



FASTER DECISIONS. BETTER DECISIONS.™

## PRICE Systems' Operational & Support Cost Estimating Capabilities

**Assistant Secretary of the Navy  
(Research, Development, and Acquisition)  
Acquisition Reform Office**

**January 2002**



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Our mission is to provide collaborative planning, cost forecasting and budgeting solutions that empower clients to sustain profitable growth through faster, better decisions.



## Overview

- **PRICE Systems Key Capabilities**
- **Managing Life Cycle Affordability (O&S) Tools**
- **PRICE Systems Naval Experience**
- **PRICE Contact Information**

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## Key Capabilities

**PRICE Systems has been a global leader providing integrated planning, cost forecasting and budgeting solutions to the Aerospace and Defense community for over 26 years.**

- 300 licensed enterprises, over 9,000 industry and Government analysts trained**
- PRICE solutions replacing grassroots methods for proposal pricing, bid evaluations, & affordability studies**
- Organization-wide licensing and service agreements with the U.S. Air Force Materiel Command, U.S. Army Cost and Economic Analysis Center & NASA.**
- Independent small business in New Jersey, 70 employees worldwide**
- US offices in California, Maryland and Ohio; international offices in France, Germany, South Korea, and United Kingdom.**

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## Key Capabilities

### Where is PRICE?

#### **Mt Laurel, NJ**

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#### **Paris, France**

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#### **Dayton, OH**

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#### **Hampshire, England**

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T: 44.1256.760012

#### **Ruesselsheim, Germany**

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GERMANY  
T: 49.6142.966081

#### **Lexington Park**

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Parkway  
Wildwood Technology Park  
California, Maryland  
T: 240.725.0828

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## Key Capabilities

Market leading suite of tools use a parametric methodology to derive cost forecasts of: microcircuits; electronic, mechanical, and structural systems; hardware & software operations and support.

### PRICE Estimating Suite

- PRICE Hardware Estimating Model
- PRICE Hardware Life Cycle Estimating Model
- PRICE Software Development Estimating Model
- PRICE Electronic & Microcircuit Estimating Model
- PRICE KnowledgeManager
- PRICE KnowledgeNetwork
- PRICE Total Ownership Cost Solution

The combination of these three PRICE Models and Total Ownership Cost Solution provide comprehensive and credible life cycle cost containment.

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## Key Capabilities

**PRICE's service offerings include cost estimating and analysis, operations research, implementations, enterprise integration, training, mentoring and independent evaluations.**

- **Hardware Project Estimating & Control**
- **Managing Life Cycle Affordability**
- **Predicting Electronic & Microcircuit Costs**
- **Software Estimating & Project Control**
- **Cost Research and Knowledge Management**
- **Program/Project Cost Management**
- **Future Capability/Advanced Concept Planning**
- **Bid & Proposals**
- **Procurement/Supplier Assessment**

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## Managing Life Cycle Affordability Tools

**PRICE Hardware Estimation Model (PRICE H)**

**PRICE Hardware Life Cycle Estimating Model (PRICE HL)**

**PRICE Software Estimating Model (PRICE S)**

**Together these models enable the rapid evaluation of Life Cycle Costs, system availability, reliability and operational readiness, alternative hardware configurations, support strategies, investment appraisals and level of repair analyses.**

**PRICE Total Ownership Cost Solution**

produces an OSD CAIG-approved format using the PRICE HL Model for the O&S outputs available and couples them with external cost estimating relationships that furnish information not included in the PRICE Models.

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# PRICE Hardware Estimating Model

## Principal Features

- Estimates Development and Production cost
- Schedule validation/Schedule penalty
- Provides Labor Hours and Material \$
- Customizable labor rates and economics
- Data protection feature
- Learning Curves
- Calibration - using historical costs
- Risk Analysis- measures uncertainty
- Exports to PRICE HL

The screenshot displays the PRICE H/HL/M software interface. The main window shows a project tree with the following structure:

- 0 Sys Sample PRICE H ONLY EBS
  - 1 Sample PRICE H EBS
    - 2 e Electro-mechanical Element
    - 3 Sample Hardware & Software Integ
    - 4 Sample Mechanical Element
    - 5 Sample Purchased Element [all Str
    - 6 Sample Design Integration Eleme
    - 7 Sample Integration and Test Eleme

The 'Assembly' window is open, showing the 'Input Sheet' for 'Sample PRICE H EBS'. The sheet is divided into 'Development' and 'Production' sections, each with 'Mat'l Index' and 'ODC%' columns. The 'Production' section is highlighted.

	Development		Production	
	Mat'l Index	ODC%	Mat'l Index	ODC%
Draft	0.00	0.00	0.00	0.00
Design	0.00	0.00	0.00	0.00
Systems	0.00	0.00		
Proj. Mgmt.	0.00	X CALC	0.00	X CALC
Data	X CALC	0.00	X CALC	0.00
Production			X CALC	0.00
Prototype	X CALC	0.00		
Tool Test Eq.	X CALC	0.00	X CALC	0.00
Purchased	100.00	0.00	100.00	0.00

Additional settings in the 'Assembly' window include:

- Learning Curve (%): Material (X CALC), Labor (X CALC), B Factor (0.00)
- Aftermarket Supplier (%): [ ]
- Original Equipment Manufacturer (%): 100



## PRICE Hardware Estimating Model

**PRICE H Integrates with the PRICE Hardware Life Cycle by automatically generate Life Cycle inputs such as:**

- Mean-Time-Between-Failure (MTBF for LRU)
- Mean-Time-To-Repair (MTTR for LRU and Modules)
- Mean-Time-To-Repair and Replace (LRU Checkout Time)
- Unit Costs for LRU, Modules, and Parts Development Costs
- Non-Recurring Production Costs
- Number of Module and Part Types
- Fraction of Non-Standard Parts
- Learning Curves for LRUs, Modules, and Parts
- Shipping Weights for LRUs, Modules, and Parts
- Storage Volumes for LRUs, Modules, and Parts
- Cost for Contractor Repair of LRUs and Modules, LRU Test Sets, Combined LRU & Module test Sets, LRU Checkout Test Sets
- Floor Space Required for LRU Test Sets, Combined LRU & Module Test Sets, LRU Checkout Test Sets

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# PRICE Hardware Life Cycle Estimating Model

## Principal Features

- User Provided or PRICE Hardware Model Generated Inputs
- Traditional Life Cycle Cost Estimating Relationships Used
- 28 Standard Maintenance Concepts
- Three Theaters of Operations
- Rapid Trade-Off Between Acquisition and Life Cycle

## What is Modeled?

- Hardware to be Maintained
- Organizational Hierarchy
- Employment and Deployment of Equipment
- Supply, Maintenance and Distribution Concepts

Year #	Number Locations (ED)	On Time Fraction (OTF)	Number Locations (ED)	On Time Fraction (OTF)	Number Locations (ED)	On Time Fraction (OTF)
1	320.000	0.3200	0.000	0.0000	0.000	0.0000
2	850.000	0.3200	0.000	0.0000	0.000	0.0000



# PRICE Hardware Life Cycle Estimating Model

## Addresses the following elements of life cycle cost:

- Equipment Development
- Equipment Production
- Support Equipment Production
- Support Equipment
- Supply Administration/Production
- Supply Production
- Supply/Support
- Supply Administration/Support
- Supply Replenishment
- Labor/Support
- Contractor Support
- Test Sets
- Initial Supply
- Other Support: floor space charges, supply-spares storage charges, and shipping costs Availability, Readiness, Reliability

Program Cost				
	Development	Production	Support	Total
Mission Equip:	3875792.8	27630327.6	-	31506120.4
Support Equip	-	1135634.9	567817.4	1703452.3
Supply:	-	4922344.6	1362864.3	6285208.9
Supply Admin:	-	28823.7	273599.8	302423.5
Labor:	-	-	3380275.7	3380275.7
Contractor:	-	-	627354.3	627354.3
Other:	0.0	-	52147.8	52147.8
<b>Total</b>	<b>3875792.8</b>	<b>33717130.7</b>	<b>6264059.4</b>	<b>43856982.9</b>

Thruput Costs				
	Development	Production	Support	Total
Field Support	0.00	0.00	0.00	0.00
Field Test	0.00	0.00	0.00	0.00
Software	3500000.00	0.00	0.00	3500000.00
Other	7691.94	0.00	0.00	7691.94
<b>Total</b>	<b>3507691.94</b>	<b>0.00</b>	<b>0.00</b>	<b>3507691.94</b>

<b>Grand Total</b>	<b>7383484.78</b>	<b>33717130.73</b>	<b>6264059.37</b>	<b>47364674.88</b>
	MTBF	Availability	Readiness	Reliability
	570	0.9994	0.9993	1.0000



## PRICE Hardware Life Cycle Estimating Model

### Acquisition Costs

- Engineering & Drafting
- Prototypes
- Documentation (CDRL)
- Tooling and Test Equipment
- Production (Recurring & Non-Recurring)
- System Integration & Test
- Initial Spares
- Initial Training
- Field Verification & Validation
- Site & Facilities Construction
- Site Activation
- Support Equipment

### Support Equipment

- Test Equipment
  - Confidence Checker
  - Fault Isolate Module
  - Fault Isolate to Part
- Other Support Equipment
  - Fixtures & Handling Equipment
  - Support Vehicles
  - Bench Mock Ups & Training Aids
  - Shipping Containers
  - Ancillary Equipment

### Manpower Cost Categories

- Crew (Pilots, Operators, Gunners, Etc.)
- Maintenance Technicians (Govt. & Contractor)
  - Organization, Intermediate, & Depot
- Installation & Indirect Support Personnel
  - Amortized Across Crew & Tech. Rates

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## PRICE Hardware Life Cycle Estimating Model

**Perform sensitivity analysis to quickly and easily determine the affect of variables and options.**

**Assess the impact of changes in:**

- Varying Mean Time Between Failure
- Number of (equipment-level, organization-level, intermediate-level, depot-level) maintenance and/or supply locations
- Number of maintenance and/or supply locations
- Duration of the support period
- Cost, size, and weight of units, modules, and parts
- Cost of contractor repair
- Test equipment costs and loading factor
- Shipping costs
- Crew size and labor rates
- Dedicated vs. non-dedicated crews
- Attrition
- Mission period reliability

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## PRICE Hardware Life Cycle Estimating Model

**The effect of variation in the following factors can be assessed in PRICE HL by using multiple-configuration scenarios:**

- Equipment operating time
- Unit Mean Time Between Failure
- Unit and Module Repair Times (MTTR)
- Authorized stock levels at all supply levels
- Safety stock coefficients Scrap and repair fractions
- **Maintenance concept options**

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# PRICE Hardware Life Cycle Estimating Model

## 28 Standard Maintenance Concept Options:

### Types of Maintenance

- Failure Repairs
- Periodic Confidence Testing
- Scheduled Part Replacement
- Preventive Maintenance
- Overhaul
- Refurbishment
- Refueling

**Automatic  
Maintenance  
Concept Ranking  
by Cost  
Effectiveness or  
Readiness**

MC #	Cost	Cost Effect.	Readiness	Maintenance Concept Description
11	85125.98	100.00	0.9820	Replace mods at EQP. Scrap bad mods.
2	453236.71	101.28	0.9763	Replace mods at ORG. Scrap bad mods.
16	907513.82	198.28	0.9985	Replace mods at EQP. Repair mods at contractor.
17	910570.92	200.16	0.9924	Replace mods at ORG. Repair mods at contractor.
14	956038.95	209.03	0.9978	Replace mods at EQP. Repair mods at DPT.
3	959147.38	210.98	0.9917	Replace mods at ORG. Repair mods at DPT.
22	691089.61	222.65	0.6771	Recheck LRU at ORG. Replace mods at DPT. Scrap bad mods.
26	775598.12	237.79	0.7115	Recheck LRU at ORG. Replace mods at contractor. Scrap bad mods.
4	721585.80	244.65	0.6434	Replace mods at DPT. Scrap bad mods.
12	1152527.60	252.77	0.9947	Replace mods at EQP. Repair mods at ORG.
10	1152528.24	253.03	0.9937	Replace parts at ORG.
15	822586.06	262.37	0.6839	Replace mods at contractor. Scrap bad mods.
28	1135102.51	287.35	0.8617	Recheck LRU at ORG. Replace parts at contractor.
25	1075555.67	290.11	0.8088	Recheck LRU at ORG. Replace parts at DPT.
19	1187747.79	316.19	0.8195	Replace parts at contractor.
9	1107655.30	319.78	0.7556	Replace parts at DPT.
20	1108772.18	324.11	0.7463	Recheck LRU at ORG. Scrap bad LRU.
1	1136426.69	385.96	0.6423	Discard LRU at failure



## PRICE Hardware Life Cycle Estimating Model

### Levels of Maintenance

- On-Equipment Maintenance
  - Remove and Replace unit
  - Replace Bad Module
  - Replace Bad Part
- Perform Preventive Maintenance
  - Off-Equipment Maintenance
  - Replace Bad Module
  - Replace Bad Part

### Maintenance Facilities

- Equipment
  - Maintenance - No Work Shop
- Organization - (Direct Support)
  - Flight Line Type Maintenance
- Intermediate (General Support)
  - Controlled Environment & ATE
- Depot
  - May Be Contractor or Government

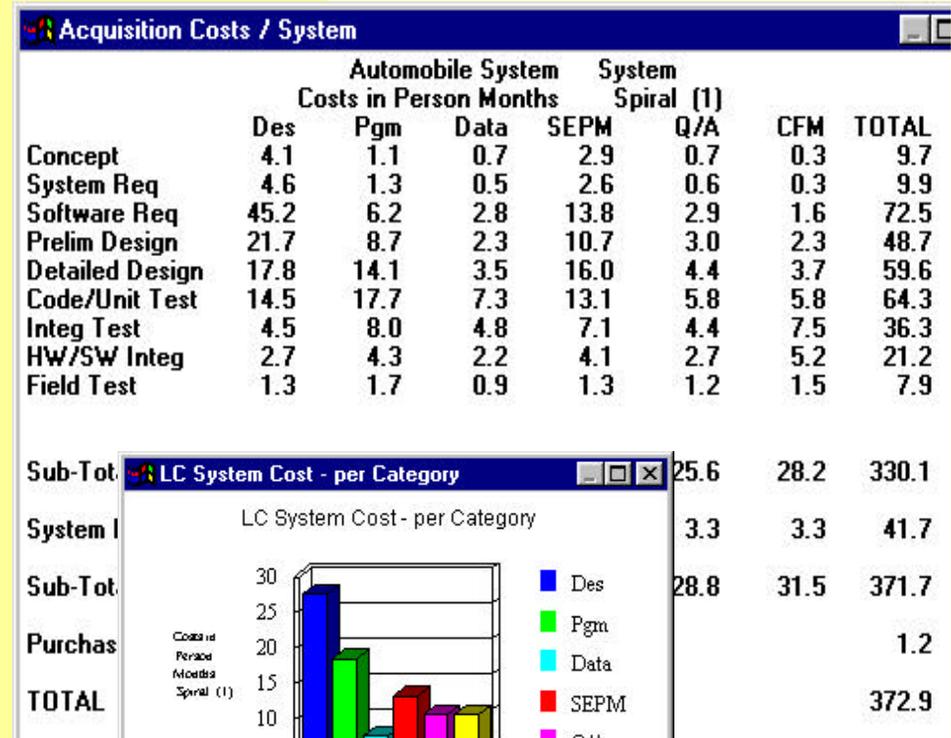
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# PRICE Software Estimating Model

## Principal Features

- Acquisition and O&S Costs in One Model
- 36 languages (HTML, SQL, Java, etc.)
- Development processes include: 2167a, Spiral, Waterfall, Incremental, & Evolutionary
- Predictive Object Points, Source Lines Of Code, and Function Points for Sizing
- Maintenance, Enhancement, and Growth for LCC
- Risk Analysis using Monte Carlo or Latin Hypercube Simulation Processes



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## Managing Life Cycle Affordability Tools

PRICE Hardware Estimation Model (PRICE H)

PRICE Hardware Life Cycle Estimating Model (PRICE HL)

PRICE Software Estimating Model (PRICE S)

Together these models enable the rapid evaluation of Life Cycle Costs, system availability, reliability and operational readiness, alternative hardware configurations, support strategies, investment appraisals and level of repair analyses.

### **PRICE Total Ownership Cost Solution**

produces a customized format using the PRICE HL Model for the O&S outputs available and couples them with external cost estimating relationships that furnish information not included in the PRICE Models.

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# Total Ownership Cost (TOC) Solution

By integrating PRICE models with Microsoft Excel analyst are able to supplement and customize Operations & Support estimates by incorporating O&S elements not captured by PRICE HL.

The screenshot displays an Excel spreadsheet titled "ABC Communication System" with a table of personnel costs and a parameters table. A hierarchical tree view on the left lists system components, with a red arrow pointing to the "EXHAUST AND AIR SUPPLY" component.

LVL	ID	Title	Cost in K \$	Name	Formula
2		MISSION PERSONNEL	269,328.3	MISSIONPERSONNEL	MPOPERATIONS+MPMAINT+MPOther
4	3	4.1 OPERATIONS	267,580.3	MPOPERATIONS	OT*NOJP*OpRate*ED*NOY
5	3	4.1.2 MAINTENANCE	0.0	MPMAINT	OLSUPPCOST*(MAINTFACTOR*LSUPPCOST)
6	3	4.1.3 OTHER MISSION PERSONNEL	1,738.0	MPOther	OT*NOJMP*OMPRate*ED*NOY

Parameters:		Cost in single units \$		
Avg. Operating Time per Year per Location		624,3239829	Hrs. OT	Calculation PRICE HL (Factor Value Tab)
Avg. Number of Equipment Locations		1480	ED	PRICE HL Deployment Parameter
On Time Fraction		50	OTF	PRICE HL Deployment Parameter
Number of Years		10	NOY	PRICE HL Deployment Parameter
Hourly Rate for Operations Personnel		26.96	OpRate	TOC Data Parameter
Number of Operations Personnel per Equipment Location		1	NOJP	TOC Data Parameter
Number of Other Mission Personnel per Equipment Location		0.01	NOJMP	TOC Data Parameter
Other Mission Personnel Hourly Labor Rate		16.81	OMPRate	TOC Data Parameter
Internal Maintenance Factor (Percentage)		0.5	MAINTFACTOR	TOC Data Parameter
Organization Labor Support Cost		0.00	OLSUPPCOST	Organization portion of HL OUTPUT LABOR_SUP
Intermediate Labor Support Cost		0.00	ILSUPPCOST	Intermediate portion of HL OUTPUT LABOR_SUP

**System Tree View:**

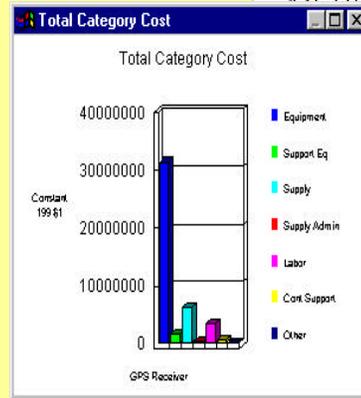
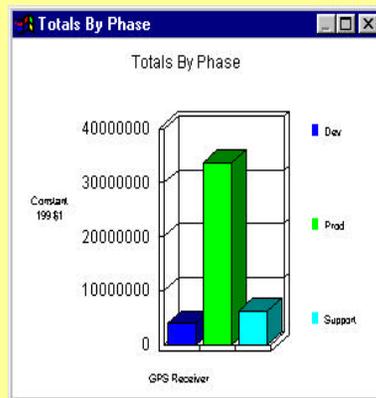
- 0 Sys Baseline
- 1 BASIC ENGINE
  - 2 VALVES
  - 3 MAIN ENGINE COMPONENTS
  - 4 CYLINDERS
  - 5 EXHAUST AND AIR SUPPLY
  - 6 CONTROLS
  - 7 FUEL AND OIL SYSTEM
- 8 ACCESSORY
  - 9 COOLING SYSTEMS
  - 10 AIR STARTING SYSTEM
  - 11 CRANK CASE VACUUM
  - 12 EXHAUST AND AIR INTAKE
- 13 SSDG
- 14 GENERATOR



# Total Ownership Cost (TOC) Solution

Analysts are able to utilize Excel's robust analysis and custom reporting capabilities which permits estimates to be delivered in familiar and customer dictated formats. (OSD-CAIG, Navy TOC O&S Analysis Form)

SAMPLE PROGRAM		\$/Flight Hour, FY97		
CES	AIR 4.2.5 TOC/O&S Cost Element Structure	Traditional O&S Estimate	TOC Additions	TOC O&S Estimate
<b>1.0</b>	<b>MISSION PERSONNEL</b>	<b>1,809</b>	<b>67</b>	<b>1,990</b>
1.1	OPERATIONS	282	-	282
1.2	MAINTENANCE	1,182	-	1,296
1.3	OTHER MISSION PERSONNEL	346	67	413
<b>2.0</b>	<b>UNIT-LEVEL CONSUMPTION</b>	<b>3,616</b>	<b>19</b>	<b>2,831</b>
2.1	POL/ENERGY CONSUMPTION	771	-	771
2.2	CONSUMABLE MATERIAL/REPAIR PARTS	746	-	301
2.3	DEPOT LEVEL REPAIRABLES	1,779	-	1,420
2.4	TRAINING MUNITIONS/EXPENDABLE STORES	320	-	320
2.5	OTHER	-	19	19
<b>3.0</b>	<b>INTERMEDIATE MAINTENANCE</b>	<b>114</b>	<b>848</b>	<b>1,113</b>
3.1	MAINTENANCE	114	752	752
3.2	CONSUMABLE MATERIAL/REPAIR PARTS	-	96	361
3.3	OTHER	-	-	-
<b>4.0</b>	<b>DEPOT</b>	<b>529</b>	<b>269</b>	<b>798</b>
4.1	OVERHAUL / REWORK	279	45	325
4.2	ENGINE REPAIR	249	-	249
4.3	OTHER	-	223	223
	<b>CONTRACTOR SUPPORT</b>	<b>-</b>	<b>-</b>	<b>-</b>
	PRIM CONTRACTOR SUPPORT	-	-	-
	CONTRACTOR LOGISTICS SUPPORT	-	-	-
	OTHER	-	-	-
	<b>TRAINING SUPPORT</b>	<b>379</b>	<b>10</b>	<b>311</b>
	SUPPORT EQUIPMENT REPLACEMENT	8	-	8
	TOOL KIT PROCUREMENT / INSTALLATION	203	10	213
	OPERATOR RECURRING INVESTMENT	-	-	-
	TRAINING ENGINEERING SUPPORT	50	-	50
	SOFTWARE MAINTENANCE SUPPORT	16	-	16
	OPERATOR OPERATIONS	103	-	25
	OTHER	-	-	-
	<b>DEPOT SUPPORT</b>	<b>102</b>	<b>1,904</b>	<b>2,623</b>
	PERSONNEL SUPPORT	50	1,387	2,055
	INSTALLATION SUPPORT	52	517	569
<b>Total</b>		<b>\$6,549</b>	<b>\$3,116</b>	<b>\$9,666</b>



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## PRICE Systems Naval Experience

### **Navy Sites working with PRICE**

- NAVAIR, Patuxent River, MD
- NAWC, Lakehurst, NJ
- NSWC, Carderock, MD
- NSWC, Dahlgren, VA
- Navy Engineering Logistics, VA
- NUWC, Portsmouth, RI\*\* (new client)

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## PRICE Systems Naval Experience

### **Some Naval Contractors working with PRICE**

- **Lockheed Martin NESS Moorestown** - Aegis, DDX, CVN77
- **Lockheed Martin NESS Syracuse and Manassas** – oceanic radar systems
- **SPAR and Associates** – integrating PODAC to H/HL
- **United Defense** – CAIV analysis and trade-offs for DD21 weapon system
- **NASSCO** – integrating OSCAM to H/HL
- **Ingalls Shipbuilders** - LPD 17
- **Bath Iron Works** – DD21
- **Penn State Univ. Advanced Research Labs** – integrated internal ICAD tool to PRICE H for Torpedo design simulations

**PRICE has achieved 100% customer satisfaction in all ICS engagements**

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## Recent Consulting Engagements

**Client:** Naval Air Systems Command, Cost Analysis Dept.  
**Program:** Advanced Tactical Aircraft Protection Program Office (PMA-272); ALR-67(V)3 Advanced Special Receiver Program  
**Task:** Develop TOC using latest available data and projections, with emphasis on program schedule, quantity changes, cost saving initiatives.

### Highlights

- Provide cost estimating information to support development of a TOC briefing, and provide support to PMA-272 Deputy Program Manager in addressing Program Executive Office (PEO) questions and comments at time of review
- Incorporate latest data into prepared TOC templates in order to obtain an Acquisition Program Baseline total
- Develop and calibrate TOC model
- Estimate new production of upgraded board and chip assemblies for the Countermeasures Computer WRA
- Estimate installation of upgraded assemblies based on quantities, process, and technical information provided by PMA



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## Recent Consulting Engagements

**Client:** Naval Air Systems Command Cost Analysis Department

**Program:** Air Anti-Submarine Warfare Systems Program Office(PMA-264; Generic Acoustic Simulation System (GASS) Program

**Task:** Review, assess, and refine existing cost estimates based on latest available data and projections; to include all Total Ownership Cost (TOC) cost saving initiatives identified by the Program Office.

### Highlights

- Identify and analyze technical and programmatic data to assess cost impact related to cost saving initiatives identified by the GASS Integrated Program Team
- Develop cost model and supporting documentation to support review by Program Executive Office (PEO)



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## Recent Consulting Engagements

**Client:** Penn State University - ARL  
**Program:** Anti-Torpedo Torpedo (ATT) Affordability  
**Task:** Assist client in constructing a model to help reduce current production costs by 100%; Develop a TOC for ATT.

**Highlights:**

- EBS established for cost trade-off analysis.
- PRICE TOC adapted to Navy format and ATT deployment conditions.



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## Recent Consulting Engagements

**Client:** National Steel and Shipbuilding Company (NASSCO)  
**Program:** T-ADC(X), Next generation US Navy Dry Cargo Ship  
**Task:** Perform Operating and Support (O&S) cost estimate and cost trade-off analyses

### Highlights

- Contractor completely outsourcing O&S estimating function to PRICE Systems
- Provided continuing support for each design review
- Used Navy Operating and Support Cost Analysis Model (OSCAM)



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## Recent Consulting Engagements

**Client:** General Atomics  
**Program:** Electromagnetic Aircraft Launch System (EMALS)  
**Task:** Prepare Life Cycle Cost Worksheet Section of proposal; prepare the parametric estimate based on data from LCC Worksheets.

### Highlights

- PRICE tools used by customer to prepare total life cycle costs (60+years) for both Hardware and Software.
- General Atomics up-front awareness of results from customer evaluation of proposed costs.
- General Atomics won the contract.



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## Recent Consulting Engagements

**Client:** ITT Gilfillan  
**Program:** Ship-borne Phased Array Radar  
**Task:** Provided preliminary production cost estimate for the radar system

### Highlights

- Client's first exposure to PRICE
- Estimated production and operating and support cost
- Provided basic instruction on use of the models



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## Recent Consulting Engagements

**Client:** Joint Venture With Newport News, Ingalls, Acquisition Logistic Engineering and Lockheed Martin NESS Moorestown

**Program:** LPD-17 Proposal

**Task:** Develop a calibrated baseline engine for trade study comparison.  
Develop a “forward run” baseline engine.  
Develop trade study candidates.  
Develop total LCC.

### Highlights

- The PRICE results were included in the Technical Volume of Proposal for evaluating against the “bottoms-up” approach.
- Bottoms-up approach required 10 months to complete while PRICE approach was completed in three weeks with the same fidelity.

	DTC 1	DTC 2	DTC 3
MTBF	760	950	846
Development	76	228	187
Production	360	465	321
Support	35,985	36,045	35,872
Total	36,421	36,738	36,380

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## Recent Consulting Engagements

**Client:** Aeronautical Systems Center (ASC/SMJ)  
**Program:** Joint Modeling and Simulation System (JMASS)  
**Task:** Complete JMASS Total Ownership Cost (TOC)  
Estimate and supporting documentation

### Highlights

- Completed a software cost model survey
- JMASS TOC estimate was in support of the Defense Acquisition Board (DAB) Program Milestone Review
- TOC estimate was presented and reviewed by Navy and Army Cost Analysis Agencies. Air Force review was from local ASC Comptroller Staff Office
- Estimate was documented in accordance with OSD/CAIG approved format

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**Assistant Secretary of the Navy  
(Research, Development, and Acquisition)  
Acquisition Reform Office**

**January 2002**