System can be accessed online at <https://www.fpds.gov>. GSA publishes general procurement information in its "Annual Federal Procurement Report". GSA also provides more detailed information upon request. A commercially maintained database found online at www.input.com includes price information on published prices including those from GSA schedules, multi-agency contracts, multi-award contracts, etc. This site provides very useful data for price analysis.

Other Government Data

The Census Bureau, Bureau of Labor Statistics, the Bureau of Economic Analysis, and many other agencies collect, maintain, and report pricing data of thousands of products, services, and commodities. This information is often in the form of indices which can be used to adjust current data to reflect historical information. When using an index, be certain to select the index which reflects the consumer role assumed by the Government. For instance, is the Government acquiring a finished good (like computers) or intermediate materials like copper wiring or machine parts? An index should be

chosen according to the good purchased, regardless of its finished product. For instance, assume the Government acquires memory chips for an aircraft computer. Memory chips--not the aircraft computer--should be the basis for selecting an index.

Sometimes data do not provide sufficient insight into prices. If this situation occurs, there are several sources of additional help. For instance, there are many experts within various Department of Defense (DoD) branches who are available for advice on construction costs, product design, manufacturing, and pricing. By contacting the cost centers of the various branches of the DoD, one can be referred to a point of contact for a specific area or expertise. In addition, the National Technical Information Service (NTIS), an agency of the Department of Commerce, publishes technical data, which are available for a fee, on a wide range of products. This service is very useful because information from this source can be utilized by the analyst to determine technological advances in a product which may affect the product's quality, comparability, and price.

6.2.3 Industry and Company-Specific Data

Industry data are what the name implies: data which describe the market as a whole. One example of industry or market data is the market price of a particular good. The market price is the price which results from the forces of supply and demand acting on the manufacturers of the good being priced. Catalog prices represent a contractor's stated price, which may or may not reflect the true market price of the item as determined by forces of the marketplace.

Company-Specific Data

Catalogs are the primary source for company-specific data. The Internet has many online catalogs. A search engine (e.g., Google or Yahoo) can be used to locate catalogs by entering search terms such as the generic name of the product (e.g., computer instead of Macintosh), catalog, and any other descriptors.

Industry Data

Industry or market data is a broad category which includes informal telephone quotes, prices advertised in trade journals, or formal market surveys. Trade associations, user organizations, and individual companies regularly provide information. Appendix 6A (located at the end of

MARKET DATA SOURCES

- Online Catalogs
- Newspapers, for ex. "Science" section, NY Times
- Trade journals
- Market indices
- Trade/industry publications
- Trade and business association directories

this chapter) lists several industry-specific associations, directories, and journals. The most exhaustive list of trade journals is available in the “Index to Periodicals” at most large libraries.

Buyers’ guides provide purchasing advice to consumers and the guides are available for many goods and services. One example is *Consumer Reports* which provides an objective analysis of many consumer goods. Analyses provided in buying guides

incorporate many factors. Price is usually a major factor but quality and performance are also considered in the evaluation process. As a result, the lowest priced product may not be rated the highest. Instead, the product option with the best combination of quality and reasonable price will be recommended to the consumer. Other buying guides can be found in industry-specific journals or in general publications such as *Business Week*.

North American Industry Classification System (NAICS) is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the US business economy. NAICS was adopted in 1997 to replace the SIC system.

An **establishment** is an economic unit where business, services or industrial operations are performed.

6.3 CONSIDERATIONS REGARDING DATA

When faulty data are used to arrive at a decision, the decision is most certain to be unwise. Data problems are elusive because data are generally presented as numbers which have no intrinsic value. The difficulty lies in analyzing the data and identifying areas of error. Examining data requires familiarity with the task at hand (price analysis in this situation) and the data itself (what problems are likely to need correction). The following sections discuss the general considerations for gathering data: timing, quantity and kind, quality, and use of historical data.

6.3.1 Timing

To be useful, data must be collected in a systemic and timely manner. This means that data needs such as scope, sample size, and horizon must be anticipated to budget adequate time for data gathering. The method of organization and sources of data should be decided early in the data gathering process. If a market survey is necessary, time for survey preparation and data collection and analysis must be scheduled. If informational quotations will be used, time for advertising, source selection, mailing, and response should be scheduled. In procurements where you are not familiar with the technical issues, decide in advance what technical assistance will be needed and make the necessary arrangements.

6.3.2 Quantity and Kind

In essence, an analyst must know how much and what kind of data are needed

with the product or service to be acquired. The quantity of data available for an analysis is important. Generally, the largest possible sample (without generating excess burden on the Government or the offeror) is preferable because a larger sample size reduces the effect of abnormally high or low prices. The kind of data refers to the information conveyed (e.g., wholesale versus retail prices). Since gathering inappropriate data often necessitates repeating the gathering process, the kind of data to gather must be considered carefully before beginning the process. In short, the objective is to obtain the data that are necessary to determine and demonstrate the reasonableness of prices.

6.3.3 Quality

Three components determine quality of data: accuracy and relevancy, completeness, and currency. Accuracy and relevancy relate to whether the product is in stock and whether the products for which data are available and the product being acquired are comparable. Completeness pertains to the inclusion of information on sale prices to dealers and price differentials for warranty, material, and design. Currency considers whether the information is so outdated that it is useless because the circumstances have changed.

Accuracy and Relevancy

Several situations or factors may affect the accuracy and relevancy of data. A vendor may artificially inflate prices in anticipation that the negotiation process will reduce the price. This renders the proposed price invalid. Another consideration is the market for the product or service. In an environment with perfect competition, the prices of goods and services accurately reflect the true costs involved, and profit will not be overstated (understated) due to excess number of buyers (sellers).

Published prices are better than phone quotes because published prices must be upheld by the vendor. In contrast, phone quotes are subject to conjecture and can be denied later. There are several other guidelines an analyst can follow to determine the accuracy and relevancy of a price. The analyst should verify that the good is for sale at an advertised price and analyze the conditions affecting the offered price, i.e., the terms of sale. For instance, the price must reflect the quantity that the Government requires. Prices are generally lower when large quantities are purchased. Therefore, a reduced price may not be applicable if the Government requires a minimal amount of units. Discounts for early or prompt payment should also be considered. In addition, the analyst should compare the advertised product to the actual product being offered and to required specifications. Other situations that require verification of accuracy, relevance, and comparability include:

- Data received from an interested party such as a trade association or a large business prohibited from competing due to a small business set-aside,
- Data received from a dissimilar buying organization, e.g., commercial products may not meet the requirements of military use end-items, and
- Conflicting data received from two or more sources.

Completeness

An offeror may not provide all the data that are requested and/or needed in a solicitation. Incomplete data can impair the evaluation of an offeror's proposal as the analyst may not be able to determine fairness, reasonableness or realism. Also, sometimes the data which are provided may be skewed and subsequently will not present the entire picture. When asked to submit information on past procurements, the offeror may selectively provide the most favorable information. This could lead to undue bias in the presentation of data. Another cause of bias occurs in published or proposed data which do not reflect price differentials for warranty, material, design, and maintainability. Such incompleteness may cause a particular vendor to appear more favorable to the Government when compared to others because it excluded items such as a warranty, which were included in the other vendors' prices.

6.3.4 Use of Historical Data

The use of historical data is appealing to an analyst. Often, the data have already been gathered so little work is required by the analyst. Also, the data have (theoretically) been purged of faulty information. However, historical data still require close scrutiny. For instance, the firms in an industry or the nature of the industry may have changed. The video rental industry is an example of an industry which experienced a "shakeout" of firms. During the 1980s there was a boom in the VCR market which generated many new entrants to the video rental industry. During this period, video rental stores and rental outlets (stores with video rentals as a sidelight, e.g., convenience stores) comprised the industry. In the 1990s the industry rapidly changed to an industry dominated by large chain rental stores, whereby the rental outlets and small rental stores disappeared.

The computer industry during the 1995-96 market is a prime example of a changing industry. According to an article in Business Week, Apple Computer Inc. slashed Macintosh prices by 20 percent (Rebello, November 6, 1995). The price of the computer did not decrease because it was becoming outdated. To the contrary, this computer was technologically advanced. Apple's price cut was a competitive move aimed at increasing their market

share. Instead, the favor of consumers changed to the operating system of IBM and compatibles. In summary, the nature of the industry, particularly how it has changed over time, needs to be considered before using historical data.

Adjustment of Historical Data for Inflation

If historical data are used, the prices need to be adjusted for inflation. After an adjustment using an index such as the Producer Price Index (PPI) (annual index number or a year-to-date average), the prices reflect the same purchasing power of a dollar. The choice of an index depends on the good (it should reflect the trend of the good's particular industry). The PPI is only one family of indices; there are many indices from which to choose. Since the PPI is published by the Bureau of Labor Statistics (BLS), past and current PPI values can be found in their periodic news releases and on their website (<http://stats.bls.gov>). Similarly, past and current values for other indices can be gathered from periodic news releases or reports.

6.4 EVALUATING DATA

The preceding sections have identified sources of data and issues to be considered when using data from each source. Perhaps the most important section is 6.3, which delineates considerations affecting the validity and reliability of data. This leads to the final step of the data gathering process: evaluating data and deciding which data are most reliable. Evaluating data is the process of deciding which data to use when available data reflects similar information. In essence, there is no single source of data that can be identified as a superior source because all data must be weighed in comparison to the quality of other available data. Therefore, data from a particular source may be used in conducting a certain price analysis but may be deemed inappropriate for another. The merits of data and its source depend on the data considerations mentioned in section 6.3. Accordingly, the criteria listed in section 6.3 should be used to determine which data are most appropriate and applicable.

Often a combination of two or more data elements will be used. For example, assume an analyst has two prices for a computer processor: 1.) the price listed in the offeror's catalog and 2.) the price listed in the competitor's catalog. The offeror's price is more expensive than the price for the same general product listed in the competitor's catalog. The quantities associated with each published price are the same. Although the general products are the same-- both are 90 megahertz processors, the competitor's product has been described as poor in quality by trade journals. The second source of information is important in that it may sway the analysis in favor of the higher price. Therefore, the best evaluation approach is a combination method, whereby data from

all sources are considered at once. This enables the analyst to assess accuracy and relevancy, completeness, and currency by means of comparison.

6.5 SUMMARY

Data used during price analysis should be accurate, detailed, and timely. Numerous resources provide data that can facilitate an analysis; however, the analyst should carefully review the data since any incorrect data may skew the analysis and lead to a faulty conclusion. It is the analyst's responsibility to ensure that the information used is valid and that the application of the information is accurate.



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I. AEROSPACE INDUSTRY

- 1.) Air Transport Association of America
1301 Pennsylvania Avenue NW
Suite 1100
Washington, DC 20004
02-626-4000
<http://www.air-transport.org>

- 2.) American Institute of Aeronautics and Astronautics
1801 Alexander Bell Drive
Suite 500
Reston, VA 20191
703-264-7500
<http://www.aiaa.org>

- 3.) Airline Employment Assistance Corps.
P.O. Box 630830
Littleton, CO 80163
303-683-2322
<http://www.avjobs.com>

- 4.) International Civil Aviation Organization
International Aviation Square
999 University Street
Montreal Quebec, Canada H3C 5H7
514-954-8219
<http://www.icao.int/>

- 5.) National Aeronautic Association
Suite 202
1 Reagan National Airport Hngr 7
Washington DC 20001-6015
703-416-4888
<http://www.naa.aero>

- 6.) Professional Aviation Maintenance Association
400 North Washington St
Suite 300
Alexandria, VA 22314
703-778-4647
<http://www.pama.org>

II. ARCHITECTURE, CONSTRUCTION, AND ENGINEERING

- 1.) Association for the Advancement of Cost Engineering
209 Prairie Avenue
Morgantown, WV 26505
800-858-2678
www.aacei.org
- 2.) American Consulting Engineers Council
1015 15th Street NW
Suite 802
Washington, DC 20005
202-347-7474
<http://www.acec.org>
- 3.) American Institute of Architects
1735 New York Avenue NW
Washington, DC 20006
202-626-7300
<http://www.aia.org>
- 4.) American Society for Engineering Education
1818 N Street NW
Suite 600
Washington, DC 20036
202-331-3500
<http://www.asee.org>
- 5.) American Society of Civil Engineers
1801 Alexander Bell Drive
Reston, VA 20191
703-295-6300
<http://www.asce.org>
- 6.) Amer. Society of Heating & Refrigerating & Air Conditioning Engineers
1791 Tullie Circle NE
Atlanta, GA 30329
404-636-8400
<http://www.ashrae.org>

- 7.) American Society of Landscape Architects
636 Eye Street NW
Washington, DC 20001
202-898-2444
<http://www.asla.org>

- 8.) American Society of Mechanical Engineers
Three Park Ave.
New York, NY 10016
800-843-2763
<http://www.asme.org>

- 9.) American Society of Naval Engineers
1452 Duke Street
Alexandria, VA 22314
703-836-6727
<http://www.navalengineers.org>

- 10.) Illuminating Engineering Society of North America
120 Wall Street
17th Floor
New York, NY 10005
212-248-5000
<http://www.iesna.org>

- 11.) Institute of Industrial Engineers
3577 Parkway Lane
Suite 200
Norcross, GA 30092
770-449-0461
<http://www.iienet.org>

- 12.) National Action Council for Minorities in Engineering
440 Hamilton Avenue
Suite 302
White Plains, NY 10601
914-539-4010
<http://www.nacme.org>

- 13.) Junior Engineering Technical Society
1420 King Street
Suite 405
Alexandria, VA 22314
703-548-JETS
<http://www.jets.org/>

- 14.) The American Ceramic Society
600 N. Cleveland Avenue
Suite 210
Westerville, OH 43082
866-721-3322
<http://ceramics.org/>

- 15.) National Society of Black Engineers
205 Daingerfield Road
Alexandria, VA 22314
703-549-2207
<http://national.nsbe.org/>

- 16.) National Society of Professional Engineers
1420 King Street
Alexandria, VA 22314-2715
703-684-2800
<http://www.nspe.org>

- 17.) Society of Fire Protection Engineers
7315 Wisconsin Avenue
Suite 620E
Bethesda, MD 20814
301-718-2910
<http://www.sfpe.org>

- 18.) Society of Manufacturing Engineers
One SME Drive
Dearborn, MI 48121
313-425-3000
<http://www.sme.org>

- 19.) American Association of Engineering Societies
6522 Meadowridge Road
Suite 101
Elkridge, MD 21075
202-296-2237
<http://www.aaes.org>

III. CHEMICAL/RUBBER AND PLASTICS INDUSTRY

- 1.) American Chemical Society
1155 16th Street NW
Washington, DC 20036
202-872-4600
<http://www.acs.org>
- 2.) American Institute of Chemical Engineers
3 Park Avenue
New York, NY 10016
203-702-7660
<http://www.aiche.org>
- 3.) American Chemistry Council
1300 Wilson Blvd.
Arlington, VA 22209
703-741-5000
<http://www.americanchemistry.com>
- 4.) Society of Plastics Engineers
13 Church Hill Road
Brookefield, CT 06470
203-775-0471
<http://www.4spe.org>
- 5.) Society of Plastics Industry
1667 K Street NW
Suite 1000
Washington, DC 20006
202-974-5200
<http://www.socplas.org>

IV. COMPUTER HARDWARE, SOFTWARE, AND SERVICES

- 1.) Association for Computing Machinery
2 Penn Plaza
Suite 701
New York, NY 10121
212-869-7440
<http://www.acm.org>

- 2.) Information Technology Association of America
1401 Wilson Blvd.
Suite 1100
Arlington, VA 22209
703-522-5055
<http://www.ita.org>

V. ELECTRONIC/INDUSTRIAL ELECTRICAL EQUIPMENT

- 1.) American Electronics Association
5201 Great America Parkway
Suite 400
Santa Clara, CA 95054
800-284-4232
<http://www.aeanet.org>

- 2.) Electrochemical Society
65 South Main Street
Building D
Pennington, NJ 08534-2896
609-737-1902
<http://www.electrochem.org>

- 3.) Electronic Industries Association
2500 Wilson Blvd.
Arlington, VA 22201
703-907-7500
<http://www.eia.org>

- 4.) Electronic Technicians Association International
5 Depot Street
Greencastle, IN 46135
765-653-8262
<http://www.eta-i.org>

- 5.) Institute of Electrical and Electronics Engineers
3 Park Avenue
17th Floor
New York, NY 10016
212-419-7900
<http://www.ieee.org>

- 6.) Association Connecting Electronics Industries (IPC)
3000 Lakeside Drive 309S
Bannockburn, IL 60015
847-615-7100
<http://www.ipc.org>

- 7.) International Brotherhood of Electrical Workers
900 Seventh Street NW
Washington, DC 20001
202-833-7000
<http://www.ibew.org/>

- 8.) International Microelectronics and Packaging Society
611 2nd Street NE
Washington, DC 20002
202-548-4001
<http://www.imaps.org/>

- 9.) International Society of Certified Electronics Technicians
3608 Pershing Avenue
Forth Worth, TX 76107
817-921-9101
<http://www.iscet.org>

- 10.) National Electrical Manufacturers Association
1300 North 17th Street
Suite 1752
Rosslyn, VA 22209
703-841-3200
<http://nema.org>

- 11.) National Electronics Service Dealers Association
3608 Pershing Avenue
Forth Worth, TX 76107
817-921-9061
<http://www.nesda.com>

- 12.) Society of Manufacturing Engineers
One SME Drive
Dearborn, MI 48121
800-733-4763
<http://www.sme.org>

- 13.) Semiconductor Equipment and Materials International
1401 K Street, NW
Suite 601
Washington, D.C. 20005 USA
202-289-0440
<http://www.semi.org>

- 14.) The Center for Innovative Technology
2214 Rock Hill Road
Suite 600
Herndon, VA 20170
703-689-3000
<http://www.cit.org>

VI. FABRICATED/PRIMARY METALS AND PRODUCTS

- 1.) American Foundry Society
1695 North Penny Lane
Schaumburg, IL 60173
847-824-0181
<http://www.afsinc.org>

- 2.) ASM International
9639 Kinsman Road
Materials Park, OH 44073-0002
440-338-5151
<http://www.asm-intl.org>

- 3.) American Welding Society
550 NW LeJeune Road
Miami, FL 33126
305-443-9353
<http://www.aws.org>

VII. MANUFACTURING AND WHOLESALING: MISC. CONSUMER

- 1.) Association for Manufacturing Technology
7901 Westpark Drive
McLean, VA 22102
703-893-2900
<http://www.mfgtech.org>

- 2.) National Association of Manufacturers
1331 Pennsylvania Avenue NW
Suite 600
Washington, DC 20004
202-637-3000
<http://www.nam.org>

VIII. MANUFACTURING AND WHOLESALING: MISC. INDUSTRIAL

- 1.) Association for Manufacturing Technology
7901 Westpark Drive
McLean, VA 22102
703-893-2900
<http://www.amtonline.org/>

- 2.) National Tooling and Machining Association
9300 Livingston Road
Fort Washington, MD 20744
301-248-1250
<http://www.ntma.org>

- 3.) National Center for Manufacturing Sciences
3025 Boardwalk Ave.
Ann Arbor, MI 48108-3266
800-222-6267
<http://www.ncms.org>

IX. TRANSPORTATION

- 1.) American Bureau of Shipping
16855 Northchase Drive
Houston, TX 77060
281-877-5800
<http://www.eagle.org>

- 2.) American Trucking Association
950 North Glebe Road
Suite 210
Arlington, VA 22203
703-838-1700
<http://www.truckline.com>

 - 3.) Institute of Transportation Engineers
1099 14th Street NW
Suite 300 West
Washington, DC 20005
202-289-0222
<http://www.ite.org>

 - 4.) National Motor Freight Traffic Association
1001 North Fairfax Street
Suite 600
Alexandria, VA 22314
703-838-1810
<http://www.nmfta.org>

 - 5.) The Journal of Commerce
PO Box 5051
Brentwood, TN 37024
888-215-6084
<http://www.joc.com>

 - 6.) Transport Topics
950 North Glebe Road
Suite 210
Arlington, VA 22203
703-838-7916
- X. UTILITIES: ELECTRICITY/GAS AND SANITATION**
- 1.) American Public Gas Association
201 Massachusetts Avenue NE
Suite C-4
Washington, DC 20002
202-464-2742
<http://www.apga.org>