The state of variable rates: Economic signals move into the mainstream

by Lisa A. Skumatz, Ph.D., Erin Truitt and John Green

Communities can increase their recycling rates by implementing variable rates programs.

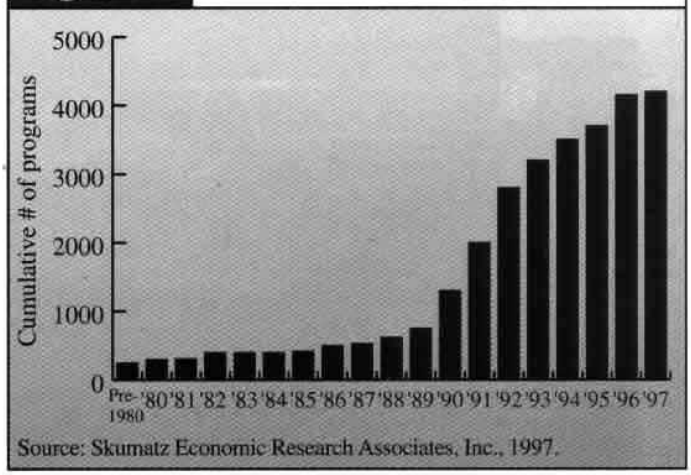
More than 4,400 communities across North America now have variable rates programs available for garbage collection service. This finding is a product of the latest in a series of biannual surveys on variable rates programs conducted since the late 1980s by Skumatz Economic Research Associates, Inc. (Seattle). SERA's survey verified each program and conducted detailed phone surveys with communities to assemble a large analytic database on demographic, implementation, program and rate information.

Under variable rates (VR) programs — also called unit pricing, user pay or Austin's "Pay as You Throw" — customers pay more if they put out more units of garbage for collection. The economic incentive represented by this move from "fixed bills" or taxes for unlimited collection has been demonstrated by previous SERA work (see "Beyond case studies: Quantitative effects of recycling and variable rate programs" in the September 1996 issue). Communities that implement VR programs see an increase in their recycling and yard waste diversion of eight to eleven percentage points, achieving one-third to one-half of 25 percent diversion goals with one program (and no new trucks on the street). The 1997 SERA survey shows dramatic growth and success for VR programs, and the results are summarized below.

Growth of VR programs over time

Figure 1 shows the growth in programs by year. According to reported implementation dates, about 10 percent of programs (about 400) were in place as of 1985, with the vast majority in Oregon and Washington. The figure grew to 20 percent (about 800 programs) by 1989. Growth in the early 1990s accelerated dramatically, with more than 45 percent of programs adopted by 1991 (just under 2,000), nearly 75 percent by 1993, and 90 percent by 1995. Programs increased to more than 3,000 by 1993 — a growth spurt of 400 percent from 1989. This growth rate looks as though it is decreasing, but SERA's latest count found additional existing programs and updated the count to more than 4,400 communities with VR programs available as of 1996, with 10 percent growth between 1995 and 1996. The count also probably underestimates the number of communities in 1996 and later because SERA may not have heard about all of the most recent programs.

Figure 1 Growth of variable rates programs over time



Source: Skumatz Economic Research Associates, Inc., 1997.

State patterns in adoption

Figure 2 shows the number of programs adopted by state, with a detailed count contained in Table 1. Adoption has proceeded in regional clusters, driven by a number of likely factors:

Landfill prices. Programs tend to be more common where tipping fees are higher, improving cost-effectiveness of increased recycling and diversion.

State legislation. A number of states man-

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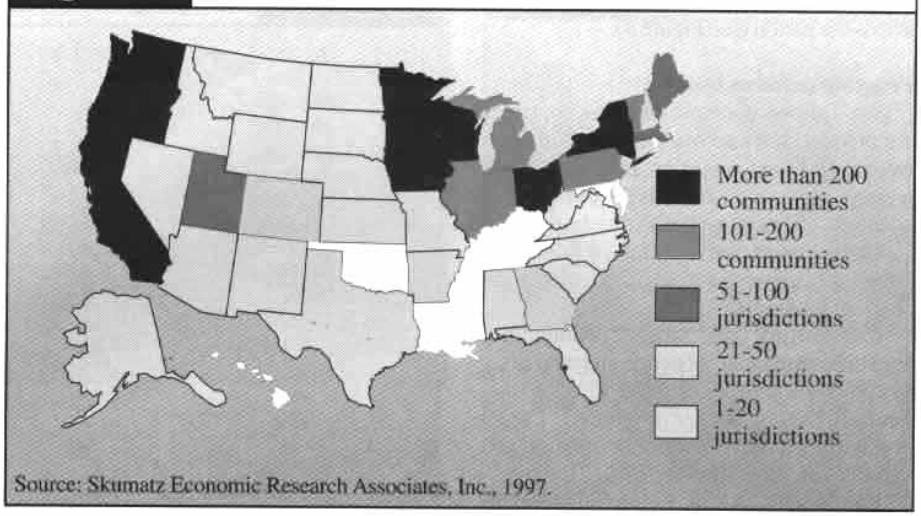
date or strongly encourage VR programs in their legislative or state plans. These states have higher levels of program penetration.

Familiarity. The most potent argument for putting programs in place is the success of VR programs in nearby communities.

The early trendsetters in implementing VR programs were Oregon and Washington, followed by Pennsylvania. A number of programs in these states were adopted in the 1970s and the early 1980s.

The early 1990s was a key period for implementation of VR programs — with significant activity in California, Illinois, Iowa, Maine, Michigan, Minnesota, New York and Wisconsin. The mid-1990s saw implementation by Connecticut, Indiana, Massachusetts and Ohio (as well as continued implementation by earlier states). More recently, programs have been growing in the Midwest and in southern states.

Figure 2 Variable rates program distribution



Source: Skumatz Economic Research Associates, Inc., 1997.

Types of programs

Nationwide, program types tend to fall into five categories:

Variable or subscribed can. Customers pay based on the number (or size) of cans of garbage they sign up for as their "normal" setout.

Bag. Only garbage set out in bags with special logos will be collected. Customers must buy the bags, and the price includes some or all of the cost of collection and disposal of the garbage.

Tag or sticker. Similar to the bag program, except that the logos are on tags or stickers that are attached to the bags or cans of garbage to be disposed.

Hybrid. Customers continue to pay their traditional fixed fee or tax-based payments, but now receive only one or two cans or units of service. Additional garbage requires a special pre-paid logo bag, tag or sticker. A number of communities (especially smaller ones) are using route sheet notations rather than bags or stickers for the hybrid program "extras."

Weight-based. Customers pay by the pound for garbage set out for collection, and collectors use scale-retrofitted trucks with onboard computers.

SERA's research on nationwide program frequencies shows that of the major program types, variable can and bag programs each represent about one-third of programs. Hybrid

programs account for one-fifth, and tag/sticker programs account for one-tenth of programs across the nation (see Figure 3).

Program patterns by state

Figure 4 shows the most common programs adopted by states across the U.S. Although most states have a mix of program types, there are regional patterns in the types of programs adopted. The patterns are affected by:

Collection systems. Semi- or fully automated collection systems tend to select variable can programs.

Community size. Smaller communities tend to have manual collection and tend to select programs with easier implementation (particularly bag/tag/sticker programs). Larger communities move toward automation and variable can programs (see Table 2).

Familiarity. Again, successful programs nearby are imitated.

The map in Figure 4 clarifies regional patterns:

- Variable can programs are the most common type implemented on the West Coast.
- Bag, tag/sticker and hybrid programs are common in the Midwest.
- Bag programs are the most common type used in the Northeast.
- Hybrid programs are being adopted in states without many programs.

This pattern with hybrid programs may evolve because hybrid systems require very

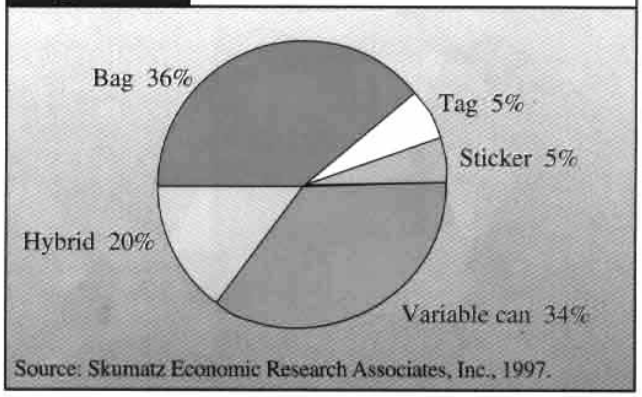
Table 1 **Number of communities in the U.S. and Canada with variable rates programs available**

State	Communities	State	Communities
Alabama	2	New Hampshire	24
Alaska	4	New Jersey	47
Arizona	3	New Mexico	1
Arkansas	8	New York (2)	366
California	261	North Carolina	26
Colorado (1)	52	North Dakota	9
Connecticut	19	Ohio (1)	208
Florida	4	Oregon	284
Georgia	28	Pennsylvania	187
Idaho	18	Rhode Island	7
Illinois	132	South Carolina	1
Indiana	113	South Dakota	17
Iowa	201	Texas	13
Kansas	2	Utah	58
Maine	68	Vermont	160
Maryland	49	Virginia	3
Massachusetts	87	Washington	426
Michigan	128	West Virginia (1)	18
Minnesota	867	Wisconsin (2)	311
Missouri	7	Wyoming	1
Montana	1	Canada	>162
Nebraska	17	Total (3)	4,402
Nevada	2		

(1) A total of 174 variable rates programs are offered as options to customers in Colorado, Ohio and West Virginia.
(2) A total of 473 drop-off variable rates programs are used by communities in Indiana, Maine, Maryland (majority), New Hampshire, New York (majority), North Dakota and Wisconsin.
(3) Total number of communities with programs excluding optional equal 4,228; total excluding drop-off equal 3,929; total excluding optional and drop-off equal 3,755.
Source: Skumatz Economic Research Associates, Inc., 1997.

few changes for implementation, have low revenue risk and may be one of the easiest options to "sell" to decisionmakers — especially when there aren't many other programs nearby.

Figure 3 Frequency of variable rates program types



Source: Skumatz Economic Research Associates, Inc., 1997.

Table 2 Average community size, by program type

Type	Population
Variable can	27,000
Hybrid	14,000
Sticker	9,000
Bag	6,000
Tag	6,000

Source: Skumatz Economic Research Associates, Inc., 1997.

Patterns in size of community

SERA's research shows patterns in the types of programs adopted by different sizes of communities (see Table 2). SERA found programs in communities as small as 15 and as large as 850,000.

Most of the programs have been implemented in small- to medium-sized communities, which are more numerous nationwide. Although a few large cities have adopted programs, it seems that widespread adoption by large communities has been slower due to implementation concerns, questions about unique community features, political issues and the relatively few examples they have available to point to.

A few communities also have optional programs (generally offered by haulers); however, these programs numbered about 150 and were generally in very small communities (concentrated in Colorado, Ohio and West Virginia). In some rural unincorporated areas (particularly in Indiana, Maryland, New York and Wisconsin), citizens may use drop-off user-pay programs with bag, tag, punch-card or other methods. In addition, a number of programs provide incentives in name only, providing a large first container, and providing additional increments of service for small additional fees. However, this is not common and requires judgment to classify, based on the particular research application. SERA is currently undertaking Phase II research to try to determine the appropriate cutoff for in-name-only programs.

Variable rates legislation

Given the relatively recent prominence of VR on the waste management scene (85 percent of programs have been adopted over a nine-year period), VR has been considered or addressed by a surprisingly high number of states. The results of SERA's latest survey of VR legislation at the state level is shown in Figure 5. The research shows that 48 percent of states encourage VR in legislative or other state-level efforts and initiatives.

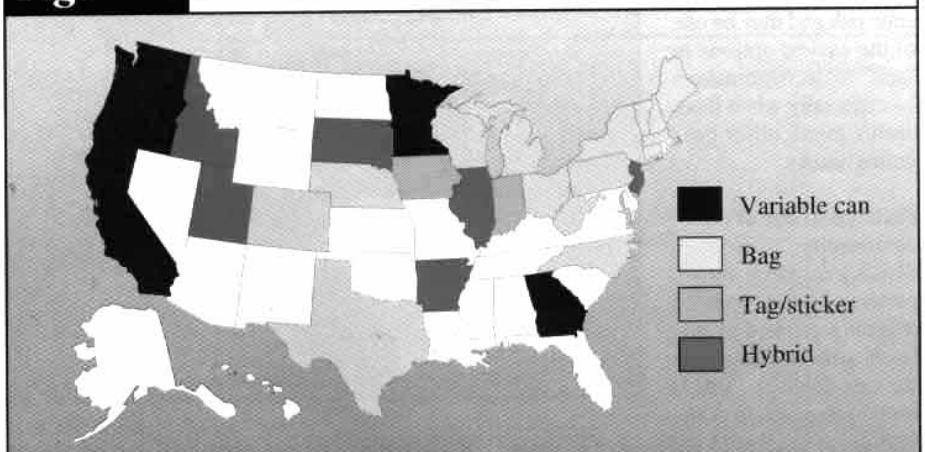
SERA found that four states (8 percent) mandate VR at the state level — Iowa, Minnesota, Washington and Wisconsin. Minnesota requires VR for all communities (with caveats related to populations above 1,500 or issues of "responsible agency"); Iowa and Wisconsin

SERA's findings

- ✔ More than 4,400 communities have VR programs in place in 43 states and Canada.
- ✔ Variable rates programs are available to nearly 16 percent of the U.S. population.
- ✔ Significant growth occurred in the 1990s, and growth is continuing.
- ✔ Can and bag programs are the most common (about one-third each) with hybrid programs in about one-fifth of communities and tag/sticker programs in about one-tenth.
- ✔ Four states have mandatory VR programs, and 48 percent of states encourage VR.
- ✔ Regional patterns of program adoption occur by type and over time.
- ✔ Program adoption has been influenced by landfill fees, legislation and familiarity.
- ✔ Illegal dumping continues to be a much greater fear than a reality.
- ✔ Most of the programs are adopted by small- to medium-sized communities, partly because there are more communities of that size and partly because larger cities have different implementation concerns and may need more model communities.

Source: Skumatz Economic Research Associates, 1997.

Figure 4 Predominant variable rates program types (1)



(1) States with 10 or more variable rates programs.
Source: Skumatz Economic Research Associates, Inc., 1997.

require VR for communities not reaching the 25 percent recycling goal; and Washington requires VR for all haulers regulated by the Washington Utilities and Transportation Commission.

Thirteen states (26 percent) strongly encourage VR through one or more of the following methods: including it on a menu of required options; recommending it as an option in the state's plan; or offering financial and grant incentives. An additional seven states (14 percent) encourage VR through significant outreach efforts, such as technical assistance, workshops and manuals. Legislation or state encouragement is closely related to greater community adoption of VR programs.

Problems

Surveys asked questions about a wide variety of topics, including collection systems, recycling and green waste programs, rate levels and many other issues. In particular, the survey was an opportunity to inquire about traditional problems associated with VR, including the issue of illegal dumping, to update SERA's 1993-94 report, *Illegal Dumping: Incidence, Drivers and Strategies.*

In the 1994 report, SERA found that about one-third of "early adopting" communities reported illegal dumping as an issue (although virtually all said it was short-term, easily solved and shouldn't be a barrier). The study also demonstrated that household waste was a small minority of illegally dumped materials. In SERA's 1997 survey, of the 27 percent reporting illegal dumping, only one-sixth of those (4 percent overall) said it was an ongoing problem. An additional 10 percent reported that illegal dumping occurred but specifically cited that it was not related to variable rates.

A number of respondents were very vocal in their assertion that illegal dumping was not

a problem, and they insisted that the problem was perceived and not real. A few others pointed out that because of the increased attention, illegal dumping in their communities had actually decreased.

Information on a wide range of other problems, implementation issues and suggestions was also gathered in the survey.

Summary and conclusions

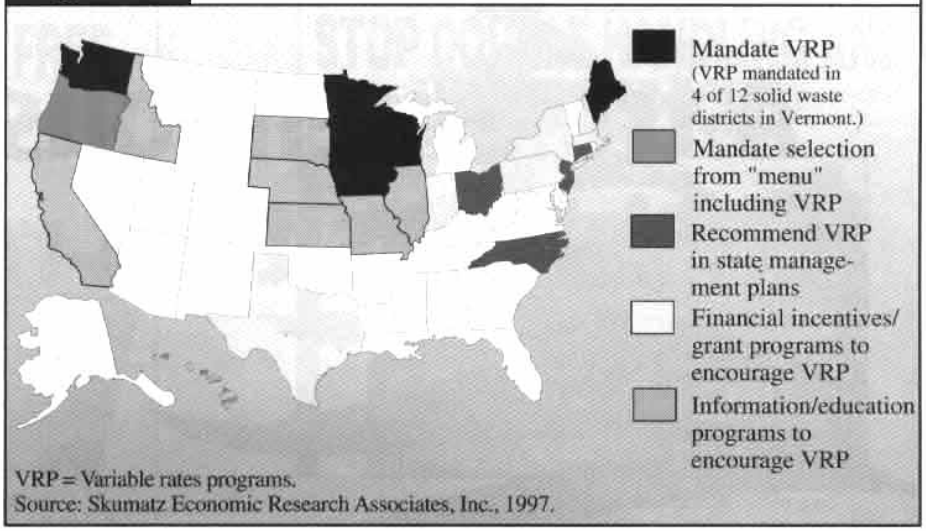
This detailed update of SERA's studies of VR programs finds significant growth in the number of communities with VR. Their suitability, sustainability and effects are now well demonstrated, and programs are more and more in the mainstream across the country (see check box).

Now that the data are collected, the second phase of this work has started. The follow-up work analyzes four key issues: suitability, effectiveness, rate levels and problems. Specifically, it includes analysis of:

- whether certain program types deliver more tonnage/diversion
- the level of fees and differentials that seem to be related to higher diversion/strongest customer reactions and issues of thresholds, patterns in rate levels, lessons from problem communities, etc.
- whether there are patterns in program fit for communities
- successful and unsuccessful implementation designs
- the source reduction impacts of variable rates
- problems, problem frequency, workable solutions, remaining challenges and a wide range of other technical issues.

Previous SERA research has demonstrated the huge impact that VR can have on increasing recycling and yard trimmings program effectiveness and diversion. It may be that these kinds of research results may have added additional impetus to program adoption. **RR**

Figure 5 State legislation on variable rates



VRP = Variable rates programs.
Source: Skumatz Economic Research Associates, Inc., 1997.

To obtain the Phase I report, or to help sponsor Phase II, contact SERA, Inc., 1511 Third Ave., Suite 1000, Seattle, WA 98101; (206) 624-8508, (206) 624-2950 (fax).

SERA would like to thank participating communities. New or recent programs are encouraged to contact SERA for its next update.