

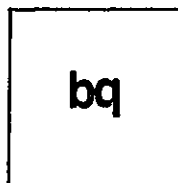
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Guide to Purchasing Quieter Products and Services

*A Handbook for Officials of Local, State, and
Federal Government Units Who Want to Reduce
Noise in Their Communities Through Purchases
of Items That Make Less Noise*

prepared by the

**National Institute of
Governmental Purchasing, Inc. (NIGP)**
1001 Connecticut Avenue, NW
Washington, DC 20036



The Buy Quiet Program

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To All Local, State, and Federal Purchasing Officials and Others Interested in Quieter Products:

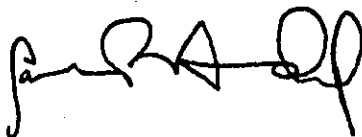
All of us are aware of the noisy environment in which we live, work and play. We are surrounded by products that are designed without consideration for how much noise they make. How many times have we been jarred out of bed by the neighbor's lawn mower, the construction worker's drill, or the county's garbage truck?

When most of us think about noise, we usually think about how irritating it is. It is irritating, but it's much more than an irritant. Scientists and the medical profession now tell us that noise has a very adverse impact on our health and our well-being.

What can governments do to reduce noise in their communities? One important thing is making their own operations and services quieter by purchasing quieter models of new equipment.

This guide tells how to buy quieter products and services at competitive prices. It describes the Buy Quiet Program—a cooperative effort of the National Institute of Governmental Purchasing, the National League of Cities, and two federal agencies.

We hope that your government will actively participate in this very important effort.



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Introduction

Purpose

This guide has been prepared to help purchasing officers and other governmental officials develop purchasing programs that complement other noise reduction efforts in their communities. Comprehensive noise control programs will involve the purchase of quieter models of new equipment, and they will limit the noise that can be generated during the provision of a governmental service by a contractor.

Organization

This guide briefly discusses the following topics:

- The Need for Quieter Products
- The Buy Quiet Program
- How to Specify Noise Level Requirements
- How to Verify Compliance with Noise Level Requirements
- How to Reward Increased Quietness

WHY BUY QUIET?
WHERE
CAN I GET
HELP?
HOW DO I
ASK FOR
QUIETER
PRODUCTS?
HOW CAN
I BE SURE
I GET WHAT
I ASKED
FOR?
HOW CAN
I BUY THE
REAL QUIET
MODEL?



The Need for Quieter Products and Services

Noise is America's most widespread nuisance. It is, however, much more than a nuisance. It is a very real danger to people's health that appears to be related to:

- heart disease
- other body reactions
- effects on the unborn
- intrusions at home and work
- sleep
- mental and social well-being
- danger to life and limb

Many of the products used by governments or their contractors noticeably contribute to excessive noise levels in communities throughout North America. These products include, but they are by no means limited to:

- lawnmowers
- chain saws
- air compressors
- paving breakers
- typewriters
- vacuum cleaners
- air conditioners
- garbage trucks

By purchasing quieter models of equipment and requiring contractors to use quieter models of equipment when providing public services, governments can reduce noise at its source. Moreover, they can set a good example for local businesses and the general public who use many of the same items.

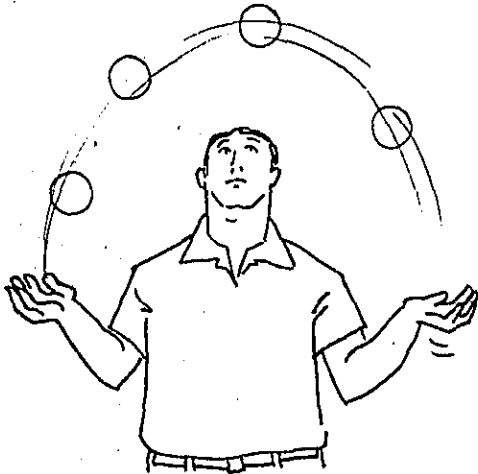
An Overview of the Buy Quiet Program

The Buy Quiet Program has been established to encourage and support governmental purchases of items that make less noise. It is coordinated by the National Institute of Governmental Purchasing (NIGP) and involves the active participation of the National League of Cities, the federal government, and a growing number of state and local government purchasing agencies.

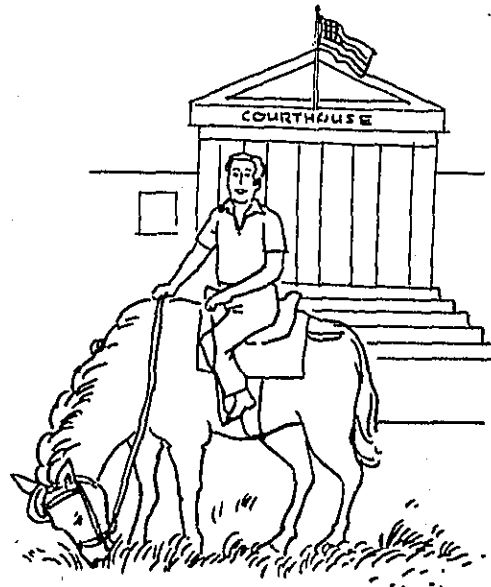
The Buy Quiet Program is divided into 4 major areas. They are:

- the Product Selection Process
- the Data Bank for Quieter Purchasing
- the "Official" Buy Quiet Programs Project
- the Quieter Products Project

As illustrated below, these major elements of the Buy Quiet Program complement one another. A fifth program element is the Quieter Products Demonstration Project.



The National Institute of Governmental Purchasing is a non-profit educational and technical society of governmental purchasing agencies. It was founded in 1944 to raise the standards of public purchasing through the interchange of technical and professional information and to further professionalize the field of public purchasing by offering training and professional certification for public purchasing officers. Chartered under the laws of the State of Wisconsin, NIGP is affiliated with the Institute of Purchasing and Supply of Great Britain and is a charter member of the International Federation of Purchasing and Materials Management. It is the largest organization in the world devoted exclusively to governmental purchasing. NIGP's offices are located at 1001 Connecticut Avenue, Suite 922, Washington, DC 20036.



"I sure like this quiet mower the federal government loaned me."

The Quieter Product Demonstration Project

"Quieter" lawn mowers, purchased by the federal government in a procurement that emphasized both price and noise reduction, have been loaned to some 200 state agencies and local governments for the 1980 grass cutting season. The loan is intended to:

- demonstrate the benefits of quieter products and services for citizens and governmental employees
- demonstrate that quieter models of common-use items are available at competitive prices

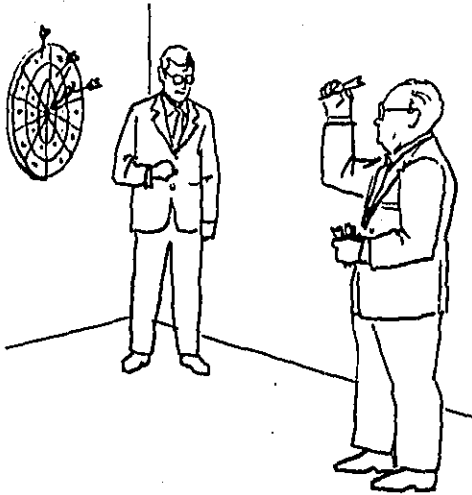
These mowers have a 21" cutting swath and are designed for use on prepared lawn surfaces. They have a noise level of 82 decibels (A Scale) at the operator's ear, which is about half as loud as the noisiest models available.

Mowers with similar noise levels and performance capabilities are available commercially.

Loans of other quieter products to state and local governments are anticipated.

The Product Selection Process

As a basis for targeting its efforts in other areas of the program, NIGP has surveyed federal agencies and state and local governments to identify the products that governments would like to see quieter models of. Early responses to our survey indicate that governments are interested in obtaining quieter lawn mowers, chain saws, portable air compressors, paving breakers, typewriters, vacuum cleaners, air conditioners, garbage trucks, and portable electric drills. Governments interested in quieter models of other products should advise NIGP of their interests.



"Good shot... let's start with lawn mowers!"

The Data Bank for Quieter Purchasing

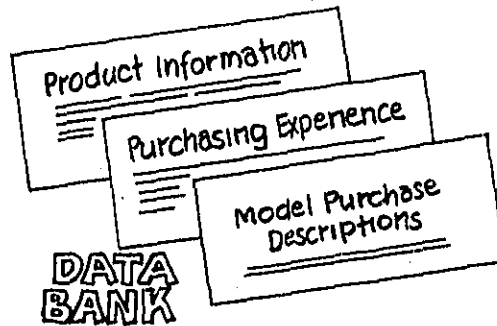
NIGP has set up a central file which buyers may consult when preparing their own* purchase descriptions for quieter products and services. It contains information on quieter models of various products as well as information on the experience of governments who have purchased products or services with an emphasis on noise reduction.

Materials describing quieter product models are being gathered from manufacturers, suppliers, standards-setting organizations, trade associations, independent laboratories, and federal agencies. Such materials describe the design, performance, and noise level characteristics of product areas and specific product models.

NIGP is also gathering materials which describe the experiences of governments who have required vendors to offer quieter products and services. These materials include purchase descriptions, tabulation sheets, and award recommendations. Lists of known quiet purchases will be tabulated periodically and made available through the Data Bank.

The Data Bank will also contain model purchase descriptions developed under the Quieter Product Project (see below).

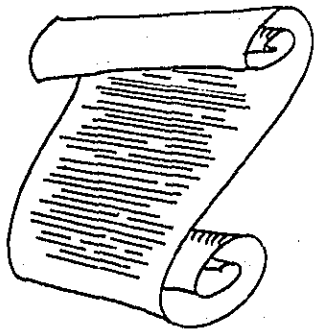
To obtain materials from the Data Bank, governments should write or call the Data Bank for Quieter Purchasing, % NIGP, 1001 Connecticut Avenue, Suite 922, Washington, DC 20036, telephone (202) 331-1357.



*Governments will have to develop their own purchase descriptions for most product areas. Only a limited number of product areas will be covered by model purchase descriptions developed under the Quieter Products Project of the Buy Quiet Program.

The "Official" Buy Quiet Programs Project

This project involves commitments by state agencies and local governments in specific communities to purchase products or services with contract documents that require or reward the offering or use of quieter products. Participating governments will use information provided through the Data Bank and the Quieter Products Project to prepare purchase descriptions and award contracts for a number of quieter products and services.



The Quieter Products Project

This element of the program is intended to speed up the marketing of quieter models of the products targeted in the Product Selection Process. The process for each product will involve the development of a "model" purchase description and the use of that purchase description by several governments in their regularly-scheduled purchases of that product.

The model purchase descriptions are being prepared in government-industry conferences convened by NIGP. At these conferences, purchasing officials and manufacturers' representatives are working together to create clear, open and accurate purchase descriptions that permit competitive bidding on quieter product models.

Purchase descriptions for quieter models of three types of push-type, powered, rotary lawn mowers* were prepared in a government-industry conference in New Orleans on April 18, 1980. These descriptions are now available to governments upon request through the Data Bank for Quieter Purchasing.

Purchase descriptions for other targeted products will be announced as they become available.



*Intermediate duty, heavy duty, and heavy duty (high wheeler).

SECTION 1

How to Specify Noise Level Requirements

A specification for any product or service should do four (4) things:

- It will identify minimum performance and design requirements
- It will list the reproducible test methods that may be used to determine compliance with these requirements
- It will allow competitive bidding
- It will permit an equitable contract award at the lowest possible evaluated price

Therefore, a government that is interested in purchasing a quieter product or service must be sure that its specification describes an acceptable product or service that can be offered at a reasonable price by at least two, and preferably, three or more suppliers. This requires the government to:

- know the noise level output, performance and design characteristics, and price ranges of commercially available models
- be familiar with the procedures used by industry and government to measure the sound level of the equipment to be purchased

Noise Level, Performance, Design, and Price

Data on the noise level output, performance and design characteristics, and price ranges of commercially-available models can be obtained by various methods. Possible means include:

- writing or calling the Data Bank for Quieter Purchasing at NIGP
- calling, writing or meeting with suppliers or manufacturers on an individual basis
- conducting a specification—development conference attended by purchasing officials, using agency officials, and manufacturers' representatives
- using, if time permits, the *multi-step competitive sealed bid* method*

NIGP is preparing product noise information supplements to assist buyers in the selection of noise levels for different products. These publications describe the product and give the *range* of noise levels and the *average* noise level for all known models. They also suggest wording for "Noise Level" requirement of the purchase description and describe a method of contract award that will encourage bidders to offer models with noise levels below the requirements of the specification. In addition, the supplements list manufacturers of "quieter" and "regular" models, and they indicate sources of additional information. Lists of governments who have purchased products with "noise limiting" specifications are included in the product noise information supplements.

Sound Level Measurement Procedures

Sound level measurement procedures prescribe *instrumentation* (e.g., the type of sound level meter to be used, other devices required), a description of the *test site* and measurement zone, a description of *equipment operation* (e.g., traveling or stationary mode, r.p.m. setting), how *measurements* are to be made (e.g., setting of sound level meter, height and location of microphones), and *general requirements* (e.g., who should select testing devices and conduct the tests).

*For those readers who are not purchasing agents, a brief description of this and other source selection methods is included in the appendix.

Including Sound Level Measurement Procedures in the Specifications

A government *must* reference a *reproducible* sound level measurement procedure whenever it specifies a noise level requirement or any other performance requirement. Otherwise, that requirement is meaningless. For example, the noise level requirement of the NIGP purchase descriptions for quieter lawn mowers (paragraph 3.9 in all three) states:

Noise Level: Noise level shall not exceed 86 decibels (A Scale) when measured in accordance with paragraph 2.2.

Paragraph 2.2., (under section 2, APPLICABLE PUBLICATIONS), cites:

S.A.E. J1174, "Operator Ear Sound Level Measurement Procedure for Small Engine Powered Equipment."

Paragraph 6.2, AVAILABILITY OF DOCUMENTS, (under Section 6, NOTES) tells the bidder to obtain copies of all referenced documents, including the procedure for noise level measurement.

Sources of Sound Level Measurement Procedures

Sometimes governments develop their own procedures for sound level measurement and other performance requirements. However, as a general rule, it is preferable to reference and use testing procedures that have been developed by recognized standards-setting organizations. Some of the sound level measurement procedures developed by recognized-standards setting organizations are listed, by product, in the appendix. If the procedure you need is not listed, contact NIGP for assistance.

SECTION 2

How to Verify Compliance With Noise Level Requirements

There are at least two ways that governments can assure themselves that they have been offered or sold products which conform to specified requirements. One involves laboratory and field testing by the government. The other involves vendor submission of "certified" test data.

In some instances, it may be necessary for the government or its agent (for example, a commercial laboratory) to actually test items when they are submitted for evaluation or received after purchase. In most instances, however, it is more practical for the government to ask a vendor to submit with his bid a third party's written certification that the vendor's product conforms with a specified requirement. There are hundreds of private sector laboratories which perform testing and certification services for manufacturers.

If a government must actually test the noise level output of product models offered in response to a "noise-conscious" Invitation for Bids, it should contact the Buy Quiet Program director at the NIGP national office. In many instances, he may be able to arrange for essential testing at no charge to the government concerned. Requests for testing will be carefully screened, however.

The TESTING section of the NIGP purchase description for quieter lawn mowers is a good model to follow when preparing purchase descriptions for quieter models of any product. It states:

4.2 Testing:

4.2.1 Testing for noise level shall be in accordance with paragraph 2.2 above.

4.2.2 Verification for noise level and testing of other specification requirements may be performed at the discretion of the contracting activity as indicated in the Invitation for Bids. Such tests shall be performed on bid samples or samples taken from contractor's shipments. In the event products tested fail to meet requirements of this specification, the cost of samples used in testing and the cost of the testing shall be borne by the supplier.

4.2.3 Bidders must certify with each bid that the model being offered has been tested in accordance with paragraph 2.2; and, a copy of the laboratory test report must be included with the certification provided. Retesting for certification of noise level for the same model year shall not be required unless there has been a design change affecting noise level output.



SECTION 3

How to Reward Increased Quietness When Awarding Contracts

NIGP has developed an optional method of bid evaluation which allows a government to reward a bidder for offering a product that is even quieter than required by the specification. In effect, it tells the bidder: "For each decibel (A scale) that your product is quieter than the loudest product bid (in conformance with the specification), we will subtract a fixed percentage of the *average actual* bid price from your *actual* bid price. The difference will be your *evaluated* bid price."

Evaluated bid prices, rather than actual bid prices, are compared in the selection of the contract recipient. As in Life Cycle Costing, the bidder with the lowest actual bid price may not necessarily be the bidder with the lowest evaluated bid price.

To insure against paying an excessive premium for increased quietness, governments using this optional method of contract award can state that the evaluated bid price per unit is not to differ from the average of the actual bid prices by more than a certain dollar amount. This dollar amount is, in short, the maximum additional amount that the government is willing to pay, above the average actual bid price, for each quieter product unit.

Formula for Determining Evaluated Bid Price

The formula for determining the Evaluated Bid Price (EBP) is:

$EBP = P - \text{---}\% (P_{AV}) (N_N - N)$ where:

EBP = Evaluated bid price

P = Actual bid price

---% = The percentage weight designated by the purchasing activity to "reward" the bidder for each decibel that his model is quieter than the noisiest model bid.

P_{AV} = Average (actual) bid price of all models bid in response to the IFB

N_N = The noise level (in decibels) of the noisiest model bid in response to the IFB

N = The noise level (in decibels) of the model whose ESP is being determined

Sample Bid Tabulations

The bid tabulations for a purchase of quieter lawnmowers might look like this:

Bidder	Actual Bid Price	Noise Level (dBA)	Evaluated Bid Price (EBP)
(A) Smith Co.	\$145.00	86	\$145.00
(B) Robert Co.	\$154.00	85	\$151.02
(C) Jones Co.	\$147.00	82	\$135.08
(D) Watkins Co.	\$150.00	81	\$135.10

Calculation of Evaluated Bid Price

Assuming that the Purchasing Activity used a 2% "reward" factor for each decibel of increased quietness, the EBP for each bidder would be determined as follows:

(A) **Smith Co.**
 $EBP = \$145.00 - .02(\$149) (86-86)$
 $= \$145.00 - \$2.98 (0)$
 $= \$145.00$

(B) **Roberts Co.**
 $EBP = \$154.00 - .02(\$149) (86-85)$
 $= \$154.00 - \$2.98 (1)$
 $= \$151.02$

(C) **Jones Co.**
 $EBP = \$147.00 - .02(\$149) (86-82)$
 $= \$147.00 - \$2.98 (4)$
 $= \$147.00 - \11.92
 $= \$135.08$

(D) **Watkins Co.**
 $EBP = \$150.00 - .02(\$149) (86-81)$
 $= \$150.00 - \$2.98 (5)$
 $= \$150.00 - \14.90
 $= \$135.10$

Contract Award

Based on an evaluated bid price (EBP) of \$135.08, the contract should be awarded to Jones Co. (bidder "C") at its actual bid price of \$147 per unit for furnishing mowers with a (maximum) noise level of 82 decibels (A scale).

SUMMARY

Noise is a serious threat to our health. By purchasing quieter products and services, governments can lower that threat. NIGP, through its Buy Quiet Program, is eager and willing to provide assistance to governmental entities who desire to reduce noise in their community. Call or write us for information and materials. Our address is:

NIGP Buy Quiet Program
1001 Connecticut Avenue, NW
Suite 922
Washington, DC 20036

Feel free to call Lewis E. Spangler, Executive Vice President, or Stephen B. Gordon, Director, Buy Quiet Program at (202) 331-1357.

APPENDIX

How to Select Vendors of Quieter Products and Services

This attachment briefly discusses competitive sealed bidding, multi-step competitive sealed bidding, and requests for competitive sealed proposals. These are the three major methods of source selection recognized by NIGP for the competitive procurement of products and services.

Competitive sealed bidding is the preferred method and should be used when clear and adequate specifications are available or can be developed and adequate competition is available.

Multi-step competitive sealed bidding is a modification of competitive sealed bidding. It can be used when time is not a critical factor, and when available specifications are inadequate or too general to permit full and free competition without technical evaluation or technical discussion. The first "step" is a Request for Information to which potential suppliers respond with unpriced technical offers. The final step is very similar to "regular" competitive sealed bidding; proposers who submitted acceptable offers in the first step submit competitive sealed bids based on those offers. We recommend that governments consider the government-industry conference as an alternative to the multi-step competitive sealed bid method. Such conferences are attended by purchasing officials, using agency officials, and manufacturers representatives, and involve line-by-line discussions of proposed purchase descriptions.

Competitive sealed proposals are requested when a government must purchase non-standard items (such as those involving relatively new technology), and competitive sealed bidding is not advantageous. Requests for proposals include a description

of the product or service to be purchased and the criteria that will be used to compare proposals. Price may not be the major or even the determining criterion for contract award. Unlike the competitive sealed bidding process, which compares the evaluated bid prices of responsive bidders to determine contract award, the competitive sealed proposal method involves the objective evaluation of proposal against proposal to determine contract award.

Additional information regarding these methods of source selection is available through NIGP publications and training seminars.

A copy of the *NIGP Seminar Planning Guide* is available, free of charge, from the NIGP, Education and Professional Development Division, 1001 Connecticut Avenue, NW Suite 922, Washington, DC 20036.

Sound Level Measurement Procedures Developed by Recognized Standards-Setting Organizations

Product	No. and Name of Standard
• Lawn mowers	ANSI B71.1, "Safety Standard for Power Lawn Mowers; SAE J1174, "Operator Ear Sound Level Measurement Procedure for Small Engine Powered Equipment"
• Chain Saws	Chain Saw Manufacturer's Association Test Procedure (Proposed ANSI B175.1-197 and ANSI B175.2-197)

- **Portable Air Compressors** CAGI-PNEUROP Test Code for the Measurement of Sound from Pneumatic Equipment (ISO2151-1972 and ANSI S5.1-1971)
- **Paving Breakers (Pneumatic)** CAGI-PNEUROP Test Code (see above)

The sound level measurement procedures listed above are the four products most frequently mentioned by government purchasing agencies. Copies of these procedures should be requested from the standards-setting organizations themselves, not NIGP. These addresses are:

American National Standards Institute (ANSI)
1430 Broadway
New York, NY 10018

Society of Automotive Engineers (SAE)
400 Commonwealth Drive
Warrendale, PA 15096

Chain Saw Manufacturers Association
Suite 403, 1015 18th Street, NW
Washington, DC 20036

Compressed Air and Gas Institute (CAGI)
1230 Keith Building
1621 Euclid Avenue
Cleveland, OH 44115

The Data Bank for Quieter Purchasing at NIGP will be pleased to assist you in the identification and location of sound level measurement procedures for other products. If no appropriate procedure exists, we will assist you in the development of your own procedure.

BIBLIOGRAPHY

For additional information on relevant topics see the publications listed below:

Effects of Noise

EPA, *Noise: A Health Problem* (Washington, DC: United States Environmental Protection Agency, Office of Noise Abatement and Control, August 1978).

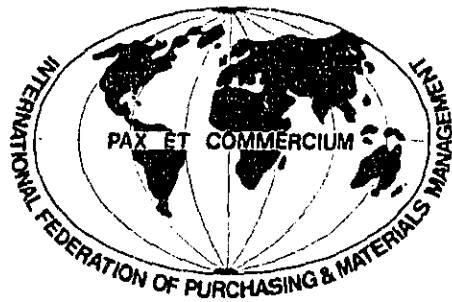
Specifications and Standards

NIGP, *Basic Public Purchasing and Materials Management* (Washington, DC: National Institute of Governmental Purchasing, Inc., 1978).

U.S. Department of Commerce, National Bureau of Standards, *Standards on Noise Measurements, Rating Schemes and Definitions: A Compilation* (NBS Special Publication 386, 1976 Edition).

Quality Assurance

NIGP, *Intermediate Public Purchasing and Materials Management* (Washington, DC: National Institute of Governmental Purchasing, Inc., 1979).



This "Guide to Purchasing Quieter Products and Services" is written by NIGP staff members Lewis E. Spangler, Executive Vice President, and Stephen B. Gordon, Director, Buy Quiet Program/Coordinator, Education and Professional Development. © 1980 by the National Institute of Governmental Purchasing, Inc. (NIGP), 1001 Connecticut Avenue, N.W., Washington, D.C. 20036, telephone (202) 331-1357. Reproduction in whole or in part without written permission is prohibited.