Vermont Department of Taxes

Property Valuation and Review Division

Study of Equalization Procedures

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The AGJD study team comprised Richard Almy, Robert Denne, and Robert Gloudemans, partners in the firm, and David Gaskell, an independent consultant specializing governmental finance and property tax and assessment administration. They wrote the report.

EXECUTIVE SUMMARY

Act 60, the Educational Opportunity Act of 1997, may have forever changed the nature of property taxation in Vermont. With the institution of the statewide education property tax, over 50 percent of the property tax will be state-imposed rather than locally imposed. This change requires commensurate changes in the State's administrative and regulatory oversight of the property tax. The State's obligation for ensuring that the property tax is apportioned among the cities and towns fairly is now equal to the city and town's obligation to assess fairly and consistently all property owners. This new obligation requires not just tinkering with existing procedures and systems, but major rethinking and redetermination of how equalization among the cities and towns is conducted.

Local government revenues and taxes in Vermont from *all* sources, on either a per-capita or income basis, are less than the national average. However, Vermont local governments have historically made much greater use of the property tax as a source of funding local governments than local governments in the rest of the nation. Data from 1994 (the latest available) indicates that per-capita property taxes in Vermont were 5.8 percent above the national average and 17.5 percent above the national average as a percentage of income. The message is clear: the property tax is a most important source of funding government in Vermont. Act 60 may change the tax mix somewhat, but the property tax will remain critical to the funding of both education and local governments generally.

While school finance was being debated, the Division of Property Valuation and Review (PVR) of the Vermont Department of Taxes and the Legislature recognized that existing equalization and local assessment practices would not be adequate to equalize fairly educational finance burdens and property taxes. A Commission on Property Tax Appraisals and Equalization was created under Act 60 to address property tax issues resulting from Act 60. Its report was issued on January 15, 1998. Among its findings was that "the annual equalization studies appear too volatile on a year to year basis in many small and intermediate size municipalities. For the public to have confidence in and support an equalization system year to year improvements must be made. The State has the responsibility to improve equalizations." PVR welcomed the Commission's recommendation of an independent review of the equalization process to obtain recommendations for enhancing its

effectiveness and reducing the year-to-year volatility of study results. This report is a direct result of PVR following through on the Commission's recommendation.

PVR wisely sought a comprehensive evaluation of the current system, accompanied by broad policy recommendations, detailed procedures, and an equalization model. Our analysis of the current system leads to the conclusion that substantial improvements are needed to meet the challenges and requirements of Act 60. We make many significant recommendations for improvement of the study. Although some of the changes proposed can be made now, many cannot. Many are complex. Some require the support and assistance of listers and other government officials. We hope the desire for an equitable, workable system, coupled with the new state aid payments for the assessment and equalization function under Act 60, will be sufficient inducement to obtain the help and support of listers. Other changes will simply take more time to plan, design, and implement. Some will depend on funding. In these instances, changes in most cases can be made on an incremental basis. We are pleased to note that PVR has anticipated some of our recommendations and has begun to set in place a multi-year improvement program. Legislation correcting the definition of the coefficient of dispersion (COD) has been enacted. Authority to hire an appraiser to appraise complex properties has been obtained.

While the focus of this report is on improving Vermont's program for determining equalized education property values for the state property tax, implementation of many of the recommendations will have the secondary effect of providing significant improvement in the local administration of the property tax. Act 60 among other things clearly makes the property tax a state-local responsibility, with increased interdependence necessary. Although successfully implementing our recommendations would put Vermont in the forefront of state equalization programs, the best equalization program cannot fully compensate for poor local assessment practices. Consequently, Act 60 challenges listers to produce the most equitable assessment possible.

Because our recommended changes are numerous, this executive summary does not attempt to critique thoroughly the existing system or elaborate on recommended changes in detail. Rather the

paragraphs that follow summarize our most important recommendations. The full report develops the rationale and details more fully.

No simple solution exists for improving the equalization program in Vermont. Achieving success requires strong state-local cooperation, dramatically revised processes and procedures, better use of technology and data, and enhanced training. While seemingly forbidding, we believe a greatly improved equalization program can be attained in Vermont at reasonable expense. Some improvements can be made without any additional cost; others will require adding staff and technological capacity. Given the importance of equalization in allocating each city and town's share of the statewide property tax, accuracy and stability in the determinations become exceedingly critical. Without making substantive changes in the equalization program, it seems highly unlikely that the credibility of Act 60 in treating cities and towns fairly can be maintained. We believe the recommendations outlined below and detailed in the full report offer a way of attaining an equalization program for Vermont that will accomplish the goals of Act 60.

1. The Number of Survey Categories Should be Reduced

Currently Vermont attempts to analyze fifteen property categories in its equalization studies. This number is greater than normal, with the result that there are few or no sales in many categories in many towns. Assigning properties to the correct category is difficult. As a result, PVR's findings may be unreliable. As soon as possible, the fifteen categories should be regrouped into four clusters: residential, commercial and industrial, vacant land, and utility. Where sufficient sales are available, properties can be sub-stratified within these categories by such predefined use types as single-family residential, condominium, multi-family, mobile home, waterfront, urban vacant land, acreage, commercial, and industrial. It may also be desirable to sub-stratify by value range.

2. Property Use Codes Should be Revamped

Vermont now maintains two sets of often duplicative and sometimes inconsistent property codes: category codes and use codes. There is no need for such redundancy and confusion, and a

consolidated set of codes should be developed to ease administration and help implement recommendation number 1 above. Our full report contains specific recommendations.

3. A Standard Parcel Identification System Should be Developed

Parcel identification numbers are a crucial element of an assessment record-keeping system. Currently in Vermont, identifiers follow various conventions and are sometimes changed from one year to the next. Without a unique identifier for each parcel, avoiding errors in matching parcel information can be tedious and sometimes impossible. A standardized system is needed in which a permanent parcel identification number, in conformance with State standards, is assigned to each parcel. Achieving this should be a long-term of objective of the financial assistance the State provides municipalities under Act 60. These permanent numbers should be recorded on each deed and included on the property transfer return, the lister's property record, and the grand list. In addition to facilitating equalization studies, persons doing title research would have an easier job.

4. The Property Transfer Return Should Be Redesigned and Correctly Processed

The Vermont Property Transfer Return (Form PT-1 or "PTR") is the source document for sales used by listers in the valuation process and by the PVR in its equalization studies. The document was designed primarily to aid in collecting the real estate transfer tax and does not provide much of the information needed to evaluate the usability of the sale as a good representation of market value. While a number of suggestions are offered for improvement in the form, the most significant is a clear set of check boxes that would assist in determining whether a sale is valid or invalid for use in both equalization and assessment. A sale may be valid for assessment purposes, but invalid for equalization purposes (such as, a newly built house on land assessed as vacant).

Real estate attorneys and municipal clerks need to understand the importance of timely and accurate property transfer data in the appraisal and equalization processes, especially with the advent of Act 60. PVR should work with the legal community and with municipal clerks to communicate these needs and to devise ways to improve the accuracy of data in PTRs. To help ensure complete returns,

the State could compensate recording official for properly completed returns or could withhold compensation to towns in which performance was poor after efforts to improve performance failed.

5. Sales Verification and Screening Must be Improved

Current sales review procedures are inefficient and appear sometimes to be improperly followed. Sales are initially screened by the PVR, and sales not culled out are then sent to listers for review, correction, and determination as to usability in the equalization study. Sales screening guidelines are incomplete, and the percentage of sales deemed unusable ranges from below 20 percent to above 70 percent (the average is 53.5 percent, which is typical). District advisors properly retain authority over final determination as to usability, but they usually accept the recommendations of listers–sometimes without sufficient justification. In some cases, validity codes are changed from one year to the next without apparent justification.

We recommend that updated lists of all recorded real property transfers by provided to listers more frequently than once a year (perhaps quarterly). Better guidelines for sales screening should be implemented, supplemental computer edits should be installed, and changes in valid/invalid determinations should only be accepted with substantive justification. Final determination of usability should continue to rest with PVR. Municipalities with unusually high rejection percentages should be audited and practices corrected as needed to ensure compliance with PVR guidelines.

6. Sales Chasing Must be Quashed

Some Vermont listers engage in illegal "sales chasing," which is the practice of reassessing properties that have sold at or near the sale price while not reassessing surrounding or comparable properties. If an assessment change is made following a sale and that assessment is used in the equalization study, the determination of equalized education property value and the calculation of the coefficient of dispersion can be seriously distorted. Municipalities in which sales chasing is practiced can receive an unjust share of school aid at the expense of towns who assess all properties fairly and uniformly, regardless of whether they sold. Thus, procedures must be put in place to prevent sales chasing. PVR must be vigilant in testing for sales chasing and take measures to exclude or adjust any

sales ratios contaminated by this unprofessional practice. One solution is to use assessed values from the previous year (for example, for the 2000 study, use assessed values as of 1 April 1999 instead of the 1 April 2000 assessments).

7. The Sales Period Should Be Expanded

Current equalization studies generally employ two years of sales prior to the assessment date (April 1) of the study year. District advisors can expand the period six months in either direction to help achieve larger samples, but seldom do because of the tight time frame to complete the studies. Given the nature of Vermont's small towns with insufficient sales, we recommend that the time frame be extended to a standard period of three years, with allowance for still more years (up to five per the IAAO *Standard on Ratio Studies*). Having sufficient sales is critical to the equalization process and using the same sales in several studies carries additional benefits in terms of year-to-year stability in results. Time trends should be monitored and all sales used in the study adjusted as necessary to the valuation date. Also, if a property has sold multiple times in the study period, only the latest sale should be used.

8. Guidelines for Personal Property Should Be Established

The advent of Act 60 makes the determination of what is "real" and what is "personal" property much more critical. We are pleased that PVR is establishing guidelines for this purpose, for the use of both district advisors and listers. Cable television property presents a special problem because it is presently classified as personal property and thus excluded from the study, yet must be included in the equalized education property value calculation. We believe that cable property is similar to electric transmission and distributions systems and thus should be included in the utility class.

9. PVR Should Acquire Expertise in Utility Valuation

Present procedures for the treatment of utility properties involve trending the previous year's value in various ways, some of which are seriously flawed. These approaches can also miss new construction and demolitions. A consistent approach needs to be developed and implemented. We

recommend that the PVR move to retain a qualified full time staff person or persons responsible for utility valuations (including cable) for equalization purposes in all cities and towns. Current valuation procedures must be rethought, particularly in the light of deregulation. There is considerable market activity in these properties in New England that could be used to establish unit values that could then be apportioned among cities and towns.

10. PVR Should Acquire Expertise in Large/Complex Property Valuation

Related to the issue of utility valuation is the valuation of other large, complex properties that rarely sell, such as manufacturing plants and ski resorts. Like utility properties, these properties constitute a large percentage of the tax base in some cities and towns. PVR should develop the capacity to appraise these properties consistently and fairly on a statewide basis. The values could be provided to listers for their potential use in the local valuation process as well.

11. Studies of Incorporated School Districts Can be Discontinued

Currently, separate equalization studies are done for each incorporated school district. We find no convincing rationale for doing these studies. Incorporated districts in the same town have a common lister. Unless different assessment practices occur within the town, which seems unlikely, a separate study is unnecessary. A statistical test could be run to determine whether assessment levels differ in such cases and, if so, a special study could then be undertaken.

12. The Equalization Study Calendar Should be Revised

For all practical purposes, field work for the annual equalization study is conducted in slightly more than six months. This is insufficient time. It does not allow sufficient time for sales screening, making appraisals if necessary, adequate review of the completed study, and time to take corrective actions when they are warranted. The time frame needs to be extended, and with changes in the way sales are processed, an earlier start would be possible.

13. Statistical Analyses Must be Improved

The equalization process involves factoring local values to estimates of full (equalized) market values based upon computed assessment levels. Unfortunately, under current procedures, the estimation of assessment levels is problematic and often unreliable. Several substantive improvements are needed. First and foremost, samples sizes need to be increased. The current requirement of at least three sales per category (or combination thereof) with all sales constituting at least 4 percent of the properties in the municipality is statistically inadequate. Other recommendations made in this report, most notably expansion of the study period and consolidation of study categories, are designed to increase sample sizes and statistical reliability.

Second, under the current "O'Brien table," the measure of central tendency used to determine assessment levels varies. We can find no supportable basis for this approach and recommend that a standard measure be used to estimate the level of assessment for all categories. We recommend that consideration be given to using the mean of ratios weighted by the square root of sales prices (in lieu of the weighted [aggregate] mean) or that the median ratio be used, if PVR is reluctant to use an unconventional measure.

Third, confidence intervals need to be calculated to measure the reliability of the statistics used to measure assessment levels. Where measures show unacceptable margins of error, samples should be expanded by further broadening the sales period or adding appraisals.

Finally, Vermont law requires that a reassessment be done when the coefficient of dispersion (COD) is above 20. We are pleased to note that definition of COD in the law has been amended to center the COD on the median rather than the mean, as previously was the case. Not only does Vermont's definition of COD now conform to the recognized standard but the revised measure will treat municipalities more fairly.

14. A Standard Equalization Model Using Statistical Software Should be Employed

PVR currently uses an outmoded mainframe program to perform equalization calculations. The program is inflexible and does not conform to statistical conventions for such studies (see recommendation above). We recommend that PVR replace this system with a PC-based system using a standard statistical package. This will provide flexibility and facilitate routine updating or enhancements. The software can also be used for such supplemental analyses and time trend studies and per-unit value calculations. The software could be provided to district advisors for use on their laptops. We have developed such a system for PVR using SPSS (Statistical Package for the Social Sciences) for Windows, a popular statistical package commonly used by assessors.

15. Quality Control Should be Improved

At the conclusion of an equalization study several steps should be taken. First, the field advisor's work should be reviewed for consistency and defensibility. Second, the results for a city or town should be compared with prior years and with the surrounding region. Any excessive volatility or abnormal relationships should be investigated and resolved. Third, a review should be undertaken of the findings and results of each survey with the field advisers, in part with a view to identifying ways to improve future studies.

16. Appeal Procedures Should Be Defined

With Act 60 and the increased importance of the equalization function, more substantive appeals can be expected. The equalization appeal process has generally been fairly informal. Guidelines need to be developed for cities and towns wishing to appeal their equalized education grand list. The guidelines should indicate how to make an appeal, the evidence and documentation required, and the procedures to be followed. Petitions should provide detailed information on the basis for seeking a change in equalized value. Responsibility for the review of, and recommendations concerning petitions should be assigned to individuals not responsible for the original determination. Input, however, from the responsible field adviser should be sought and made part of the record.

17. District Advisors Need to Work More Consistently

The success of an equalization study is highly dependent on the field advisors. Currently, they work quite independently and may reach different interpretations and react differently to similar situations. An increased effort needs to be made to establish consistency in the work products of the field advisors. More training on equalization issues should be provided and a procedural manual should be developed. The advisors could also benefit from additional information, such as access to Multiple Listing Service data bases, and from PC software, such as a laptop version of our recommended equalization model. Increasingly, the field advisors should function as a team under a full time field supervisor.

18. Listers Should be More Involved in the Equalization Process

Currently, the primary role of the listers in the equalization study is to review of the sales to be used. However, they are also responsible for the proper identification and categorization of parcels, verification of the accuracy of the property transfer returns, supplying of data to the PVR, and review of PVR appraisals. To the extent practicable given the part-time nature of many listers' positions, regional meetings should be held with the listers at the outset of a study so that they have a full understanding of the study, its importance, and their role. As necessary, additional training should be provided to listers. At the conclusion of the study, listers should be provided the full data and computations used in the equalization study.

19. State Assistance Should be Contingent Upon Performance

Act 60 provides $6 a parcel for reassessment support and $1 a parcel for equalization assistance annually. Guidelines need to be developed for eligibility for receipt of these funds. A condition for receipt of the state aid should be compliance in meeting the data and information needs of PVR in the equalization studies, including supply of required data files, proper classification of properties, and proper sales screening.

20. Computer Utilization

A successful equalized education grand list program requires significant capability to quickly and easily electronically transfer information between listers and PVR. All cities and towns should be encouraged to computerize their grand lists and data bases. Greater stress and support must be given by PVR for CAPTAP II implementation. All calculations for the computation for the equalized education property values should be computerized. As noted, district advisers need software for this on their laptop computers.

Section 10 of our full report outlines a strategy for implementing our recommendations.

1 INTRODUCTION

The impetus for this study of Vermont's equalization procedures was the enactment in 1997 of Act 60, which was designed to assure equal education opportunity. Part II of the act addressed school finance in response to *Brigham v. State of Vermont* (1997). In combination with a local basic levy, Act 60 provided for a statewide tax on property, the proceeds of which are distributed among school districts on the basis of needs and spending. This overcame the fiscal disparities inherent in each school district levying a property tax to support the bulk of its activities. The statewide education property tax was based on equalized assessments (the "equalized education property value"). These equalized assessments were the chief product of a ratio study traditionally known as the Aggregate Fair Market Value (AFMV) Study. In essence, the need for the equalized assessments to be accurate and supportable increased substantially.

1.1 Purpose of Study

The Property Valuation and Review Division (PVR) recognized this need and wanted a comprehensive study of its equalization procedures by a qualified consultant to ensure that equalized education property values could withstand increased scrutiny and to identify where the equalization studies could be strengthened by taking advantage of advances in ratio study methods and innovations in other states' equalization programs. In addition, the consultant was to develop a prototype improved equalization model that Vermont could use in future equalization studies.

1.2 Methodology

We made a comprehensive and systematic study of PVR's current standards and procedures for determining the equalized education property values and coefficients of dispersion. We considered: (1) ratio study and equalization methods used in other jurisdictions; (2) the setting and legal framework for equalization in Vermont; (3) data assembly (market data sources, collection, and screening; matching sale and assessment data); (4) ratio study design, statistical issues, and statistical methodology; (5) appraisal programs; (6) performance audits; (7) funding, staffing, and program management; (8) automation; and (9) reporting and use of results. We read available documentation, interviewed concerned officials, and performed independent statistical analyses.

The Almy, Gloudemans, Jacobs & Denne study team visited Vermont twice to conduct interviews and examine current procedures. In an attempt to understand legal requirements, we read excerpts of the law in the Lister's Handbook. We also read Act 60 and Act 71. (All legal references in this report are to *Vermont Statutes Annotated*, unless noted otherwise.)

1.3 Organization of Report

This report of our study of Vermont's equalization procedures contains ten sections. The first three sections are introductory in nature. Section 2 provides background information on property tax supervision and equalization in other jurisdictions. This section establishes the context of our evaluation of Vermont's equalization procedures. Section 3 describes the setting for equalization in Vermont. This section establishes the demands–and constraints–placed on the equalization studies. Beginning with section 4, we focus on equalization practices in State. Section 4 presents an overview and considers the adequacy of resources and management practices. Section 5 critiques ratio study data assembly and processing, particularly the collection and screening of sales data. Section 6 considers the use of independent appraisals to supplement sales data and also considers the possible role of performance audits. Section 7 addresses the statistical analyses that underlie the estimates of equalized education property values and presents the results of our independent analyses. Section 8 considers how equalization study results are made public and how PVR's determinations may be appealed. Section 9 contains our recommended equalization model. Section 10 outlines an implementation strategy. Beginning with section 3, we discuss a topic in general terms, describe practices in Vermont, and present conclusions and recommendations (which are incorporated in sections 9 and 10).

2 THE CONTEXT OF RATIO STUDIES AND EQUALIZATION

2.1 Overview

Equalization occurs at a late stage in a complex assessment process. It (or another mechanism) is necessary when the performance of local assessors is uneven. Ratio studies provide the basis for equalization decisions. This section provides background information on ratio studies and equalization in the context of assessment supervision. Readers familiar with these subjects may wish to skip it.

Property tax assessment has several phases: original assessment (generally the responsibility of local assessors), review and appeal, and supervision by the state. Because review, appeal, and equalization sometimes are used interchangeably, we provide their proper definitions here. *Appeal* refers to the process whereby taxpayers challenge their assessments. An appeal agency has the power *only* to alter assessments that have been appealed. *Review* technically refers to the power another government agency—such as an appeal or supervisory agency—may have to examine assessments and revise them *on its own initiative*. *Supervision* refers to oversight, assistance, coordination, and enforcement activities. *Equalization* describes the process a supervisory or review agency might use to make blanket adjustments through the use of factors to the total appraised values (or assessments) of entire assessment districts. In so-called *direct* equalization, the factors are applied to individual assessments before local taxes are levied. In *indirect* equalization (such as is employed in Vermont), the factors are used to adjust roll totals.

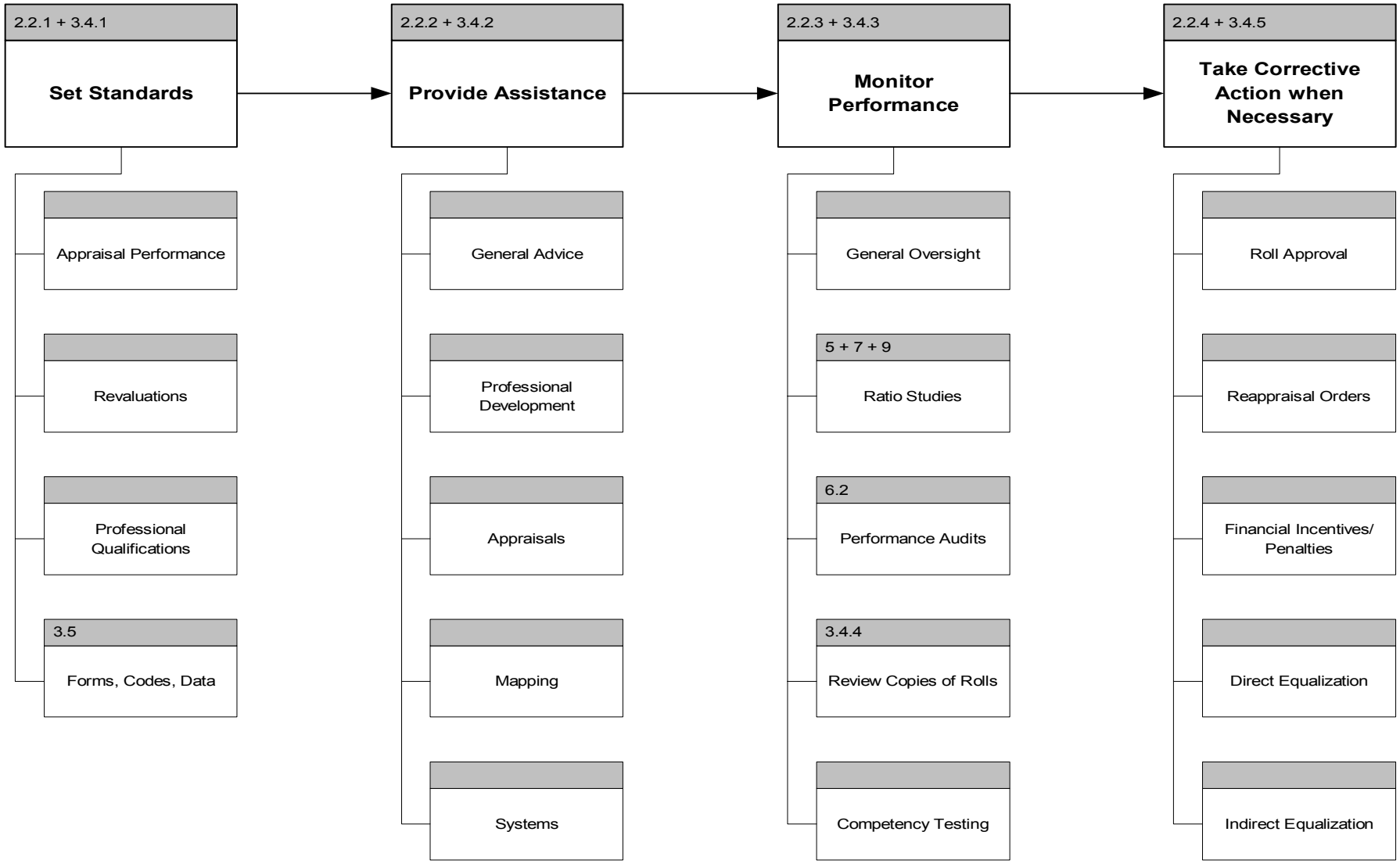
Effective state participation in property tax administration is considered vital to the state's interest in having its laws administered uniformly. Equally important, a strong state role benefits local governments. Many of the tools and services that states provide are too costly to be afforded by many local governments. A state role also deters destructively competitive underassessment. A competent state property tax supervisory agency tends to encourage competence in local assessment offices.

2.2 General Model of Assessment Supervision

A general model of state assessment supervision (which is derived from recommendations made by the U.S. Advisory Commission on Intergovernmental Relations, the International Association of Assessing Officers, and others) assigns four broad, interrelated roles to property tax supervisory agencies: (1) setting standards and specifications, (2) assistance and counseling, (3) monitoring and analysis, and (4) enforcement. The main components of this model are depicted in exhibit 2-1. In addition to supervision, many states are responsible for the assessment of certain classes of property (such as transportation and utility property and occasionally industrial property).

The development of standards and specifications is necessary for effective, uniform administration of property tax laws. Assisting and counseling activities are helpful to and supportive of local governments. Although crucial to effective supervision, monitoring and analysis may be seen as an intrusion or a threat. Enforcement is confrontational, with the state in a resented position of power. Therefore, enforcement should be the last resort, but enforcement actions should be taken whenever the first three roles have not produced the desired results. The challenge a supervisory agency faces is achieving the balance of activities that results in the highest level of assessment performance with the least consumption of resources and the least amount of stress. In other words, the more effectively a state encourages high-level performance and the more effective its assistance activities, the less onerous its enforcement activities will need to be. In summary, the assessment supervision model combines effective programs for monitoring local conditions and local assessment performance, a strong commitment to assisting when necessary, "counseling" when performance falls below standards, and enforcing legal standards firmly and consistently. In this light, PVR's interest in increasing the assistance it provides local listers and assessors seems wise.

Figure 2-1. ASSESSMENT SUPERVISION MODEL



Note: Numbers refer to sections of the report where the topic is discussed.

Application of the model of assessment supervision varies greatly among the states. The executive branches in a few states (most notably Delaware and Hawaii) have little or no legal authority over local assessing unit performance. Others have strong oversight and directive powers over assessing jurisdictions. In Maryland, the state is entirely responsible for assessment administration.

The number and size of local assessing districts have a considerable bearing on local assessment performance and on the demands placed on supervisory agencies.

2.2.1 Setting Standards and Specifications

States set standards and specifications to guide local assessors, facilitate the transfer of data, and provide an objective basis for measuring local assessment performance and for taking equalization and enforcement actions. From the standpoint of equalization, perhaps the most important area of standard setting is the establishment of appraisal performance (ratio study) standards. Other areas include standards for revaluations and reinspection programs, standards designed to improve the technical proficiency of assessment officials, standard forms, and data standards. Such standards may be codified in legislation, regulations, or guidelines. These may be compiled in an assessor's manual (see below), and they may prescribe specific and often detailed rules and regulations, with which assessors are required to comply.

- Appraisal Performance. In accordance with the IAAO *Standard on Ratio Studies*, over thirty states (including Vermont) require local assessment districts to meet valuation accuracy standards based on ratio study statistics. Most common, the actual level of valuation must be within a certain distance from the legal level. About twenty-eight states require coefficients of dispersion to be less than a specified value, which may vary with the class of property in keeping with the IAAO standard. Failure to meet the standards can trigger loss of state aid or enforcement actions.

- Revaluations. Frequent revaluations make it easier to meet valuation accuracy standards. Professional standards recommend an annual reappraisal program. Under such a program, the

assessor continuously monitors both valuation accuracy using ratio studies and property market developments. When values change significantly for any segment of the property market or when accuracy standards can no longer be met, the assessor decides on an appropriate course of action. Small deviations from performance standards can be handled by simple indexing, often referred to as "trending." Valuation models can be recalibrated when indexing cannot produce the desired results. If necessary, larger-scale valuation projects can be initiated. At the same time, a schedule can be developed for inspecting properties to ensure that they are accurately described. The important point is that the assessor does not need to change every appraisal every year.

Changing revaluations from a periodic project basis to an ongoing program basis offers major benefits. Most important, by maintaining accurate, up-to-date valuations, tax burdens are more equitably distributed. Changes in the composition of the tax base are gradual. Political opposition to revaluations disappears. Property owners can more easily predict what their taxes will be, and taxing districts can better judge their tax capacity. The annual costs of an ongoing revaluation program compare favorably with the annualized costs of periodic revaluations.

Several states have developed specifications and procedural standards for revaluations. These may cover requests for proposals (RFPs), data collection, field verification, valuation methodologies, taxpayer information and disclosure, and contracts. Some states require approval of an overall revaluation plan before the revaluation is begun. Others (such as Massachusetts and New York) may monitor revaluations while they are underway.

Similarly, in the interest of maintaining current and accurate data on each property, several states have reinspection requirements and may require assessors to submit for approval a plan for inspecting all properties within a specified time.

- Professional Qualifications. Property markets have become more sophisticated and valuation science has developed considerably in recent decades. These developments have implications for desirable and attainable qualifications for assessing officers. About forty states have taken steps to improve the capabilities of assessing officers in their states by establishing qualifications for assessors, appraisers who work in, or for, assessors' offices, or both. The qualifications are mandatory in about thirty (including Maine and Massachusetts). In some instances, a person must be state certified *before* he or she may perform the function of assessor. In others, a specific time frame is set forth. Penalties for failing to obtain certification vary, with removal from office being one option. Also, periodic recertification is required in nearly half the states. Some states provide monetary incentives for certification. States frequently specify the courses and number of hours of training that assessment officials must have. Some require a separate examination. A few states require demonstration appraisals. Appraisers in private practice are now required to be licensed in all states. A number of states have required assessors to meet the commercial (fee) appraiser license requirements also. New Jersey has taken the unusual steps of abolishing elected assessors and requiring assessors to be college graduates. A state assessors' association frequently provides the impetus for, and may manage, the certification program.

- Forms, Codes, Parcel Identifiers, and Data. States have long set standards designed to ensure that assessors had the information needed to carry out their duties properly and to ensure that data transmitted to the state were in a standard format These objectives originally were achieved by prescribing forms (states often furnished the forms in question) or by approving locally developed forms. Forms relevant to valuation and equalization studies include property records, sales reports, and other taxpayer returns. With the advent of computer technology, states began to set standards for record formats and for coding data. Often those standards were imbedded in computer systems developed by the state for local use. Such standards-setting indirectly promotes consistency in policy and practices. It facilitates transmission of information electronically and analysis of that information.

Vermont's difficulties in getting all localities to categorize property properly does not seem to be a common problem. As discussed in section 3.5.2, the complexities and ambiguities in the coding scheme doubtless are factors. Possible solutions to the problem include simplifying the categories, preparing better descriptions of the categories, and more intensive training. Based on the experience of states that make performance audits, jurisdictions that failed to meet data accuracy requirements could be found not to be in compliance with standards. They would then be subject to whatever penalties were available in the law. These might include reducing the current assessment administration grants or even school funding. We also note that §24 of Act 60 gives the director of PVR the authority to reclassify any property erroneously classified as nonresidential.

2.2.2 Providing Assistance

State technical assistance activities vary widely. States provide assessment tools and equipment, technical and professional services, and assist with assessment personnel education. The activities include:

- General advice. Virtually all states with a supervisory agency provide general advice to local assessors.

- Legal opinions and interpretations. At least forty-three states, including all New England states, provide some legal and technical support to their local assessing units. This may range from formal legal opinions that will set state policy to a telephone response that enables an assessor to solve a particular problem. New issues and questions are constantly surfacing that require a state response if consistency and uniformity are to be maintained across the state.

- Manuals. About thirty-eight states, including Maine, Massachusetts, New Hampshire, and Vermont, issue an assessment manual. Assessors are required to use the manual in about twenty-three states. None of the New England states requires the use of a manual. Assessment manuals may be either compiled by the state or commercially prepared. In some cases, the manuals contain only appraisal information, but in many states they contain

complete, detailed instructions on many aspects of the assessment function. Appraisal manuals may consist of valuation methodologies, data collection procedures, cost indices, economic indices, and CAMA guidelines. Non-appraisal manuals may cover the responsibilities of the assessor, equalization procedures, the state's role and responsibility, exemption administration, relevant law, and the appeals process. For manuals to be of value they must be regularly updated.

- Bulletins and newsletters. Assessors need information about what is occurring in the assessment field both within their state and elsewhere. Many state agencies issue bulletins and publish newsletters to provide assessors with important information.

- Education and training. As with certification of assessment personnel, states play a major role in educating assessment personnel. Educational activities may range from cosponsoring conferences to mandating training. About twenty states have mandatory training, including Connecticut, Maine, New Hampshire, New York, and (formerly) Vermont. Education often is contracted out to a state association or university, to the IAAO, or to another organization. Training programs may be quite extensive and include assessment administration; exemption administration; basic valuation methods; advanced use of the income approach; valuation of specific types of property, such as agriculture, land, utilities, personal property, and complex commercial and industrial properties; data collection; computers and software; CAMA; public relations; and professional standards and ethics. Generally, annual conferences are used to update assessors on recent developments. The conferences may be held in conjunction with an assessors' association meeting. In some instances all the training is paid for by the states. Mississippi provides very substantial salary adjustments to those assessors achieving the required training.

- Computer services. At least thirty states, including Massachusetts, New York, and Vermont, have sponsored the development of computer-assisted mass appraisal systems. Some states provide computer processing. Some assist with CAMA modeling. The services offered by

the states may be free of charge or, in some instances, done on a charge back basis. In some cases the computer system and services are mandatory and in other cases at local discretion.

- Sales data bases. Several states maintain sales databases. A database containing commercial, industrial, and vacant land sales is particularly useful.

- Valuation assistance. About thirty states provide direct on-site valuation assistance. About twenty-three states assist with property inspections. Valuation assistance ranges from occasional, as-needed services to routine major mass appraisal assistance. Montana, Tennessee, and West Virginia are examples of states providing large-scale assistance. About twenty states assist with valuation modeling. Arizona is an outstanding example of a state involved in mass appraisal modeling and computer processing. States frequently assume responsibility for valuing railroad, utility, and similar property. Oregon, Wisconsin, and other states assess industrial property.

- State aid for assessments. Many states will provide support, both staff and computers, during reassessment projects. Staff assistance may vary from RFP preparation, specialized training, contract monitoring, computer support and modeling, to doing the valuations of complex properties. About twenty-three states, including Connecticut, Maine, Massachusetts, and New Hampshire, help with revaluation contracts.

- Mapping. Many states assist with cadastral mapping. Assistance ranges from providing specifications, to providing financial assistance, to actually making maps. Of the Northeastern states, only Connecticut, New Hampshire, and Rhode Island have not provided such assistance.

- Public relations. A very important part of every assessor's job is maintaining good public relations. State agencies often produce publications and handouts which assessors can provide taxpayers. These handouts may explain the assessment process, the job of the

assessor, reassessments, the appeals process, and various individual exemptions and how to apply. Some states may go further and work with assessors in media relations and provide video materials.

- State aid. A number of states, including Vermont, provide funding for reassessments or for assessment administration improvements. State aid is generally provided as an incentive to entice assessing units to take certain actions. State aid may underwrite part of the cost of training or the assessment process or it may be related to the quality of assessment practices and the assessment roll.

2.2.3 Monitoring Practices and Performance

States use several methods to monitor the practices and performance of local assessors. They range from informal, unstructured contacts with local assessors to detailed performance audits. Of particular interest to Vermont are obtaining copies of grand lists and ratio studies.

- District advisors. Most states have a staff with positions comparable to Vermont's district advisors. Routine contact with local assessors allows field personnel to form general, subjective opinions of the quality of assessments and assessment practices in the districts visited.

- Obtaining copies of rolls and property records. Copies of rolls and property records, particularly when they are supplied electronically, provide the data needed for rigorous analyses of local assessment performance. Among other things, they allow states to test for even-handed assessment practices between properties that are sold and those that are not. Having copies of rolls is especially important when the state is responsible for approving rolls. Among the Northeastern states, only Vermont requires copies of rolls. In addition, Arizona, Florida, Utah, and West Virginia require assessors to submit digital copies of sales files and assessment rolls for use in the states' enforcement and equalization programs. Other states have the authority to require assessors to supply such records.

- Ratio studies. The primary tool used by property tax supervisory agencies to monitor appraisal performance, produce equalized assessments, or enforce appraisal accuracy standards is the ratio study. A ratio study compares appraised values to other indicators of market values. Market values can be represented either by sales prices or independent appraisals. Sales are preferred because they are objective and inexpensive to obtain.

  There are two primary aspects of appraisal performance: level and uniformity. Appraisal level refers to the overall or common level of appraisal. Appraised values cannot be expected to equal independent indicators of market value (sales prices or appraisals). Following a revaluation or statistical update, however, high and low ratios should balance, so that the typical ratio is near 100 percent. Appraisal uniformity refers to equity in values among properties. Uniformity requires that different groups or categories of properties (use classes, neighborhoods, age groups, and the like) be appraised at similar percentages of market value. It also implies that properties be equitably and consistently appraised within groups. The coefficient of dispersion (COD) is the main measure of appraisal uniformity within a group of properties. The lower the COD is, the more uniform the appraisals are. Property tax equity is greatest when appraisals are uniform. As discussed in section 7, ratio studies examine other aspects of valuation uniformity.

  At least forty-five states conduct ratio studies (Dornfest 1997). As property taxation is an annual occurrence, so should ratio studies be an annual occurrence. According to Dornfest, thirty-five states conduct ratio studies annually.

- Performance audits. Performance audits may be used in lieu of ratio studies when sales are insufficient and when sales are irrelevant (such as when property is based on its use-value and when personal property is appraised on the basis of declarations). Performance audits also are used as a general monitoring tool. They may cover a multitude of areas, including proper

parcel identification, property use coding, accuracy and completeness of property inventory, exemption administration, and so forth. States also are engaged in competency testing.

- Reassessment monitoring. Several states monitor reassessments–some to ensure that mandatory reassessment and reinspection plans are being followed and others (such as Massachusetts and New York) to forestall problems with poor quality appraisals, which could jeopardize roll certification or would make equalization studies more expensive and controversial.

2.2.4 Enforcing Standards and Requirements

Effective enforcement measures are necessary to reduce assessment inequities within an assessment district and among assessment districts. Effective enforcement requires adoption of specific performance standards, as mentioned above, and workable remedies when the standards and requirements have not been met. State legislatures have given supervisory agencies a wide variety of enforcement measures. In practice, the more powerful the measure, the less likely it is to be used either because political will is lacking or because of the Draconian nature of its consequences. The options include:

- Removal of the power to levy property taxes. Arguably, the strongest enforcement measure is to deny a local government the power to levy property taxes unless the assessment roll has been approved. Usually before such a tool is used, the state has ordered a reassessment (see below) and the local government has refused to comply. Although the tool is so powerful that few states actually use it, Arizona and Florida are among those that have successfully done so. A difficulty is that the measure may "punish" taxing districts that have no responsibility for the assessor's performance.

- Reassessment orders. About thirty states have the authority to order a reassessment when valuation accuracy standards are not met. Problems with this approach include the time and expense required to effect the remedy and the uncertainty regarding the outcome.

- State takeover of the duties of the assessor. Related to removal from office (below), the state may have the power to assume the assessment function if the assessor fails to perform her or his duties, including complying with a reassessment order. Kentucky recently has taken over responsibility in a number of its assessing jurisdictions. Alternatively, the state may exercise administrative supervision of all or certain assessment functions for a prescribed period of time.

- Contract for a reassessment. As most states do not have the resources to conduct a reassessment on short notice, about twenty states have the authority either to hire a private appraisal firm or for the state to perform a reassessment at local expense. Massachusetts, for example, can contract on behalf of a city or town for professional, technical, or appraisal services and deduct the cost of such service from state aid reimbursement.

- Withhold state aid. About ten states, including Vermont, can withhold state funds (usually assessment assistance aid, education aid, or revenue sharing) if there is a failure to adhere to state property tax administration standards.

- Financial incentives. An alternative to withholding aid is to provide additional state funding to local assessment districts that comply with standards.

- Equalization. As noted, equalization can be viewed as an enforcement tool. In contrast to other tools, equalization is less confrontational and is of limited effectiveness inasmuch as it can only cure inequities among groups of properties and among assessment districts. There are two types of equalization programs. In the first (sometimes known as "direct" equalization), the calculated equalization factor is applied to each local assessment before the local tax rate is applied. In most states, the same factor is applied to all properties in the jurisdiction. In a few (Michigan, for example), a separate factor may be developed for each major class of property. Equalizing each assessment is more effective because it highlights inequities in the underlying assessments. About eighteen states have this authority. In the

second approach (known as "indirect" equalization), only the total assessed value is equalized. The adjusted total (or equalized) value is then plugged into an aid distribution formula. Individual assessments and local taxes are not affected. As noted below, most New England states use indirect equalization. Under either approach, the equalization factor is designed to bring the total assessed or appraised value of the district into line with the legal standard. Thus, if the legal assessment level were 50 percent of value and assessments generally were at 40 percent, all assessments would be increased by 25 percent (multiplied by 1.25) to bring the assessing unit to 50 percent. Of course, individual assessments might in actuality be higher or lower than 50 percent.

- Removal from office. Some states have the ability to remove an assessor from office. New York, for example, can and does remove assessors who fail to take and pass the required training.

- Fines and penalties. Many state laws provide for fines and penalties if assessors fail to perform their responsibilities. In practice, these are seldom used, because the cost of assessing them usually is much greater than the fine.

- Challenge valuations. In at least two states, the state can challenge the valuation of individual property assessments that it deems to be erroneous.

2.3 Central Assessment

Railroad, utility, and similar properties generally are centrally valued by the state supervisory agency (a special agency performs the central valuation function in Tennessee). The agency finds the total value of the operating property of the entity and apportions that value among the local governments in which the entity has a presence. Local assessment of these types of properties is essentially limited to the New England states and New York (with a partial exception in Alaska, Florida, and Texas).

Some states value other difficult-to-appraise properties (such as larger industrial facilities) as well, because local assessment districts find it difficult to maintain the required specialized valuation skills and acquire the required databases.

Typically state agencies establish the standards for valuing agricultural, forest, and open space properties when they are to be valued on a current-use basis.

In Maine and New Hampshire (as with Vermont), the supervisory agency is responsible for assessing property in unorganized areas.

An issue that arises when the state assesses some types of property is the equalization of state-assessed property. Generally, the state-assessed property is presumed to be correctly valued. When the state employs direct equalization, there is no need to adjust the assessments of the centrally valued property. However, when the state does not, the assessments of centrally valued property typically are factored to the level of locally assessed property.

2.4 Assessment Appeal

In most states, a taxpayer dissatisfied with the local determination of her or his assessment may appeal to a state appeal body, which sometimes is the supervisory agency. Three New England states have a state-level administrative appeal body. In Massachusetts it is the Appellate Tax Board; in New Hampshire, the Board of Tax and Land Appeals; and in Vermont, the State Appraiser. A few states, including New Jersey, have special state-level property tax courts.

2.5 Appeal of Ratio Study Findings and Equalization Determinations

State-level appeal bodies usually have the power to hear appeals by localities of equalization decisions. The legislative basis for such appeals generally is different than the basis for ordinary taxpayer appeals, however.

Issues that arise in appeals involving the equity of assessments generally (as opposed to the accuracy of a single assessment) are the validity and proper use of ratio study findings. Similar issues arise in appeals of equalization determinations and similar actions by supervisory agencies.

After early challenges to using computers to analyze data and to using sales data without subpoenaing the parties to each sale, it is well settled that a ratio study *is* a valid analytical technique. However, it is possible to challenge both the data elements and the design, execution, and use of a ratio study.

The passage of the Railroad Revitalization and Regulatory Reform ("4-R") Act by the U.S. Congress in 1976 increased the legal scrutiny given ratio study methodologies.

A question that sometimes arises is whether a ratio study whose primary purpose is to equalize assessments can be used in individual assessment appeals. The courts in different states have taken opposite positions. New York courts have endorsed the use of equalization studies in assessment appeals, while Illinois courts have ruled equalization studies invalid for the purpose.

3 THE SETTING FOR EQUALIZATION IN VERMONT

An appreciation of Vermont's property tax system and its setting is important to a fair evaluation of the State's equalization program and is essential to the design of an improved system. This section addresses administrative arrangements, fiscal relationships, key legal provisions, current property tax supervision, and other matters relevant to the equalization program, which is introduced in section 4.

3.1 Jurisdictional, Fiscal, and Economic Setting

The jurisdictional, fiscal, and economic setting of a state has important implications for the design and execution of equalization studies.

3.1.1 Jurisdictional Setting

Vermont has 251 organized cities and towns which constitute local assessment districts. In general, a three-member elected board of listers is responsible for assessment. Some cities and towns have appointed single assessors. The director of PVR appoints three-member boards of appraisers to assess properties in unorganized towns and gores. County governments have no responsibilities in property tax administration.

As noted, the Property Valuation and Review Division (PVR) (and its director), acting on behalf of the Department of Taxes (and its commissioner) of the Agency of Administration (and its secretary), are chiefly responsible for supervision (see section 3.4). PVR also has some central assessment and appeal responsibilities.

The assessment appeal process begins with a grievance meeting convened by the listers. A taxpayer may appeal the listers' decision to the Boards of Civil Authority and from the BCA to the director of PVR or to superior court. Appeals to the director are heard by a State Appraiser appointed by the director. The structure for appealing aggregate fair market values is discussed in section 8.3.

Many local assessment districts are small and sparsely populated. In addition to making equalization studies of these districts, Vermont also studies five incorporated school districts and six unorganized towns, gores, and grants. Consequently, PVR must not only make a large number of equalization studies, but it also faces the challenge of making supportable estimates based on small samples of market data.

An incorporated school district may be coterminous with a town, span town boundaries, or constitute only a part of the town in which it is situated. Separate equalized grand lists are created for these school districts even though they have a common assessor with the town. The towns of Bennington, Essex, Jericho, Underhill, and Barton have such districts.

Our interviews involved listers from two affected towns. They and their PVR district advisors questioned the wisdom of doing separate equalization studies when a common assessor exists, and we share their concerns. Doing so aggravates the "sampling error" problem associated with small samples of sales. In addition to inexplicable year-to-year fluctuations in equalized value estimates (which is a subject of discussion in section 7), there can be inexplicable differences in the direction and rate of change within different parts of a town in a single year.

Rather than routinely making a full-blown study of each independent school district *and* of the town of which it is a part, PVR could merely examine whether the ratio data suggested bias in assessment practices between the two parts of the town. If there was no evidence of bias, the equalized value of the school district could be based on the ratio study for the town. If bias were detected, a complete study may be warranted.

Where adjacent towns have a common assessor who uses consistent practices and where CODs are acceptable, consideration should be given to combining them in the calculation of equalization ratios. No data were available to indicate how frequently this occurs. However, given the stresses on the assessment function, it can be expected that assessors will increasingly be employed to assess in more

than one town. If New York can be used as an example, there has been a very rapid growth by small rural towns in the employment of an assessor who will have responsibility for multiple towns.

3.1.2 Fiscal Setting

Several features of Vermont's revenue system increase the need to have accurate local assessments and accurate aggregate fair market values. The property tax is the largest single tax source in Vermont, and Vermont places a very high reliance on the property tax as a revenue source for local governments. On a per-capita basis, property taxes in Vermont were $1,034, in contrast to a national average of $ 725 in fiscal year 1994, the latest year for which national statistics are available (these data from *Facts and Figures on Government Finance*, 32nd edition, published by the Tax Foundation). On the basis of property taxes per $1,000 of personal income, property taxes were $52.4 in contrast to a national average of $33.7. Thus, property taxes in Vermont were 42.6 percent above the national average on a per-capita basis and 55.5 percent above on an income basis.

This heavy reliance on property taxes to support local government is more broadly demonstrated when Vermont is compared with other states on a broader revenue and tax basis. When all taxes are combined (property, sales, income, and other) Vermont's per-capita taxes were 5.8 percent above the national average and 17.5 percent above on an income basis. When the category general revenue is examined (which includes charges, fees, utilities, etc.) Vermont's per-capita general revenues for local governments were 19.1 percent less than the national average and on an income basis 12.0 percent less. When intergovernmental revenues, from the federal government and the state, are included in the calculations, Vermont's local government revenues further declined in comparison to the rest of the nation. Local government revenues from all sources on a per-capita basis were 31.4 percent below the national average in Vermont and on an income basis 25.5 percent below.

In summary, as the definition of revenues broadens, Vermont's local governments' relationship to the national average declines. Conversely, as the definition of revenues is narrowed, and moves towards a specific focus on the property tax, Vermont's local governments' relationship to the national average increases dramatically. Vermont is very dependent on the property tax as a local revenue

source. Of course, the implementation of Act 60 is altering these relationships, but the fundamental importance of the property tax is not changed.

In addition to the local importance of the property tax, the State's interest in property taxation is high. Most prominent of the State's interests, of course, is the education property tax. In addition, the State reimburses municipalities for revenues lost under circuit breaker property tax relief, use-value assessment, and exemption of state-owned property. Accordingly, the State's interest in the quality of local grand lists is high. As the director of PVR recognizes, the State essentially "owns half of the grand list." The 1.1 percent education property tax raises about $400 million. Circuit breaker relief is in the vicinity of $60 to $80 million. With Act 60 aid to municipalities to improve assessments and assist with equalization of $7 per parcel annually and the use of the grand list to raise the state education property tax that constitutes more than 50 percent of the total property tax levy, the state interest in what occurs in property taxation is dramatically heightened. Equalization should become only one component of this new interest. At the current time, other than the day-to-day focus on implementation of Act 60, it seems to be the primary focus. Resource limitations constrain PVR's ability to focus on other approaches to improve the quality of local grand lists.

3.2 Legal Framework

The basic purpose of an equalization program is to produce defensible estimates of taxable wealth of each local assessment district. Accordingly, the equalization program must encompass all assessable property (section 3.2.1). It must account for differences in valuation standards and exemptions and similar reliefs granted by local authorities (3.2.2).

The main elements of the legal framework include Title 32, Taxation and Finance, *Vermont Statutes Annotated* (V.S.A.), which deals with property taxation generally. The education finance provisions of Act 60 are codified in Title 16, V.S.A., Chapter 133, and provisions related to the education property tax are codified in Title 32, Chapter 135. We found it difficult to understand Vermont's legal framework because the sources available to us seldom made it clear whether obsolete legislation had been repealed. Presumably, others would be similarly confused. It would be desirable for PVR to

maintain an annotated set of property tax statutes. It also would be desirable to recodify the property tax laws with the aim improving their clarity. Obsolete provisions, archaic language, and references to obsolete record-keeping technology should be deleted. An attempt should be made to reorganize sections to improve the flow. (Illinois recently undertook such an exercise.)

A policy of uniform property taxation is imbedded in Vermont's property tax laws. Vermont's 1777 constitution established a standard of proportionate taxation. Furthermore, Title 32, §4467, alludes to Chapter I, Article 9, of the Vermont constitution and the 14th Amendment to the United States constitution. New listers take an oath to list property "without discrimination on a proportionate basis." A standard in appeals is whether the listed value of the property under appeal "corresponds to" the listed values of comparable properties. Section 4601 requires taxes to be uniformly assessed unless otherwise provided by law.

3.2.1 Property Tax Base

The property tax base comprises property that must be assessed minus property that is exempt. In Vermont, the base for the education property tax differs from municipal property tax bases. Personal property is not taxable for education purposes. Some locally approved exemptions are included in the education property tax base.

In general, real property is assessable and is taxable unless exempted. Some personal property is taxable, although personal property increasingly is exempted. As is the case elsewhere, the distinction between real and personal property is not always clear. The legislation contains rules on how some property should be classified. For example, certain manufacturing machinery and "trailer coaches" are taxable as real property. Certain severed mineral and water rights are as real property, as are buildings on leased land. The legislation attempts to define taxable personal property, which includes certain construction equipment and other business personal property, but not inventories, fixtures, and certain poles, lines, and fixtures that are taxable as operating property of electric utilities. Operating property of railroads and telecommunications companies are exempt from local taxation.

Vermont law provides for a wide array of property tax exemptions (see 32 §§3802-3849). Some partial and/or limited duration exemptions are at the option of the municipality. These are to be reported to PVR. Municipalities may also grant certain other property tax relief. For example, they may preferentially tax agricultural buildings and they may exempt business personal property.

3.2.2 Legal Basis of Assessment

An understanding of the legal basis of assessment is important in the design or evaluation of an equalization system. In general, assessable property in Vermont is to be valued for tax purposes on the basis of its fair market value (32 V.S.A., §3481). This is in conformity with market economy principles and recommended practice. Estimated fair market value variously is referred to as "appraisal value" and "listed value." Values in assessment rolls ("grand lists") are 1 percent of listed values (32 §4082), a needless complication that will confuse the uninitiated. The valuation (assessment status) date is 1 April (32 §3651), which also is the base date for equalization studies.

There are a number of special bases of assessment designed to favor certain types of property and certain types of owners. For example, orchards are to be valued as bare agricultural land until trees are fifteen years old. Qualifying agricultural and forest land is to be assessed on the basis of its use value. Use value is defined as the "price per acre which the land would command if it were required to remain henceforth in agriculture or forest use" as set by the Current Use Advisory Board. The use value appraisal program largely is administered by the State, and the inclusion of use-value property in the equalization program is straightforward. See section 3.6.1.

3.3 Local Assessment Practices

Local assessment practices are influenced by the jurisdictional setting and traditions. Practices, in turn, have implications for equalization studies. Although conditions vary widely between large and small municipalities, many listers have limited funding and skilled mass appraisers at their disposal. When limited resources curtail reappraisal programs, both the level and uniformity of local assessment suffer. In addition to increasing inequities in local property taxes, inaccurate appraisals increase the

difficulties in developing accurate estimates of aggregate fair market values, particularly when there are few sales available.

Limited sales data is a common problem in small assessment jurisdictions. This encourages listers to rely on the cost approach, which adds to the likelihood that appraisals will be inaccurate. This problem is compounded when land valuation methods are deficient, as they often appear to be in Vermont. Land values appear especially problematic in settings attractive to affluent buyers, many of whom are out-of-state residents.

The requirement that municipalities maintain an assessment ratio of at least 80 percent or lose state aid meant a reassessment every three to four years during periods of significant market appreciation. Since the early 1990s, there have been very few reassessments in Vermont as a result of flat real estate markets.

In addition to intrinsic problems, some Vermont listers compound the problems of non-uniform and inaccurate appraisals by engaging in illegal and professionally unacceptable reassessment practices. Specifically, they reassess only recently purchased properties (known as "sales chasing" or "Welcome Stranger assessing"). Some also practice what might be termed "Welcome Flatlander assessing," because they appraise property owned by non-residents at a higher proportion of current market value than they appraise the property of residents.

In part, these practices stem from common misconceptions about the market value of certain types of property. Vermont's physical attractions make it a desirable place to have a seasonal home, if not a primary residence. Affluent out-of-staters often can outbid locals for desirable sites. From a local perspective, they pay "too much." Although listers may be comfortable with basing the assessments of out-of-state property owners on such "high" prices, they often are uncomfortable with the low sales ratios that result from an in-state owner selling to an out-of-state owner. Consequently, they may seek to have such sales removed from equalization studies. Rather than to try to reject such sales from the equalization study and to attempt to preserve the assessment status quo for current property

owners, listers should focus on better defining market areas and on developing land rates that reflect market realities.

3.4 Property Tax Supervision in Vermont

Part of the Department of Taxes mission is to "serve local governments by striving to improve local property tax assessment practices." Outcomes that the Property Valuation and Review Division have identified include:

- Ensure equitable administration of the property tax statewide by promoting the consistent use of modern evaluation tools and reporting methodology;

- Improve the knowledge and self-sufficiency of local government assessment officials through regular training and education opportunities; and

- Generate a correct equalized value for each school district's taxable worth on an annual basis.

Against these aspirations, this section compares property tax supervision in Vermont with the standards suggested by the model described in section 2.2. The section explicitly deals with the responsibilities and programs of PVR. Section 4.3 addresses management issues. Under Title 3, §2289, PVR's duties are to assist in the administration of property taxation and provide property tax information to state officials and employees. Pursuant to Title 32 V.S.A., §341, the director of PVR is to examine any inventory in the hands of listers, confer and advise with them, furnish printed instructions, issue bulletins, furnish information on request of listers. Section 3411 also enumerates powers and duties. (Citations in this section are to Title 32 unless otherwise noted.)

3.4.1 Standards and Specifications

In comparison to other states, Vermont statutes contain few appraisal standards and specifications apart from the general market value and uniformity standards. However, 32 §4041a requires municipalities to maintain a level of appraisal no lower than 80 percent and a coefficient of

dispersion (COD) no greater than 20 percent. Until this year, section 5401(1) contained a non-standard definition of the COD in that it is calculated about the mean ratio rather than the median ratio, which is the standard reference point. In addition to the technical reasons for preferring the median, CODs calculated about the mean tend to be higher, which means that it will be more difficult for municipalities to comply with the law.

We note also that Vermont does not have a standard system for identifying parcels of land. Having a numbering system that uniquely identifies each parcel greatly facilitates market research.

In addition to general rule-making authority pursuant to the Administrative Procedures Act, 32 §5411 gives the commissioner of taxes and the director of PVR the authority to adopt formal and informal rules in order to conduct equalization studies. Although four rules have been issued, the director has not fully exploited his rule making powers.

A passive way to set standards is to prescribe (and provide) standard forms. Vermont legislation authorizes PVR to provide copies of forms and statutes (at reasonable charge).

A facet of standards setting is to communicate requirements and expectations effectively. PVR has authority to issue written instructions and bulletins. In addition, 32 §3434 specifically authorizes the director to call meetings for instruction, and at least one lister per town is required to attend. This authority has not been fully exploited. The *Vermont Lister's Handbook* is a good beginning, although this work needs to be continually updated (PVR is working on updating the 1995 edition) and expanded to meet the needs of listers in appraisal. As discussed below, instructions concerning the equalization studies need attention as well.

Along with not having any explicit standards regarding the frequency of reappraisals or the frequency of property inspections, a striking omission from Vermont's legal framework is technical proficiency requirements for assessing officers. However, §4052 provides for certification of contract appraisers by the director. The law does not apply to elected or appointed officials of municipalities.

3.4.2 Technical and Financial Assistance

The State of Vermont has a good record of providing technical and financial assistance, although efforts in both areas have varied with the State's fiscal condition. PVR has had an ongoing mapping program. It also has supported the installation of computer-assisted mass appraisal (CAMA) systems through the Computer-assisted Property Tax Administration Program CAPTAP. PVR's district advisors and headquarters staff provide a range of assistance on request within the limits of available time.

Act 60 also has provided Vermont municipalities with substantial financial assistance. Title 16, V.S.A., §4025(c) establishes an equalization and reappraisal account within the State's education fund. Moneys in this account are to be used by PVR for its operations and for administering the equalization studies. In addition, they are to be used for lister training; reappraisal payments pursuant to Title 32, §4041a; and for assistance in maintaining a reappraisal on a case-by-case basis. Provided the legislature appropriates the funds, title 32, §5405(f) requires the State to pay municipalities $1 per grand list parcel per year for their services in connection with the equalization studies. Section 4041a(a) requires the State to pay $6 per grand list parcel per year to be used only for reappraisal and costs related to reappraisal of its grand list properties and for maintenance of the grand list. The intent is to cover 50 percent of such costs. There are no guidelines on how the money should be spent. Municipalities are not required to report on how the money was spent, and there is no auditing. While acknowledging the fact that money is fungible, we believe these issues should be addressed, because unconditional grants do not promote accountability. We suggest that the State consider requiring reappraisal plans of all municipalities and reporting on how the grants were used. The law should permit PVR to withhold funds if they are misused.

3.4.3 Monitoring Practices and Performance

In a continuation of past practice, PVR monitors the common level of appraisal and coefficient of dispersion in each municipality each year under the provisions of Act 60. The ratio studies reviewed below are the tools that are used to do this. Although PVR does not have formal performance audit program, it instructs district advisors to spot check the consistency and accuracy

of data in grand lists and in abstracts. The advisors also are in a position to form informal opinions about the quality of assessment practices in the municipalities in which they work.

3.4.4 Obtaining Copies of Rolls and Property Records

As previously indicated, a property tax supervisory agency can more effectively monitor practices and performance if it has the power to obtain copies of assessment rolls and individual property records. Vermont law gives the director of PVR broad powers to collect data.

Equalization determinations depend on two things: ratio studies and abstracts of grand lists. Consequently, listers are required to deposit with the town clerk an abstract of the grand list (from 411). "Abstracts shall contain information prescribed by rule of the commissioner of taxes which is reasonably needed for the proper execution of his or her duties." Clerks are required to send the abstract and a photocopy of the grand list to the director on or before 15 August. The State also receives a report on levies and tax rates (form 427).

Section 3410 requires the director to maintain a central file of municipal grand lists. The director also may supply copies of grand lists at a reasonable charge.

Act 60 specifically requires municipalities to furnish information about homestead property assessments in the form (preferably electronic) required by the commissioner. Particularly since many municipalities now have the capability to produce electronic records, this precedent should be expanded to copies of grand lists and the abstracts. Municipalities that do not now have computerized grand lists should be encouraged to so and to provide them to PVR in an electronic format. In principle, PVR could have on-line access to some grand lists and could create its own abstract.

One problem is that grand lists are subject to change for six months after they are submitted to the state. Although the director is to be informed of such changes, this creates ambiguities in calculating ratios and in the summary values reported in abstracts.

Individuals and firms are required to return inventory forms by the deadline (generally not applicable to taxpayers who own only real property). The director is authorized to examine inventories on file.

3.4.5 Enforcing Standards

Under 32 §4041a(b), when the director of PVR determines that the common level of appraisal is below 80 percent or the coefficient of dispersion is greater than 20, the municipality is required to reappraise its education grand list properties. The director of PVR may order reappraisals when performance standards are not met. When this happens, the municipality must within thirty days contest the determination, develop a compliance plan, or both. If a municipality fails to submit a plan or carry it out in a timely manner, the State shall withhold education, transportation, and other funds. Although this power to order reassessments is untested, hearings have been held on draft rules.

We believe it is now appropriate to begin enforcing the reassessment requirement. Currently, only a few municipalities do not meet the performance standards. They should be put on notice, and the causes of non-compliance should be determined. If they have not reappraised recently, reassessment orders should be issued. If their response is not acceptable, an appropriate course of action should be determined. It would seem appropriate to withhold reassessment assistance, particularly if the municipality is not coding property categories correctly or is not providing PVR the assistance it needs in carrying out an effective and accurate equalization study. However, to withhold education aid while collecting a statewide education property tax seems inherently contradictory.

Vermont law also provides some penalties for failing to comply with reporting requirements. Section 4185(b) provides for withholding state aid if a town fails to file an abstract. A lister who makes or returns an incorrect abstract is subject to a fine of $500.

3.4.6 Reporting

The statutes also require the director of PVR to make reports. Section 3403 requires a biennial report, while sections 3411(9) and 3412 require an annual report on, among other things,

property appraisal practices. There also is a requirement to develop and recommend to the general assembly improved methods for standardizing property assessment procedures.

3.5 Property Ownership and Use Classifications

Vermont has a confusing array of ownership codes, category codes, and property use codes. This section addresses issues related to the classification of properties according to ownership and use. These issues include (1) inherent difficulties in meaningfully characterizing residence and ownership, (2) the comparatively large number of use classes for which aggregate full value estimates may have to be made in a city or town, (3) ambiguities in category definitions (including special exceptions), (4) inconsistencies between "categories" and property "class" codes, (5) the influence of land area in how a property is classified, (6) the influence of where the owner resides on how a property is classified, and (7) concerns about how well cities and towns classify properties.

In property taxation, property generally is classified according to use for three basic reasons. First, property is classified for purposes of valuation, so that like properties are valued similarly. Second, there often is an interest in compiling data according to various property use categories for a variety of purposes. Third, there may be a policy reason for varying property tax burdens according to how property is used.

3.5.1 Ownership Codes

Pursuant to 32, V.SA., § 4608, listers are required to classify property ownership. Ownership codes may be unique to Vermont. Ensuring that the codes are correct has been problematic. Given the complexities of modern property ownership and occupancy arrangements, we doubt that they would provide much useful information if they were properly coded. Except perhaps in relation to "homesteads," they are not terribly relevant in assessment administration and they have no bearing on the equalization study.

One problem has been ensuring that residency is properly categorized as a town resident ('T"), state resident ("S"), or out-of-state resident ("NS"). Place of residency is inherently ambiguous in an

increasingly mobile society, and the Lister's Handbook doe not provide useful guidance on defining legal place of residence. The Property Transfer Return system is not designed to identify where the buyer resides or will reside.

Another problem has been the tendency of officials in some cities and towns to distinguish between ownership by natural persons ("T," "S," and "NS") and legal persons ("C") on the basis of property use. Although how a property is used clearly is irrelevant to classifying ownership and although distinguishing between legal and natural persons is straightforward, we can see no benefit in putting things right. What does it matter if a store is owned by a natural person or by a corporation or if a house is owned by one or more of the people who live in it or by a trust established for estate-planning purposes?

3.5.2 Real Property "Categories"

As mentioned, Vermont attempts to develop aggregate full value estimates for fifteen real property "categories." Assessors and listers are responsible for assigning the proper category code to each property record in the grand list. Town clerks are responsible for inscribing the category code on each property transfer return (PTR). Incorrect category codes are a common problem.

The categories and their general definitions are as follows:

1) R1–Residential property with less than six acres of land. Residential property includes buildings with up to four dwelling units and houses on non-operating farms used as year-round residences.
2) R2–Residential with six or more acres of land.
3) MHU–Mobile home unlanded. A mobile home on land not owned by the owner of the mobile home (such as in a mobile home park).
4) MHL–Mobile home landed.
5) V1–Vacation property with less than six acres of land. Vacation property includes all properties whose "highest and best use" is for seasonal occupation (such as summer homes

and cottages, camps, and ski chalets). Ski lodges and the like would be categorized as commercial.

6) V2–Vacation property with six or more acres of land.
7) C–Commercial. Includes properties whose highest and best use is in providing goods and services.
8) CA–Commercial apartments (with more than four dwelling units).
9) I–Industrial–properties used in manufacturing.
10) UE–The operating property of electric utilities.
11) UO–The operating property of other utilities.
12) F–Farm. Includes only parcels with buildings that are part of an operating farm.
13) O–Other. Intended for subcategories of other types of property, such as condominiums, if approved by PVR.
14) W–Woodland. Defined as undeveloped land that is *mostly* wooded, but can include tracts with some improvements, such as deer camps.
15) M–Miscellaneous. Defined as *undeveloped* land that is *not* mostly wooded. Includes vacant parcels suitable for residential, commercial, and industrial development; vacant land owned by utilities; and vacant parcels used in farming. Also can include parcels with buildings of little value.

The number of categories for which full value estimates are made is unusually large, which compounds the problem of having to make aggregate full value estimates for a large number of areas (262). A review of twenty-five other states indicates that no state uses as many categories in their equalization studies. Idaho was next highest with ten categories. The most common number of categories was four (in nine states). Six states used only three categories. Among the New England states, four categories predominated.

No one could explain the rationale for the existing categories or defended doing an equalization survey with such a large number of categories. Advisors and listers alike found fault with the existing

categories, although there was no agreement as to either the faults or the solutions. Problems include the following:

- Lack of clarity and consistency in instructions. The definitions for "commercial" and "industrial" property provide no guidance on how such property types as warehouses and industries that do not process raw materials (such as assembly plants) should be categorized. The materials we reviewed contained no guidance on determining "highest and best use" or on determining whether a piece of undeveloped land was "mostly" wooded. There was no guidance on defining the operating and non-operating properties of utilities.

- Having both a "miscellaneous" and an "other" category and the absence of a "vacant land" category. With good reason, it is difficult to decide whether land should be categorized as "woodland" or "miscellaneous." Of course, "miscellaneous" really is a misnomer. It is used to categorize essentially vacant land that is not woodland or part of an operating farm, although it is unusual to categorize rural and urban land the way Vermont does. There is no real miscellaneous category. "Other" is not intended to be a miscellaneous category either; it essentially allows listers to create a single subcategory (such as condominiums), but it effectively could become an amalgam of subcategories (such as trailer coaches and waterfront properties). However, both categories are sometimes used as catch-all categories. It would be better to establish a small set of primary categories with as many subcategories as are needed (as will be discussed in proposed revisions to the property use coding scheme). This would mitigate some of the problems assessors have with seasonal property, mobile homes, wooded land, and so forth.

- Mixed-use properties. While it appears that a mixed-use property is to be categorized according to its predominant use under existing instructions, the instructions provide no guidance on how to do this. In any event, the situation with respect to mixed-use properties has changed under Act 60. In particular, there now is a need to identify the homestead versus non-homestead portion of many residential properties. There are other ramifications of the

law that will need to be addressed, including valuation and the proper handling of usable sales of mixed-use properties. Procedural guidelines will need to be developed.

- Tenure of residence (as between a primary residence and seasonal residence). The grand list coding instructions tacitly recognize that the difference between "residential" and "vacation" property is a gray area. The instructions assert that "highest and best use" is the determining factor. Absentee (whether in- or out-of-state) ownership and ownership by cable TV companies are not to be considered. However, if a property is occupied year-round, it is to be classified as "residential." Apart from relying on a declaration by the owner that a property is a primary residence, there is no easy way to determine whether a structure is occupied seasonally. A physical inspection may reveal whether it is suitable for year-round occupancy.

- Area as a determinant of a category. Given the emphasis placed on "highest and best use" in determining a property's category, it is incongruous that six acres be the dividing point between the two residential and vacation categories. Clearly, the six acre cut-off now serves no useful purpose. It conflicts with the two acre homestead break point under Act 60. It is inconsistent with the break points under Act 250 (less than three acres, three to ten acres, and more than ten acres).

Solving all the problems associated with category codes will not be easy or quick. However, there are some sensible interim actions that should be taken. The number of categories used in the equalization study could be reduced immediately. For example, pending the complete rationalization of property use codes recommended below, the fifteen existing categories could be combined in the 1999 equalization study as follows:

- Residential–Residential (R1 and R2), vacation (V1 and V2), and mobile home (MHL and MHU)

- Commercial and industrial–Commercial (C and CA) and industrial (I)

- Urban and rural and vacant land–Farm (R), woodland (W), and miscellaneous (M)

- Utility–Utility (UE and UO)

Properties categorized as "Other" (O) should be merged with whichever category they have the most in common. Thus, residential condominiums would be included with residential. Ultimately, the use coding scheme used in the aggregate full value studies will need to be rationalized and simplified as much as possible (see section 3.5.3).

3.5.3 Property Use Codes

In addition to the fifteen "category" codes discussed above, Vermont has developed a more comprehensive set of property use ("class") codes. Most states have developed similar coding systems, although none to our knowledge has developed two inconsistent sets of use codes. Because of the dominance of the category codes, the property class codes have only a limited use.

For good assessment administration and in sharing sales and other information across town lines, a good set of property use codes would be very valuable. The category codes are an odd mixture of ownership and use. As alluded to previously, there is not a neat overlay of the category codes and the class codes. For example, the property class codes for year-round residences and vacation homes do not have a six-acre split, but condominium land owned in common does have a six-acre split. Neither category codes nor property class codes have a coding for "waterfront." No code exists for ski resorts, and few codes exist for mixed-use properties.

We recommend that category and class codes be combined into a single set of property use codes. We believe that combining the two sets of codes into a meaningful new set of combined codes should not be too difficult. The Appendix provides a suggestion of how this could be done. The new coding scheme should have a hierarchical structure like the property class codes have. The codes should be numeric to facilitate computer processing. The best of both sets of codes could be retained. For example, the 100 and 200 series could cover residential properties, the 300, 400 and 500 series

commercial, recreational and entertainment, and industrial properties, the 600 series utilities, the 700, 800 and 900 series could cover farm, forest, and open land. The 1000 and 1100 series could be for governmental property and for community service (charitable, religious, educational, and other benevolent organizational property). All members of a series should logically belong to that series and to no other (the 330–rentals–series in the current class codes violates this principle). As much as possible, each series, sub-series, and type should be discrete to minimize ambiguity. There should be no overlaps or gaps in the categories. A committee of PVR staff, listers, and any other interested parties could be formed to develop the use coding scheme.

Clear instructions on the new coding scheme will need to be prepared. The IAAO *Standard on Property Use Codes* recommends that the actual use of the property govern classification. However, Standard 6 of the *Uniform Standards of Professional Appraisal Practice* requires that property be appraised on the basis of its highest and best use (which oftentimes would be the same as current use), but implementation of the cost approach generally requires an identification of the use for which a building was defined.

The treatment of mixed-use properties needs to be addressed. Several approaches are possible. Specific codes can be used to identify a property as having a mixed use. Each building's use could be coded, and each unit in a building similarly could be separately coded. A single code could be assigned based on predominant land use (not a recommended choice).

Except where necessary, it is best *not* to incorporate other characteristics, such as land or building area, in a property use coding system. Logical exceptions to this principle include the need to identify homesteads.

Assessors and listers will need to be trained. After that, the properties in the state will need to be recoded. Much of the recoding could be automated, although it may be necessary to modify some computer programs. The per-parcel grants now given to cities and towns could be used to defray the costs.

To ensure that all cities and towns adopt the new system, PVR should audit or otherwise monitor implementation. If errors are significant or if a pervasive pattern of errors is detected, the municipality should be put on notice, and PVR should work with the assessor to develop a plan to remedy the errors. PVR should continue to monitor progress, and should progress not be satisfactory, appropriate action should be taken. The options include curtailing aid.

3.6 Assessment and Equalization of Special Types of Property

This section discusses types of property that represent special valuation and equalization problems either because of their intrinsic nature or because of legislative requirements.

3.6.1 Agricultural and Forest Land

Qualifying agricultural and forest land may be assessed on the basis of its current "use value" rather than its fair market value. Use-value assessment is intended to provide tax relief to properties assessed under the program.

Since properties in a use-value program are not taxed on the basis of market values, PVR correctly does not equalize current use assessments or calculate use-value to sale-price ratios. Instead, in determining equalized values, properties under use-value are excluded from the aggregate fair market value study and then added back in later. However, rather than merely accepting use values as reported by the municipalities as Vermont now does, it would be advisable to verify that use values were being correctly calculated and reported.

Although administration of Vermont's current use-value program is a major activity of PVR, it has no major implications for the equalization program other than the above-mentioned need to verify figures. Act 60 did a good job of consolidating and clarifying the various current use enactments.

3.6.2 Personal Property

With the exception of cable television property, otherwise taxable personal property, such as business inventory and machinery and equipment, is excluded in determining the equalized education

grand list under Act 60. The statewide property tax does not apply to business inventory and machinery and equipment. At local option, business inventory and machinery and equipment are taxable for municipal purposes. Increasingly, cities and towns are exempting "business inventory" from taxation, but most continue to tax "machinery and equipment."

Current equalization study practices account for real and personal property listed values straight-forwardly. For municipal equalized grand lists, personal property is added in after adjusting the grand list amount for personal property by the townwide rate determined for real property. Given the difficulty in valuing personal property this is logical. Scarce staff resources can be better used elsewhere.

There is a larger set of classification issues, however. Before Act 60, the distinction between real and personal property was not particularly important. Under Act 60 it becomes quite important. Taxpayers will seek a broad definition of personal property. Thus, the classification of fixtures, leasehold improvements, and certain industrial structures will become more controversial. Advisors have not been given much guidance and direction in determining what is real and what is personal property. Definitions and instructions need to be developed by PVR consistent with Act 60 that will aid both district advisors and listers in distinguishing between real and personal property. Vermont needs to develop its own guidelines as the definitions of what constitutes taxable real property and what constitutes exempt personal property vary widely from state to state.

We note that Vermont currently classifies telephone poles and wires as personal property and electric poles and wires as real property. Cable television poles and wires also are classified as personal property. In contrast to other personal property, cable property is included in the equalized education grand list. In our view, the easiest and most appropriate solution to this anomaly is to treat cable property as real property, as is done with electric transmission and distribution systems. As real property, cable would included in the utility class. If it remains personal property, it will continue to be an anomaly in the ratio studies and require some kind of effort to arrive at an equalized value. As personal property, it effectively becomes a separate class or category. Sales of cable properties

will rarely be available and appraisals are difficult. For these reasons, it would be advisable to have a staff person in PVR with cable expertise value all cable properties in the state on some kind of mass appraisal basis.

3.6.3 Utility Property

As with the treatment of personal property, utility values are handled in a straightforward manner in the equalization studies. The valuation methodology used, trended original cost less depreciation, and valuation practices are questionable, however.

The utility appraisals currently used in the equalization studies probably do not come close, in most cases, to representing the actual utility value. The indexing approach produces a revised number each year, but it probably bears no relationship to real world values. One of the advisor pointed out that when the town of Rutland recently reassessed, the resulting utility value was widely different that PVR equalized value.

In reviewing the work of some field advisors, we noted inconsistencies in utility value determinations. One method used was to simply index last year's equalized utility value. This approach is sanctioned in PVR's instructions and apparently has the intent of not recognizing depreciation reductions. Using it means that any new construction or demolition that occurred during the year and added or subtracted from the grand list is ignored. Advisors cannot determine without research whether a decrease in a utility property on the grand list results from removal of property or from depreciation. In one town we examined, this method resulted in the grand list for utility showing a 21.98 percent decrease and the equalized utility value a 6.85 percent increase.

Another valuation approach used can best be described as "circular." The 1998 grand list value of utility property was multiplied by the utility index provided. The next step was to divide the 1998 grand list utility value by the result in step one (1998 grand list x index) to produce a ratio for utility property. The circle is then completed by dividing the 1998 utility grand list value by the utility ratio

to produce the equalized utility value. In effect the utility grand list value is simply increased by the utility index factor.

A third approach found was to multiply the 1997 utility grand list assessment by the utility index. The result of this calculation was then divided by the 1998 utility grand list assessment to create a utility ratio. The 1998 grand list assessment was then divided by the utility ratio to determine the 1998 equalized utility value. This approach has the most rationality of the three approaches found.

Utilities clearly need serious attention in the equalization studies. The first two approaches discussed are seriously flawed and cannot be defended. Only the third approach has any rationality.

Both short-term and long-term solutions are needed for utility property valuations. For 1999, PVR is developing a worksheet to ensure consistency in valuation method. As another short-term measure, a staff person in PVR with utility appraisal knowledge and expertise should be given responsibility for determining equalized utility values on a statewide basis and then providing this information to the district advisors. PVR secured permission in 1999 to hire a utility and commercial property appraiser.

Utility property valuations also require a longer-term examination linked closely with deregulation. Significant sales of utilities are now occurring in New England and other states. Data from these sales could be used to develop a mass appraisal approach that could be applied to utilities in Vermont. An allocation could then be done to determine the equalized utility value for each city and town.

As utility properties tend to be concentrated and often represent significant portions of grand lists in a few towns, the accuracy of individual equalized education grand lists and equity of the statewide property tax under Act 60 require serious attention to utility valuation.

3.6.4 Large Properties

The equalization of the listed values of large special-purpose properties present issues somewhat analogous to those of utilities. Such properties presented difficult problems for all of the advisors we met. In particular, they were uncomfortable with trying to determine the ratio to be used for these properties. Probably more often than not, they ended up relying on the R1 ratio. The 1997 sales transfer data indicates that statewide there were only 30 valid sales for industrials.

The current system does not allow time for the advisors to do appraisals of these large, complex properties. Moreover, most of them have not been trained in the valuation of industrial properties. As with utility valuations, it would be advisable to dedicate some of PVR staff to valuing large industrial and ski resort properties for equalization purposes. The resulting appraisals could be presented to the municipalities for the listers' consideration.

3.7 Implications for the Design of the Equalization Program

The setting for property taxation and equalization in Vermont and current practices have a number of implications for the design of an optimal equalization program. For the foreseeable future, the program will have to accept as constraints the fabric of small, sparsely populated towns. The large number of small, local assessment districts and the large number of property use categories make it difficult to produce statistically reliable estimates of the value of each stratum. Assessors have similar difficulties in estimating the values of properties in sparsely populated strata. The program will also have to come to terms with the political and valuation ramifications of Vermont's scenic attractions. Although the legislature clearly wants the equalization program to be economical, the resources devoted to it should be commensurate with the State's stake in equitable property taxation.

Within the context of limited resources, three factors always influence the design of an equalization program: accuracy, stability, and timeliness. At any point in time, different weight can be attached to each of these. For example, in periods of rapidly changing real estate markets, timeliness becomes very important. Given the fact that equalization in Vermont now directly affects the total tax rate and the amount of property taxes to be raised in each municipality, accuracy takes on greater importance

than in the past. This may be especially true in the one-third of the cities and towns that will see their property taxes increase as a result of Act 60. It is likely that PVR can expect to be tested and challenged vigorously each year by a significant number of cities and towns over the accuracy of their equalized education grand list. More than the sales samples will be scrutinized. The broader statistical validity of the studies will be challenged.

As noted above, there are a number of operational issues that need addressing. The number of property uses that are studied should be reduced. The property use coding scheme needs to be rationalized, and categories should be clearly defined. Listers need to be well-trained in property use coding, and there performance should be monitored. The underlying valuations of utilities and large, complex properties by municipalities need to be scrutinized.

4 OVERVIEW OF THE CURRENT EQUALIZATION PROGRAM

4.1 Legal Requirements

Title 32 V.S.A., §5405 specifies the procedure for determining the equalized education property tax grand list and the coefficient of dispersion (apparently supplanting earlier legislation in Chapter 121). Subsection 5405(d) gives the commissioner latitude as to equalization methodology as long as it is "appropriate to support" the determinations equalized values, given the resources available. Certain property exempted by action of a municipality is to be included in equalized education property value (EEPV). EEPV is the sum of (1) the aggregate fair market value of all nonresidential and homestead property required to be appraised at market value, (2) the aggregate use value of all nonresidential property enrolled in a use-value assessment program, and (3) the aggregate value of property under certain local tax agreements. The equalization program also produces aggregate fair market values for the municipal grand list. These equalized assessments are used as the basis for allocating county taxes (32 §4301).

4.2 Procedural Overview

We outline the current equalization program (often referred to as the Aggregate Fair Market Value study) in this section to provide a frame of reference for more detailed discussion of current practices in sections 5 through 8 and our recommended equalization model in section 9.

4.2.1 Procedural Steps

Currently, there are seven main phases of an equalization study: (1) sales data acquisition, (2) sales screening, (3) the ratio studies, (4) determining equalized values, (5) quality assurance, (6) issuing PVR's determinations, and (7) appeals. Figure 4-1 illustrates the steps in phases 1 through 5.

- Sales Data Acquisition. Sales data acquisition is a year-round activity. Town clerks forward copies of property transfer returns (PTRs) to the Department of Taxes monthly or quarterly.

When they are received by PTR, they are given an initial screening, after which they are sent to data entry.

- Sales Screening. The equalization study begins when instructions and a sales list are sent to each municipality for screening. This phase ends when the district advisor confers with the assessor or listers about the sales that are deemed usable for ratio study purposes.

- Ratio Study. The ratio study phase begins when the advisor considers the adequacy of sales samples and decides how to remedy any deficiencies. After the sales samples are finalized, ratio study statistics are calculated, and the level of assessment for each stratum is determined.

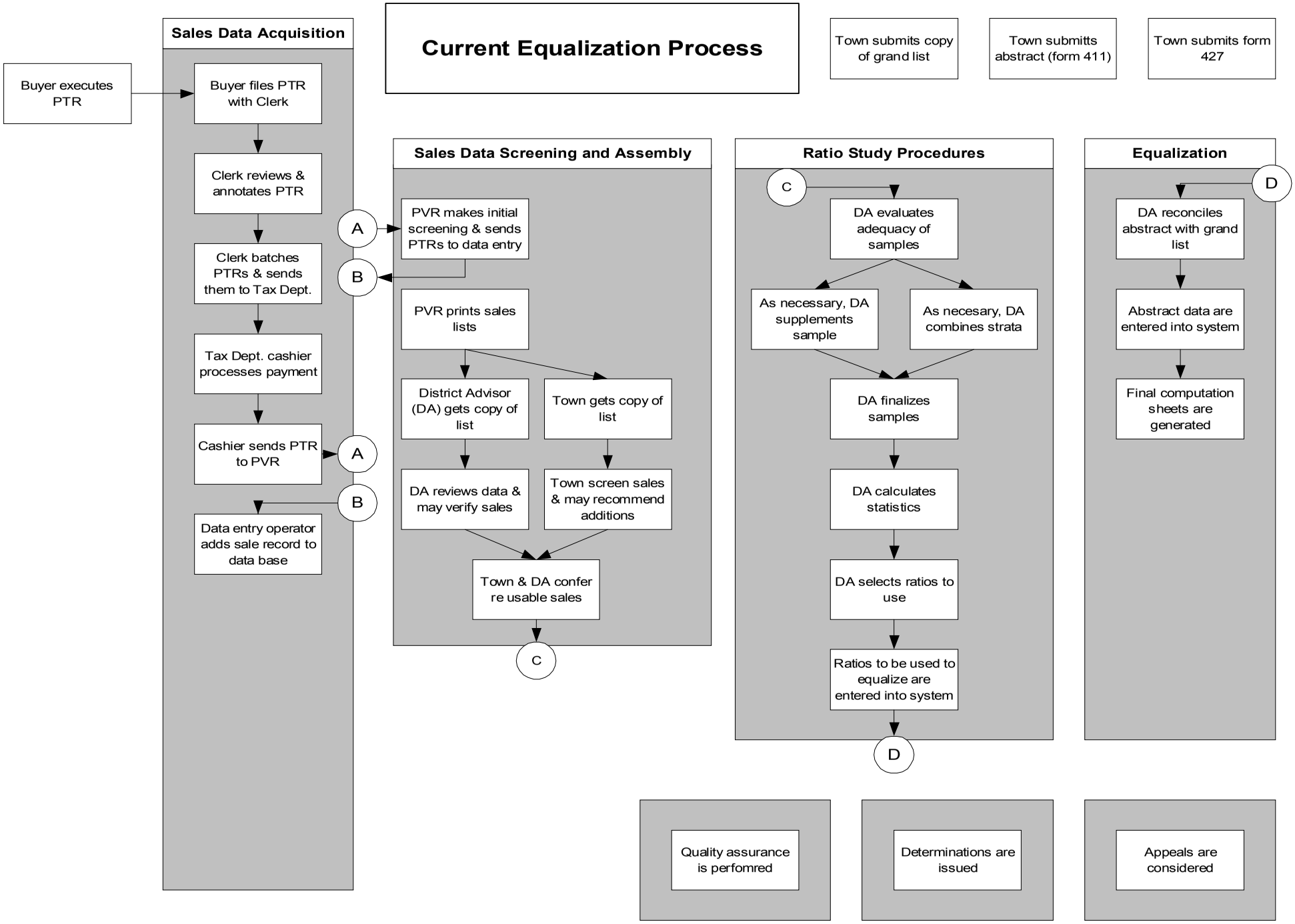
- Determining Equalized Values. Abstracts are reconciled with grand lists. Listed values are divided by ratios to produce aggregate fair market value estimates for categories required to be listed at fair market value. Necessary adjustments are made. Preliminary determinations are reviewed with listers.

- Quality Assurance. The work of district advisors is reviewed for completeness and accuracy.

- Issuing Findings. Final determinations are issued to municipalities. The annual report is prepared.

- Appeals. Petitions for a redetermination are considered. Further appeals are processed.

If problems are encountered before final determinations are made, one or more of the processing phases made be repeated as necessary until a satisfactory result is obtained.


Current Equalization Process
Town submits copy of grand list
Town submitts abstract (form 411)
Town submits form 427
Buyer executes PTR
Sales Data Acquisition
Buyer files PTR with Clerk
Clerk reviews & annotates PTR
Clerk batches PTRs & sends them to Tax Dept.
Tax Dept. cashier processes payment
Cashier sends PTR to PVR
Data entry operator adds sale record to data base
A
B
Sales Data Screening and Assembly
PVR makes initial screening & sends PTRs to data entry
PVR prints sales lists
District Advisor (DA) gets copy of list
Town gets copy of list
DA reviews data & may verify sales
Town screen sales & may recommend additions
Town & DA confer re usable sales
C
Ratio Study Procedures
DA evaluates adequacy of samples
As necessary, DA supplements sample
As necesary, DA combines strata
DA finalizes samples
DA calculates statistics
DA selects ratios to use
Ratios to be used to equalize are entered into system
D
Equalization
DA reconciles abstract with grand list
Abstract data are entered into system
Final computation sheets are generated
Quality assurance is perfomred
Determinations are issued
Appeals are considered

The current equalization program affords cities and towns considerable latitude in how they fulfill their responsibilities for classifying properties, screening sales, and attaching listed values. District advisors have comparable latitude in how they complete a study. Some seem disinclined to question the assessor's changes in the list of sales. Advisors have latitude in how they combine strata. The O'Brien table provides latitude in selecting the measure of central tendency. Although a certain measure of flexibility and latitude is desirable, greater structure in the equalization studies would reduce concerns about the lack of objectivity in the studies.

4.2.2 Study Calendar

Equalization studies now are done annually. The effective date of analysis is 1 April (although 32 §5405 seems to establish a 1 January date). The study for a year is to be completed by 1 January of following year. For example, the 1998 study was to be (and was) completed by 1 January 1999 so that notices of determinations could be issued by the deadline. The 1998 studies were based on sales between 1 April 1996 and 31 March 1998 (except when a longer period was necessary). The sales were matched to 1998 listed values. The director of PVR is to certify the studies to the Commissioner of Taxes by 1 April of the following year.

The time period for making equalization studies is now approximately six months. Based on instructions for the 1998 studies, the calendar usually begins in July of each year when PVR mails each municipality a memorandum containing study instructions, blank copies of an abstract of the grand list (form 411-4181) and a statement of taxes assessed (form 427), and a two-year list of sales. PVR requests that the abstract and statement be returned by 15 August. PVR requests that lists of sales be returned to district advisors by 1 September. The target date for completing equalized value estimates is 15 November. The studies are reviewed for quality control purposes between 15 November up to the completion deadline of 31 December.

Given the large number of studies that must be made, the small number of district advisors, and the fact that studies are only partly automated, the current study schedule does not allow enough time and it does not provide any margin for taking corrective or supplemental action when problems are

found. Along with streamlining procedures, the study period should be lengthened by beginning it earlier. With changes in procedures discussed later, we believe sales screening could be a year-round activity. Preliminary decisions about sample sufficiency could be made by 1 April.

4.2.3 Observations about Procedures

This section summarizes observations about equalization study procedures derived from inspecting the worksheets for a sample of six municipalities, including three very small towns. They reinforce procedural observations made in other sections of the report.

Regarding sales screening procedures (section 5.2.2), in every case the changes made by the lister in the sales worksheets were accepted by the district advisor. No instances were found where the district advisor did not accept the changes of the lister. Although such an outcome would be expected when the lister had bona fide reasons for making the changes, many district advisors hold the view that listers attempt to skew the ratio study results.

The sales listings were extensively marked up. Many changes were made to category codes, sales prices, prior grand list assessments, and the valid/invalid codes. It appears that clerks initially do not inscribe the proper category code. Although we cannot be certain of the reasons why, ownership may be a more important criterion to clerks than use. A parcel of vacant land bought by a business person would be coded commercial. It is not clear why changes were made in the grand list numbers. In one town, the changes were cited as a result of changes following a property owner grievance. Sales prices were frequently changed without explanation.

Often, listers changed the validity code. Usually sales were changed from valid to invalid. Sometimes adequate reasons were given. Other times the reasons were questionable reasons, and too often no reason was given. The most commonly used code was 19, "other," which requires an explanation. Advisors accepted such reasons as "not market", "out of state owner," "remarried," and "divorced." There is a clear overuse of code 19. Sales that were outliers were in some towns thrown out, but not in other towns. In one town, all but three commercial sales were thrown out, thus retaining enough

for study purposes. Of the three commercial sales, the sale price was adjusted in two, thereby producing a nearly perfect COD and an equalized value of 100.

There was evidence of sales chasing in one town. (This may also have been occurring in some of the other towns with grand list changes.) When a change has been made in the assessment on the grand list of a sold property, PVR's procedures properly call for the district advisor to use the prior grand list assessment. This was not done in this instance.

In no instances were appraisals made. In only one instance was an effort made to add additional sales beyond the two-year period. One town with eight sales had no permanent residential sales. The townwide ratio was used for a majority of the categories. The deletion of one sale resulted in a 6.4 percent change in the education equalized grand list. In another town with thirty-six sales, there were only three R1 sales. These R1 sales were each used a total of five times. Thus, they carried a tremendous weight in determining the equalized grand list. A different grand list to sales ratio in any one of these sales would have substantially affected the results (this town had a 17 percent increase in its education equalized grand list between 1997 and 1998).

PVR's procedures provide district advisors with guidelines for combining categories when insufficient sales exist. Advisors had to combine categories in every town reviewed. The most problematic category is mobile homes. For example for mobile homes with land, district advisors are offered three choices. Rarely are there sufficient mobile home sales, so that combinations of sales are necessary. The three combinations suggested are R1 + MHL + MHU, R1 + MHL and MHL + MHU. District The choice can significantly affect the resulting determination of equalized value. In one case, the choice of the district advisor resulted in significantly lowering the equalized value of the category, in comparison to the other two options, much to the benefit of the town.

We also noted incorrect interpretations of the "O'Brien table" (see section 7). In reviewing the use of the O'Brien table, it was observed that the O'Brien table has a very significant impact on equalized values. Changes of 10 percent or more were observed.

In Greensboro, all properties with waterfront, whether residential, vacation, or vacant land, were transferred to the "other" category. Because waterfront properties are generally underassessed as a result of more rapid appreciation, the result was a dramatic increase in the education equalized grand list of Greensboro. Thus, by not leaving waterfront properties dispersed through a number of categories, Greensboro created for itself a much higher equalized value.

These observations underscore the need for clearer procedures and guidelines, greater consistency among towns, more support and assistance in problem areas, and major change in the equalization ratio study process.

4.3 Resources and Management

Adequate resources for effective management are essential to the success of an equalization program.

4.3.1 Funding

The funding provided for property tax supervision and for equalization reflects the political importance of those functions. According to fiscal year 1999 budget documents, PVR spent about $850,000 in fiscal year 1997, its was going to spend about $890,000 in 1998, and it was allocated about $900,000 for 1999. Of these totals, the amounts allocated to the use-value program were $169,000, $174,000, and $173,000, respectively. Thus, approximately $650,000, $720,000, and $730,000 was allocated to property tax supervision and equalization in the respective years. (Budget documents identify the equalization studies as a separate program, but the amounts assigned to it are not a true reflection of the costs of the program, because district advisors are accounted for elsewhere, as are other resources.)

A variety of benchmarks are used to evaluate the adequacy of funding and staffing for property tax supervision (including equalization). One is to compute funding as a percentage of total property tax revenues. When one divides the $720,000 of spending in 1998 by $706 million, the total of property taxes assessed in 1998, the resulting percentage is 0.1 percent. A percentage of 0.1 percent is

considered minimally adequate for supervision. A thirty-eight state average for 1992 was 0.32 percent according to *Assessment Administration Practices in the U.S. and Canada*, published by the International Association of Assessing Officers in 1992 (the median was 0.14 percent).

Although there have been modest increases in the funding available for assessment supervision and equalization since the enactment of Act 60, PVR operates with minimal resources. Before Act 60, PVR operated under even greater funding constraints and has been struggling to meet the demands placed on it. Act 60 has increased the pressure on PVR to produce credible equalization studies and support property tax administration in other ways. Although PVR is not yet in a crisis stage, now is the opportune time to put in place the staff needed to carry out the full range of PVR responsibilities, including having listers better trained and doing a more effective job of assessment administration with state assistance and support. We believe that with the introduction of the statewide education property tax, the State's stake in property tax administration and in equalization is much higher than is typical. It would not be unreasonable for the State to allocate an amount equivalent to 0.5 percent of total school and municipal property taxes to supervision, equalization, and support to municipalities for assessment improvements (including the $7 per parcel grants that are now made).

The greatest component of a supervisory agency's budget is salaries and benefits. It is said that Vermont state employees are paid in scenery, and we would agree. In the most recent survey of assessing officials salaries by the International Association of Assessing Officers, *Salaries in Assessment Administration: Report of the 1996 Survey for the United States*, the level of salaries generally was low. For example, Vermont ranked 39th out of forty-six states in terms of average full-time assessors' salaries (and we expect state officials' salaries would be of comparable rank were the data available). Vermont also compares unfavorably to other New England states. This is an opportune time to argue for salaries commensurate with responsibilities.

4.3.2 Staffing

The Property Valuation and Review Division is allocated twenty-seven positions, including Act 60 positions, some of which are unfilled. Disregarding positions assigned to the use-value

program and the mapping program, twenty-one are allocated to property tax supervision and equalization. This equates to twelve local assessment districts per person. In the 1992 IAAO survey mentioned above, the thirty-eight state average was 6.19 jurisdictions per staff member, about half Vermont's figure (the median of four New England states, with their large number of small jurisdictions, was 11.7). Although it does not affect our conclusion that PVR is under-staffed relative to its responsibilities, it should be noted that it draws on resources in other divisions of the Department of Taxes, including Information System, the General Counsel's Office, the Business Manager's Office, and the Commissioner's Office.

District advisors are crucial to assessment supervision in Vermont. They answer assessors' questions and help with training. They may assist with appraisals. Their main activity in recent years, however, is making the equalization studies. The complement of district advisors was increased from four to eight in 1998 (six advisors did the 1998 equalization studies). Experience levels differ considerably. In recent years very little training has been provided. This produces a lack of consistency in the approaches being used in the equalization studies. Among the examples cited were different treatment of merging categories, outliers, bank sales, and business value.

Even with the increase, the large number of local assessment districts coupled with the seasonal nature of the equalization studies and the largely manual nature of the studies implies a high effective work load (about one study per advisor per day). Such a pace prevents making any credible appraisals and prevents any serious attempts to ensure that information supplied by a municipality is correct.

PVR was authorized a new position of District Advisor Supervisor in 1998. Filling this position with a qualified person is critically needed and should make a significant difference. The successful implementation of our recommendations will, in large part, be dependent on this person. We were happy to learn that PVR has been allocated an additional utility/commercial appraisal position for 1999. Filling this position with a qualified person will make it possible to begin implementing our recommendations concerning utility and large property appraisals.

The recent addition of new district advisors was obviously badly needed. We believe several additional positions are warranted. PVR needs an analyst in Montpelier to monitor market activity statewide to develop necessary time adjustment factors for sales. We also believe there should be at least two senior-level appraisal positions whose incumbents would be chiefly responsible for appraising utility and large commercial and industrial properties. More staffing support and emphasis needs to be put on the usage of CAPTAP II and the electronic transfer of information between Montpelier and the municipalities. In the long run, both cost savings and improved equalization ratio studies would result. Consideration should be given to forming dedicated equalization study unit.

Recommended programmatic improvements imply that the training and skills of the district advisors will need to be improved in a number of ways. The district advisors should have training in appraising land and commercial and industrial properties and ratio study analyses. If they are not experienced appraisers, courses should be made available to them to develop their appraisal skills.

4.3.3 Computing Support

Sales data from property transfer returns are maintained on the Department of Taxes computer system. PVR has a standalone PC-based system that it uses in the equalization studies. The system is not year 2000 compliant and is due to be replaced in 1999. The equalization system contains enhanced records of sales used in the studies. It calculates the following ratio study statistics for each stratum: aggregate (weighted) mean, mean, median, lowest, and highest sales ratios. It calculates the state's coefficient of dispersion and the regressivity index (price-related differential). It also computes the average listed value and the average of market value indicators (sales, appraisals, or both).

The system produces several reports used during the equalization process. They include preliminary sales reports by category and sales ratio reports by category. The system produces a category combination report, which is used when sample size criteria are not met. It also produces preliminary and final computation sheets which contain the ratio and listed value data needed to produce equalized values.

Improvements need to be made in the data provided to the district advisors. They should have sales data, abstracts, grand lists (where electronically available), MLS information, and other important information on their laptop computers. In addition to our recommended equalization model, spreadsheet templates could be developed to facilitate their work in making the computations and help prevent errors. Of course, the advisors should be trained in using new computer tools.

The work of the district advisors would be facilitated by establishing an on-line sales data base. This not only would improve efficiency but also would permit an earlier start in the market value study cycle. Category and property used coding of all sales would also be invaluable both to the district advisors and prospectively the listers.

4.3.4 Quality Assurance

PVR commendably is quality conscious. However, limited staffing and time have limited quality assurance efforts. Consequently, there are significant opportunities for improvements.

There are separate written procedures for municipalities and for district advisors. Although the instructions for municipalities are well written, more effort needs to be put into developing a comprehensive and better illustrated set of instructions for clerks and listers.(Fortunately, both district advisors and PVR headquarters staff are available to answer questions.) Effective training for listers in mass appraisal and equalization study procedures also should result in fewer problems for PVR. PVR should focus its training efforts on new listers and on listers in towns that have difficulty in following procedures correctly.

Although more detailed than instructions to listers, the current eighteen-page set of instructions for district advisors is poorly organized, repetitive, and lacking in a consistent style. As PVR intends to do, the manual should reflect changes made as a result of recommendations in this report. Equally important, the district advisors might be asked to cite the problems and concerns that they have in carrying out equalization studies, which should then be addressed within the procedures manual.

Currently, study files are reviewed for completeness and to ensure that rules are followed (such as sample size requirements are met). Some accuracy checks are made, and there is a concern about consistency. However, our review of the work files of several towns indicates that mathematical errors can go undetected. In addition, we noted inconsistency among advisors. Given the large number of studies that must be reviewed, computerized checks will be needed to eliminate mathematical errors and to detect patterns of inconsistencies.

Although PVR is concerned about unusual increases or decreases in ratios and equalized value estimates, we think more needs to be done about trying to determine the causes of the fluctuations. Specifically, PVR should assess the extent to which the changes reflect actions by listers, market trends, errors in the previous study, or sampling error (section 7.4). In addition to looking at year-to-year changes, PVR should investigate changes on a regional basis. Are the results for the subject municipality consistent with the results for similar or surrounding municipalities?

Post equalization study analyses should be done with district advisors, both individually and collectively. Two purposes can be served. First, valuable lessons and experience can be gained from this exercise. Second, it provides a useful way to begin preparations for the next equalization study. Each equalization study should be a learning experience and an improvement over the previous studies.

As is planned, the field advisor supervisor should have quality assurance as a major responsibility. The supervisor should meet periodically with the district advisors to discuss statewide issues and concerns, plan future work, and to resolve common problems.

5 RATIO STUDY DATA ASSEMBLY AND PROCESSING

Section 5 traces and evaluates the flow of ratio study data from the time of sale to the finalization of data files for analysis (see section 7). In section 5.1, we evaluate sales data collection, beginning with an evaluation of the Property Transfer Return (PTR), which is the basic source of sales data. In section 5.2 we evaluate state and local efforts to verify, screen, and adjust sales. In section 5.3, we consider the adequacy of ratio data samples.

5.1 Sales Data Collection

In addition to the property transfer return discussed below, title 9, V.S.A., §2602, provides for the disclosure of prices for mobile homes via a uniform bill of sale, a copy of which must be filed with the town clerk. Industry sources, such as multi-listing services, are not routinely used in the collection and verification of sales data. With MLS data now computerized, it would seem logical to add this to the data base available for the district advisors to use in their day-to-day work. The data can be used to confirmation sales prices and terms and to flag possible problems with category and other physical attribute data.

5.1.1 The Vermont Property Transfer Return

The Vermont Property Transfer Return (Form PT-1, 12/92, also know as the "PTR") is the source document for sales data compiled by local assessors for use in valuation and by PVR for use in its equalization studies. We evaluated it from the perspective of property tax administration. That is, we reviewed it from the standpoint of whether it collects the information needed for ratio study and appraisal purposes, including the information needed to decide whether the transfer is usable (sales unusable for ratio studies may be usable in appraisal). We drew from recommendations in the IAAO's *Standard on Ratio Studies*, *Property Appraisal and Assessment Administration*, and *Improving Real Property Assessment: A Reference Manual*. We did not consider the specific needs of transfer and land gains tax administration or of other purposes (such as the reasons for lines K, Q, and R). In this regard, we note that the social security numbers of the buyer and seller are not needed in the analysis of sales data for valuation and equalization study purposes. We also note that the

Commission on Property Tax Appraisals and Equalization in its report recommended blacking out the social security number section.

Of course, the design of any form involves compromise. A paramount design consideration is a form that can be understood and completed by ordinary buyers and sellers of real estate. If it is not feasible to collect all of the information needed on the PTR, it should be designed to flag situations where additional efforts to collect information (via follow-up questionnaires or telephone calls) would be warranted.

Buyer and seller information. The PTR adequately provides for collecting the names and addresses of sellers and buyers (lines A and B). To facilitate confirmation efforts, it would be highly desirable to attempt to obtain the telephone numbers of the buyer and seller, perhaps at the signature block. In addition, consideration should be given to requesting a tax billing address, which would be helpful where escrow accounts are used and when the property is not owner-occupied.)

The PTR does not explicitly explore whether the transfer was at arm's length (that is, whether the buyer and seller were unrelated). Although the names of the buyer and seller can be helpful, consideration should be given to simple check-off questions, such as:

- ☐ Sale is between relatives or former relatives
- ☐ Sale is between corporate affiliates or between a corporation and a stockholder

It also is necessary to know whether there was an element of duress in the sale or whether one of the parties to the sale was of a type that would render the sale price suspect as an indicator of market value. As above, check-off questions such as the following can supply the needed information:

- ☐ Sale to or from a charitable, religious, or benevolent organization
- ☐ Sale as a result of bankruptcy, receivership, dissolution or liquidation sale
- ☐ Sale by guardian, trustee, executor, or administrator

☐ Buyer or seller is government agency or lending institution

☐ One of the buyers is also a seller

Property information. Obviously, it is essential that the PTR identify the property being transferred (including the physical real estate, the interests transferred, any other property included in the transfer, such a personal property). Again, check-off questions, such as the following, can be useful:

☐ Personal property cannot be allocated or separated from real property

☐ Sale of business is included in the purchase price

☐ Property is located in more than one city/town

☐ Property is in current use-value assessment program

Regarding the physical real estate, the IAAO *Standard on Ratio Studies* recommends obtaining the legal description, the address, and the parcel identifier of each property transferred. Perhaps the most serious weakness of the PTR is the inadequacy of information about the parcel sold. It asks only for the address (line C), frontage and depth (line F), total acreage (line G), and the parcel identifier or map number (information to be supplied by the clerk). Other states ask for a complete legal description. A legal description is less necessary when there is a parcel identification system in which the PINs unambiguously define an existing property. Asking for this information on the PTR would reduce the work load of the clerk or PVR's district advisor.

Of course, some sales involve the combination or division of existing properties, and it is very helpful to flag such sales. For example, New York asks the question "Indicate the number of [grand list] parcels transferred on the deed____ or ___ Part of a parcel."

Regarding the interests transferred, line E contains a helpful check-off concerning the interest in the property. In the interests of brevity and form limitations, some of these items could be rewritten and combined. In addition to asking whether the interest transferred is a lease, it would be desirable to determine whether the property is under lease.

Information on the use of property is helpful in classifying sales for analysis. Lines I and J helpfully get at the use of the property before and, especially important, after the sale. In addition, line H of the PTR has a check-off concerning the *buildings* on the property. However, the categories in lines I and J do not match the "categories" currently used by the state ("mobile home with land" and "mobile home in park" are omitted). The use categories on the PTR should conform to those used by the state. One option would be to add two more boxes to lines I and J. Alternatively, "mobile home with land" can be constructed from answers to lines H, I, and J. However, the PTR does not contain the information needed to identify property as belonging in the "mobile home in park" category. Perhaps this is a personal property issue (see below).

A greater effort should be made to include the property use code on the form. Currently the municipal clerk is supposed to fill in the parcel identification or map number and the grand list category. Prospectively, space should be provided to fill in the property use code. As sales transfer data becomes available electronically this will become increasingly valuable information to have, both for listers and district advisors, where there are limited number of sales and for commercial and industrial type properties.

Line H also has a check-off concerning the occupancy and rental status of the buildings. The reason for (and wording of) this question is not entirely clear, although knowing whether a building has never been occupied (i.e., is a new building), knowing whether it was vacant at the time of sale, and knowing whether is will be rented is useful.

Although the PTR gets at the existence of personal property included in the sale (see line N), it does not ask for a description of the property. It would be highly desirable to do so when the value of the personal property is significant (that is, more than 5 percent of the total consideration) and when intangibles, such as goodwill, are involved.

Sale price information. The PTR provides for disclosure of the total price paid with a breakdown between real and personal property in lines M, N, and O. The breakdown is helpful, although it would

be desirable to get a description of the personal property as noted above. It would also be useful to get a breakdown between the cash transferred and the amount transferred as a prelude to inquiring about financing in more detail.

Transfer information. Information about the date and type of transfer are important. Knowing the date the price was agreed to is especially important, especially when prices are changing rapidly. The date of closing (line D) is perhaps the best representation of this date. The date of recording is less desirable.

The IAAO *Standard on Ratio Studies* recommends collecting information on time on the market. Neither we nor the standard have any recommendations as to how this can be done systematically in a meaningful way.

As to the type of transfer, only warranty deeds and equivalent instruments are regarded as evidencing a bona fide sale of a property or providing good evidence of the market value of the property. Others, such as quit claim deeds, may or may not and generally are disregarded when there are sufficient acceptable sales. The PTR does not obtain any direct information about the type of transfer. We believe that it should in order to streamline sales processing. The PTR could either ask for the deed type or provide a check-off question similar to the following:

- ☐ Deed type is not warranty or bargain and sale.

For future reference purposes, it is important that sale records contain information about where the deed or other instrument is recorded. Providing this information generally is the responsibility of the recording official, and in Vermont, entering the date of recording and the book and page number on the PTR is a duty of the clerk.

As the Vermont PTR does in line M, returns from other states also provide for comments about special circumstances.

Attestation. As with the Vermont PTR, an attestation that the information is believed to be correct is important. Unless the return is incomplete or appears questionable, it is unnecessary make further confirmation efforts. Some states require "complete" as well as truthful statements.

Control number. Sometimes control numbers are considered useful in ensuring that all transfers are forwarded to the state. The number may be printed on the return or stamped by the recording official. Consideration should be given to such a number in Vermont.

Instructions. The PTR comes in a packet that contains other returns. A strength of Vermont's PTR is the completeness of the instructions for completing it. In addition to general instructions on when a PTR is required, there are line-by-line instructions.

5.1.2 Sale Data Collection Procedure

Filing a PTR is a prerequisite to recording a deed. The buyer is responsible for preparing the PTR, obtaining the required signatures, and filing it (together with the transfer tax payment and one copy of the PTR) with the town clerk. (Typically, the buyer's attorney prepares the PTR.) The town clerk is expected to acknowledge receipt of the return, ensure that it is correctly filled out, add assessment information to the form, and transmit the original PTR together with the transfer tax payment to the Department of Taxes (the clerk retains the copy). The clerk is to provide the name and number of the town or city, the date the transfer was recorded, and the book and page number. In addition, the clerk is to provide the listed value, the year of the grand list from which the listed value was obtained, the parcel identification number or map number, and the grand list category.

The cashier section of the Department of Taxes opens batches of PTRs and processes the payments. After processing, PTRs are forwarded to PVR. A member of the staff makes an initial screening of the PTRs (see below), codes them, and sends them to data entry. The PTRs together with sale reports are returned to PVR for manual editing, after which the PTRs are filed. Currently, corrections made during subsequent sales screening procedures are not used to update the main sales data base.

PVR has problems with incomplete returns and returns that contain erroneous information, particularly grand list category codes (see section 3.5.2). Buyers may have various motives for not being conscientious, and neither they nor their attorneys may appreciate the importance of accurate sales data to equalization studies. Town clerks also may not realize the importance of PTRs in the implementation of Act 60, and they may be reluctant to reject incomplete PTRs, because they would naturally regard maintaining title records as more important than assisting with property tax administration. Few would be in a position to flag evident errors in the grand list. However, our review of samples of sales lists provided to listers confirms that many sold properties apparently are improperly coded by the town clerks.

Given the jurisdictional setting in Vermont, improving the quality of the data on PTRs may not be easy. However, inaccurate data undercut the accuracy of the equalization studies, and tracking down missing information during the screening is time-consuming and expensive, not to mention being tedious. PVR should consider several strategies for improving the quality of the data supplied on PTRs. It could work with the legal community to attempt to improve voluntary compliance. In the case of egregious failures, it could take action against the buyers or attorneys who are responsible. PVR also could work with clerks to identify problems and to design solutions. An approach taken in several states is to compensate local governments for the efforts of recording officials. Compensation could then be withheld if performance was poor. At a minimum, PVR perhaps should occasionally remind all clerks of the importance of complete PTRs. When the information from them is computer entered, a computer check could be done to determine the percent that are incomplete. When the percentage exceeds some threshold number, a reminder or warning letter could be written to the town clerk involved.

Other states put the onus on assessors to supply the necessary assessment data. However, the part-time nature of listers' jobs in many towns would seem to make this impractical in Vermont. In any event, it would make sense to give listers a copy of each PTR.

5.1.3 Sale File

In essence, the Department of Taxes maintains two sales files. The first is the file completed by data entry personnel, and it is available over the Internet at the following address: http://www.state.vt.us/tax/ftpframe.htm. It is organized by week for the current year, with file names of the form ptMMDDYY.txt and in annual cumulative versions with file names of the form ptCCYY.zip (where CDMY stand for century, day, month, and year respectively). These files are accompanied on the Internet site by auxiliary text files entitled "readme", "codes," and "layout." The second version of the sales file differs from the version available on the Internet in several respects. It includes error corrections made by the district advisors/equalization personnel, it includes appraisals in addition to sales, and it includes codes reporting the judgment of PVR personnel of validity of each sale or appraisal for equalization purposes. Unfortunately, these files are only available from PVR, and selectively so. The statistical analyses reported in chapter 7 of this report are based on all such data sets made available by PVR from this source, since the former source was represented as being unsuitable for our purposes. As discussed in chapter 7, we recommend making the second data source publicly available, in addition to the first. In addition to the "sunshine" related benefits of public availability, administrative benefits would also accrue in that the various town listers and district advisors would be able to access data indicating market activity and trends in jurisdictions potentially similar to the ones in which they worked. The programming necessary to implement the capture and manipulation of the data is relatively straightforward, and would be trivially easy if the recommended equalization model described in chapter 9 were implemented.

As discussed in chapter 7, the sales file should ultimately include data not just on the details of the transaction, but also details on the physical characteristics of the property at the time of its sale. With such data available, coded consistently across all the jurisdictions of the state, it becomes feasible to contemplate the introduction of a computer-assisted mass appraisal (CAMA) modeling effort at the state level. Such an effort would benefit the state by reducing the volatility of estimates of equalized value, facilitating the development of advisory appraisals for selected property types, increasing the equity of tax administration, and (thereby) increasing the revenue capacity of the property tax.

5.2 Verification, Screening, and Adjusting Sales

Each year, PVR generates two copies of a list of the sales in each city or town in the two previous years. One copy is given to the district advisor. The other is sent to the city or town for screening. Through some evidently consensual mechanism, the sales (and appraisals, if any) on the list are coded as to whether or not they are valid. We reviewed some gross results of this process, and are concerned by the number of invalid sales in many towns. Statewide, from the 1997 sales transfer reports, 53.5 percent of sales were deemed invalid (a typical percentage). However, the number of invalid sales in some towns was exceedingly high. Some eighty-eight cities and towns, over one-third, had in excess of 60 percent of their sales invalid. Conversely, Cambridge had only 17.6 percent of its sales coded invalid. There is a wide range among the towns in the percentage of invalid sales. One might expect somewhat greater clustering around a central tendency. At the high end, the percentages of invalid sales are:

83.3 %	Lemington, Hancock
78.9	Averill
76.7	Marlboro
75.0	Ripton, Whiting
73.3	Topsham, Woodford
72.9	Greensboro
72.7	Maidstone, Pomfret
71.7	Clarendon
71.4	Baltimore
71.2	Readsboro
70.9	Peacham
70.6	Windham
70.5	Wallingford

It might be useful for PVR to do a sampling of the towns with very high percentages of invalid sales to determine why it is occurring. The towns with high percentages of invalid sales do not seem to fit any particular population size or property type.

The number of valid sales in each of the categories was also examined. One might surmise that the highest percentage of valid sales would be in the R1 category. This did not turn out to be true. Time share properties (61.9 %), unlanded mobile home (60.3 %), and commercial (58.8 %) had the highest percent of valid sales. Having the percentage of valid commercial sales higher than valid residential sales is surprising. On the other extreme were farms with only 28.7 percent of sales valid.

The invalidation of appraisals (presumably made in prior years to augment inadequate sample sizes) strikes us as surprising. The process by which an appraisal in the equalization work file comes to be coded invalid should be better documented.

5.2.1 Verification

Verification and screening are closely related activities. The former is the process by which decisions about the latter are made. Due to the small-town nature of the original assessment environment, much that would normally require a formal procedure in a larger jurisdiction is seen to be superfluous because it is part of the common knowledge of small-town life. We are not in a position to judge the accuracy of the claim in all environments, but we do note that often the assessor and the advisor meet to go over the list of sales. A list may be reviewed more than once. The assessor can question anew the earliest list of sales. Pending appeal, the advisor has the last word on whether a sale should be included or excluded. The advisor may independently confirm a sale. To the extent that this is an iterative process, some greater formality for it may be advisable.

5.2.2 Screening

A well-designed procedure for screening sales for a ratio study starts with the premise that a sale is *usable* unless one or more reasons exist why it should *not* be considered an open-market, arm's-length sale. Next, there must be a close correspondence between the property that was sold and the property that was appraised. That is, there must be no major physical changes (such as the construction of a new building) between the appraisal date and the sale date. Moreover, the rights that were sold must be essentially the same rights (usually fee simple rights) that the owner was assumed

to possess when the property was appraised. (Of course, sales that violate the close correspondence rule can be very useful in appraisal.) In good practice, a code is assigned to each specific reason for excluding a sale from a ratio study, and sales analysts would attach the appropriate code or codes to each sale record. Analysts should both have sufficient facts about the circumstances of each sale at their disposal and be familiar with the local real estate market.

Vermont's sales screening procedures follow this basic approach. However, they have weaknesses which need to be addressed (beginning with a redesign of the PTR as mentioned above).

Screening Rules. One general problem is a certain amount of confusion regarding valid and invalid sales. This problem stems in part from poor documentation and in part from the two-stage screening process. We obtained two lists of reasons for disqualifying sales. One had twenty reasons and the other, nineteen, although reasons one through seven were not identified, because "they were reserved by the Tax Department for administrative purposes (such as corrective deeds, etc.)." The twenty-item lists indicates that there are three validity categories: "valid," "invalid," and "no good."

Table 5-1 lists the twenty reasons and the validity category of each reason. From inspection of the list, it is impossible to discern the difference between "invalid" and "no good" sales. It also is impossible to discern how reasons 1 through 7 as a group differ from reasons 8 through 20 as a group. Both sets contain reasons that can be seen from inspection of the PTR and both sets contain reasons that can be seen only with further research or knowledge of local conditions.

Table 5-1. Sale Usability Codes

Code	Reason	Usability Category and Comments
0	None	Sale is "valid."
1	Price paid is less than value of land	Sale is "valid." Unless it is clear that the recorded price is only a nominal figure, sales should not be excluded on the basis of price relationships without verification.

Code	Reason	Usability Category and Comments
2	Straw transfer	Sale is "no good."
3	In-lieu of foreclosure	Sale is "no good."
4	Real property is estimate by Tax Dept.	Sale is "no good." The meaning of this circumstance is unclear.
5	One of several returns for a property	Sale is "invalid." The meaning of this circumstance is unclear. Ordinarily, sales of partial interests should be excluded. An exception may be when 100 percent of the interests in a property transfer at the same time. The sum of the prices can be taken to represent the market value of the fee simple interest when there is no evidence that a premium was paid for the assemblage.
6	Contract sales	Sale is "no good." Contract sales may be bona fide sales, although they require analysis to ascertain the date of sale and other circumstances. They should not be automatically rejected unless samples are ample.
7	Burned out building	Sale is "invalid." This would be a valid reason for excluding a sale when the building is assessed as being in a normal condition.
8	Sales between members of the immediate family	Sale is "no good."
9	Sales between a corporation and a stockholder	Sale is "no good."
10	Tax sales; sheriff's sales; bankruptcy, receivership, dissolution or liquidation sales	Sale is "no good." The June 1995 list of "reasons to eliminate sales from equalization study" includes sales by banks in the list. Unless sales samples are ample, it would be better to investigate sales by banks before excluding them. Some such sales are bona fide.
11	Sales by and to guardians, trustees, executors, and administrators	Sale is "invalid." Unless sales samples are ample, it would be better to investigate sales settling an estate before excluding them. Some such sales are bona fide.

Code	Reason	Usability Category and Comments
12	Sales to or from the U.S. Government, the State of Vermont, or any political subdivision of Vermont	Sale is "invalid."
13	Sales to or from any charitable, religious, or benevolent organization	Sale is "no good."
14	Sales where unusual financing affected the sale price	Sale is "no good." As noted, it would be desirable to adjust the sale price for financing unless samples are sufficient.
15	Sales where all assessed interests were not sold, thereby affecting the sale price (life interest retained, etc.)	Sale is "no good." The 1995 list adds "development rights retained," which seems reasonable. The analyst also is expected to be specific, a good practice.
16	Sale of property assessed in more than one town	Sale is "invalid."
17	Any sales that include personal property unless the amount of the personalty can be determined and reported	Sale is "no good." This is an overly broad reason for rejecting a sale, as most sales contain *some* personalty. Insignificant amount of personalty can be ignored.
18	Sales of property conveying only a portion of the assessed unit, such as a lot or lots sold off from a farm	Sale is "invalid." This reason was deleted from the 1995 list, and the subsequent reasons were re-numbered.
19 (18)	Sales where the property sold was substantially changed after the assessment date but prior to date of sale.	Sale is "invalid."
20 (19)	Other reasons (specify)	Sale is "invalid."

A second general problem is that current procedures make it too easy for a lister to invalidate sales without documentation. Although the onus of documenting the validity of reasons 8 through 19 is on the lister, advisors seem to take the lister's word at face value, because proving the lister wrong would require time-consuming research, which is impractical in the current situation. Our review of selected field review files revealed that it is easy for a lister to have a sale declared invalid. Number 19, "other" is overused as a reason, and then with inadequate or incomplete justification.

"Outliers," sales with extremely high or low sales ratio are a major concern, particularly to PVR. No guidelines and rules exist for the district advisors on how to handle outliers. We believe that PVR can and should adopt standardized procedures for trimming outliers consistent with the new IAAO guidelines (see section 7.5).

Screening Procedures. Currently, there is a two-stage screening process. PTRs are initially screened by PVR before data entry. Sales that are eliminated at this stage are never seen by listers. Although eliminating sales of convenience, forced sales, and sales between related parties is appropriate, it would be better if listers and advisers had access to such information (New Hampshire, for example, produces lists of invalid sales as well as lists of valid sales).

As noted, after sales lists are printed, the second-stage screening process begins. In it, lister is expected to review the list carefully, correcting erroneous information, adding missing information, and deciding whether the sale should be used in the equalization study. If it should not, the exclusion code should be written on the list. If the "other" category is used, the specific reason should be written in the space provided. The annotated lists are returned to the district advisor, who reviews the recommendations of the lister. Usually, the lister and the advisor meet to go over the list. A list may be reviewed more than once. The assessor can question anew the earliest list of sales. Pending appeal, the advisor has the last word on whether a sale should be included or excluded. The advisor may independently confirm a sale.

There are a number of problems with current screening practices. Familiarity with real property markets is not a requirement for serving as a lister, and some listers lack expertise. As would be expected, the conscientiousness of listers (and advisors) varies. Instruction in screening procedures largely is the responsibility of district advisors, and they appear not to approach the task evenly. Written instructions could be improved. In the absence of new, documented information, the list of usable sales from the earlier year should not be changed. That is, usable sales should not be reclassified as unusable the following year without justification. Listers could be required to "sign-off" on the sales list.

With a revised PTR, a preliminary classification of sales as usable or unusable could be computerized. The computer listings could then be provided to both district advisers and listers on a regular basis, perhaps quarterly. Listers could be given a prescribed amount of time to return their adjustments, perhaps 30 to 60 days. The submissions of the listers could then be analyzed by the district advisors and the appropriate corrections made to the computer files. Any change by a lister should require documentation to support the requested change. The district advisors could also do their own independent analyses of such things as checking sales prices reported against multiple listing reports.

5.2.3 Sale Price Adjustments

The *Standard on Ratio Studies* (IAAO 1990) recommends that sales used in ratio studies be adjusted as necessary for financing, assumed leases, personal property, and date of sale.

In lieu of adjusting sales prices for the effects of non-market financing, PVR recommends automatically excluding all such sales from the equalization studies. We find little problem with this approach in the current market, but believe that financing adjustment should be considered in lieu of excluding sales in tight-money markets characterized by high interest rates and common use of creative financing.

Current procedures allow for adjustments for personal property. No guidelines for making such adjustment are in evidence, except for an instruction to automatically deduct 10 percent from the reported price of a mobile home if the furnishings were sold. Unless adequate sales exist, we recommend that adjustments be made for personal property included in sales, although transactions for which the amounts appear extreme (say, more than 5 percent for residential property and more than 25 percent for commercial property) should continue to be automatically excluded.

The importance of time trending depends on the degree of change in real estate markets. Time trends will not occur evenly across the state and often times not even within a town. Waterfront properties have historically moved differently than other properties. In order to improve the accuracy of the ratio study, particularly in small towns, we recommend that a longer period of sales be used with time

trend adjustments. Appendix 5.3 of IAAO's *Property Appraisal and Assessment Administration* discusses time trend techniques useful in mass appraisal. The sales ratio trend method, in which sale-to-appraisal ratios are analyzed over time to extract trends, seems particularly applicable to Vermont.

5.3 Assembling the Ratio Study Sample and Evaluating the Adequacy of Samples

Under current procedures, sales in the twenty-four months before the date of the study (1 April of the year in question) that are deemed usable by the district advisor after conferring with the town constitute the basic ratio study sample for a category of property. Current instructions provide two basic tests for deciding whether this sample is sufficient. First, the total number of sales in all categories must equal at least 4 percent of the total parcel count. Second, the sample for each real property category (see section 3.4.2) must at least equal three. If these requirements are not met, the advisor may extend the sales period six months in both directions or add appraisals, although the latter is not commonly done due to resource constraints (see section 6.1). Also, if the total listed value of a category is less than 5 percent of the grand list total, the advisor may combine the category (stratum) with a "similar" stratum or group of strata in order to obtain a sufficiently large sample. The large number of sparsely populated areas that are studied, coupled with the large number of property categories and limited resources, means that may categories are combined in this manner rather than studied individually. Our observations suggest that as many as 50 percent of all sales are in combined categories.

Further, the criterion of three sales appears to be controlling. In reviewing the field advisor work sheets, it appears that once three sales have been identified for a category or combination of categories, they are used. Generally no effort is made to further combine categories or add additional sales. By using two years of sales, the four percent requirement is generally met. In any case, as addressed more fully in section 7.4, the use of only three sales is statistically inadequate and the four percent rule provides little help, since statistical confidence is more a function of sample size than sampling percentage.

We are also concerned about the frequency and various combinations with which strata are combined. PVR has developed instructions for combining strata but they are not very helpful. After citing normal groupings, district advisors are pretty much left on their own. As already discussed, we recommend that four primary categories be established (residential, commercial/industrial, vacant/forest/agricultural, and utility) with additional stratification where the number of sales permits. This will provide generally larger strata and better consistency among jurisdictions.

5.4 Sales Period

A number of factors affect the choice of the sales period. From the perspective of accurately estimating market value as of the study date, the sales period would ideally be centered on the study date (1 April), although time-adjustments can be used to trend sales to the study date. From the standpoint of evaluating an assessor's performance, the sale period would ideally coincide with the period the assessor used. When sales chasing is suspected, the sales period should follow the date the assessments were finalized. In addition, desirably the period should be relatively short, provided there are sufficient sales.

As noted, the general sales period in Vermont's studies is the twenty-four month preceding the official study date. In the absence of time adjustments (section 5.2.3), sales actually reflect market values about twelve months earlier and equalization study results would perhaps be more accurately portrayed if it were acknowledged, for example, that the 1998 equalized education grand list reflected market value as of April 1, 1997. However, we recommend that the most recent valuation date be maintained as the official study date and that sales be adjusted as necessary to that date. We further recommend that the standard sales period be expanded to three years to provide larger samples, reduce margins of error, and improve year-to-year stability in results.

Finally, under current procedures, each of two or more sales of the same property during the sample period are used in study. This over-weights certain parcels and opens the door to potential criticism when the sales are not consistent. We recommend that only the most recent sale be used.

6 APPRAISALS AND PERFORMANCE AUDITS

Appraisals commonly are used in state studies of local assessment performance to supplement sales samples. A few states uses appraisals exclusively in their ratio studies, chiefly to overcome assertions that sales samples are not representative. States increasingly use performance audits as a general supervisory tool and as an adjunct to ratio studies.

6.1 Appraisal Program

State property tax supervisory agencies use appraisals in ratio studies to ensure that samples are representative. Offsetting this advantage of using appraisals are several potential disadvantages. These include the cost and contentiousness of appraisals and the additional time required. However, it is generally agreed that judicious use of appraisals can improve the accuracy of ratio studies.

The Vermont equalization program contemplates the use of appraisals to supplement sales when sales samples are deficient (Title 32, §5405(e)). In recent years, few if any appraisals have been made, largely because of staff shortages. In the six towns we reviewed in detail, including three small towns, no appraisals were done. With the recent hiring of additional district advisors (some with a background in fee appraisal), the intention is to increase the use of appraisals. However, PVR does not have a well-developed appraisal program, so it will first be necessary to develop procedures and assemble an appraisal database.

6.1.1 Sample Selection

Selecting the sample of properties to be appraised is the first step in a ratio study appraisal program. In theory, the properties to be appraised should be selected randomly, if the advantages of a representative sample are to be obtained. However, experience has shown that pure statistical random sampling is wasteful of appraisal resources. Consequently, appraisal samples generally are drawn from strata that have high-value properties, such as commercial and industrial properties. Within such a stratum, random sampling should be used, although systematic sampling would be acceptable as long as there was no evident bias in the process. That is, every property in a class

should have an approximately equal chance of being sampled. Sample selection procedures should anticipate that some properties cannot be appraised (properties that cannot be located, for example).

Vermont's current sample selection guidelines reflect the reality of limited appraisal resources. They recommend (not very clearly) a systematic sampling process of above- or below-average value properties in a stratum (category). As we had no example to review, we could not evaluate the current sampling procedure. However, we would recommend stratified random sampling, focusing on high-value properties, as indicated above.

6.1.2 Appraisal Methods

Appraisals must be credible if the benefits of using them in ratio studies are to be achieved. Professional standards recommend that all three approaches to value be used when appropriate. This implies that appraisers have access to appropriate valuation systems and market data bases (see section 6.1.3).

We were unable to evaluate current appraisal methods directly because no sample appraisals were available for inspection. Consequently, our conclusions are based on interviews and on written instructions given to district advisors. Mirroring local practice, appraisals made by PVR generally rely on the cost approach. Advisors verify the data on the assessor's property record card by inspecting the property in the field. An up-to-date estimate of replacement costs is made. The depreciation allowance combines scheduled depreciation and observed depreciation based on the advisor's appraisal judgment. The land value estimate may be developed independently when sufficient vacant land sales are available. Otherwise, it is derived from the land schedule used by the assessor. Instructions recommend that land be appraised on a per-acre basis. Time constraints generally prevent sales analysis or inspection of comparables.

If the above description is accurate, we would conclude that PVR's appraisal program would be deficient. Complete reliance on the cost approach is inappropriate and use of locally developed land values is unacceptable. Simplistic or arbitrary appraisal methods that do not reflect market nuances

cannot produce credible results. Adding poor quality appraisals of properties selected in a questionable manner would add nothing to the quality of PVR's equalization studies.

We recommend that PVR take steps to develop a credible appraisal program. This program would have the following elements:

- Market Monitoring. PVR should monitor market trends in the categories of property selected for appraisal, particularly utilities and large commercial and industrial properties, including ski resorts. This monitoring should be on a broad geographic basis. It would be advisable to monitor sales, rents, and operating expenses for land and ordinary commercial and industrial property including resorts on a statewide basis. One aim of this monitoring activity would be do define broad market areas composed of groups of municipalities, particularly for ordinary commercial properties (apartments, retail establishments, offices, industrial properties, and the like). Another would be to develop time adjustment factors for sales (see section 5.2.3).

  Economic trend data from non-appraisal sources (such as employment and other tax data) can be analyzed along with real property price data with the aim additional data series that would be useful in trending values.

- Mass Appraisal Models. Attempts should be made to develop direct market models for vacant commercial and industrial land and both direct market and income approach models for improved commercial and industrial properties. Depending on available data, direct market models may be simple, stratified value per-unit models or multivariate models calibrated using MRA or another tool. Mass appraisal applications of the income capitalization approach typically proceed in two steps. First, income and expense data are collected and analyzed to produce estimates of normal (market rents) and operating expenses. The second step is to develop separate capitalization rate models and income and expense models. As with direct market models, these models may be simple, stratified value per-unit models or multivariate models. Cost models should be based on a recognized cost service, and cost rates should be

adjusted for time and location using cost trend indexes and location modifiers. Attempts should be made to verify these cost locally by collecting actual cost information on new construction and by comparing those costs with costs estimated by using the cost service.

- Model Application, Field Review, and Documentation. Although it may be desirable to develop models centrally, they should be applied and reviewed in the field. They should be well documented.

6.1.3 Appraisal Data Requirements

PVR anticipated the need to upgrade its appraisal program and requested us to comment on the data required for appraisals. As discussed above (and in section 5.1.3), PVR need to develop a statewide market data base for the types of properties it plans to appraise. As to the data elements that should be contained in a property record, the data requirements for the sales comparison and income approaches generally are less than for the cost approach. Important land attributes include:

- Parcel size and dimensions (with units of measure clearly identified)
- As applicable, the dimensions of components of the parcel (such as "excess land")
- Land use(current and, if applicable, a different use deemed to be the "highest and best" use)
- If applicable, zoning or permitted use
- Site characteristics that significantly contribute to the desirability (or lack thereof) of the parcel (often varies with use)
- The market area (for example, neighborhood)

Important building and structural attributes depend on the valuation approaches used. The following would be necessary or desirable for the sales comparison and income approaches:

- Overall size and size of important components
- Construction quality or grade
- Year built or condition

- Significant building materials and features, such as wall and roof type, and story height for commercial and industrial structures
- Other structural components that significantly contribute to desirability or construction costs, such as garages and swimming pools

The cost approach may require much more structural detail. An appraisal system will require not only the on-line sales data base already mentioned but also an income and expense data base (when there is an active rental market).

Date elements should be consistently coded. This requires the development of a data collection manual and data collection training for district advisors or other data collectors.

6.1.4 Appraisal Quality Assurance

PVR supervisory personnel need to ensure that appraisals will withstand challenges by municipalities. At the outset, appraisers need to be qualified. An appraisal can be deemed to be acceptable when the data on which it is based are accurate, when appropriate appraisal approaches are used, when valuation models are rational and meet performance standards, and when the appraiser has recognized factors applicable to the property being appraised that were not reflected in the model (such as an unusual structural feature). Appraisals need to be well-documented, and each appraisal should be reviewed by someone other than the person chiefly responsible for it (such as the district advisor supervisor).

6.2 Performance Audits

As previously indicated, performance audits can be used as a supervisory tool and as an adjunct to ratio studies when ratio data are inconclusive or irrelevant (as in the evaluation of a use-value assessment program). If the audit reveals that assessment procedures conform to legal requirements and professional standards, the resulting values can be presumed to be accurate reflections of the underlying market values. If procedures fail these tests, no confidence can be placed in the assessed values, and a reassessment is called for.

District advisors, in effect, make informal performance audits during the course of their work with listers. We suggest that PVR consider formalizing audit activities as a long-term improvement in its supervisory activities. Although there would be programmatic benefits to a performance audit program, resource requirements could be significant. Initially, the focus could be on improving data accuracy and consistency. In addition to evaluating whether listers were classifying property use correctly, PVR could evaluate whether the homestead program was being administered correctly (proper classification, valuation, classification of outbuildings, treatment of business use).

Currently, reassessment activity is not explicitly considered during an equalization study. Vermont should consider actively monitoring reassessments. If the procedures being followed in the reassessments are in line with professional standards and if spot checks suggest that procedures are being consistently followed, then the grand list filed by the town could be used as an indicator of what the equalized education property value should be (after making the necessary adjustments). Both Massachusetts and New York review reassessments while they are underway. When the State of Massachusetts finds a revaluation acceptable, the municipality receives an "accelerated certification" of its roll. New York accepts the full value implied by the local roll in lieu of making an equalization survey in the year the revaluation is completed.

7 RATIO STUDY ANALYSES

In section 7, we address important statistical issues and present the results of our statistical analyses.

7.1 Level of Valuation

In selecting a measure of central tendency to estimate level of valuation, Vermont stands alone in using an algorithm like the one propounded in the July 1978 memo from George O'Brien to the District Advisors/Appraisers for this purpose. We believe it lacks any basis in statistical decision theory and by its nature precludes any theoretical analysis of its merits. Although it would be possible to explore its merits and shortcomings statistically by means of simulation studies, we did not, because of limited resources and the general lack of recognition of such an approach among standard setting bodies in the field, particularly the International Association of Assessing Officers. The IAAO *Standard on Ratio Studies* (1990) contemplates using a single measure of central tendency throughout a state for all strata (either the weighted mean or the median). The essence of the O'Brien algorithm is that a different measure or average of measures is chosen depending on their magnitudes and other factors. Although it may be an interesting attempt to deal with the exigencies of sampling variability, it enjoys no support among peer agencies in other states, limited superficial validity, and no easily determined statistical characteristics. Superior methods of dealing with restricted sample sizes are available. We recommend that it be retired in favor of either of one of the standard measures of central tendency employed in ratio studies for the purpose of equalization (we prefer the median in this instance) or the square root weighted mean described below.

As noted, for equalization purposes, two measures of the level of valuation have enjoyed longstanding recognition: the weighted mean and the median. The weighted mean is weighted by dollars of estimated market value (effectively sale prices), and the median (as commonly used in ratio studies) is oriented to parcels, rather than dollars of taxable value. Traditionally, the weighted mean has enjoyed greater support in indirect equalization studies and the median in assessment performance analyses and direct equalization (see section 2.2.4).

In order to demonstrate the effects of changing from the current measure to the weighted mean or median, we present in Table 7-1 several alternative measures of the level of valuation of the towns for which we were able to get the necessary data. It can be noted that all of the alternative measures of central tendency tend to produce higher ratios than is currently used. This, of course, has consequences for statewide education property tax revenues.

Because the sales and appraisals available for analysis in a ratio study may not proportionately reflect the numbers of parcels in the jurisdiction, it is often considered necessary to weight the observations in each category to ensure that they appropriately reflect the population. Dollar weighting is generally considered to be the most appropriate in an equalization context and will be discussed further below. For parcel-based weighting, the weights involved are obtained by taking the number of parcels in a category (such as a type of property use) and dividing by the number of sales or appraisals in the category. Each of the numbers thus obtained is then divided by the total number of parcels in the jurisdiction (at least in the sampled classes) to obtain the weight applied to each observation in the category, so that the sum of all the weights is equal to one. The weights are then multiplied by each of the ratios, and the median ratio is calculated. (Equivalently, the ratios are sorted, and a running total of the weights is calculated, with the median being the ratio where the running total of the weights reaches one half.) This procedure was employed to obtain the final column of Table 7-1. Note, however, that there can be no weighting for categories from which there have been no sales or appraisals. Therefore, to minimize the number of unrepresented classes, it is advisable to minimize the number of classes. As discussed in section 3.5, Vermont is extreme in the number of strata it routinely attempts to employ in ratio studies, and we recommend that their number be reduced, consistent with the objective of grouping properties so that they are reasonably homogeneous in their assessment treatment. The last column above was calculated based on our recommended 4-stratum scheme, although only one jurisdiction had representation in all of them; most had sales from only 2 or 3 strata.

Table 7-1
Current and Selected Alternative Measures of the Level of Valuation
For Sample Towns in Vermont, 1998 and 1997

Town, Year	Current Ratio	Weighted Mean Ratio (Dollar Weighted)	Weighted Median Ratio	
			(Dollar Weighted)	(Parcel Weighted)
Athens, 1998	0.9709	0.9941	0.9713	0.991
Barre City, 1998	1.0488	1.0340	1.0496	1.027
Benson, 1998	1.0426	1.0720	1.0152	1.049
Burke, 1997	1.0106	1.0392	1.0310	1.034
Burke, 1998	1.0046	1.0416	1.0122	1.036
Chester, 1998	1.0163	1.0189	1.0076	1.027
Hartland, 1997	1.0191	1.0520	1.0097	1.055
Hartland, 1998	0.9720	1.0321	0.9867	1.033
Milton, 1998	0.8943	0.9978	0.9950	0.985
Newport City, 1998	0.9978	1.0082	1.0213	1.016
Norwich, 1998	0.9041	0.9422	0.9067	0.939
Plymouth, 1998	0.9955	0.9856	0.9705	1.004
Rockingham, 1997	0.9899	1.0853	1.0712	1.067
Rockingham, 1998	0.9538	1.0428	0.9946	1.057
Royalton, 1998	1.0085	1.0162	1.0018	1.000
Townshend, 1997	0.9685	0.9849	0.9537	0.982
Townshend, 1998	0.9241	0.9743	0.9383	0.973
Vernon, 1998	0.8219	0.7696	0.7789	0.833
Victory, 1998	0.6826	0.5766	0.6071	0.553
Wardsboro, 1997	0.7438	0.7851	0.7559	0.769
Wardsboro, 1998	0.8080	0.8320	0.7802	0.912
West Fairlee, 1998	1.0501	1.1042	1.0773	1.101

Dollar-based weighting gives equal weight to each dollar of taxable value in the sample rather than each parcel in the sample. Such weighting is most appropriate when the objective is to equalize property tax bases, or tax capacity, rather than to judge assessor performance or to determine a "typical" assessment ratio. Dollar weighting of the mean can be accomplished much like parcel weighting of the median, by multiplying each ratio by its associated sale price divided by the sum of all the sale prices. But it is more easily calculated by dividing the total of the represented assessments by the total of the represented sales prices. The ratios so calculated for each stratum are then used to impute the full value of each stratum by dividing the sum of the assessments by the ratio. The full values are then summed to obtain the imputed full value of the represented classes, and a final weighted ratio is obtained by dividing the sum of the assessments of the represented classes by the sum of the imputed full market values of those classes. When dollar-weighted medians are calculated, the process is identical, except that the (simple) median ratios of each stratum are used in place of the weighted means in the first step to impute the full value of each stratum. In a sense, the dollar-weighted mean is doubly dollar weighted, while the dollar-weighted median is only singly dollar weighted. Examples of the necessary calculations are presented more fully below in connection with Table 7-4.

Aside from the question of dollar-weighting of the various classes, which measure of central tendency should Vermont employ in its equalization studies? We begin by noting that the weighted mean is conceptually preferred for indirect equalization, but that the median is more generally stable for small samples. To help evaluate the issue empirically, we conducted an exhaustive simulation analysis of six benchmark, hypothetical towns constructed from actual sales data from larger data bases (mostly jurisdictions in New York State). Each sale was taken to represent a parcel. Stratified random samples were repeatedly drawn from each jurisdiction and measures of central tendency were evaluated. Appendix 2 describes the analyses in detail.

Based on these analyses and other considerations, we recommend that Vermont use either the square root weighted mean or median ratio. The former measure, described more fully in appendix 2, is our preferred measure. It weights each ratio in proportion to the square root of its sale price. Thus it

gives more weight to high value parcels, but not on a dollar-per-dollar basis as does the weighted mean. For example, a $200,000 sale would receive 1.41 percent of the weight of a $100,000 sale:

$$\text{Sqrt } (100{,}000) = 316.2;\ \text{Sqrt } (200{,}000) = 447.21;\ 447.2 \div 316.2 = 1.41$$

Further, weighting based on the square root of sales prices has the statistical advantage that, as is well known, reliability in ratio studies tends to increase in proportion to the square root of sample size. The weighted mean weights each ratio based on dollar value regardless of sample size. The square root weighted mean strikes a balance between the information brought by more samples and more dollar value.

We devised the square root weighted mean as a way of addressing the relative inadequacies of both the median and weighted mean. The median affords equal weight to each ratio regardless of value. The weighted mean over-weights high-value parcels at the expense of stability. We believe the square root weighted mean strikes a reasonably compromise, particularly for small jurisdictions. We acknowledge that the statistic is not used elsewhere. If the Department is uncomfortable using it, then we recommend use of the median, which provides better stability than the weighted mean in small jurisdictions.

7.2 Uniformity

Uniformity refers to the extent to which assessments do or do not tend to cluster around an identifiable percentage of sales prices (or of appraisals used as a proxy for market value). A lack of uniformity indicates a large error component in the tendency of the assessments to approximate market value. Large error components are not only intrinsically bad, but they also complicate the task of equalizing the tax bases of the various jurisdictions in several ways. First they reduce the overall accuracy with which the job can be done, and secondly they make it more difficult to detect any need for special bias-related adjustments, as described below.

The standard measure of uniformity in assessment administration is the coefficient of dispersion (COD). It is essentially the mean of the differences between each of the assessment ratios and the median assessment ratio, expressed as a percentage. Until this year, Title 16, V.S.A, §3441(21) provided a non-standard definition for the COD. Under this definition, deviations are from the mean ratio rather than the median ratio. Since the median, not the mean, is the measure of centrality that minimizes absolute deviations, using the latter instead of the former, as Vermont did, distorts the measure of variability by biasing the measure of centrality. We are happy that this departure from standard practice has been eliminated.

We note with approval that in practice, as well as law, poor COD results from a town are sufficient grounds for PVR to direct the town to undertake a reappraisal. Provisions such as this are important in that poor measures of uniformity can mask the need for adjustments related to biases, described below, and inevitably result in wider confidence intervals for the ratios calculated from a given number of sales (or appraisals) and hence less accurate equalizations. The IAAO standard suggests that COD levels somewhat more stringent than those embedded in current Vermont law and practice are reasonably attainable, but we refrain from suggesting appreciable tightening of state requirements until additional experience is gained with the results of other recommendations contained in this report.

7.3 Bias

Bias (also known as discrimination or inequity) is the phenomenon that underlies a finding that different classes of property have been treated dissimilarly for tax purposes. It is possible for biases to arise either by intent or by "innocent" result of imperfect administrative practices. In either case, biases result in a distribution of the tax burden in ways that depend not only on the values of the taxable property (as it should), but also on other factors (which it should not). When present, biases should not only be corrected, but their effect should also be taken into account when equalization is done. One way in which this may be done is by weighting the available sales and appraisal data appropriately. Although it is never generally inappropriate to weight, it is essential when there are biases present between or among the strata. The mere presence of a difference between two or more

strata is not sufficient evidence that biases are present, since some differences are to be expected due to chance variations alone. To establish the presence of a bias (that is, to account for the likelihood of chance variations being the cause of the observed differences) a statistical test is required. The IAAO standard recommends the Kruskal-Wallis nonparametric test for this purpose. Table 7-2 reports the results of applying that test to see whether there were observable biases among the (newly defined) classes of property in the sample data sets that were provided to us.

The last column of the table would be labeled the "significance of the results" on the output of a standard statistical program. Effectively, these numbers represent the probability that a pattern of disparity in assessment ratios as large or larger than the one actually observed would have arisen by chance alone, in the absence of a real difference in the ratios. It is common practice to adopt a confidence level of 95 percent, which translates into a significance level of 0.05. Thus, in the table above, four failures may be noted (those with significance levels below 0.05), and several other jurisdictions might bear monitoring even though they are not below 0.05. Two practical inferences stem from analyses such as this. First some classes of property in some of the towns give strong evidence of being treated unfairly, and the towns should remedy the situation either by means of inter-class adjustment factors or by implementing a reappraisal. Second, the equalization procedures must take cognizance of these disparate levels of assessment by weighting the results from the various classes in proportion to their presence in the population of all taxable parcels, not merely their proportion in the sample.

In addition to testing for inter-strata biases, it is advisable to test and appropriately adjust for other suspected biases, particularly sales chasing (discussed below) and including value-related biases and the occasionally reported bias related to in-state vs. out-of-state taxpayers.

Table 7-2
Test for Biases in Level of Assessment Among Selected Classes of Property
For Sample Towns in Vermont, 1998 and 1997

Town, Year	Number of classes tested	Significance of Kruskal Wallis test*
Athens, 1998	2	0.514
Barre City, 1998	3	0.190
Benson, 1998	2	0.070
Burke, 1997	2	0.026
Burke, 1998	2	0.033
Chester, 1998	3	0.359
Hartland, 1997	3	0.857
Hartland, 1998	2	0.974
Milton, 1998	3	0.276
Newport City, 1998	3	0.981
Norwich, 1998	3	0.745
Plymouth, 1998	3	0.155
Rockingham, 1997	3	0.842
Rockingham, 1998	3	0.590
Royalton, 1997	3	0.640
Townshend, 1997	3	0.967
Townshend, 1998		0.466
Vernon, 1998	2	0.582
Victory, 1998	2	0.008
Wardsboro, 1997	3	0.276
Wardsboro, 1998	3	0.017
West Fairlee, 1998	3	0.700

*For non-random patterns of differences in assessment ratios by (new) class.

The study team attempted to measure the prevalence of sales chasing. However, incompatibilities and omissions in the coding of the available data prevented us from doing so effectively. Several data problems merit mentioning in this regard. First, the grand lists and grand list abstracts contain no information about assessment changes from one year to the next. In some jurisdictions, including New York, the assessor's abstract must summarize the changes in the roll due to physical changes such as new construction and demolition, changes in taxable status (from taxable to exempt and vice versa), and changes in estimated value. Such data greatly facilitate the monitoring of both assessment equity and sales chasing. In the absence of reports on assessment changes in each year's grand list, the study team sought to calculate assessment changes from one year to the next by analyzing grand lists of selected towns for successive years. Second there were only three towns for which grand lists for more than one year could be made available. Third, there is a pattern of changing the parcel identification number from one year's grand list to the next. Absent a stable identifier, it is tedious and difficult to match assessments of identical properties from one year to the next, although the study team managed to do so for the three available. Fourth, the sales data available lack identifiers congruent with the grand lists. Two sources of sales data were available to the study team: the files of validated sales (occasionally supplemented by appraisals) used in the equalization program and second the files of all sales in the state, which are publicly available on the tax department's Internet site. Neither source included usable parcel identifiers. In the equalization file there was a "map number" for each record, and in each Internet file there was a "map-parcel," but in neither case were the identifiers related to the identifiers on the grand list. In most cases the identifiers were blank or otherwise obviously not used, and in no case could the identifier be used to link records of sold properties to records of assessable parcels on the grand list. Thus the study team was not able to test for the practice of selective reappraisals and advise on specific ways of ameliorating its effects.

Nevertheless, some district advisors justifiably worry about sales chasing. Officials in some towns have even professed it as a policy. In other towns, the statistics calculated to compare the sale prices and assessments of sold properties reveal patterns of improbably close correspondence between the two. Additional evidence may be found in the work papers compiled during the equalization process. These frequently show extraordinary changes of assessments of sold properties from what was on file

at the start of the process to what was accepted as valid for the purposes of the equalization program. The changes tend to be overwhelmingly in the direction of the sale prices and to be generally unmatched by overall changes in the magnitude of the grand list. These changes are important in the equalization context (as well as the assessment context) because they constitute measurement error. When selective reappraisals occur and the appraisals used in the equalization study are the new appraisals rather than the old ones, the study says nothing about how well the assessments reflect market value. Instead it reports only how well the listers are able to copy the sales figures for the properties that sold. Since the objective of the study is to infer facts about the town as a whole, not merely the properties that happened to sell, the effects of sales chasing, when it occurs, must be expunged from the study. This is most efficiently done by taking the listed appraisals before the sale transaction, and adjusting them as necessary for general changes to assessments of "*all*" properties of the same class, not just the ones that sold.

7.4 Reliability

Reliability refers to the extent to which the results obtained from the equalization study (which is based on some sort of sample) can be taken to reflect the underlying reality of the population (the totality of the taxable real estate parcels in the town, whether sold or unsold). Several factors contribute to reliability, including the size of the sample, the inherent variability of the population, whether or not the data being gathered measure what they purport to (known in the statistical literature as "measurement error"), and whether or not the administrative procedures followed in processing the data are valid. Of these, the one most commonly addressed in statistical literature is sampling error (the variability introduced by taking only a sample rather than measuring the totality of a population), and the standard tool for measuring it is the confidence interval. No confidence measures are calculated in Vermont, and we recommend that this deficiency be corrected.

Within limits, reliability can be administratively determined. To narrow the confidence limits for the equalization of a town, it will be necessary either to increase the sample size for the town or to decrease the inherent variability of the ratios in the town. The first may be accomplished by taking sales from a larger time frame (adjusted as necessary) or by supplementing sales with appraisals,

either of an individual or a mass-appraisal nature. The second may be accomplished by ordering that a reappraisal be done in the town and taking appropriate steps to ensure that it is done competently. When there are assessment biases, the second may also be accomplished by stratifying (or post stratifying) the data so that the categories of analysis are homogeneous with respect to the bias. If one stratum is entirely subject to a bias and another is not, the uniformity within each stratum will be lower than if the strata had been combined, and the (more precise) results obtained from each stratum can then be weighted appropriately to reflect the population as a whole. (The difference between stratification and post stratification is that groupings of the population under the former are decided upon before the sample is drawn, and the sampling plan reflects them proportionately. Post stratification is done after the sample is drawn and entails weighting to reflect groups proportionately after it is no longer possible to do so in the sampling plan.)

PVR is aware of the importance of sample size in helping to ensure the reliability of its results. It has established a requirement that 4 percent of the total number of parcels on the roll be in the equalization sample and at least three sales or appraisals be available for "each" category of analysis. When the number of validated sales falls short of that requirement a number of steps, some of dubious validity, are taken. First, sales from an enlarged time frame are considered, and with that we concur. In fact, we would recommend going back as many as five years for sales, with appropriate adjustments as necessary, instead of the two years or so that constitute the present limits. Second, appraisals may be used to augment the sales, and we also concur with that procedure (although the appraisals should be credible). Third and more dubiously, the strata may be combined in various ways in an attempt to get the prescribed number, irrespective of appropriate weighting of the available data. We recommend that the practice of combining strata in the current somewhat ad hoc way be discontinued, and in its place a policy be adopted of consolidating strata on a rational basis as described elsewhere. More fundamentally, however we would note that the current required sample stratum and sample size has no apparent validity. Sample sizes necessary for appropriate performance of PVR's mission have essentially no relation to the number of parcels in the jurisdiction. Rather, the necessary sample sizes depend on the variability of the assessment ratios observed and the tolerance of the department for imprecise results. The same considerations apply for a stratum as for a sample

drawn for any other purpose. Thus strata should optimally be defined based on known divergences in assessment practices or relative performance. We would recommend using the sample-size formula available in the IAAO standard or most statistical textbooks, including the finite population correction factor. For the estimated variance, we recommend using the variance of the ratios from the prior study, and in specifying the desired confidence we would recommend considering the magnitude of the (apparent) tax base involved in the stratum. As a first step in gaining experience with the inter-relatedness of sample size and reliability issues, we recommend calculating confidence intervals for the equalization ratios promulgated by PVR. This may be done retrospectively using data from prior years' studies, although there is no convenient way to calculate a confidence interval for the deprecated O'Brien ratio. As a start on this process, we have calculated in Tables 7-3 and 7-4 confidence intervals for statistics that are appropriate for equalization purposes.

As an interim way to determine *minimum* samples, we suggest the following guideline. When the total assessed value of a category–expressed as a percentage of the total assessed value of a municipality–is in the range indicated in column 1, the sample size should be at least as large as the number in column 2. When it is not, the sale period should be extended or supplementary appraisals should be added (when the number of properties in a category is less than or equal to the number in column 2, all the properties in the category should be studied).

Percentage of Total Assessed Value	Minimum Sample
Less than 5.0	Do not study–use overall ratio
5.0 to 9.99	3
10.0 to 14.99	5
15.0 to 19.99	8
20.0 to 24.99	10
25.0 to 49.99	15
50.0 or more	25

Table 7-3
Parcel-Weighted Medians and Their Confidence Intervals for
For Sample Towns in Vermont, 1998 and 1997

Town, Year	Weighted Median*	95% Confidence Interval Boundary		Boundary as a Percentage Change from the Median	
		Lower	Upper	Lower	Upper
Athens, 1998	0.991	0.871	1.019	12	3
Barre City, 1998	1.027	0.989	1.054	4	3
Benson, 1998	1.049	0.935	1.200	11	14
Burke, 1997	1.034	1.000	1.062	3	3
Burke, 1998	1.036	0.996	1.055	4	2
Chester, 1998	1.027	0.990	1.066	4	4
Hartland, 1997	1.055	1.029	1.081	2	2
Hartland, 1998	1.033	0.999	1.065	3	3
Milton, 1998	0.985	0.976	0.995	1	1
Newport City, 1998	1.016	0.990	1.055	3	4
Norwich, 1998	0.939	0.912	0.963	3	3
Plymouth, , 1998	1.004	0.938	1.051	7	5
Rockingham, 1997	1.067	1.024	1.162	4	9
Rockingham, 1998	1.057	1.029	1.121	3	6
Royalton, 1997	1.000	0.982	1.035	2	3
Townshend, 1997	0.982	0.973	1.000	1	2
Townshend, 1998	0.973	0.905	0.994	7	2
Vernon, 1998	0.833	0.788	0.874	5	5
Victory, 1998	0.553	0.513	0.643	7	16
Wardsboro, 1997	0.769	0.629	0.880	18	14
Wardsboro, 1998	0.912	0.838	0.984	8	4
West Fairlee, 1998	1.101	1.002	1.247	9	13

*Based on New Categories.

Confidence intervals establish the boundaries within which one may expect the true, but unknown, ratio to fall with a given degree of confidence, based on the variability of the ratios inferred from the sample at hand. They are often calculated by reference to the standard error of the estimate. The confidence intervals for the post-stratified parcel-weighted medians shown above were calculated by the so-called "bootstrap" method, while those contained in the proposed equalization model (see table 7-4 and section 9) employ a statistical algorithm. (The algorithm is less precise for any given distribution, but enjoys the advantage of providing a quick and consistent approximation.) The intervals shown are at the 95 percent confidence level, meaning, as described above, that if repeated random samples were drawn and intervals calculated using the appropriate methods, 95 percent of the time the interval would include the true but unknown population parameter (absent other problems). Since such intervals will be foreign to many readers, they have been recast in the final columns in an attempt to show the reliability of the estimate in terms of the more familiar "plus or minus (some) percent." As can be seen, the sampling error, and hence the reliability of the results, varied greatly among the towns. It should be stressed that confidence intervals address reliability only in terms of sampling errors. They do nothing (nor does any other statistical reliability measure) to address the issue of unreliability stemming from such other sources as measurement error or sampling bias, which are equally important.

In equalization using stratified estimators, the estimated market value of each stratum is calculated first, by dividing the assessed value totals for each stratum by the measure of central tendency employed. The sum of the assessed values for all represented strata is then divided by the sum of the estimated market values for all represented strata to obtain an overall or combined ratio. Using the same categories as before, the process of equalizing using weighted means is illustrated in table 7-4, which also includes information on the reliability of the derived figures. As before, confidence interval boundaries also have been re-expressed as the percentages that would have to be subtracted from the relevant ratio, or added to it, in order to obtain the intervals. By construction, they will also represent the percentages by which the estimated market value would have to be adjusted, up or down, to obtain a 95 percent confidence interval for the estimated full market value of the jurisdiction (again, assuming no problems other than sampling variability).

(Insert Table 7-4 about here [2 pages])

7.5 Outliers

The reliability of the estimated equalization ratio is a function of the variability of the individual assessment ratios. Thus the correct treatment of outliers is important not only in ensuring that the measure of central tendency is not unduly affected by one or more aberrant ratios, but also for ensuring that confidence intervals are meaningful. Especially if one relies on the median, which is highly resistant to aberrant ratios, outliers should be given due credence unless a valid reason exists for rejecting the sale on the basis of other criteria. With respect to "winsorization", about which the Division specifically inquired, it is generally unnecessary, since the median statistic discounts outliers appropriately in most circumstances. Analysts must be attentive to the possibility that the outliers are signaling different assessment practices and unacceptable assessment performance for property types differing from those most frequently participating in market transactions. It should be noted that the IAAO *Standard on Ratio Studies* condones symmetrical trimming of no more than 5 percent of a sales sample, but this rule implies that the sample should be at least forty. (The symmetry and 5 percent rule for small samples will likely be relaxed in the revised standard.) Hence, one or two extremes could still be deleted in small samples.

7.6 Stability of Equalized Value Estimates

Year-to-year fluctuations in equalized grand lists are an area of concern. However, changes brought about by Act 60 in 1997 make a long-term comparison of equalized values meaningless. Other complications include the facts that ratio studies have not been made at consistent intervals and that the effects of increases and decreases in the inventory of assessable properties due to new construction and demolitions cannot be isolated. In general, it is our belief that the fluctuations observed probably result from the sampling variability that would have been evident from the width of the confidence intervals that should have been calculated. In other words, the sample sizes used were probably too small for the amount of variability generally present in the data being analyzed, and the best tool available for minimizing its effects, post-stratification-based weighting, was not used optimally. Other contributing factors would include the large number of equalization strata and the general issue of non sampling-error contributors to reliability, specifically sampling bias and measurement error.

The issue of the volatility of the calculations of the Grand Lists can be addressed in multiple ways. First and foremost is to scrupulously calculate confidence intervals for the resulting statistics, with due regard for the ancillary issues of data validity described above, and to take action accordingly. When the intervals are wide, it is only natural to expect volatility from year to year. If volatility is present in the absence of wide intervals, there is strong indication of measurement error (or sales chasing) as described above. When the sales chasing problems are resolved, (which may take some doing in jurisdictions with long histories of it) and volatility persists, there is cause to augment the sales as much as possible either by using older sales (adjusted for sales chasing) or by supplementing sales with appraisals. If the intervals remain wide, using appraisals generated from a computer assisted mass appraisal (CAMA) model is generally the most economical approach available for augmenting an inadequate collection of sales data for a jurisdiction. This approach enjoys recognition in the IAAO Standard on Ratio Studies and has been routinely employed in some states, including the State of Colorado. A potentially attractive, but highly dangerous alternative is to constrain percentage changes in the equalized grand list to be multiples of the economic trends indicated from other sources. The danger of this approach is that it takes no cognizance of market developments in particular areas and adjustments for such exigencies tend not to be well supported. It also "freezes in" the prevailing patterns at the time such a policy is adopted, without any reason to believe the relationships accurately reflect the patterns of relative market values.

In addition to using sales from multiple years, more use should be made of information carried forward from prior years, rather than beginning each year's equalization effort from a clean slate. For example, the variability of ratios by class and strata could be used in determining sample size requirements. Known reappraisal activity or the lack thereof is another important consideration, and past evidence (or hints) of sales chasing should also be regarded.

Greater consistency in evaluating the validity and usability of sales and the use of a standard performance monitoring and equalization model, as described elsewhere, can also be expected to improve results.

8 REVIEW AND REPORTING OF CONCLUSIONS

Section 8 addresses how municipalities may review and challenge equalization determinations. It also considers how the results of equalization studies are presented and disseminated.

8.1 Reporting of Results

Title 32 V.S.A., §5406 (also Title 16 V.S.A., §3460) a sets out the requirements for officially notifying towns and school districts of the fair market value and coefficient of dispersion for the year. The notice is to include information on how the determinations were made. Each municipality receives a letter stating the equalized education property value (EEPV) and coefficient of dispersion (COD) as determined by PVR. The letter is accompanied by a narrative "profile," a computer-generated "final computation sheet,"

8.2 Appeal of Equalized Values

Vermont law provides a process by which towns and incorporated school districts may appeal the director of PVR's determinations of aggregate fair market value and coefficients of dispersion. The first step is to petition the director for a "redetermination" (32 §5408 and 16 §3461a). This must be done within thirty days of the receipt of the notice by the clerk No procedural rules have been established for petitioning for a redetermination. The procedure provides for a hearing with the director (the district advisor and other top staff may attend as well). Bodies dissatisfied with the director's redetermination may then appeal to the Valuation Appeals Board (VAB). The VAB is a five-member board created under 16 §3461b (and 32 §5407). It is attached to PVR for administrative purposes. Although the law requires that the members have relevant experience, it is doubtful that they have experience with the statistical subtleties of ratio studies. Taxation goes forward while appeals are before the VAB. There is no statutory mechanism for dealing with changes ordered by the VAB. Towns and school districts may appeal the VAB's decision to superior court and from there to the supreme court. PVR has no right of appeal.

In the past, PVR has not been faced with many appeals, and the process has been fairly informal. Municipalities are invited to discuss PVR's study with the district advisors, who may recommend

changes to PVR director. If the director agrees, director will stipulate to a redetermination. Most disputes in the past centered around the inclusion–or exclusion–of specific sales in the sample. A change of one sale could have a significant impact on the result. Usually, an accommodation was reached, and the municipalities did not formally petition for a further redetermination.

As would be expected, the number of appeals increased significantly in 1997 (to five). More significantly, several of the appeals challenged the studies on statistical grounds (especially Pomfret and Sherburne). The issues raised included small samples and wide confidence intervals.

This would seem an appropriate time to address several issues. The absence of procedural rules essentially gives a municipality *carte blanche* to appeal a study with or without substantial grounds. To the extent possible, in formal appeals the onus should be on the municipality to state the grounds for the appeal, which should be backed by concrete evidence that PVR erred or reached a wrong conclusion. Merely not liking the determination should not be sufficient grounds to appeal. A thorny issue will be the extent to which deficiencies in the municipality's assessment practices contribute to the difficulty in making the equalization study. However, the municipality should not be allowed to base appeals on its own shortcomings. On the other hand, the procedures should assist municipalities in presenting their cases. They should spell out what is required to make an appeal, the kinds of evidence and documentation that would be helpful, and the procedures that will be followed.

Administratively, the role of district advisors in the redetermination process needs to be reconsidered. They should be on hand to describe how the study was conducted, what sales were used and why, and so forth. To improve impartiality and fairness, it would seem appropriate for someone else in PVR to review the case as part of the redetermination process. There should be an assurance that any past accommodation was warranted and that none has been unreasonably withheld.

9 PROPOSED EQUALIZATION MODEL

9.1 Overview

We have developed a flexible equalization model consistent with IAAO ratio study standards and the recommendations made elsewhere in our report.

As proposed, the model is written in SPSS for Windows, specifically version 9.0, although it will run equally well on versions 6.1.4 and higher. Only the SPSS base system is required (no add-on modules are needed). The model takes the form of SPSS syntax (user program) files.

The model consist of one base program and four subordinate modules initiated from the base model. Normally there should be no need to update or modify the latter modules. The model assumes that the user has created an SPSS data base containing property category, sale validity indicator, assessed value, and sale price after any personal property, time, or other adjustments (other variables are optional). Data can be ported from other data files into SPSS in many formats, including standard ASCII, spreadsheet, and data base (dbf) formats.

9.2 Base Module

The base module, SR-BASE.SPS (attached as the last page of this section), performs the basic set up and calls the other modules. As written, the program assumes that the variables for property category, sale validity indicator, assessed value, and sale price are named PCAT, PVLD, PLSTV, and PREAL, respectively, although the syntax is easily modified to accommodate any variable names. The data received for the town of Chester is used to illustrate the programs. (Of course, the directory names in the program should be changed to match the directory in which the files are stored on the user's computer.)

In the paragraph labeled "DELETIONS," the user can specify any desired edits, for example, to exclude sales prices below a certain dollar amount or ratios outside a certain range. Currently the only selection criterion is that PVLD (valid sale indicator) equals 1.

In the STRATIFICATION paragraph, the user creates the property strata to be used in the analysis. Per our recommendations, currently four strata are created: residential, commercial/industrial, vacant/rural, and utility. If adequate sales are available, the RECODE statement can be modified to accommodate sub-strata.

The user may run one or more of four modules from the base module by simply highlighting them and clicking the SPSS run icon from the toolbar. The first module, SR-MED1.SPS, computes ratio study statistics for each defined property strata, including confidence intervals for the median. SR-WM1.SPS performs the same calculations but instead computes confidence intervals about the weighted mean. In general, one would use the first program if the median is adopted as the preferred measure of central tendency and the latter if the weighted mean is used.

The programs, SR-MED2.SPS and SR-WM2.SPS, compute an overall (combined) median and weighted mean ratio, respectively, for the municipality, along with estimated confidence intervals. Each uses intermediate statistics calculated in SR-MED1.SPS or SR-MED2.SPS. Both programs weight the chosen measure of central tendency calculated for each stratum by the estimated market value for the stratum. Enter the number of parcels and total assessed value of each stratum into the RECODE statements (the current numbers are hypothetical) and block and run the entire paragraph.

To summarize, in general, one would use either SR-MED1.SPS or SR-WM1.SPS for a municipality, depending on the preferred measure of central tendency. If an overall value-weighted ratio is desired, also run SR-MED2.SPS or SR-WM2.SPS.

9.3 Ratio Study Statistics with Median Confidence Intervals (SR-MED1.SPS)

The program computes the number of sales, minimum, maximum, median, mean, weighted mean, COD, PRD, and 95% confidence intervals about the median. To run the program, run the upper portion of SR-BASE.SPS and block and execute the INCLUDE statement (one line) containing SR-MED1.SPS. An example of the output for the town of Chester follows:

PTYPE	N	MIN	MAX	MEAN	WM	MED	LCL	UCL	PRD	COD
RES	60	.671	1.400	1.025	1.009	1.026	.989	1.067	1.016	10.5
COM	7	.795	1.456	1.029	.970	.950	.795	1.456	1.061	15.2
VAC	29	.632	1.610	1.088	1.080	1.090	.968	1.177	1.008	15.0

Number of cases read: 3 Number of cases listed: 3

All statistics are calculated as defined by IAAO. LCL and UCL are the lower and upper 95% confidence limits, respectively, for the median. In other words, there is only a 5% chance that the true median for a stratum falls outside the range. In general, the larger the sample and the more uniform the ratios, the tighter the range. "Number of cases read" simply refers to the number of strata defined by the user for which there were available data.

9.4 Value-Weighted Median and Confidence Intervals (SR-MED2.SPS)

This module computes the value-weighted median and associated confidence intervals. The value-weighted median is a weighted average of the medians calculated for each stratum, with the weights are proportional to the estimated market value of the strata. Lower 95% CL and UPPER 95% CL are the approximate 95% confidence limits around the measure. TOTAL AV is the total assessed value of the combined strata (entered by the user in SR-BASE.SPS). The last three columns indicate the total estimated market value of the combined strata and approximate 95% confidence limits (notice that the limits are not necessarily symmetric owing to the fact that assessment ratio data are not usually normally distributed).

VALUE WEIGHTED MEDIAN AND APPROXIMATE CONFIDENCE INTERVALS

SALES	VALUE-WTD MEDIAN	LOWER 95% CL	UPPER 95% CL	TOTAL AV	ESTIMATED MARKET VALUE	LOWER 95% CONF LIMIT	UPPER 95% CONF LIMIT
96	1.0218	.9743	1.1125	50,000,000	48,932,592	44,943,952	51,316,460

9.5 Ratio Study Statistics with Confidence Intervals for the Weighted Mean (SR-WM1.SPS)

This program parallels SR-MED1.SPS but calculates confidence intervals about the weighed mean rather than the median. The output appears as follows:

PTYPE	N	MIN	MAX	MEAN	WM	MED	LCL	UCL	PRD	COD
RES	60	.671	1.400	1.025	1.009	1.026	.977	1.040	1.016	10.5
COM	7	.795	1.456	1.029	.970	.950	.833	1.106	1.061	15.2
VAC	29	.632	1.610	1.088	1.080	1.090	.996	1.163	1.008	15.0

Number of cases read: 3 Number of cases listed: 3

9.6 Value-Weighted Mean and Confidence Intervals (SR-WM2.SPS)

The program calculates a value-weighted ratio, in which the weighted means calculated for each stratum are weighted based on their estimated market values. The program also calculates the total estimated market value for the combined strata and associated 95% confidence interval. The output appears as follows:

ESTIMATED COMBINED WEIGHTED MEAN AND CONFIDENCE INTERVALS

SALES	COMBINED WTD MEAN	LOWER 95% CL	UPPER 95% CL	ESTIMATED TOTAL AV	% MARKET VALUE	LOWER 95% ERROR	UPPER 95% CONF LIMIT	CONF I
96	1.0140	.9804	1.0475	50,000,000	49,311,625	.0331	47,732,422	50,998,899

"% Error" represents the percent error at the 95% confidence interval and is used to form the 95 confidence limits about the combined weighted mean and total estimated market value.

Base Module Syntax

```
*PROGRAM NAME 'SR-BASE.SPS'.
*DATE OF LAST UPDATE:  MAY 7, 1999.

*SET UP.
GET FILE='C:\Vermont\Eq98Ches.sav'.
RENAME VARS (PLSTV=AV)(PREAL=SP).
COMPUTE RATIO=0.
IF (AV> 0 AND SP > 0)RATIO=AV/SP.
SELECT IF (RATIO > 0).

*DELETIONS.
SELECT IF (PVLD=1).

*STRATIFICATION.
VALUE LABELS PCAT 1  'R1' 2 'R2' 3 'MHU' 4 'MHL' 5  'V1' 6 'V2' 7 'COMM' 8 'CMA' 9 'IND' 10
'UE' 11 'UO' 12 'FARM' 13 'OTHER' 14 'WOOD' 15 'MISC'.
RECODE PCAT(1,2,3,4,5,6=1)(7,8,9=2)(12,14,15=3)(ELSE=4) INTO PROPTYPE.
FORMATS PROPTYPE(F8.0).
VALUE LABELS PROPTYPE 1 ' RES' 2 ' COM' 3 'VAC' 4 ' OTH'.
FREQ PROPTYPE.

*SALES RATIO STATS WITH 95% CONF INTERVAL FOR MEDIAN.
INCLUDE FILE='C:\VERMONT\SR-MED1.SPS'.

*APPROXIMATE 95% CONFIDENCE INTERVAL FOR VALUE-WTD MEDIAN.
*ENTER PARCEL AND ASSESSED VALUE TOTALS FOR TESTED PROPERTY TYPES
BELOW.
```

```
COMPUTE PARCELS=PROPTYPE.
RECODE PARCELS(1=5000)(2=200)(3=1000).
COMPUTE TAV=PROPTYPE.
RECODE TAV(1=30000000)(2=10000000)(3=10000000).
INCLUDE FILE='C:\VERMONT\SR-MED2.SPS'.

*SALES RATIO STATS WITH 95% CONF INTERVAL FOR WTD MEAN.
INCLUDE FILE='C:\VERMONT\SR-WM1.SPS'.

*ESTIMATED  95% CONF INTERVAL FOR COMBINED WEIGHTED MEAN.
*ENTER PARCEL AND ASSESSED VALUE TOTALS FOR TESTED PROPERTY TYPES
BELOW.
COMPUTE PARCELS=PROPTYPE.
RECODE PARCELS(1=5000)(2=200)(3=1000).
COMPUTE TAV=PROPTYPE.
RECODE TAV(1=30000000)(2=10000000)(3=10000000).
INCLUDE FILE='C:\VERMONT\SR-WM2.SPS'.
```

10 IMPROVEMENT STRATEGY

We outline a strategy for implementing our recommendations in section 10. The strategy recognizes that not all proposed changes in equalization procedures can be made immediately or without additional cost. We characterize recommendations as "short-term" and "long-term." We believe short-term recommendations should be addressed in 1999 and accomplished no later than 2000. Long-term recommendations should be addressed in 2000 at the latest and may take up to three years to accomplish. As noted, PVR already has implemented some recommendations and has laid the groundwork to implement others.

We recommend that PVR develop a plan to implement the recommendations with which it agrees in principle. Initially, it would be desirable to convene a brainstorming session with the project advisors and other key individuals to initiate the planning process. The session would seek to identify the actions (or tasks) that would be needed to accomplish each recommendation, assign responsibilities for accomplishing the tasks, estimate the levels of effort required, establish timetables, and identify unmet resource requirements. By formalizing the implementation plan in this way, all concerned would have a shared understanding of the plan's objectives, of the work involved, and of how their work fit into the larger scheme of things. A framework of mutual accountability would be established. The plan obviously would serve as a basis for evaluating progress and for making necessary changes.

10.1 Short-term Improvements

Section 10 lists recommendations that we thank can and should be implemented in the short term. Although there is some overlap, we categorize recommendations as pertaining to (1) resources and management and (2) study design and procedures.

10.1.1 Resources and Management

1. Fill the district advisor supervisor position. The district advisor supervisor position already has been approved, and efforts to find a qualified candidate should continue until the position is filled. (Section 4.3.2)

2. Stress quality assurance. The following recommendations focus on specific quality assurance measures. The aim is to ensure that each equalized education property value determination is as accurate as the underlying data on market values will allow and that all determinations are consistently made. (Section 4.3.4. Also see executive summary recommendations 15 and 17.)

3. Improve equalization study instructions. As PVR wants to do, instructions to listers and district advisors should be subject to continuous review and improvement. This work should begin in 1999. The instructions should be compiled in an equalization study procedural manual that would be updated as needed. Issues that need to be addressed include the distinction between real and personal property and ensuring consistency in utility valuation. (Sections 4.3.4, 3.6.2, 3.6.3. Also see executive summary recommendations 8 and 9)

4. Improve training. As instructions are refined, district and advisors and listers should be required to participate in workshops on new or improved procedures. Areas where listers need additional training is needed include modern property tax administration, property classification, sales screening, and equalization study procedures. District advisors also will need training in equalization study procedures and the use of recommended software. (Section 4.3.4, etc. Also see executive summary recommendation 17.)

5. Increase computerization of the equalization studies. The aim is to automate all equalization study calculations to increase consistency, eliminate mathematical errors, and increase productivity. Section 9 contains our recommended equalization model, which is written in the syntax language of a power and popular statistical package, SPSS for Windows. We believe this software (or comparable software) should be acquired in 1999 in time for training district advisors in the use of the model, so that the model can be implemented in 2000. The cost of statistical software licenses for all district advisors should be less than $6,000. (Also section 4.3.3 and executive summary recommendation 20.)

6. Review the results of each equalization study comprehensively. Compare the results for each municipality with prior years and with the surrounding region and determine the cause of anomalies. Seek ways to make improvements in the next study. (Section 4.3.4. Also see executive summary recommendation 15.)

10.1.2 Study Design and Procedures

7. Improve the review and control over lister changes to the sales data submissions. Accept a lister's recommendation that a sale be deemed unusable only for valid, documented reasons. (Section 5.2)

8. Use only the most recent sale when there is more than one sale of a property. (Section 5.4)

9. Simplify (reduce the number of) strata (categories) for which equalized values are estimated. We believe this and the next four design improvements should be implemented for 1999. Under current procedures, reducing the number of categories studies would reduce work and usually would increase study reliability. (Section 3.5.2. Also see executive summary recommendation 1.)

10. Revise the current minimum sample size rules. Until experience is gained to determine sample size requirements scientifically, we believe the sample size required for a category should be related to the relative value of the property in the category. Although still very small, our recommended minimum sample sizes are larger than the current minimum of three. This implies either using more years of sales or supplementing the sales samples with appraisals, which is probably not something that should be attempted this year. (Section 7.4)

11. Use a standard measure of central tendency. Use of the O'Brien table should be abandoned, and a single measure of central tendency should be used for all strata. We recommend the

square root weighted mean or the median. (Section 7.1. Also see executive summary recommendation 13.)

12. Calculate confidence intervals. We believe it would be feasible to calculate confidence intervals about the chosen measure of central tendency beginning this year to guide determinations of equalized education property value. Statistical software would facilitate these calculations. (Section 7.4. Also see executive summary recommendation 13.)

13. Discontinue equalization studies for independent school districts. This would slightly reduce work loads. (Section 3.1. Also see executive summary recommendation 11.)

10.2 Long-term Improvements

We divide recommended long-term improvements into four categories: (1) policy and legislation, (2) management and resources, (3) study design and procedures, and (4) assistance to municipalities. The groundwork for long-term improvements should be made as early as possible, with some preparations being made in 1999.

10.2.1 Policy and Legislative Changes

In addition to amending the definition of the coefficient of dispersion so that it is consistent with industry standards, we recommend the following:

14. Make state financial assistance to municipalities for equalization and improved assessment practices conditional on actually spending the money to improve compliance with equalization study requirements and to make revaluations. This may require legislation and implies reporting by municipalities at a minimum. PVR also should monitor municipal performance. (Sections 3.4.2 and 3.4.5. Also see executive summary recommendation 19.)

15. Treat cable property consistently with other utility property. For consistency, cable should be classified as real property in the studies. (Section 3.6.3)

16. Require petitions for redeterminations of equalized education property values to be based on substantial grounds and develop written rules for filing appeals. Require appellants to present specific, documented evidence in support of their appeal. (Section 8.2. Also see executive summary recommendation 16.)

10.2.2 Management and Resources

17. Hire or train utility and complex property valuation specialists. A new position would require budget authorization and the development of position specifications. The aim of this recommendation is two-fold: (1) increase the accuracy of the appraisals of utility property and large, complex properties and (2) increase consistency of approach (which especially in utility appraisal currently). (Section 4.3.2. Also see executive summary recommendations 9 and 10.)

18. Strengthen training of advisors. The objectives of the training would be to ensure that each advisor had the requisite appraisal and computer skills (including statistical analyses and CAPTAP) and that each advisor fully understood equalization study procedures. (Sections 4.3.2 and 4.3.4)

10.2.3 Study Design and Procedures

19. Revise the property transfer return to facilitate further improvements in sales screening. The aim of this is to base decisions about the usability of a sale on information on the return itself rather than on the presumed familiarity of the lister with the sale. Screening of sales could become partially automated. (Sections 5.1 and 5.2. Also see executive summary recommendations 4, 5, and 18.)

20. Review sale usability codes. With the compilation of a sales data base for appraisal purposes, it will be necessary for the codes to describe the usability of a sale for each of at least two purposes: assessment equity analysis and appraisal (valuation modeling).

21. Provide listers with updated lists of transfers approximately quarterly. We believe that by sending updated sales lists approximately quarterly, with the requirement that the listers review the lists within a stipulated period of time, will even out work loads when there are large numbers of sales and will allow PVR to identify problems with poor cooperation early enough to address them without delaying the studies. Listers should evaluate the accuracy of data on the lists and confirm or recommend changes in sale usability codes.(Section 5.2.2. Also see executive summary recommendation 12.)

22. Revise the abstract of grand lists that municipalities must submit. The aim of the revisions would be to distinguish changes in listed values due to new construction and demolition, changes in taxable status, and changes in market values of existing properties. Being able to do so will make it easier to detect sales chasing. Eventually, abstracts should be submitted in digital form (see recommendation 34 below).

23. As necessary, extend the period from which sales are drawn to increase sample sizes and improve stability. This recommendation also implies that PVR monitor property price trends and time-adjust sales prices as necessary. (Section 5.4. Also see executive summary recommendation 12.)

24. When sales samples are inadequate, use appraisals to supplement samples. Appraisal procedures should conform to standards. In particular, large industrial and other complex properties should be appraised. Implementation of this recommendation will imply the building of a market data base, the development of mass appraisal models, and the training of appraisers. (Sections 5.3 and 6.1)

25. Develop formal audit procedures. One set of audit procedures would be designed to detect data accuracy problems. The focus should be on property use classification, screening of sales, and administration of the homestead property tax relief program. Another would focus

on reassessment standards (for use in conjunction with recommendation 32 below). (Section 6.2)

26. Establish guidelines for determining what is "real" and what is "personal" property. As this will have implications for taxpayers as well as for equalized value determinations, public input should be solicited. In certain gray areas, regulations may be needed (such as in the classification of utility operating property, which often is a blend of real and personal property). (Section 3.6.2)

27. Take steps to discourage sales chasing and discrimination against out-of-state owners, detect such practices when they occur, and deal with them in equalization studies so that they do not bias conclusions about full market value. PVR should monitor the pattern of changes in assessments made by the various towns and should take steps to ensure that sales chasing is not occurring. Second, PVR should take steps to ensure its equalization procedures are not compromised by sales chasing when it has been found to be taking place with a reasonable degree of probability. (Sections 3.3 and 7.3. Also see executive summary recommendation 6.)

28. Obtain MLS data base and provide it to district advisors. The data would be used to confirm data in sales files. (Section 5.1.3)

10.2.4 Assistance to Municipalities

The aim of the following recommendations is to improve the quality of local assessment practices, thereby simplifying the task of PVR during its equalization studies. Several imply long-term commitments of resources.

29. Work with the legal community and municipal clerks to identify ways to improve the completeness and accuracy of property transfer returns. The focus should be on those that accept and forward to PVR an unusually large proportion of poor returns. Those that do a

good job of ensuring complete and accurate returns should be recognized. (Section 5.1.2. Also see executive summary recommendation 4.)

In conjunction with the next recommendation, PVR should lobby the legislature to require that municipal clerks insist as a condition of registration that the parcel identifier of the parcel involved be noted on the deed. This parcel number should then be incorporated into the sales files now maintained by PVR. If more than one parcel was involved in the sale or resulted from the sale, the identifier of the parent or largest parcel should be recorded in the primary record and subsidiary records should record the additional detail.

30. Develop a standard parcel identification numbering system that provides a unique identifier for each parcel, and work with municipalities to implement it. It will be necessary to prepare education materials describing the benefits of unique parcel identifiers and guidelines for implementing the system. (Section 3.4.1. Also see executive summary recommendation 3.)

31. Work with listers to develop a new hierarchical set of property use codes to replace existing category and property use codes. (Section 3.5.3. Also see executive summary recommendation 2.

32. Work with municipalities undergoing reassessments to ensure accurate appraisals. The aim would be to ensure that the resulting appraisals met practice and accuracy standards, in which the level of assessment could be deemed to be 100 percent (see recommendation 25 above). (Section 6.2)

33. Increase support for CAPTAP II implementation. This implies an increase in staffing. (Section 3.4. Also see executive summary recommendation 20.)

34. Help cities and towns that need it to computerize their grand lists and data bases and to provide the information needed for the equalization studies electronically to PVR. In the long

run, municipalities should be able to provide PVR with the property characteristic information necessary to develop mass appraisal models that could, if necessary, be used to augment sales information during the equalization program. Toward this end PVR should establish a uniform system for coding at least a minimal set of property characteristics consistently across all jurisdictions. The requirements for the minimal set of property characteristics may vary by type of property. For any given property type, the minimal set of property characteristics should be constituted so that it is capable of producing acceptably accurate appraisals using all the valuation approaches relevant for the property type in question. (Sections 3.4 and 5.1. Also see executive summary recommendation 20.)

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Appendix 1. Property Use Coding Suggestions

In order to stimulate debate and begin a process of rethinking the category and property use codes, we offer the following coding proposal for Vermont.

100 Residential (up to four dwelling units) - Year Round
Constructed for year-round occupancy with adequate insulation, heating, etc.

110 Primary Residence - 2 acres or less
(A workable definition of "primary residence" would be needed.)

111 One family
112 Two family
113 Three family
114 Four family

120 Primary Residences - more than 2 acres

121 One family
122 Two family
123 Three family
124 Four family

130 Condominium or Cooperative Apartment

131 Condominium - land held in common 2 acres or less
132 Condominium - land held in common more than 2 acres
133 Co-op apartment

140 Mobile Homes
141 Mobile home unlanded
142 Mobile home with 2 acres or less
143 Mobile home with more than 2 acres

150 Waterfront - with lake or pond frontage

160 Estate - luxurious residence and auxiliary buildings on at least 2 acres

160 Mixed Use
161 Bed & breakfast - primary use of home is residence of permanent occupant
162 Residence with 25 % or less of space used for business purpose

163 Residence with more than 25 % of space used for business purpose

200 Residential - Vacation/Seasonal
Dwelling units not constructed for year-round occupancy and lacks adequate insulation, heating, etc. If value of land and timber exceeds value of vacation/seasonal dwelling use the correct property code from the farm, forest, or vacant category.

200 Vacation or Seasonal Residence - 2 acres or less
201 One family or one camp on land parcel
202 Two family or two camps on land parcel
203 Three family or three camps on land parcel
204 Four family or four camps on land parcel

210 Rural Vacation/Seasonal - with more than 2 acres
211 One family or one camp on land parcel
212 Two family or two camps on land parcel
213 Three family or three camps on land parcel
214 Four family or four camps on land parcel

220 Condominium and Co-op Apartment
221 Condominium - land held in common 2 acres or less
222 Condominium - land held in common 2 acres or more
223 Co-op apartment

230 Mobile Homes
231 Mobile home unlanded
232 Mobile home with 2 acres or less
233 Mobile home with more than 2 acres

240 Waterfront - with lake or pond frontage

300 Commercial

300 Living Accommodations
301 Apartments - five or more units
302 Motel
303 Hotel
304 Camps, cottages, bungalows - rented
305 Inns, lodges, boarding & rooming houses, tourist homes, fraternity & sorority houses
306 Mobile home park land - trailer parks & courts where mobile home owner rents or leases land

310 Dining and Eating Establishments
311 Restaurants - serve full course meals
312 Diners & luncheonettes - counter service & limited seating
313 Snack bars & drive-ins
314 Fast food franchises
315 Night clubs - dining, legal beverages, & live entertainment
316 Bar - serve only legal beverages

320 Transportation Services
321 Sales & service - automobiles, trucks, buses, motor homes, farm machinery, etc.
322 Service, repair, and gas stations
323 Autobody, tire shops, automotive repair
324 Car washes
325 Automobile & truck rental
326 Parking lots
327 Parking garages

330 Transportation Other Than Automotive
331 Airports & buildings
332 Railroads & assorted facilities
333 Ferry, barge docks, & marinas

340 Retail Services
341 Regional shopping centers - multi-occupant tenants with ten or more stores & ample paved parking
342 Area or neighborhood shopping center - several stores often with a supermarket
343 Large retail outlet - often complemented by a supermarket & with ample parking
344 Small retail shops & stores
345 Large retail food store - supermarket
346 Dealerships - other than auto
347 Neighborhood small store and groceries, mini-marts, snack bar-market-gas station
348 Building & lumber supply, animal feed & grain, seed & fertilizer, farm machinery & equipment
349 Heating oil & propane gas

350 Storage, Warehouse, and Distribution Facilities
351 Gasoline, diesel fuel, heating oil, & liquid petroleum
352 Bottled gas & natural gas facilities
353 Cold storage facilities

354 Groceries, beverages, etc.
355 Automotive parts, tires, batteries
356 Trucking terminals
357 Piers, wharves, docks, & other boat storage facilities
358 Lumber yards
359 Other storage, warehouse, & distribution facilities

360 Banks and Office Buildings
361 Standard bank - single occupant
362 Drive-in branch bank
363 Bank complex with office building
364 Office building
365 Professional building

370 Mixed Use
371 Office building & apartments
372 Stores & office building - store on first floor, offices on higher floors
373 Stores & apartments - store on first floor, apartments on higher floors
374 Living accommodations and office building
375 Living accommodations and restaurant
376 One story small structure with one occupant - adaptable for several uses
377 One story small structure with multiple occupants - partitioned for multiple uses
378 Converted residence - building in residential area converted or adapted for office space with perhaps an apartment upstairs

380 Miscellaneous
381 Funeral homes, morgues, & crematories
382 Veterinary clinics & animal kennels
383 Greenhouses
384 Junkyards
385 Bill boards
386 Laundromats & dry cleaners
387 Other

400 Recreation and Entertainment

400 Entertainment Facilities
401 Motion picture theater
402 Drive-in theater
403 Performing arts theater - musicals, drama, opera, ballet, symphonies, etc.
404 Auditoriums and exhibition & exposition halls
405 Television, radio, and motion picture studios

410 Sports Facilities
411 Stadiums, arenas, armories, field houses
412 Racetracks - auto, horse, motorcycle, go-cart, drag racing

420 Amusement Facilities
421 Fairgrounds
422 Amusement parks
423 Game farms
424 Social organizations - Elks, Moose, Eagles, Veterans Posts, etc.

430 Indoor Sports Facilities
431 Bowling centers
432 Ice skating, roller skating, roller blading rinks

433 Health spas and fitness centers
434 YMCA, YWCA, etc.
435 Indoor swimming pools
436 Other - tennis courts, billiards, archery, etc.

440 Outdoor Sports Facilities
441 Ski centers - including sleeping and dining facilities
442 Public golf courses
443 Private golf country club & associated facilities
444 Outdoor swimming pools
445 Riding stables
446 Ice skating, roller skating, & roller blading rinks
447 Other - driving ranges, miniature golf, tennis, baseball batting ranges, etc.

450 Improved Beaches - associated facilities

460 Marinas

470 Resorts, Camps, Camping Facilities
471 Camps - used by groups of children and/or adults
472 Camping facilities - improved areas with accommodations for tents, travel trailers, Rvs'
473 Resort complex - dude ranches, resort hotel with sports facilities, etc.

480 Parks
481 Playgrounds
482 Athletic fields
483 Picnic grounds

500 Industrial

500 Manufacturing and Processing
501 Pulp, paper, plywood, & veneer mills
502 Sawmills & finishing mills
503 Finished wood products
504 Creameries & dairy products
505 Other heavy manufacturing & processing
506 Other medium manufacturing & processing
507 Other light manufacturing & processing

510 Mining and Quarrying
511 Granite
512 Marble
513 Limestone
514 Sand & gravel
515 Magnesium & talc
516 Asbestos
517 Trap rock
518 Other - iron, titanium, salt, lead, zinc, gypsum, etc.

520 Waste Disposal
521 Solid waste - incinerator & waste compacting
522 Landfills & dumps
523 Sewage treatment & water pollution control
524 Air pollution control
525 Other

600 Utility Services

600 Electric
601 Hydro power generation
602 Coal burning plant power generation
603 Oil burning plant power generation
604 Nuclear plant power generation
605 Other - solar, wind
606 Transmission & distribution

610 Natural Gas
611 Generation plant
612 Transmission & distribution

620 Industrial Product Pipelines - transmission & distribution

621 Petroleum products
622 Other

700 Agriculture

700 Livestock and Animals
701 Dairy farms and products
702 Poultry and poultry products - turkeys, ducks, geese
703 Beef, veal, dairy replacements
704 Sheep and wool products
705 Hogs and pork products
706 Horse farms
707 Other livestock - donkeys, goats, etc.

710 Crops
711 Field crops - hay, grain, corn, potatoes, beans, etc.
712 Truck crops - sweet corn, string beans, cabbage, carrots, etc.

720 Orchards
721 Apples, Pears, Peaches, Cherries, etc.
722 Vineyards
723 Sugarbush
724 Other

730 Other Fruits - strawberries, raspberries, dewberries, currants, etc.

740 Nurseries

750 Specialty Farms
751 Honey and beeswax
752 Fur farms and fur products
753 Fish, frogs, and aquatic products
754 Pheasant and other birds
755 Other - deer, llamas, buffalo, etc

760 Fish, Game, and Wildlife Preserves

770 Conservation Easements

800 Forest

800 Timberland

801 Timber production - more than 25 acres
802 Timber production -25 acres or less

810 Private Hunting and Fishing Clubs

820 State Owned Forest Lands

830 Federally Owned Forest Lands

840 Public Parks
841 State owned public parks and recreation areas
842 Municipal owned public parks and recreation areas

850 Other Wild and Conservation Land
851 Wetlands
852 Lands under water - other than residential

860 Conservation Easements

900 Vacant Land

900 Residential
901 Vacant lots in residential areas
902 Residential land with small improvement - not used for living in
903 Waterfront vacant lot and frontage
904 Waterfront vacant land with small improvement - not used for living in
905 Rural vacant lots of 10 acres or less
906 Underwater vacant land - privately owned

910 Rural
911 Abandoned agricultural land - nonproductive
912 Residential land over 10 acres
913 Other rural lands - waste lands, sand dunes, brush swamps, rocky areas

920 Commercial
921 Commercial vacant lots
922 Commercial vacant lots with minor improvements

930 Industrial.
931 Commercial vacant lots
932 Commercial vacant lots with minor improvements

940 Urban Renewal - improvements abandoned, vacant lots undergoing clearance & urban renewal

1000 Government

1000 Government Facilities
1001 Office buildings
1002 Transportation facilities
1003 Correctional facilities
1004 Public safety facilities
1005 Parking lots
1006 Other

1010 Culture and Recreation
1011 Museums, art galleries, etc.
1012 Nature trails, bike paths, etc.

1020 Miscellaneous
1021 Cemeteries
1022 Professional associations
1023 Animal welfare
1024 Other

1100 Community Service

1100 Education
1101 Schools
1102 Libraries
1103 Colleges and universities
1104 Special schools and institutions
1105 Other educational facilities

1110 Religious

1120 Health
1121 Hospital
1122 Nursing home, convalescent and rest homes
1123 Clinics
1124 Other health facilities

1130 Social Services
1131 Homes for the aged
1132 Benevolent and moral associations

Appendix 2. Evaluation of Measures of Central Tendency