



PPG#13 PARAMETRIC AND CONCEPTUAL ESTIMATING, 3RD EDITION

Table of Contents

Introduction to the Third Edition

Introduction to the Second Edition


Introduction to the First Edition

Chapter 01: Parametric/Conceptual Estimating Overview

1. *Preliminary Estimates of Process Plant Investments Can be Realistic*, Gustav Enyedy, Jr., **AACE Transactions**, 1976
2. *Toolmaking for Better Conceptual Estimates*, C. Peter Rapier, **AACE Transactions**, 1977
3. *An Introduction to Parametric Estimating*, Tom E. Krieg, PE CCE, **AACE Transactions**, 1979
4. *Feasibility of Feasibility Estimates*, John Cran, **Cost Engineering Journal**, 1980
5. *Time Saving Devices in Estimating*, Jack D. Shiles, **AACE Transactions**, 1981
6. *Application of Parametric Estimating to Cost Engineering*, James H. Black, CCE, **AACE Transactions**, 1984
7. *Theoretical And Practical Aspects Of Conceptual Estimating*, Robert D. Bakewell, **Cost Engineering Journal**, 1985
8. *Applied Estimating - Conceptual Estimates*, Kweku K. Bentil, **AACE Transactions**, 1987
9. *Conceptual Estimation and Budget Control*, William Noble, **AACE Transactions**, 1987
10. *Parametric Cost Estimating: A Design Function*, Edwin B. Dean, **AACE Transactions**, 1989
11. *The Dangers of Early Estimates*, Charles G. Poulton, PE CCE, **AACE Transactions**, 1989
12. *Conceptual Estimating Systems and Their Benefits*, Rollin A. Kreps; John W. Slomba, **AACE Transactions**, 1990
13. *Integrated Estimating Technique*, Arun Chakravartty, PE, **AACE Transactions**, 1992
14. *Contractor Risks in Conceptual Estimating*, Joon Hong Paek, **Cost Engineering Journal**, 1994
15. *Estimating Engineered Equipment Costs*, Kul B. Uppal, PE, **AACE Transactions**, 1996
16. *Estimating? Number/Confidence/Resources or What?*, Kul B. Uppal, PE, **AACE Transactions**, 1999
17. *Advanced Cost Estimating and Strategic Planning*, Zoran Vojinovic; Rainer Seidel; Vojislav Kecman, **AACE Transactions**, 2000
18. *Easy Factored Estimating and Process Cost Engineering*, Kul B. Uppal, PE, **AACE Transactions**, 2001
19. *Interactive Roadmap to Conceptual Cost Estimating*, Christopher L. Kinney; Nathalie Soubiran, **Cost Engineering Journal**, 2004
20. *So You Think You're An Estimator?*, Larry R. Dysert, CCC; Todd W. Pickett, CCC, **AACE Transactions**, 2005
21. *Improving Conceptual Cost Estimating Performance*, Alfredo F. Serpell, **AACE Transactions**, 2005
22. *An Introduction to Parametric Estimating*, Larry R. Dysert, CCC, **AACE Transactions**, 2008


Chapter 02: Estimate Classification

1. *Cost Estimate Classification System*, AACE International, **Recommended Practices**, (latest revision)
2. *Cost Estimate Classification System - As Applied in Engineering, Procurement, and Construction for the Process Industries*, AACE International, **Recommended Practices**, (latest revision)
3. *Cost Estimate Classification System - As Applied for the Mining and Mineral Processing Industries*, AACE International, **Recommended Practices**, (latest revision)

- 
4. *Cost Estimate Classification System - As Applied for the Building and General Construction Industries*, AACE International, **Recommended Practices**, (latest revision)
 5. *Conceptual Estimating Requirements & Conditions (That Impact Construction Costs & Time Frame)*, John Di Natale, CCE, **AACE Transactions**, 1980

Chapter 03: Parametric/Conceptual Estimating Methodology

1. *Developing Short-Cut Estimating Techniques*, Stanley A. Gertz; Donald Brosnan; Walter Brower; Charles F. Chatfield; Robert F. Dennee; Wesley Dodge; Elsie Eaves; Martin J. Gibson; Kenneth M. Guthrie; Joseph Shapiro, **AACE Transactions**, 1961
2. *Factored Estimates*, John Cran, **AACE Transactions**, 1971
3. *Preparation and Application of Refined Lang Factor Costing Techniques*, S. G. Kirkham, **Cost Engineering Journal**, 1972
4. *Regression Analysis - Its Application and Its Acceptance*, Lournet Villeneuve, **AACE Transactions**, 1974
5. *Selecting From Candidate Parametric Estimating Relationships*, Tom E. Krieg, CCE, **AACE Transactions**, 1980
6. *The Process Step Scoring Method For Making Quick Capital Estimates*, J. H. Taylor, **Cost Engineering Journal**, 1980
7. *A Discussion and Comparison of Methods Used In Developing Estimating Factors*, Peter J. Ohlrichs, CCE, **Cost Engineering Journal**, 1981
8. *Step Counting Methods For Preliminary Capital Cost Estimation*, A. V. Bridgewater, **Cost Engineering Journal**, 1981
9. *Techniques for Capital Cost Estimating with Minimal Data*, Gregory K. Cabral, CCE, **Cost Engineering Journal**, 1982
10. *The Fast Cost Estimating Models*, Frank R. Freiman, **AACE Transactions**, 1983
11. *Development of a Fuzzy Cost Data Bank*, Ilkka Turunen; Martti Jarvelainen; Mirko Dohnal, **AACE Transactions**, 1984
12. *Cost Estimating for Chemical Plants*, Roland H. Rodl; Peter Prinzing; Dieter Aichert, **AACE Transactions**, 1985
13. *Cost Models: Development and Use*, James J. Stevenson, Jr., CCE, **AACE Transactions**, 1985
14. *Parametric Cost Estimating - A Guide*, John W. Hackney, CCE; Kay Hudson; Lesley Gasperow, **AACE Transactions**, 1987
15. *Modular Factored Estimating: The New Wave*, Walter J. Strutt, PE CCE, **AACE Transactions**, 1992
16. *R&D Phase - Capital Cost Estimating*, Kul B. Uppal, PE; Hans Van Gool, **AACE Transactions**, 1992
17. *Computerized Databases for Reliable Cost Estimates*, Keith G. Decker, **AACE Transactions**, 1993
18. *Composite-Factored Estimating*, Masahide Nishimura, **AACE Transactions**, 1995
19. *Cost Estimating Using Historical Costs*, Kymberli Popham, CCE, **AACE Transactions**, 1996
20. *Estimating Costs With Fuzzy Logic*, Anthony K. Mason, PE; Donald J. Kahn, Sr., **AACE Transactions**, 1997
21. *Neural Networks for Cost Estimation*, Jurgen Bode, **Cost Engineering Journal**, 1998
22. *Strategic Site Development and Required Utilities*, Rodney L. Russell, **AACE Transactions**, 2000
23. *Developing a Parametric Model for Estimating Process Control Costs*, Larry R. Dysert, CCC, **AACE Transactions**, 1999
24. *Parametric Estimating for Design Costs*, Asheesh Bajaj; Douglas D. Gransberg; Mark D. Grenz, **AACE Transactions**, 2002
25. *Cost Model Performance*, James D. Whiteside II, PE, **AACE Transactions**, 2003
26. *Costing R&D Projects: A Bottom-Up Framework*, Mohammed Jahangir, CCC, **Cost Engineering Journal**, 2003
27. *Developing Estimating Models*, James D. Whiteside, II, **Cost Engineering Journal**, 2004

- 
28. *Review of Conceptual Cost Modeling Techniques*, Rifat Sonmez, **AACE Transactions**, 2005
 29. *Accurate Estimates In Less Than a Minute*, Glenn C. Butts, CCC, **AACE Transactions**, 2006
 30. *Parametric Factors as Applied to Pipeline Cost Estimating*, Donald Polla, CCE, **Cost Engineering Journal**, 2007
 31. *Methodology for Calculating a Pipeline Repair Cost*, Jeferson Faria Vianna; Enirton Ferreria Teles, **AACE Transactions**, 2008
 32. *A Challenge to Traditional Best Practice Methodologies: Improving Project Cost Estimate Accuracy Through the Use of the Lichtenberg Successive Principle*, Joel M. Friendman, **Cost Engineering Journal**, 2009
 33. *Predict Piping Quantities Based on 30 Percent Model Review or Earlier Downloads*, Lakshmanan Simhadri, P.Eng. CCE; Blair Hitchings, **AACE Transactions**, 2009
 34. *Modeling Historical Cost Data For Probabalistic Range Estimating*, Faik Burak Evrenosoglu, CCE PSP, **Cost Engineering Journal**, 2010
 35. *Modeling Projects' Scopes for Conceptual Cost Estimating*, Alfredo F. Serpell, **AACE Transactions**, 2010
 36. *Estimate Conversion to Conceptual Model*, R. Jerry Coppo, **AACE Transactions**, 2010
 37. *A Cost Estimation Methodology for a Pre-Feasibility Study of Wind Energy Projects*, Huseyin Sarper, PE; Burak L. Unay, **Cost Engineering Journal**, 2010
 38. *Simple, Probabilistic ROM Estimates*, George A. Whyte, CCC CEP EVP; Kofi Adomako-Arhin, CCC, **AACE Transactions**, 2011

Chapter 04: Capacity Factoring


1. *Project Conceptual Estimating: A Systematic Approach*, Burt D. Hulbert, **AACE Transactions**, 1980
2. *Scaling Operating Costs by Cost-Capacity Factors*, James E. Black, CCE, **AACE Transactions**, 1982
3. *How to Do a Good Coal Plant Quick Estimate in Less Than an Hour (Or What to Do Until Some Engineering is Done)*, Tom B. Thamm. CCE, **AACE Transactions**, 1983
4. *Operating Cost-Capacity Factors Revisited*, James H. Black, CCE, **AACE Transactions**, 1985
5. *Chemical Plant Costs From Capacity*, Kevin W. Tolson; Jude T. Sommerfeld, **Cost Engineering Journal**, 1990
6. *Cost Scaling Factors*, James R. Bielefeld, Jr.; G. David Rucklos, CCE, **Cost Engineering Journal**, 1992
7. *Cost Scale-Up Factors for Airport Construction*, Donald S. Remer, PE; Christopher Wong, **Cost Engineering Journal**, 1996
8. *Cost-to-Capacity Analysis for Estimating Waste-to-Energy Facility Costs*, Richard K. Ellsworth, PE, **Cost Engineering Journal**, 1998
9. *Estimating Scale-Up Cost Factors for Commercial Jet Airplanes*, Christopher P. Holcomb; Donald S. Remer, **Cost Engineering Journal**, 2004
10. *Cost to Capacity Factor Development for Facility Projects*, Richard K. Ellsworth, PE CCE, **Cost Engineering Journal**, 2007

Chapter 05: Parametric/Conceptual Estimating in the Process Industries

1. *Estimating Capital Costs From Process Flowsheets*, W. E. Hand, **AACE Transactions**, 1958
2. *Order-of-magnitude Capital Cost Estimate Of A Distillation Unit*, W. E. Hand, **AACE Transactions**, 1963
3. *Order-of-Magnitude Capital Cost of a Distillation Unit*, W. E. Hand, **Cost Engineering Journal**, 1964
4. *Module Estimating Technique As An Aid In Developing Plant Capital Cost*, Leslie J. Hellenack; Douglas R. Carnegie; Victor Bych, Jr.; E.J. Johnson; Wesley J. Dodge; Edmund F. O'Connell, **Cost Engineering Journal**, 1964
5. *An Approach To Process Equipment Estimation*, Francis P. O'Connell, **AACE Transactions**, 1965




6. *Factor Estimating Refined For Appropriation of Funds*, C. A. Miller, **Cost Engineering Journal**, 1965
7. *Estimating Machinery and Equipment Erection Costs*, Lawrence J. Bloch, **AACE Transactions**, 1973
8. *Preliminary Estimation of Costs for Air and Water Pollution Control*, D. L. Brandt; A. N. Mann, **AACE Transactions**, 1973
9. *Computer Simulation of Definitive Estimates*, Herbert G. Blecker, **AACE Transactions**, 1973
10. *The Functional Unit Approach to Rapid Cost Estimation*, A. V. Bridgwater, **Cost Engineering Journal**, 1976
11. *Sectionalized Cost Estimating for the Solids Processing Industries*, J. C. Agarwal, CCE; I. V. Klumpar, CCE, **AACE Transactions**, 1978
12. *Parametric Estimating Applied to Power Plant*, Laxmidas V. Popat, CCE, **AACE Transactions**, 1980
13. *Analysis of Published Data for Parametric Estimating of Boiler Plants - Part II*, Laxmidas V. Popat, CCE, **AACE Transactions**, 1981
14. *Instrumentation Cost Estimating by Loops*, Don P. Kidwell, **AACE Transactions**, 1983
15. *Rapid Capital Estimation Based on Process Modules*, Ivan V. Klumpar, CCE; Richard F. Brown; Jorg W. Fromme, **AACE Transactions**, 1983
16. *How To Make Rapid Electrical Estimates For Large Industrial Plants*, Kalliana R. Krishnan, **Cost Engineering Journal**, 1983
17. *Budgeting By Criteria Not Cost Per Square Foot*, Donald E. Parker, CCE, **AACE Transactions**, 1984
18. *Electronic Spreadsheets in Feasibility Studies*, M. S. A. Vrijland; K. R. Westerterp, **AACE Transactions**, 1984
19. *Estimating Engineering Costs for the Appropriation of Funds Without Drawing Counts*, C. Arthur Miller, CCE, **AACE Transactions**, 1984
20. *Conceptual Estimating: Motor Wiring and Control*, Kalliana R. Krishnan, **Cost Engineering Journal**, 1984
21. *Preliminary Cost Estimating For The Nuclear Industry*, Ivan V. Klumpar, CCE; Kenneth M. Soltz, **Cost Engineering Journal**, 1985
22. *Conceptual Estimating*, John J. Suarez, **AACE Transactions**, 1986
23. *Estimating Factors for Process Plants*, John R. Heizelman, **AACE Transactions**, 1988
24. *Capital Cost of Pulp and Paper Capacity*, Michael F. Davy, **AACE Transactions**, 1989
25. *Upgrading Capital Estimation Factors and Correlations*, Ivan V. Klumpar, CCE, **AACE Transactions**, 1990
26. *Cost Estimating Electrical High-voltage Distribution Systems in Industrial Facilities*, Kiran Jani, PE, **AACE Transactions**, 1992
27. *Cost Estimating Techniques for Pilot Plants*, Stan Yoslov, **AACE Transactions**, 1992
28. *Estimating from Process Flow Diagrams: A Conceptual Approach*, Alex W. Krokowski, **AACE Transactions**, 1992
29. *A Different Approach to Factored Cost Estimating*, Kul B. Uppal, PE, **AACE Transactions**, 1993
30. *Factored Estimating Guidelines - Refinery/Petrochemical Projects*, Robert S. Smith, PE, **AACE Transactions**, 1996
31. *Extreme Order-of-Magnitude Estimating*, Thomas E. Simpson, CCE, **AACE Transactions**, 2000
32. *Reappraisal of Module Factors*, Yoshimi Saito, **AACE Transactions**, 2000
33. *Easy Factored Estimating and Process Cost Engineering*, Kul B. Uppal, PE, **Cost Engineering Journal**, 2003
34. *Sharpen Your Cost Estimating Skills*, Larry Dysert, CCC, **Cost Engineering Journal**, 2003
35. *Suitable Method for Capital Cost Estimation in Chemical Processes Industries*, Mohammed Reza Shabani; Reza Behradi Yekta, **Cost Engineering Journal**, 2006
36. *Chemical Processes Equipment Cost Estimation Using Parametric Models*, Mohammed Reza Shabani; Reza Behradi Yekta, **Cost Engineering Journal**, 2006
37. *Factored Estimating for Process Industries*, Kul B. Uppal, PE, **AACE Transactions**, 2007

- 
38. *Estimating by Equipment Factors - A Recommended Practice*, Desmond Orsinelli, PE CEP, **AACE Transactions**, 2010
 39. *Conducting Technical and Economic Evaluations - As Applied for the Process and Utility Industries*, AACE International, **Recommended Practices**, (latest revision)
 40. *Development of Factored Cost Estimates - As Applied in Engineering, Procurement, and Construction for the Process Industries*, AACE International, **Recommended Practices**, (latest revision)

Chapter 06: Parametric/Conceptual Estimating in the Non-Process Industries

1. *Early Estimating and a Systems Approach in the Construction Management Process*, Oliver D. Filley, **AACE Transactions**, 1975
2. *Parametric Estimating of Buildings*, Norman A. Koenigseker, **Cost Engineering Journal**, 1982
3. *Predesign Estimate of Elevator Cost in Multistory Buildings*, Saeed Karshenas; Zafar S. Yousuf, **AACE Transactions**, 1985
4. *Preliminary Cost Estimating for Highway Construction Projects*, Lansford C. Bell; Ghazanfer A. Bozai, **AACE Transactions**, 1987
5. *Preliminary Estimating for Heavy Construction*, Steve R. Sanders; Robert R. Maxwell, **AACE Transactions**, 1992
6. *Preliminary Estimating Models For Infrastructure Projects*, Steve R. Sanders; Robert R. Maxwell; Charles R. Glagola, **Cost Engineering Journal**, 1992
7. *Square Foot Type Estimating for Construction*, Steven F. Roney, CCC, **AACE Transactions**, 1992
8. *Conceptual and Early Design Estimating Techniques for Building, Heating, Ventilation, and Air Conditioning Systems*, Frederick M. Reynolds, CCE, **Cost Engineering Journal**, 1993
9. *Parametric Cost Estimating of Building Construction - US, Canada, and Mexico*, Luis C. Hinojosa, CCE; Ramon Vazquez Del Mercado, **AACE Transactions**, 1993
10. *Square Foot Range Estimating*, John R. Knoke, PE; Liang Y. Liu; John R. Spittler, **AACE Transactions**, 1993
11. *A Parametric Building Cost Estimating System*, John K. Hollmann, PE, **AACE Transactions**, 1994
12. *Developing a Project Scope/Conceptual Estimate Questionnaire*, Frank B. Mitchell, Jr., **AACE Transactions**, 1995
13. *Computer Assistance in Conceptual Estimating for Buildings*, Christopher Nelson; Doug Powell, PE; Mark O. Federle, PE CCE, **AACE Transactions**, 1998
14. *Neural Networks for Cost Estimating of Structural Steel Buildings*, Osama Moselhi, PE; Ines Siqueira, **AACE Transactions**, 1998
15. *Parametric Estimates Made Easy*, James J. Davis, PE, **AACE Transactions**, 1998
16. *A Conceptual Cost Estimating Model for Water Reservoirs*, Mohammed Al Khalil; Sadi Assaf; Walild Abdul Rahman; Mashoor Asfoor, **Cost Engineering Journal**, 1999
17. *A Cost Model for the Pultrusion Process*, Robert C. Creese, PE CCE; Taher B. Patrawala, **AACE Transactions**, 1999
18. *Preliminary Cost Estimation of Highway Construction Using Neural Networks*, Hashem Al-Tabtabai; Alex P. Alex; Maha Tantash, **Cost Engineering Journal**, 1999
19. *The Empirical Method of Budget Pricing for Prisons*, Iftikhar Kamil Madni, CCE, **Cost Engineering Journal**, 1999
20. *An Integrated System for Conceptual Cost Estimating of Building Projects*, Ahmad Jrade; Sabah Alkass, **Cost Engineering Journal**, 2002
21. *Conceptual Estimating*, Philip D. Larson, **AACE Transactions**, 2002
22. *Using Models in Parametric Estimating for Transportation Projects*, Robert H. Harbuck, **AACE Transactions**, 2002
23. *Development and Maintenance of a Parametric Building Cost Estimating System*, Joseph George Masi, CCC, **Cost Engineering Journal**, 2003

- 
24. *Metrics Improve Software Cost Estimating*, Ralph Porter; Joseph Lees, **Cost Engineering Journal**, 2003
 25. *Parametric Cost Estimating Model for Buildings*, Kan Phaobunjong; Calin M. Popescu, PE, **AACE Transactions**, 2003
 26. *Approximate Estimating Method for Typical Buildings*, Amarjit Singh, P.Eng., **Cost Engineering Journal**, 2007
 27. *A Study of Design-Build Estimates at the 10 Percent Completion Level*, Dan E. Schottlander, CCE, **AACE Transactions**, 2007
 28. *Parametric Estimating for Environmental Remediation Projects*, Angela R. Brunsmann, ICC; Kenneth F. Robson; Douglas D. Gransberg, PE CCE, **AACE Transactions**, 2008
 29. *Budgeting for Federal Buildings Using Parametric Models*, William H. Hunt, CCC CEP PSP; Peter H. Morris, MRICS, **AACE Transactions**, 2010

Chapter 07: Parametric/Conceptual Estimating Systems

1. *"Flame" Factored Labor and Material Estimates*, Lawrence J. Bloch, **AACE Transactions**, 1975
2. *Estimating Building Construction Costs - A Better Approach Through Models*, Marshall S. Zewe, **AACE Transactions**, 1978
3. *Design of a Viable System for Process Plant Estimating*, John W. Hackney, CCE, **AACE Transactions**, 1980
4. *Automated Estimating Systems: Army/ Navy/Air Force*, John E. Williams, **AACE Transactions**, 1985
5. *Cost Estimation as a Complexity Modeling Problem*, Celestine A. Ntuen; Arup K. Mallik, PE, **AACE Transactions**, 1987
6. *Capital Plant Factorial Estimating System (FACTEST)*, Mike G. Leese, **AACE Transactions**, 1988
7. *Parametric Software Cost Estimation with an Adaptable Model*, Robert E. Park, **AACE Transactions**, 1988
8. *Case History - Parametric Estimating System*, Tom G. Mendel, **AACE Transactions**, 1989
9. *Development of Conceptual Estimating Support Systems at Kodak*, John K. Hollmann; Larry Dysert, **AACE Transactions**, 1989
10. *FACET - Oil and Gas Production Facilities Cost Estimating and Control Techniques*, C. W. (Cled) Cole; I. J. (Steve) Banzsky, **AACE Transactions**, 1989
11. *Parametric Estimating - In Search of Expert Systems*, Rino Gosselin; Leslie E. McMullan, **AACE Transactions**, 1989
12. *IEST: An Interactive System for Estimating*, Charles J. Golde; Michael A. Hauser, **AACE Transactions**, 1990
13. *Statistical Conceptual Estimating System (SCES)*, A. James Poe, CCC, **AACE Transactions**, 1995
14. *The Evolution of Estimating Systems at Kodak*, John K. Hollmann, PE CCE; Larry R. Dysert, CCC, **AACE Transactions**, 1996
15. *Facility Parametric Cost Estimating*, Edward R. Meyer, PE; Thomas J. Burns, PE, **AACE Transactions**, 1999
16. *Parametric Cost Estimating for Environmental Remediation Projects*, Jacqueline Rast, PE; Kate M. Peterson, PE, **AACE Transactions**, 1999
17. *Benefits of Expert Estimating Systems*, Waymon D. Lofton; Michael D. Monteith, **AACE Transactions**, 2003
18. *Government Estimating Tools*, Joseph A. Brown, CCE; Gene Hajdaj, PE, **AACE Transactions**, 2003
19. *Experiences with Front-End Integrated Estimating Tools*, Albert van der Werf, CCE, **AACE Transactions**, 2004
20. *Booz Allen Hamilton Uses Parametric Cost Estimating Tool to Move Navy's Satellite Communication Program to Next Level*, Stephen Glad, **Cost Engineering Journal**, 2005
21. *Refinement of Storey Enclosure Forecasting Method*, Franco K.T. Cheung; Martin Skitmore, **AACE Transactions**, 2005



Author Index

Chronological Index

About the Editors