

**A Comprehensive Analysis
of the Integrated Waste
Management Act Diversion
Rate Measurement System**

Final Report to the Legislature

November 13, 2001

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Preface

Report Mandate

The California Integrated Waste Management Board (Board) is required to prepare a report to the legislature on improvements to the disposal reporting system using a working group (Public Resources Code [PRC] section 41821.5). The report to the legislature is due on January 1, 2002. The Board expanded the review to include the entire diversion rate measurement system and the role of disposal reporting in that system.

About the Integrated Waste Management Board

The full-time, six-member Integrated Waste Management Board, established by the California Integrated Waste Management Act (AB939, Sher, Chapter 1095, Statutes of 1989 [IWMA, 1989]) is responsible for administering the State's solid waste management regulatory, programmatic, and policy activities. The Board's membership represents a cross-section of interests, including four gubernatorial appointees: one representing the solid waste industry, one representing environmental concerns, and two representing the public. The Senate Rules Committee and Speaker of the Assembly also appoint one Board member each to represent the public. Board members elect the Board Chair.

The Act also created a nine-member Local Government Technical Advisory Committee with members appointed by the Governor, Senate Rules Committee, and Speaker of the Assembly to advise the Board on local government solid waste issues. Under the terms of the Act, the committee's charter expired January 1, 1999.

Report Organization

This report, required by Chapter 740, Statutes of 2000 (Committee on Environmental Quality, SB 2202), evaluates the diversion measurement system and the disposal reporting system (DRS). Chapter 1 contains the executive summary; Chapter 2 covers an introduction to the components of the diversion rate measurement system and the working group structure for the board review; Chapter 3: Recommendations contains recommendations from the working groups and the Board to improve the diversion rate measurement system; Chapter 4: The Disposal Reporting System (DRS) provides an overview of the existing the specifics on the DRS issues, and analysis and recommendations; Chapter 5: The Adjustment Method (AM) provides an overview of the existing AM issues and recommendations, and Chapter 6: Review of Alternatives to the Existing System contains ideas on how to improve the measurement system to make it more accurate and flexible and other ways to meet the spirit of the IWMA. Additionally, Appendix A contains specific links to the Board's Web site, www.ciwmb.ca.gov, to enable the reader to access more detailed information. Appendices B through F contain technical information and are available online at www.ciwmb.ca.gov/LGLibrary/SB2202Rpt/ and in hard copies upon request.

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Chapter 1 Executive Summary

In the 1980s, California has faced landfill siting problems and a projected shortage of landfill capacity that could impact the health and safety of Californians. The California Integrated Waste Management Act (AB939, Sher, Chapter 1095, Statutes of 1989 [IWMA]) established a framework to limit reliance on landfills and waste-to-energy projects and give greater weight to recycling, waste prevention, reduction, and composting methods. The IWMA required each city and county to prepare and implement plans to divert 25 percent of solid waste in 1995, and 50 percent in 2000 from landfills. Diversion activities include source reduction (also called waste prevention), recycling, and composting. Cities, counties, and regional agencies that fail to meet the mandates face potential penalties of up to \$10,000 per day.

In 1989, the diversion rate measurement system was generation-based and each city and county was to quantify diversion and disposal (generation) in 1995 to find out if they met the 25 percent diversion requirement, and again in 2000 for the 50 percent diversion requirement. Cities and counties expressed concern that the most difficult and costly requirement was obtaining accurate information on quantities and types of wastes recycled or otherwise diverted, and calculating waste prevention. Waste diversion activities are decentralized and dispersed, as compared to disposal that occurs at a limited number of facilities. Recyclers and businesses were reluctant to provide information that could give competitors an advantage.

The solution was to redesign the measurement system. With the passage of Chapter 1292, Statutes of 1992 (Sher, AB 2494), measurement of 25 and 50 percent diversion was changed to a disposal-based measurement system and the Integrated Waste Management Board was required to establish a mechanism to estimate disposal tonnages through periodic surveys. Diversion achievement would be determined by comparing jurisdiction disposal amounts (as measured by the disposal reporting system [DRS]) to the estimated annual waste generation, adjusted for changes in population and economics. The adjustment is needed so jurisdictions are not penalized for changes in population and economics outside their control that can have significant impact on the amount of waste generated. AB 2494 also allowed jurisdictions to join together in regional agencies to reduce costs and improve measurement accuracy.

Over the last five years, concerns have been raised about the accuracy of the DRS. SB 2202 (Sher, Chapter 740, Statutes of 2000) requires the Board to convene working groups to assist in preparing a report to the Legislature on DRS improvements. SB 2202 requires the Board to recommend regulatory and statutory changes to address DRS deficiencies and improve accuracy. Since the DRS is an integral part of the diversion rate measurement system, but is only one component, the Board decided to undertake a review of the entire system in the report to the Legislature. In addition to the DRS, the adjustment method and alternatives to the existing system were examined and included in the report to the Legislature. The Board review of base-level generation issues was already well underway when SB 2202 was enacted.

Local implementation of diversion programs has created a diversion infrastructure that includes collection and processing facilities and equipment, bins, trucks, and personnel. Investments of hundreds of millions of dollars have been made in this infrastructure throughout California. A key issue is the appropriate balance between resources needed to improve accuracy and resources needed to establish and maintain the diversion programs and infrastructure.

Structure of Board Review

The Board held public workshops in January 2001 to gather input on the diversion rate measurement system and potential solutions. Three working groups, comprised of volunteers from jurisdictions, waste

and materials management industries, consultants, colleges, and environmental groups, met March through May of 2001. Each of the working groups considered data, analyses, potential solutions for the DRS, adjustment method or alternatives to the existing system. A synthesis group, comprised of six members of each of the three working groups, met in June and July to synthesize ideas from all groups and develop a set of recommendations that address the diversion rate measurement system as a whole.

Base-Level Generation

Base-level generation is the starting point of the disposal-based diversion rate measurement system. For most jurisdictions, base-level generation (diversion tons + disposal tons) was established in their 1990 source reduction and recycling element (SRRE) and approved by the Board. The base level is the foundation for diversion rate estimation and plays a crucial role in the accuracy of a jurisdiction's diversion rate estimate. Many assumptions about California's waste stream that were used in establishing the original base levels are not supported by current data. Data gathered since 1990 shows:

- Waste flow patterns are much more variable and complex than originally assumed in 1990. Waste commonly flows between counties.
- Jurisdictions with large numbers of businesses and industries generate more waste than jurisdictions that are primarily residential.
- About half of California's landfills did not have scales in 1990 and about ten percent currently do not have scales. Tonnage estimates have improved with use of scales.
- A considerable amount of waste is not hauled by franchised or licensed haulers. Self-haul waste (hauled by someone whose primary business is not hauling waste) is about 13 percent of the statewide waste stream and is much higher in some areas.

The disposal-based measurement system calculates a diversion rate by applying the adjustment method to base-level generation. Large errors that understate or overstate base-level generation can result in inaccurate diversion rates. Thus, inaccuracies in base-level data can have a significant adverse impact on the estimated diversion rate. Therefore, base-level inaccuracies could negatively impact jurisdictions' ability to quantitatively demonstrate their actual progress toward achieving the 25 percent and 50 percent diversion goals. In addition to base-level generation tons for that year, its predictive value as a benchmark for future waste generation estimates erodes with changes in the nature of jurisdiction solid waste produced; for example, a manufacturing community becomes a "bedroom community" and waste types and amounts change.

In early 2001, the Board adopted a diversion study guide to provide jurisdictions with guidance on preparing a new base-level generation study. About 90 jurisdictions have new Board-approved, base-level, generation studies. About 360 jurisdictions have 1990 or 1991 base levels.

Adjustment Method

The adjustment method relies on a jurisdiction's base-level generation, a standard formula to estimate waste generation, and avoids measuring diversion. The method is low-cost for jurisdictions because the formula is relatively simple and relies on data from State agencies. This is the first method of this type in the United States.

Issues and Analyses

Issues associated with the adjustment method include:

- Heavy reliance on the base-level generation amount (greater influence on estimates of future year waste generation than any adjustment method factor).

- Whether the standard formula works well for all jurisdictions (for example, does it work well for a jurisdiction with a low population and a high proportion of business and industry and vice versa).
- Whether other sources of data on population and the economy provide accurate estimates of waste generation.
- Whether changes in the nature of solid waste produced (for example, change from manufacturing heavy machinery to assembly of computers results in different amounts and types of waste) may make a jurisdiction's base-level generation obsolete.
- Use of State data in the formula that is generally more accurate at the countywide or regionwide level than for individual jurisdictions.

Data analyses show that the adjustment method is an estimation tool that works reasonably well for most jurisdictions but has some accuracy issues. There are a number of sources of data that provide generation estimates similar to the existing factors used in the formula and seem to help the most if the jurisdiction is small or has unusual extremes of population and economic indicators. There is more variability in small jurisdiction population and economic factors over time, so accuracy of the adjustment method will be more variable for small jurisdictions. Further statistical analysis is needed to determine if entirely new adjustment method factors and weights would improve the accuracy of the adjustment method formula. Expanded dissemination of existing information and publication of new study results should improve adjustment method understanding and application.

Disposal Reporting System

The Board was required to develop a system to track jurisdiction of waste origin using periodic surveys because the disposal-based measurement system is heavily dependent on accurate disposal data. The Board set minimum standards for origin surveys, one week per quarter, to allow local flexibility. Many counties have established more stringent origin survey requirements. The DRS has given jurisdictions a better understanding of their waste flow and disposal data.

Issues and Analyses

Issues associated with the DRS include:

- Complex boundaries make it difficult to identify a jurisdiction of waste origin.
- Reliance on vehicle drivers for information on jurisdiction of waste origin.
- Accuracy of a one-week-per-quarter waste origin survey.
- Lack of scales at about half the landfills in 1990 and about ten percent of landfills in 2001.
- Different standards at different facilities that impact whether inerts and special waste count as disposal.
- Lack of enforcement mechanisms to assist jurisdictions in resolving issues due to misinformation or untimely information.

Data analyses show that waste hauler drivers may not know the jurisdiction of origin for hauling routes that serve multiple jurisdictions. In some areas, there may be economic incentives for vehicle drivers to provide inaccurate jurisdiction of origin information. Counties that require jurisdiction of origin information from waste hauler dispatcher or billing records have fewer waste origin issues. Self-haul drivers (other than franchised haulers) may not be asked for origin information or may not report waste origin correctly. Residential self-haul drivers may comprise a large portion of vehicles using a landfill, but only a small portion of disposal. Statewide, residential self-haul is about three percent of the statewide waste stream.

There can be significant error in surveying one week per quarter versus every load every day. This is particularly true for small jurisdictions with less than 25,000 people or 25,000 tons annual disposal. This makes sense in terms of arithmetic, since an extra 10 tons of waste disposed would make a bigger difference for a jurisdiction with 50 tons of disposal than for a jurisdiction with 5,000 tons of disposal. Surveying every load every day is more accurate, but there are still potential errors in assigning jurisdiction of origin. Countywide disposal data is more stable, except for counties with low countywide population and tons disposed.

Alternatives to the Existing Diversion Rate Measurement System

A wide range of alternatives has been intensely debated since development of the IWMA in 1989. The alternatives considered in this review address issues with the disposal-based diversion rate measurement system. These alternatives range from increased support for activities that increase the amount of material diverted from disposal to specific changes in the law to overcome accuracy issues.

Issues and Analyses

Some of the issues addressed include:

- The right balance between measuring diversion progress and diversion program implementation to allow a shift of resources from diversion rate measurement to diversion program implementation.
- Markets for recycled materials are critical to diversion program success.
- Jurisdictions bear the responsibility of meeting IWMA requirements but do not control all the waste generators within their borders.
- Appropriate measures of success for small and rural jurisdictions that have a disproportionate share of errors.
- Whether changing the diversion rate measurement level from each city and county to countywide or regionwide would improve diversion rate measurement accuracy.

Many of the alternatives discussions were by their nature more conceptual, so the types of ideas discussed are summarized here. Instead of determining compliance with the IWMA based primarily on a calculated diversion rate, especially when that rate is derived from a measurement system with recognized potential errors, information on diversion program implementation should be carefully considered. Since small and/or rural jurisdictions are prone to more measurement problems, this consideration is especially important for them. Efforts to promote countywide and/or other types of regional measurements can improve accuracy. Resolution of issues about what counts as disposal (special waste and inerts) can also resolve accuracy and equity issues. Several additional options were discussed that would change how compliance with the IWMA is measured, but since the issues are complex, more work and time are needed to fully evaluate the ideas.

Actions can be taken to aid and enhance local government efforts to achieve the diversion goals, including continued statewide efforts to increase and develop markets, expanding responsibility for waste diversion and resource conservation, removing inadvertent barriers to diversion, and improving training and education for those on the front lines of waste diversion efforts.

Recommendations

The working group process allowed the Board to obtain expertise from a variety of stakeholders and an independent review from Board staff in developing recommendations to resolve complex issues. This report includes both working group and Board recommendations.

Many of the recommendations resolve several problems. The recommendations from the individual working groups were reviewed and consolidated. The synthesis group, made up of members from each individual working group, reviewed all of the recommendations. The synthesis group believes that the set of recommendations, taken as a whole, will improve accuracy of the diversion rate measurement system, support activities that increase diversion, and lead to further investigation of the most promising alternatives to the existing diversion rate measurement system.

The Board approved most of the synthesis group recommendations. However, there are several specific recommendations whose implementation the Board does not support. These items are identified throughout the report. The recommendations are generally conceptual in nature and details of how they would be implemented would be developed in an open process involving all stakeholders. The recommendations are grouped into several categories. Summary tables (Tables 1-1 and 1-2) are included below and a more complete table is included in the recommendations chapter.

An overriding recommendation from all the working groups and the Board is to recognize potential inaccuracies in all components of the diversion rate measurement system. One of the key findings of this review of the diversion rate measurement system is that a diversion rate is an estimate, not an absolute value, and there are potential inaccuracies in each part of the diversion rate measurement system. One difficulty faced by jurisdictions and decision makers is how to fairly assess the accuracy of a diversion rate estimate, given the many variables and the potential for inaccuracies involved. Stated differently, a key issue is how should an estimated diversion rate be weighted in comparison to diversion program information? Another key issue for jurisdictions and decision makers is the level of resources required to improve accuracy, and the appropriate balance between resources to improve accuracy and resources to implement diversion programs.

Accuracy

These recommendations focus on improving accuracy and include:

- Recognition that potential errors in the diversion rate measurement system make the diversion rate an estimate, not an absolute value.
- Establishing statewide standards for daily origin surveys, except in rural areas, and for expanded information on alternative daily cover.
- Resolving issues of consistency with what counts as disposal.
- Increasing incentives for regional agencies.
- Continued use of the adjustment method formula and factors, and addition of other tested adjustment method factors and formulas.

The Board supports most of these recommendations. The Board, with the exception of the methodologies, recommended to resolve issues of inconsistency with what counts as disposal. In addition, the Board recommends that jurisdictions be asked to explain why their base-level generation still represents their jurisdiction if the growth rate is outside the tested limits for the adjustment method. This recommendation should help jurisdictions and the Board consider to what extent a base-level is still a reasonably accurate benchmark for estimating future year waste generation.

Alternatives to Numerical Compliance

These recommendations focus on alternatives to relying on diversion rates in determining compliance with the requirements of the IWMA and include:

- Focusing on diversion programs rather than diversion rates.

- Evaluating diversion rate accuracy (red flags) in the Board’s biennial review of jurisdiction progress in meeting IWMA requirements using a tiered approach.
- Allowing rural jurisdictions to demonstrate IWMA compliance based on diversion program implementation and effectiveness.
- Allowing countywide diversion rate measurement without a regional agency if jurisdictions are implementing their diversion programs.

The Board supports these recommendations.

Expand Responsibility and Enhance Control

These recommendations expand responsibility for diverting waste and provide a variety of options to enhance control and include:

- Developing a model ordinance for jurisdictions to establish local ordinances to implement disposal reporting and assess penalties.
- Changing state minimum standards for disposal facilities to require cooperation in DRS origin surveys.
- Requiring disposal facilities to supply jurisdictions with information at the same time it is sent to counties.
- Establishing statewide enforcement and penalties for DRS misinformation and untimely information.
- Removing unintended institutional barriers to establishing diversion programs and siting diversion facilities.
- Requiring schools to work in coordination with local jurisdiction recycling coordinators to divert waste.
- Requiring disposal facilities to divert waste from self-haul customers.

The Board takes no position regarding the recommendations to develop model ordinances, to require schools and State agencies to coordinate diversion with jurisdictions, or to require facilities to divert self-haul waste; current law encourages cooperation. Furthermore, with respect to removing institutional barriers to siting diversion facilities, the Board must carefully balance the advantages of streamlining the system with protecting the health and safety of Californians and the environment.

Markets

The synthesis group recommends the Board focus on market development, since markets are critical to the success of diversion programs. The Board strongly supports these market development activities in its recently adopted Strategic Plan.

Change What Counts as Disposal

The synthesis group recommends the Board change what counts as disposal to resolve inequities and promote power generation. These recommendations include:

- Excluding inert waste at mine reclamation facilities (the four in the San Gabriel Valley) not subject to Board fees from the DRS.
- Excluding special waste (at Class II facilities) from the DRS.
- Removing the ten percent diversion limit for burning forest debris to produce power.

The Board does not support excluding inert waste disposed at mine reclamation facilities from the DRS at

this time. However, the Board may revisit the diversion rate measurement aspect of the inert waste issue in the upcoming construction and demolition waste regulations. The Board will continue to rely on existing Board policy to exclude disposal of special waste at Class II facilities if the special waste is required to be disposed by a control agency. With regard to removing the ten percent limit on burning forest debris for power, the Board's recently adopted Strategic Plan supports, in general, energy recovery from waste through clean technology.

Training

These recommendations increase Board training on the DRS and the adjustment method and provide standard Board training for jurisdiction staff responsible for implementing diversion programs. The Board supports most of the specific recommendations in this category, but it does not support the concept of a Board-sponsored certification program for local government staff.

Ideas Merit Further Study

These recommendations include ideas that have merit, but they will require additional study to determine whether they should be considered further. They include:

- Continuing analysis of the adjustment method formula and factors.
- Placing more responsibility for diversion on generators of difficult-to-handle waste.
- Removing the ten percent diversion limit on non-burn transformation to encourage development of methods to handle hard-to-divert materials; for example, contaminated organics that are less desirable for composting.
- Developing a method to evaluate IWMA compliance based on program implementation.

Table 1-1. Summary Table of Board Recommendations

Category and Reference #	Required Actions	Synthesis Working Group Recommendations	Board Recommendations
Accuracy (ACC 1)	Policy	Recognize diversion rate estimate is an indicator, not a measured value.	Recommended by Board.
Accuracy (ACC 2)	Policy	Board should conduct increased county or regional audits of solid waste disposal facility disposal records.	Recommended by Board.
Accuracy (ACC 3)	Policy	Update Local Enforcement Agency (LEA) Alternative Daily Cover (ADC) Advisory #48.	Recommended by Board.
Accuracy (ACC 4)	Regulation	Board should require the following from solid waste disposal facilities: Conducting daily surveys and weighing every load except cars and pickups. Exempting small rural solid waste facilities from the daily survey. Scales at all solid waste facilities above certain tonnage. Solid waste facilities to post signs about origin collection. Standards for collecting origin and disposal tonnage information from waste hauler dispatchers.	Recommended by Board.
Accuracy (ACC 6)	Statute	Increase incentives/remove disincentives to form regional agencies.	Recommended by Board.
Accuracy (ACC 7)	Policy	Continue using the existing adjustment method.	Recommended by Board.
Accuracy (ACC 8)	Policy	The Board should: Continue use of the existing adjustment method factors. Monitor 2000 Census data publication & investigate potential issues. Add county level Employment Development Department (EDD) Industry Employment as default factor. Allow use of alternative data sources for factors.	Recommended by Board.
Accuracy (ACC 9)	Regulation	Consider use of alternative adjustment method factors that require regulations revisions.	Recommended by Board.

Category and Reference #	Required Actions	Synthesis Working Group Recommendations	Board Recommendations
Accuracy (ACC 10)	Policy	Not recommended by synthesis group.	Ask jurisdictions to explain why base years are valid if growth rates are greater than 14 percent (the adjustment method test limit).
Alternatives to Numerical Compliance (ATNC 1)	Policy	Board recognizes potential for significant errors in disposal reporting system (DRS) and adjustment method. Focus on diversion programs rather than tonnage/diversion rates.	Recommended by Board.
Alternatives to Numerical Compliance (ATNC 2)	Policy	Develop standard "red flag" table of diversion rate accuracy indicators for each jurisdiction and include it in biennial review agenda items. Board would use tiered approach, based on the accuracy indicators, to evaluate diversion rate accuracy in Board biennial reviews of jurisdiction progress in meeting the requirements of the Integrated Waste Management Act (IWMA).	Recommended by Board.
Alternatives to Numerical Compliance (ATNC 3)	Policy, Regulation, or Statute	Allow rural jurisdictions to demonstrate IWMA compliance based on "good faith efforts" in diversion program implementation and effectiveness during the Board biennial review, instead of spending resources on fixing numerical issues.	The Board proposes regulations or statutes to reduce rural requirements for resolving numerical issues prior to the Board biennial review.
Alternatives to Numerical Compliance (ATNC 4)	Statute	Within a county, verify diversion program implementation at the jurisdictional level; if all jurisdictions are implementing their diversion programs, allow use of a countywide diversion rate.	Recommended by Board.
Responsibility & Control (R&C 2)	Regulation	Revise regulations to make solid waste disposal facility cooperation in DRS a requirement of a solid waste facility permit.	Recommended by Board.
Responsibility & Control (R&C 3)	Regulation	Landfill and transfer station operators send jurisdictions information on tons disposed by the jurisdiction at the same time the operators are required to send the information to the county.	Recommended by Board.

Category and Reference #	Required Actions	Synthesis Working Group Recommendations	Board Recommendations
Responsibility & Control (R&C 4)	Statute	<p>Authorize assessment of penalties for misinformation and lack of timely information in the DRS.</p> <p>Establish due process procedures to address errors in DRS.</p> <p>Penalties would apply to waste haulers, landfills, materials recovery facilities, and transfer stations.</p> <p>Board would enforce and assess any penalties.</p>	Recommended by Board.
Responsibility & Control (R&C 5)	Policy	<p>Further promote jurisdiction focus on largest individual waste generators, largest waste sectors, and most common materials in the waste stream to enhance waste reduction, recycling, and composting.</p>	Recommended by Board.
Markets (MKT 1)	Statute	<p>Focus on developing markets for recycled materials through a variety of activities, including mandated programs.</p>	Board's recently adopted Strategic Plan strongly supports creation and expansion of sustainable markets.
Change What Counts (CWC 3)	Statute	<p>Remove the 10% diversion limit for direct burn transformation processes for forest debris (also called slash) used for power generation.</p>	Board's recently adopted Strategic Plan supports, in general, energy recovery from waste through clean technology.
Training (TRN 1)	Policy	<p>The Board shall provide: DRS training to facility supervisors and counties. Adjustment method training.</p>	Recommended by Board.
Training (TRN 2)	Policy	<p>Increase the number and types of DRS reports available on the Board's Web site.</p>	Recommended by Board.
Further Study (FS 1)	Policy	<p>Continue further analysis of the accuracy of adjustment method formula.</p>	Recommended by Board.
Further Study (FS 2)	Statute	<p>Place more responsibility for diversion on generators of difficult-to-handle waste.</p>	Recommended by Board.

Category and Reference #	Required Actions	Synthesis Working Group Recommendations	Board Recommendations
Further Study (FS 3)	Statute	Remove the existing ten percent diversion limit for non-burn transformation.	Board's recently adopted Strategic Plan supports, in general, energy recovery from waste through clean technology.

Table 1-2. Summary Table of Recommendations on which Board takes different or no position

Category and Reference #	Required Actions	Synthesis Working Group Recommendations	Board Recommendations
Accuracy (ACC 5)	Statute &/or Regulation	Remove uncertainties/inconsistencies with how some materials (for example special waste and inerts) are counted as disposal at different solid waste disposal facilities.	See CWC 1 and 2.
Responsibility & Control (R&C 1)	Policy	Board should draft model ordinance so jurisdictions can require commercial self-haulers to report origin information.	No position.
Responsibility & Control (R&C 6)	Regulation	Remove institutional barriers to establishing diversion programs and diversion facilities.	No position. The Board must balance the advantages of streamlining with protecting the health and safety of Californians and the environment.
Responsibility & Control (R&C 7)	Statute	Adopt new laws requiring solid waste disposal facilities to divert waste from self-haulers.	No position. The Board must balance the advantages of this requirement with protecting the health and safety of Californians and the environment.

Category and Reference #	Required Actions	Synthesis Working Group Recommendations	Board Recommendations
Responsibility & Control (R&C 8)	Statute	Require schools to work in coordination with local jurisdiction recycling coordinators to divert waste.	No position. Current law encourages cooperation.
Change What Counts (CWC 1)	Statute &/or Regulation	Exclude inert waste, not subject to the BOE fee and disposed at mine reclamation facilities, from DRS.	Board voted at its July 2001 meeting that inerts at Board-permitted mine reclamation sites count as disposal. May be revisited in upcoming construction and demolition regulations.
Change What Counts (CWC 2)	Statute	Board should support proposed legislation that will exclude Class II-type waste from counting in the diversion rate measurement system..	Rely on existing Board policy to exclude disposal of special waste at Class II facilities as required by control agencies.
Training (TRN 3)	Policy	Board shall provide standard curriculum training for local government waste management staff.	No position
Further Study (FS 4)	Statute	Establish a menu of diversion programs appropriate for jurisdiction characteristics and evaluate jurisdiction performance based on implementing programs and meeting effectiveness criteria such as participation levels.	No position

*** Complete table can be found in the Recommendations Chapter**

**

ACC—Accuracy in diversion rate measurement

ATNC—Alternatives to numerical compliance

R & C—Expand responsibility and enhance control

MKT—Markets

CWC—Change what counts as disposal

TRN—Training

FS—Ideas merit further study

Chapter 2 Introduction

The California Integrated Waste Management Act of 1989 (AB 939, Sher, Chapter 1095, Statutes of 1989 as amended [IWMA]) established a generation-based diversion rate measurement system. Each city and county was to quantify diversion and disposal (generation) in 1995 to find out if they met the 25 percent diversion requirement, and again in 2000 for the 50 percent diversion requirement.

Accurate information is essential for each city, county and regional agency to use in measuring its diversion program successes. Jurisdictions expressed concerns that the most difficult and costly requirement was obtaining accurate information on quantities and types of wastes recycled or otherwise diverted, and calculating waste prevention. Waste diversion activities are decentralized and dispersed as compared to disposal that occurs at a limited number of facilities. Recyclers and businesses were reluctant to provide information that could give competitors an advantage.

The solution was to redesign the measurement system. With the passage of Chapter 1292, Statutes of 1992 (Sher, AB 2494), measurement of 25 and 50 percent diversion was changed to a disposal-based measurement system and the Board was required to establish a mechanism to estimate disposal tonnages through periodic surveys. Diversion achievement would be determined by comparing jurisdiction disposal amounts (as measured by the disposal reporting system [DRS]) to the calculated annual waste generation, adjusted for changes in population and economics. The adjustment was needed so jurisdictions were not penalized for changes in population and economics outside their control that can have significant impacts on the amount of waste generated. AB 2494 also limited jurisdiction base-level diversion claims for inerts, agricultural wastes, scrap metals, and white goods. These materials can be a large portion of the waste stream.

The passage of AB 2494 allowed cities and counties to enter into formal legal agreements as regional agencies. Cities and counties realize many benefits from working together as regional agencies to achieve economies of scale in developing and funding solid waste diversion programs, reducing duplication in preparation of waste management plans and progress reports, and improving diversion measurement accuracy. Regional agency members must rely on one another to succeed, and they jointly share the consequences of success or failure.

Diversion Rate Measurement System Review (SB 2202)

In 1999, with nearly five complete years of disposal reporting, the Board acquired a clearer picture of disposal activities in California, including complex waste flow patterns and waste flow variation over time. Since the 1995 DRS start, jurisdictions expressed concerns about difficulty in getting accurate information about waste allocated to jurisdictions—self-haul waste in particular—and special waste accounting.

Chapter 740, Statutes of 2000 (Sher, SB 2202), requires the Board to convene working groups to assist the Board in preparing a report to the Legislature by January 1, 2002, on DRS improvements. The Board is required to evaluate DRS accuracy under differing conditions and determine the status or implementation of the DRS at the local level by waste haulers; landfill, transfer station, and material recovery operators; and local agencies. SB 2202 also requires the Board to recommend regulatory and statutory changes to address DRS deficiencies. Board recommendations are to include how to improve DRS accuracy and implementation, streamline DRS reporting, and assist agencies to meet DRS requirements.

Since the DRS is an integral part of the diversion rate measurement system, but is only one component, the Board decided to undertake a review of the entire system and establish several working groups to assist in developing the report to the Legislature. In addition to the DRS, the adjustment method and alternatives to the existing system have been examined.

Structure for Review of the Diversion Rate Measurement System

In January 2001 the Board held two public workshops, one in Southern and one in Northern California, to gather input on diversion rate measurement and disposal reporting system issues and develop potential solutions to them. The information gathered from the public workshops was used as the starting point for review.

Statute requires that the Board convene working groups to assist the Board in preparing the disposal reporting system evaluation report to the Legislature (PRC section 41821.5). Past working groups have been successful in obtaining input from all types of parties on technical issues and providing opportunities for public input. At the December 2000 Board meeting, the Board directed that three working groups be established.

Two working groups focused on making improvements to the existing DRS and to the adjustment method. The third working group, alternatives, focused on evaluating alternatives to the existing diversion rate measurement system. A list of working group members can be found in Appendix A.

Each working group met during March, April, and May 2001 for a total of three daylong sessions each. The working groups were similar to past Board working groups. Each group was made up of representatives from the following:

- City, county, and regional agency representatives.
 - Urban and rural.
 - Northern, Central and Southern California.
 - Disposal facility operators and disposal facility users.
- Waste and materials management industry.
 - Various size operations.
 - Haulers.
 - Recycling facility and disposal operators.
- Consultants.
- Colleges and universities.
- Environmental and other special interest groups.

Board staff and working group members developed background information for discussion at the meetings. Working group members were encouraged to meet with representatives of jurisdictions in their geographic area and their professional associations to gather knowledge about local and statewide measurement issues and proposed solutions. The working groups provided information, opinions, and expertise from a wide range of interested parties and provided critical input on the proposed recommendations throughout the entire process.

The working group members reviewed and commented on data and materials prepared for each meeting, acted as a liaison for reviewers or other interested parties, reported outside comments to the working group, and developed recommendations for the Board to consider. Those who had an interest in following the issues closely—but were not working group members—could participate as reviewers. Reviewers were provided with all data and materials developed for and by the working group. They

submitted comments to Board staff and/or working group members to be considered by the working groups in developing recommendations.

To ensure that the Board identifies workable changes to the diversion rate measurement system as a whole, a synthesis group was formed of members from each working group. The synthesis group held three meetings, in June and July 2001, to consider the working group recommendations. When developing its recommendations, the synthesis group considered how the activities would support the spirit and goals of the IWMA. They were also concerned with how the modifications would result in diversion rate estimate improvements, versatility, accuracy, ease of use, flexibility, and cost-effectiveness. Additionally, the synthesis group identified data gaps and areas not covered by the three working groups.

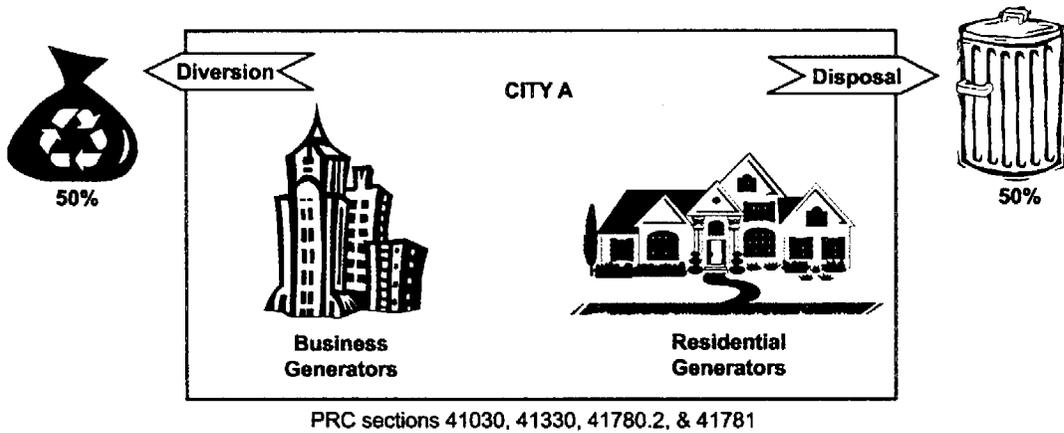
The Board has the ultimate legal responsibility for the report to the Legislature and, therefore, final approval of the recommendations to be included in the report. As the recommendations may later be incorporated into State regulations or new laws, there may be legal and procedural constraints on them. By inviting stakeholders to actively assist in developing recommendations, to advise Board staff and the Board about their special needs and interests, and to critique draft documents, the Board believes the best recommendations and most workable solutions can be developed to address current issues in the measurement system.

Diversion Rate Measurement System—The Big Picture

California's jurisdictions are required to implement a range of waste prevention, recycling, and composting programs to divert waste from disposal facilities. The diversion rate measurement system is one indicator of the success of the programs implemented.

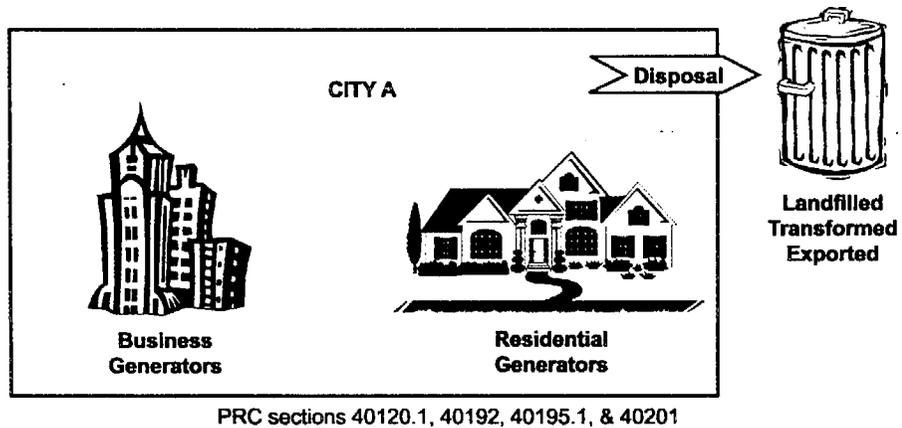
In 1990, each jurisdiction was required to perform a waste generation study that measured the waste produced by all businesses, institutions, and residents within its boundaries that was either diverted or disposed (see Figure 2-1). This generation study is the base level or foundation for diversion rate measurement in future years.

Figure 2-1. Divert 50 percent of waste generated within city's borders.



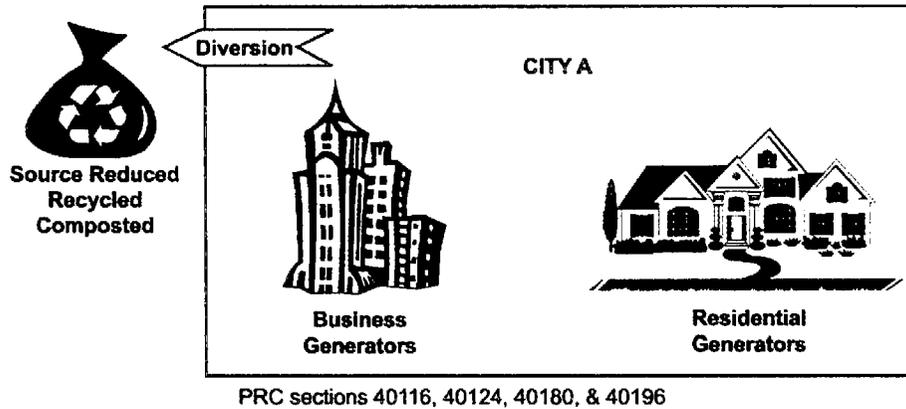
Disposal includes waste sent to Board-permitted landfills and transformation facilities or exported out of state (see Figure 2-2). In 1990, disposal tons reported for California jurisdictions ranged from 280 tons to about 3.8 million tons.

Figure 2-2. Disposal of waste generated within city's borders.



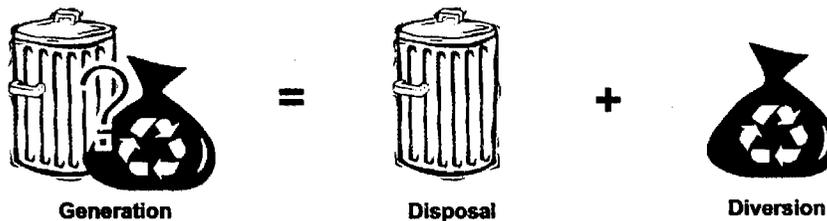
Diversion includes waste prevention activities and waste sent to recyclers and composters (see Figure 2-3). In 1990, diversion tons reported for California jurisdictions ranged from 12 tons to about 2.8 million tons.

Figure 2-3. Diversion of waste generated within a city's borders.



Waste generation is defined as disposal plus diversion. In a generation-based measurement system, disposal and diversion are measured and added together to determine generation (see Figure 2-4). This system of measurement was required through 1992 and is still an option for jurisdictions that want to measure both disposal and diversion.

Figure 2-4. Generation-based diversion rate measurement.



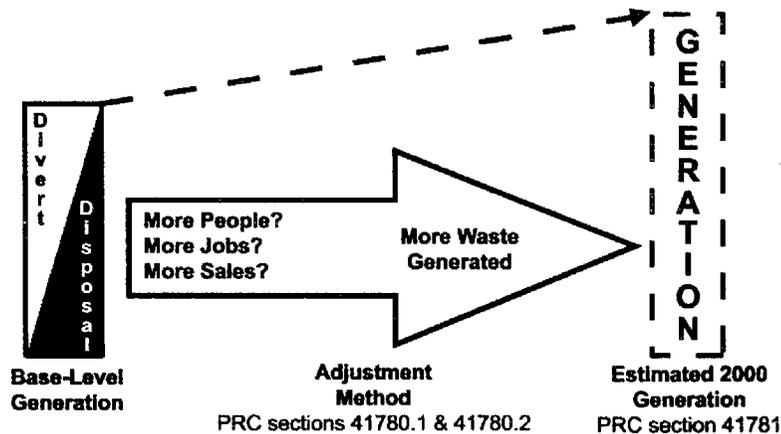
In a disposal-based measurement system, the definition of waste generation is the same (disposal plus diversion), but what is measured changes. In the disposal-based measurement system, waste generation is estimated, then measured disposal is subtracted from generation to estimate diversion (see Figure 2-5). The disposal-based measurement system is a “short cut” that does not require quantification of diversion. This system of measurement has been required since 1993.

Figure 2-5. Disposal-based diversion rate measurement.



How is waste generation estimated in a disposal-based measurement system? Waste generation correlates closely with changes in population and economics. An adjustment method was developed that relies on this correlation to estimate waste generation. The adjustment method is applied to the base-level generation (usually from 1990) to estimate generation in a future year (see Figure 2-6).

Figure 2-6. The adjustment method concept.



The disposal tonnage used in the equation is obtained from the disposal reporting system (DRS), a statewide system for tracking the jurisdiction of origin for waste disposed. Deductions from DRS tons disposed are allowed for some types of waste, such as disaster waste and treated medical waste (see Figure 2-7).

Figure 2-7. Determining disposal tons.

$$\begin{array}{rcccl}
 \text{2000} & & & & \\
 \text{Disposal} & & & & \\
 \text{Reported} & - & \text{Disposal} & = & \text{2000} \\
 & & \text{Deductions} & & \text{Disposal} \\
 \hline
 \text{PRC section 41821.5} & & \text{PRC section 41782} & &
 \end{array}$$

Disposal tonnage is divided by estimated generation to obtain a disposal rate (see Figure 2-8). Finally, since generation is 100 percent of disposal plus diversion, the disposal rate is subtracted from 100 percent of generation to obtain the diversion rate (see Figure 2-9).

Figure 2-8. Determining the disposal rate.

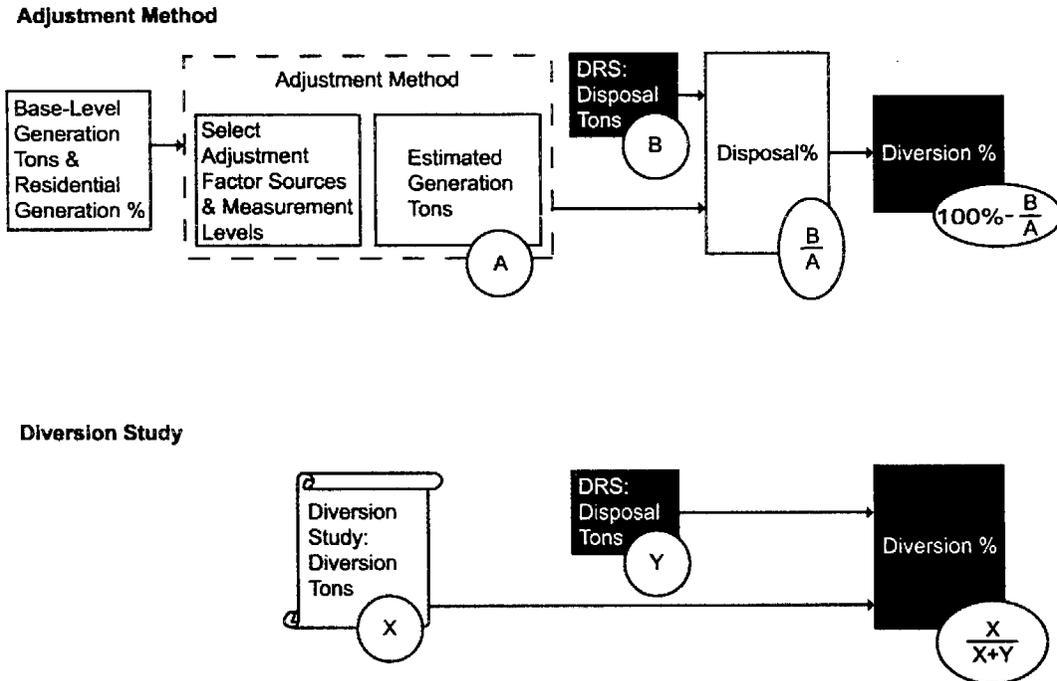
$$\begin{array}{c}
 \text{Trash Can} \quad \text{2000 Disposal} \\
 \hline
 \text{Trash Can} \quad \text{Recycling Bag} \quad \text{Estimated 2000 Generation} \\
 = \text{Disposal \%}
 \end{array}$$

Figure 2-9. Determining diversion rate.

$$\begin{array}{c}
 \text{Trash Can} \quad \text{Recycling Bag} \quad - \quad \text{Trash Can} \quad = \quad \text{Recycling Bag} \\
 \text{Generation \% (100\%)} \quad \quad \quad \text{Disposal \% (7\%)} \quad \quad \quad \text{Diversion \% (7\%)}
 \end{array}$$

The next figure shows the components of disposal-based measurement and generation-based measurement (see Figure 2-10).

Figure 2-10. Components of disposal-based measurement and generation-based measurement.



What is measured and how it is measured has been simplified since 1990, when all jurisdictions were required to measure waste diversion activities as well as waste disposed. However, there are still issues associated with base-level generation, the adjustment method, DRS, and alternatives to the existing measurement system. These issues are briefly described below. More detailed information on issues and solutions for the adjustment method, DRS, and alternatives to the existing system are found in later chapters.

Base Levels

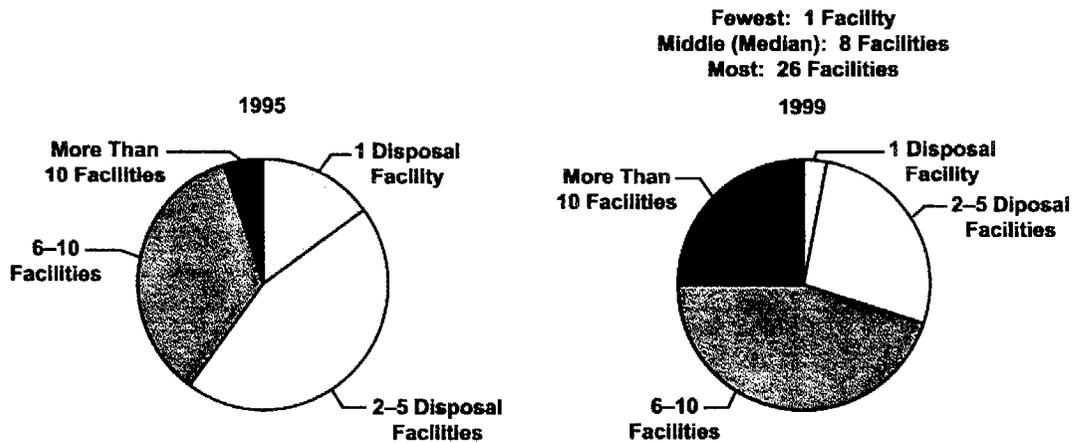
Base-level generation is the starting point of the disposal-based diversion rate measurement system. For most jurisdictions, base-level generation (diversion tons + disposal tons) was established in its 1990 source reduction and recycling element (SRRE) and approved by the Board. The base level is the foundation for diversion rate estimation and plays a crucial role in the accuracy of a jurisdiction's diversion rate estimate. A new base level (DRS tons + diversion tons) provides the opportunity to compile the "best available information" to establish a new base rate of solid waste generation from which jurisdiction achievement of the 50 percent diversion mandate may be accurately estimated.

The disposal-based measurement system calculates a diversion rate by applying the adjustment method to base-level generation. Large errors that understate or overstate base-level generation can result in inaccurate diversion rates. Thus, inaccuracies in base-level data can have a significant adverse impact on the estimated diversion rate. Therefore, base-level inaccuracies could negatively impact jurisdictions' ability to quantitatively demonstrate their actual progress toward achieving the 50 percent diversion goals.

Base Level Issues

Many assumptions about California's waste stream that were used in establishing the original base levels are not supported by current data. Waste flow patterns within counties and between counties, variation in tons disposed, and the amount of both commercial and residential waste delivered by "self-haulers" are much more variable and complex than originally assumed in 1990 (see Figure 2-11).

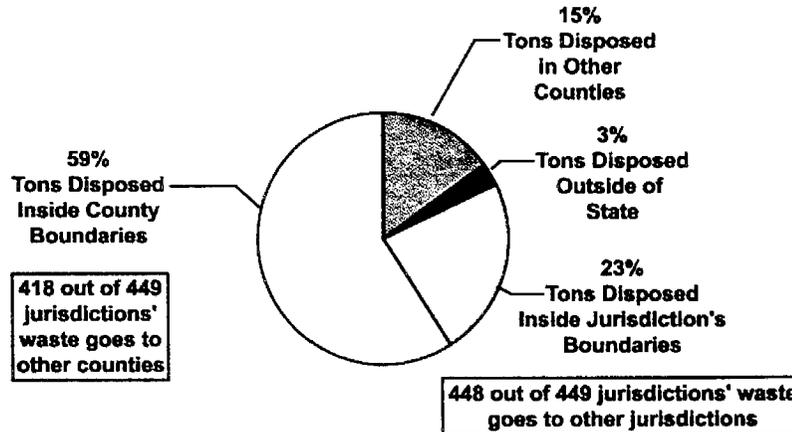
Figure 2-11. Number of disposal facilities used by jurisdictions (1995–99).



Since 1994, cities, counties, and regional agencies (jurisdictions) expressed concern regarding the accuracy of original base-level data. As jurisdictions began to compare their original base-level data against more current disposal records, discrepancies became evident. The Board conducted a survey of jurisdictions that determined there was significant concern by jurisdictions throughout the state regarding their base-level data accuracy.

Prior to 1995, no system was in place for measuring waste disposal at the jurisdiction level. Instead, only state requirements existed for tracking quarterly disposal tonnage at the landfill level, which usually represented waste disposed from multiple jurisdictions. As a result, many inaccurate assumptions were made in base-level waste generation studies to allocate tonnage down to the jurisdiction-specific level. For example, many counties used population ratios to allocate countywide tonnage. DRS data now shows there is significant waste flow between counties (see Figure 2-12), and areas that are primarily commercial and industrial produce considerably more waste than residential areas.

Figure 2-12. Jurisdiction disposal destinations in 1999.



Additionally, about half the landfills were not equipped with scales prior to 1995; therefore, base-level disposal tonnage had to be estimated. Methods to estimate the disposal tonnage included visual estimations, estimates based on aerial photos, the use of published volume-to-weight conversion factors, or actual measured volume-to-weight conversion factors.

Further, many jurisdictions relied primarily on franchised hauler data to determine their base-level disposal data, and omitted or understated self-haul or non-licensed hauler tonnage. The Board's 1999 Statewide Waste Characterization Study shows that, on average, self-haul—including loads from roofers, remodelers and others—is about 13 percent of the waste stream. In some areas the percentage is much higher. In addition, the Legislature was debating whether certain materials (inerts, agricultural waste, scrap metals, and white goods) should count as diversion. Many jurisdictions did not include them in their generation studies. Thus, although based on the best available data in 1990, original base-level data included inaccuracies due to estimation errors, misallocations of regional tonnage to individual jurisdictions, and/or omissions of significant portions of the non-franchised waste stream.

In 1996 the Board established a working group to identify the extent of the problems and solutions to base-level issues. In 1997 the Board adopted a menu of solutions to correct base-level problems. In 2000 the Board modified the solutions to require corrections to base levels within three years because of concerns with older base levels. To provide further assistance, in 2001 the Board convened a working group and adopted a diversion study guide to assist jurisdictions in preparing new generation studies. This guide is available on the Board's Web site.

Adjustment Method

The IWMA required the Board to establish a standard methodology, the adjustment method, to estimate jurisdiction waste generation (disposal + diversion) and avoid measuring diversion after the base level was established. The method was intended to prevent jurisdictions from being penalized by population

and economic change that is closely correlated with waste generation. If a jurisdiction's population increases significantly and the economy is booming, waste generation is expected to increase.

In 1993, the Board created a working group to examine factors related to waste generation and to develop the adjustment method. After extensive research, public comments, and field testing, the working group recommended population, employment, and inflation-adjusted taxable sales as the adjustment method factors, and the group recommended disposal deductions for disaster wastes.

The adjustment method is low cost for jurisdictions because it uses readily available factors from other State agencies, and the formula is relatively simple. The Board approved these factors in 1995, and on January 9, 1996, adopted the method. This is the first method of this type that was used for diversion rate measurement in the United States.

Adjustment Method Issues

The following issues are related to the adjustment method:

- Whether weighting of adjustment method factors is appropriate and whether the change in factors is outside the range of change determined to be accurate when tested in 1995.
- Impact on small jurisdictions or jurisdictions at high and low ends of the scale for the factors; for example, very low population growth rate and very high population growth rate.
- Heavy reliance on an accurate base-level generation amount. The adjustment method may be less accurate for jurisdictions with base-level generation accuracy issues.
- Use of factors published by State agencies. These measurements are more accurate for larger geographic areas; however, some issues for jurisdictions may be distinctly different from the larger geographic area. In particular, there are issues for jurisdictions with low population and a high level of commercial and industrial waste.
- Does not account for changes in waste generation due to military base closure or major change in the nature of the production of solid waste (for example, change from manufacturing heavy machinery to assembly of computers) that are related to accuracy of the base-level generation.

The adjustment method standardizes data sources, the formula, and reports for diversion rate measurement at a low cost. A key objective will be increasing confidence in the adjustment method while maintaining its ease of use, flexibility, and low cost. A more detailed discussion of adjustment method issues and potential solutions is included in the adjustment method chapter.

Disposal Reporting

The change to disposal-based measurement of diversion rates in 1993 (AB 2494), required the Board to develop a system to estimate tons disposed by all waste generators in each jurisdiction. This was the first system in California to assign a jurisdiction of origin to all waste in Board-permitted waste facilities based on periodic surveys of the jurisdiction of waste origin at Board-permitted landfills, transfer stations, and waste-to-energy facilities. The DRS regulations establish minimum reporting requirements but allow flexibility at the local level to customize data collection to local needs. Jurisdictions are allowed, under their own authority, to develop standards that exceed the minimum requirements.

Disposal Reporting Issues

The most important use of DRS annual disposal tonnage data is in calculating the diversion rate of a city, unincorporated county, or regional agency. DRS data has many other uses, such as analysis of statewide and regional disposal trends, tons exported out of state, and tracking use of alternative daily cover at landfills. Since the DRS was implemented in 1995, many jurisdictions have worked to improve accuracy of the system and data. The most complicated issue arises when jurisdictions do not agree with the amount of waste allocated to them by a landfill and adjust their disposal amounts in their annual reports. Resolution of these differences may be very complex and may require cooperation among jurisdictions, counties, haulers, materials recovery facilities (MRFs), transfer stations, and landfills. Improvements usually require more than the minimum standard, and they are not uniform statewide.

DRS issues that influence accuracy include the following:

- Reporting/allocation of waste to jurisdiction of origin.
- Issues with attributing self-haul waste to the correct jurisdiction.
- Reliance on waste hauling company drivers for information on jurisdiction of origin.
- Frequency of origin surveys (every load, every day of the year vs. every load every day of a standard one week per quarter).
- Consistency of counting inert material and special waste as disposal.
- Lack of scales at some facilities.
- Lack of standardized volume-to-weight conversion factors in lieu of scales.
- Waste export to out-of-state disposal facilities, including tribal land.
- Difficulty in resolving inaccuracies due to misinformation, untimely information, and minimum information collected.

Questions regarding wastes included in disposal have arisen since the original 1990 base-level year. Self-haul waste (delivered from someone whose primary business is not hauling waste) was often not included in base-level generation, but it is now included in the DRS. Jurisdictions may or may not have included special waste going to Class II landfills (as defined by the regional water quality control boards), construction and demolition debris, and/or inert waste in their planning documents or base-level year calculations. Not including these waste types in base-level generation—but including them in DRS reports—can cause significant drops in diversion rates. A more detailed discussion of disposal reporting issues and potential solutions is included in the disposal reporting chapter.

Alternatives to the Existing Diversion Rate Measurement System

A wide range of alternatives were intensely debated during development of both the generation-based diversion rate measurement system established by IWMA, 1989, and the disposal-based measurement system established by AB 2494. Alternatives are also included in this review of the existing diversion rate measurement system.

All of the alternatives considered address issues with the existing system, ranging from activities that support an increase in diversion to specific changes in the law to overcome accuracy issues. Some of the larger issues addressed include:

- The right balance between measuring diversion progress and diversion program implementation.
- Creating markets for recycled materials so diversion programs can succeed.
- Appropriate measures of success for small and rural jurisdictions that have a disproportionate share of errors.
- Whether changing the diversion rate measurement level from each city and county to countywide or regionwide would improve diversion rate measurement accuracy.

Chapter 3 Recommendations

Introduction

As California's diversion rate measurement system has been implemented over the years, all groups involved have identified issues that affect the system's accuracy. The system is used to assess jurisdictions' achievement of the 50 percent waste diversion goal. Therefore, its accuracy is a critical component in determining compliance with the requirements of the California Integrated Waste Management Act of 1989 (AB 939, Sher, Chapter 1095, Statutes of 1989, as amended [IWMA]). To begin the systematic identification and discussion of these issues and their potential solutions, the Board held public workshops in January 2001. The issues raised at these meetings reflect what the affected parties have learned over the years. These items ranged from increasing accuracy by collecting information more frequently at disposal facilities to developing a completely new measurement system.

Three working groups were formed to look at the issues and potential solutions in more depth. For all of the ideas raised, Board staff and the working groups developed background information, performed analyses, and discussed them in detail to develop recommendations to improve the goal measurement system. These recommendations were then further discussed by a synthesis group made up of members from each working group. From all the recommendations proposed by the three groups, the synthesis group identified the set that they believe will be the most effective in addressing accuracy issues. Taken as a whole, these recommendations will significantly improve accuracy and support further diversion efforts. The group felt that each of the recommendations had equal importance in improving accuracy in all aspects of the measurement system. The order they appear below does not reflect any order of priority or importance.

Synthesis Group Recommendations—Broad Themes

As the synthesis group discussed the ideas from each of the three working groups, several broad themes emerged. The broad themes were used to group and combine ideas. Although each working group was assigned a specific area, some larger issues crossed the boundaries of these areas and were addressed by two or all three of the working groups. Because a recommendation may resolve several issues, there is some repetition in the discussion. The broad themes are:

- Increase accuracy of the diversion rate measurement system.
- Establish alternatives to numerical compliance.
- Expand responsibility for diversion beyond jurisdictions alone and enhance their control.
- Develop markets for secondary materials.
- Change what counts as disposal and diversion.
- Expand waste measurement and IWMA implementation training.
- Alternatives that merit further research.

Board Recommendations

This chapter includes both working group and Board recommendations. The working group process allows the Board to obtain expertise from a variety of stakeholders and an independent review from Board staff. The Board agrees that activities supporting successful diversion are critical to achieving and maintaining 50 percent diversion.

The Board agrees with most of the synthesis group recommendations that related to improving the diversion rate measurement system. Where the Board agrees with the synthesis group recommendation, it is noted in the text and in the recommendations table at the end of this chapter. Where the activity does not directly improve the diversion rate measurement system, the Board has noted this in the text and recommendations table. Where the Board does not agree with the synthesis group recommendation, the Board so states by taking no position. The Board's reasoning for non-support of these recommendations is briefly explained in the text and in the recommendations table.

Specific Recommendations from the Synthesis Group

Accuracy of the Diversion Rate Measurement System

The accuracy of the goal measurement system for a particular jurisdiction is affected by three main parts: the jurisdiction's base-level waste generation study, which established its waste generation amount in 1990; the disposal reporting system, which measures the tonnage of disposed waste originating in the jurisdiction; and the adjustment method, which estimates the change in waste generation over time due to changes in demographic and economic factors. The Board recently adopted guidance for jurisdictions on establishing new base-level generation.

Accuracy of disposal reporting depends on two things: determination of waste amounts delivered to disposal facilities and transfer stations, and assignment of the waste to the correct jurisdiction of origin. Some disposal facilities in rural areas do not have scales to weigh loads of waste. Some facilities do not weigh small self-haul loads. Some waste types, like special waste, may be accurately weighed, but they are counted differently for disposal at different facilities. For correct allocation of waste to jurisdictions, accurate waste origin information must be collected at the disposal facility and correctly reported. Since this information is collected one week per quarter and extrapolated to the entire quarter, anomalies that occur during the survey week can affect the accuracy of the information for that quarter and consequently for the entire year.

Accuracy of the adjustment method is affected by whether the factors used are accurate for each jurisdiction, whether the changes in these factors truly estimate the changes in waste generation in the jurisdiction, and whether the adjustment method formula correctly weights these factors.

DRS issues addressed: The working groups discussed many issues concerning the accuracy of the disposal data collected and reported in the DRS. The working groups concluded that because of the complexity of the DRS, disposal data collection accuracy could be improved; however, the DRS would provide an estimate, not an absolute value. The major issues were allocation of waste among jurisdictions, self-haul waste data collection and extrapolation, and special waste. Currently, regulations specify minimum standards for collecting waste origin information to allow for local flexibility.

When disposal facilities lack scales for measuring tonnage, they measure the volume of the waste load and must then use conversion factors to change volume to weight. However, volume-to-weight conversion factors used throughout the state are inconsistent. Because of this variation in conversion factors among facilities, there is inconsistency in allocating waste amounts to jurisdictions.

Waste may be misallocated among jurisdictions with similar names, such as Los Altos and Los Altos Hills. Another example is misallocation that occurs because the hauler or landfill staff is unable to determine whether a load of waste is from within the city limits or the unincorporated areas of the county. It is difficult to collect data from many self-haul customers.

Some facilities charge different fees depending on the jurisdiction of origin or only accept waste from certain jurisdictions, thereby creating an economic incentive for some haulers to misreport waste origin. In other words, a hauler may misreport the jurisdiction of origin in order to avoid paying a higher fee or having to take the waste to a different disposal facility.

Major waste generating events occurring during waste origin survey weeks can skew disposal figures. If the waste disposed by a jurisdiction is higher than usual during the survey week, the extrapolated disposal tonnage for the quarter will be too high and may adversely affect the jurisdiction's diversion rate. The effect of waste generating events on the extrapolated disposal amounts is particularly pronounced for small jurisdictions.

Similar disposed waste is treated differently at different facilities, causing inequity. Some waste types are counted as disposal at certain facilities but not at others, depending on variations in regional water quality control boards, local agency requirements, location, and permit status of the disposal facility. Additionally, alternative daily cover (ADC) is overused at some facilities.

DRS recommendations: The Board should conduct increased county or regional audits of facility disposal records. Audits of facility disposal records would allow Board staff to verify information and work with the facility operator to correct any reporting errors. The Board supports this recommendation.

Update Local Enforcement Agency (LEA) Alternative Daily Cover (ADC) Advisory #48 to establish performance standards using industry standards and current law. The use of industry standards may prevent future ADC overuse and misreporting by facilities. The Board supports this recommendation and is working with all interested parties to resolve ADC issues..

Creating statewide standards for data collection and reporting will increase the accuracy of statewide disposal data. The Board should require daily waste origin surveys and weighing of all loads except cars and pickups. Jurisdictions that currently require daily surveys instead of the one-week minimum survey period have more accurate disposal tonnage. Daily surveys of every load help to prevent the skewed disposal numbers that are common when extrapolating data based on a single survey week per quarter. Weighing every load, with the exception of cars and pickups, will result in greater accuracy than relying on non-standardized volume-to-weight conversion factors. Also, the Board should require standards for collecting origin and disposal tonnage information from waste hauler dispatch or billing records. The Board supports these recommendations.

The Board should exempt small rural facilities from daily survey requirements. Rural counties contribute a small percentage of the state's disposed waste stream, and they typically have limited resources. Requiring daily surveys of the rural facilities would create a burden on their resources while contributing very little toward increasing the accuracy of the overall statewide DRS. The Board supports this recommendation.

The Board should require scales at all facilities whose daily waste intake is above a certain tonnage. Weighing the waste disposed at landfills—rather than using non-standardized volume-to-weight conversion factors—will improve accuracy, particularly at those facilities that take in significant amounts of waste. The Board supports this recommendation.

The Board should resolve the issue of treating similar disposed waste differently at different facilities. If various special waste types were treated in the same manner throughout the state, there would be greater equity among jurisdictions that dispose of the waste types (see further discussion and different Board recommendation under the “Change What Counts” section below).

Adjustment method issues addressed: Since it is not feasible to determine a jurisdiction's actual diversion rate, it has to be estimated carefully. Starting with a jurisdiction's base level generation amount—and applying the Board's adjustment method to estimate a measurement year generation amount—measurement year generation is compared with disposal to estimate a diversion rate. Although the adjustment method formula uses ten values with different accuracy levels, it works reasonably well for most jurisdictions. In addition, an old base-level generation value may no longer be a good benchmark for estimating measurement year generation. Appropriate use of this estimate requires information about how accurate the estimate might be.

Adjustment method recommendations: While no fundamental change of the Board's adjustment method is recommended, its intended flexibility should be more widely understood and accepted. Estimated diversion rates should be consistently characterized as estimates, and they should always be coupled with diversion program implementation information. Because two of ten formula values are population estimates, the impact of the 2000 Census should be carefully monitored. The Board supports these recommendations.

Since there are different legitimate methods for measuring employment, state employment estimates by "place of work" or "place of residence" should be used as standard or default adjustment method formula values. In addition, similar employment measures from federal, jurisdiction, and private sector sources that comply with existing regulations should be embraced as alternative source adjustment method formula values. The Board supports this recommendation.

Two other alternative source employment measures should be considered because they are consistent with IWMA intent, but they would require regulation revisions before use in the adjustment method:

- Increase flexibility of the formula to use both state "place of residence" and "place of work" employment measured at county level.
- Allow use of state "place of work" employment measured at city level under certain circumstances.

The primary beneficiaries of using different employment measurement methods or sources would be jurisdictions with low population for whom the adjustment method has not worked well. The Board supports these recommendations.

The Board has an additional recommendation that the synthesis group does not support. The relevance of base-level generation to current generation plays a pivotal role in diversion rate estimate accuracy. The Board recommends that jurisdictions be asked to explain in annual reports why their base-level generation is still a representative basis for estimating current waste generation. Jurisdictions with growth rates beyond those tested for the adjustment method (14 percent) would be asked to explain. Jurisdiction growth rates are shown on the Board's Diversion Rate Measurement Calculation web page. Addressing this concern in annual reports should result in more accurate base levels. Additional guidance and tools will be needed to assist jurisdictions to review base level generation.

Regional incentives issues addressed: Due to the diverse conditions in climate, population, urbanization, economic and other factors, as well as local waste management systems, California's waste stream is complex and can be difficult to measure accurately at various locations under different conditions. In some areas it can be especially difficult to track waste origin to within specific city or unincorporated county areas.

Regional incentives recommendations: The Board should increase incentives and remove disincentives

for jurisdictions to form regional agencies (RA). Jurisdictions are allowed to work together by forming a regional agency to measure and report diversion and disposal numbers as one entity instead of by individual jurisdiction. Analyses conducted for this report showed that all components of the diversion rate measurement system tend to be more accurate at the regional level than the individual jurisdiction level. RAs will have increased accuracy and save time, effort, and resources spent on measuring and reporting by individual jurisdictions. RAs can also take advantage of economies of scale to reduce costs of implementing diversion programs. Specific incentives to be considered could include: allowing diversion rates less than 50 percent for RAs; waiving penalties for member jurisdictions that fully implement their approved source reduction and recycling element programs; reducing potential maximum fines; new grants or loans specifically for RAs; and preferences to RAs for existing Board grants and loans. The Board supports this recommendation.

Alternatives To Numerical Compliance

The IWMA set specific goals for jurisdictions to reduce and divert waste. It is important to measure progress in meeting those goals. However, collecting data on the waste stream can require significant resources, especially for jurisdictions with measurement problems. The Board's method of determining compliance with the IWMA includes both assessment of the diversion rate and determination of whether adequate diversion programs have been implemented. Many jurisdictions are concerned that there is too much emphasis on the numerical achievement of a diversion rate, especially when the measurement system has the potential to significantly under- or overestimate the rate. This emphasis causes jurisdictions to expend significant resources on tracking numbers, addressing measurement errors which may be difficult to resolve, or on documenting diversion amounts for new base-level studies. If the Board established acceptable alternatives to demonstrating compliance with the IWMA apart from diversion rates, jurisdictions could focus resources more on program implementation than on addressing measurement errors.

DRS and adjustment method issues addressed: Many factors introduce error in measurement year disposal amounts. Small jurisdictions are vulnerable to significant error if the amount is extrapolated from one-week per quarter surveys. All jurisdictions are subject to error when drivers do not know the jurisdiction of origin or when they give misinformation to a disposal facility that limits waste disposal to certain jurisdictions. While the number of disposal facilities without scales has substantially declined since 1990, problems persist with inconsistent volume-to-weight conversion factors used for self-haul vehicles.

The DRS working group was concerned with the time and expense spent on resolving and correcting misallocated disposal tonnage. The group felt that resources might be better spent on diversion programs.

Although accurate base level generation and measurement year disposal amounts are crucial to estimating measurement year diversion, the diverse and dynamic nature of California jurisdictions introduces additional challenges. For the same reason that a new population census is conducted every ten years, even if a base-level generation amount is reasonably accurate when first determined, over time it loses relevance as a benchmark for estimating future year generation.

Disposal reporting system and adjustment method recommendations: The working group believes that more emphasis should be placed on diversion programs than on disposal tonnage and diversion rates. The group feels that the Board should recognize that there is the potential for significant errors in the DRS. The DRS amount is an estimate of a jurisdiction's disposal, and therefore the numbers should be used solely as an indicator—rather than as an exact measurement—of a jurisdiction's progress towards meeting their diversion goal. The Board should look at diversion rates as an indicator, and focus on

diversion program implementation and good faith efforts. The Board supports this recommendation.

To help decision-makers appropriately weight an estimated diversion rate in comparison to diversion program information, a standardized accuracy indicators table should be part of each annual report to the Board and each biennial review. It could include indicators such as:

- Base-level generation age.
- Jurisdiction size.
- Jurisdiction growth rate.
- Jurisdiction growth rate balance.
- Base-level residential generation percentage.
- Jobs-to-population ratio.
- Significant change in the nature of the production of solid waste.
- Large visitor influx.
- Large construction projects.
- Drastic change in a measurement year adjustment method factor.
- Waste origin survey frequency.
- Waste flow variability.
- Scale usage.
- Complex jurisdiction boundaries.
- City and county share same name.
- Major one-time disposal events.
- Lack of cooperation between transfer stations and landfills.

The agenda item for each jurisdiction would have similar information, and the Board would have more data to make appropriate biennial review decisions. The Board supports this recommendation.

Rural and regional issues addressed: The goal measurement system tends to be less accurate for rural jurisdictions because of the typically small size and dispersed nature of the waste stream in rural areas. Rural jurisdictions are defined in statute (PRC, sections 41083, 41084, 41787.1). Also, the small amounts of waste involved perhaps do not merit the extra effort that may be needed on the part of both local and State solid waste staff to address errors. Errors in measuring disposal and in calculating a diversion rate can be especially detrimental to rural jurisdictions because of limited resources available to address measurement problems. These limited resources should be focused on programs rather than on measurement.

Rural and regional issues recommendations: The working group recommends that the Board, through its discretion in determining “good faith efforts,” should emphasize a policy of assessment of program implementation rather than diversion rates as the basis for demonstrating compliance with the IWMA. This would lessen the need for rural jurisdictions to use scarce resources for improving accuracy of goal measurement calculations. Rural jurisdictions should use their available local resources for the expansion of waste diversion programs and public outreach efforts.

The Board recommends changing regulation or statute to address issues of numerical accuracy for rural jurisdictions up front, rather than relying on “good faith efforts” at the end of the biennial review process. Even if a rural jurisdiction fixes errors, they are likely to experience similar errors in the future simply because each ton impacts a small jurisdiction much more than a large jurisdiction. For example, a 100-ton error has a larger impact on a small jurisdiction that disposes 1,000 tons than it does on a large jurisdiction that disposes 100,000 tons.

To take advantage of greater accuracy of regional measurement, allow jurisdictions to use the countywide

diversion rate without forming an RA. For this option, the Board would first verify program implementation at the jurisdictional level. If all jurisdictions within the county are implementing programs, and all jurisdictions agree to be counted together, then they may use the countywide diversion rate. The Board supports this recommendation.

Expand Responsibility and Enhance Control

Current responsibility for meeting waste reduction goals falls on local governments only, but they do not have control over all waste generated within their borders. More diversion could be achieved by moving responsibility for reducing waste “upstream” on those that may have more control or impact on waste generation. Widening the circle of responsibility for meeting the intent of the IWMA would help jurisdictions meet the diversion goals. Waste generators may comply with local recycling programs, but they aren’t individually responsible for meeting goals. The working group members assert that local governments currently bear a disproportionate share of the waste diversion burden, and when a larger group shares the responsibility for solid waste, the resource requirements for all parties involved is more equitable.

DRS issues addressed: The working group saw the need for more shared responsibility among the entities involved in the DRS and more control for local governments. For example, counties are responsible for reporting quarterly disposal information to the Board by due dates specified in the regulations, but they are unable to control misinformation or untimely information from haulers and disposal facilities. Under the current system, there are no penalties for misinformation or untimely information, so these problems persist.

Jurisdictions sometimes find it difficult to get necessary information from private solid waste facilities. Furthermore, it is costly and time consuming to verify facility disposal information for which jurisdictions are ultimately responsible in their annual reports to the Board.

DRS Recommendations: Stricter standards and enforcement for the DRS are necessary to provide more control to jurisdictions. The recommended minimum standards and enforcement options would increase the accountability of haulers and disposal facilities for the quality of disposal information they provide. These changes in reporting would enable jurisdictions to investigate and correct any information they believe is inaccurate in a more timely manner. The Board supports this recommendation.

The Board should draft a model ordinance and recommend local jurisdictions pass ordinances to regulate haulers to implement reporting procedures. The ordinances would enable jurisdictions, under their own authority, to require commercial self-haulers to report origin information. Local ordinances would address individual local needs and would be enforceable. The Board takes no position on this recommendation.

DRS regulations should be revised to make solid waste facility cooperation with DRS origin surveys a requirement of the solid waste facility permit. The Board would provide enforcement authority. The Board supports this recommendation.

The Board should require landfill and transfer station operators to send jurisdictions a copy of the disposal information at the same time they send it to the county agency, so jurisdictions can resolve any allocation issues as quickly as possible. Operators should also be required to notify affected jurisdictions of any changes to the tonnages at the same time they notify the county agency. The Board supports this recommendation.

The law should be changed to allow the assessment of penalties to obtain accurate data and other information and to enforce timeliness of reporting information by haulers and solid waste disposal facilities. The law should also establish due process procedures to address errors in DRS. The Board supports this recommendation.

Program responsibility issues addressed: Four areas were identified for specific actions: large waste generators such as large businesses, institutional barriers to diversion programs, self-haul waste, and schools.

Many jurisdictions that have met and exceeded the goals of the IWMA could not have done so without the cooperation of local businesses and manufacturers; however, members of the synthesis group believe more effort is needed on the part of businesses and manufacturers to carry their share of the solid waste burden.

Jurisdictions, facilities, and entrepreneurs have run across barriers to establishing new diversion opportunities due to State policies or institutional requirements. For example, determining permitting requirements of various agencies may delay the startup of facilities needed for diversion programs, even as jurisdictions are under pressure to meet diversion requirements. Or, new diversion technologies may not receive needed support from key State agencies.

Those whose primary business is not waste hauling, such as homeowners, roofers, landscapers, construction companies, and many other types of generators dispose self-haul waste. Self-haul can make up a significant portion of a jurisdiction's waste. Since the waste generator takes self-haul waste directly to disposal sites, it may not be easily captured or addressed by local diversion programs. Disposal facilities themselves may be in the best position to divert materials from this waste stream.

Waste generators may comply with local recycling programs, but they aren't individually responsible for meeting waste reduction goals. In many cities and counties, schools are significant generators. Statewide, all education services contribute about two percent of the disposed waste stream. Schools are exempt from using franchised waste haulers that often provide recycling services to a community. They are free to contract with any waste hauler or recycling service provider and may choose not to recycle because of added costs.

Program responsibility recommendations: Although the Board currently provides diversion program assistance to local governments, it should further promote the focus on largest individual generators, largest sectors, and most common materials to reduce waste and recycle. This approach has been used by several jurisdictions and has been successful in increasing diversion rates. The Board supports this recommendation.

The Board should review its internal policies, particularly those involved with the permitting of new diversion facilities, to ensure they are consistent with the goals and mission of the Board. The Board should also investigate other institutional barriers, especially those at the state level, that inadvertently hinder the development of diversion opportunities. Regulations pertaining to the transfer and processing of construction, demolition, and inert debris are currently in process and will be released for public comment in the next few months, therefore the Board has an immediate opportunity to modify regulations as needed to address this alternative. The Board takes no position on this recommendation. The Board must carefully consider specific types of facilities as new regulations and policies are developed, in order to balance the advantages of streamlining with protecting the health and safety of Californians and the environment. Disposal facilities themselves may be in the best position to divert materials from this

waste stream, and they should be required to divert 50 percent of self-haul waste that enters the facility. The Board takes no position on this recommendation.

New laws should be passed to require schools to work with local government recycling coordinators to divert waste. More diversion of waste could be accomplished by placing more responsibility on schools to more actively share responsibility with local governments for meeting diversion goals. Requiring schools to run their own diversion programs could increase opportunities for solid waste and environmental education. The Board takes no position on this recommendation; current law encourages cooperation.

Markets

Jurisdictions and their solid waste haulers are charged with collecting and separating useful materials from the waste stream, but they may not have any avenue to sell those materials, or they may be forced to sell those materials for less than the costs of collection.

Efforts by the State to encourage, stabilize, or speed the growth of markets to purchase collected commodities offer the potential to greatly improve the cost/benefit characteristics of solid waste diversion programs. Stable markets and higher prices will allow jurisdictions to implement more programs and to recover more materials from the waste stream as their value increases enough to merit further diversion efforts.

For some jurisdictions, collecting these marginal-value materials can make the difference between attaining or failing to attain the 50 percent goal. Recycled commodity prices critically impact small jurisdictions, which may have more difficulty funding solid waste diversion programs, as well as those jurisdictions which are geographically far from existing markets and therefore incur significant transport costs. As one stakeholder succinctly put it, “Without markets, diversion programs fall apart.”

Markets issues addressed: The Board operates the Recycled Market Development Zone (RMDZ) loan program, as well as other loan and grant programs (for example, to encourage the manufacture of crumb rubber from old tires). The Board enforces minimum recycled content in several types of products, including newsprint, fiberglass insulation, trash bags, and rigid plastic containers. The Board purchases recycled products for its own operational needs and coordinates campaigns encouraging others in the public and private sectors to do the same.

Despite these efforts, markets for recycled materials continue to be volatile, and low prices for certain materials undermine recycling efforts. Stakeholders believe the Board, as an entity with statewide influence, should do more to develop stable markets for those materials being removed from the waste stream.

Markets recommendations: The working group recommends the following specific steps be taken; the Board takes no position on these recommendations, however, the Board believes many of these recommendations are currently being addressed through various Board programs, projects, and State initiatives (see Table of Recommendations and Chapter 6).

- Expand the list of materials for which minimum recycled content is required.
- Mandate the purchase by government agencies of products made from recycled materials.
- Leverage existing programs with funds from the federal government and private foundations.
- Quantify the impacts of the Board’s market development efforts (much the same way that jurisdictions must now quantify their waste diversion efforts).
- Expand and improve the RMDZ program as follows:

- Expand RMDZ loan program eligibility to include sustainable business practices, including energy conservation, sustainable energy generation, and water conservation.
- Provide RMDZ businesses with a State tax credit for the full value of the capital investment in sustainable recycling, energy conservation, sustainable energy generation, or water conservation.
- Create a secondary market for RMDZ loans by implementing the recommendations of the report “Creating a Secondary Market for Community and Economic Development Loans: a Feasibility Study” prepared for the California State Legislature pursuant to Chapter 923, Statutes of 1997 (Bustamante, AB 1219).
- Clarify RMDZ revolving loan program, including:
 - Authorization to assist startup businesses through credit enhancements, including financial assurances and interest write-downs, and equity participation through the RMDZ revolving loan program.
 - Clear authority for Board loan sales, if needed.
 - Sunset extension, coterminous with zone re-designation and new zone designation.

The synthesis group recommends the Board prepare an updated Market Development Plan, considering the expanded sustainable program eligibility and secondary market financing resources. The Board recently adopted its new Strategic Plan which includes strong recommendations relating to sustainability and increased markets for recyclables.

Change What Counts As Disposal

Most materials disposed at permitted disposal facilities are counted in the DRS as “disposal” and are used to determine disposal amounts for the goal measurement system. However, some materials have special status because of their characteristics (often called “special waste”), and they are handled and counted differently depending on local circumstances.

Jurisdictions that send materials to the three Board-permitted transformation facilities (all three of which are incineration facilities) may count that material as diversion, but only up to a limited amount (10 percent of their total waste generation amount). Some jurisdictions, especially in forested rural areas, may send materials to biomass conversion facilities, which are non-Board-permitted facilities that generate power through controlled combustion. Feedstocks for these facilities may include agricultural residue as well as forest debris. Since these facilities do not fall under the DRS, materials they burn are not counted as disposal. These materials may not be counted as diversion, which has an impact if jurisdictions perform a comprehensive base-level generation study in which they must account for all their waste streams.

DRS issues addressed: In the current DRS, some waste types are counted as disposal at certain disposal facilities, but they are not counted at other facilities depending on variations in regional water quality control boards, local requirements, location, and permit status of the facilities. The inequitable treatment of waste types in reporting years is particularly problematic for jurisdictions that did not include the waste types in their base-level generation amounts.

Jurisdictions have limited opportunities for diverting special waste. Further, special waste handling and tracking takes resources away from the implementation of diversion programs.

DRS recommendations: The working group recommends the Board support proposed legislation that will exclude special waste disposed at Class II landfills from counting as disposal in the DRS. The

working group also recommends the Board exclude from the DRS inert waste tonnage not subject to the integrated waste management fee and disposed at mine reclamation facilities. Exclusion of special waste types and the inert waste disposed at mine reclamation sites would address issues of inequity. If special waste was to be excluded, then jurisdictions that counted these waste types in their base levels would have to remove the applicable waste amounts. Similarly, jurisdictions whose base levels included inert waste disposed at mine reclamation facilities would have to remove the inert waste tonnage from their base-level generation amount.

However, at the July 2001 Board meeting, the Board voted that inerts at mine reclamation sites would continue to count as disposal. The Board may revisit the issue of inerts at mine reclamation sites in the upcoming construction and demolition regulations. The Board will continue with its existing policy of excluding special waste from disposal if the regional water quality control board, local air district, or other control agency requires the waste be disposed.

Transformation issues addressed: For jurisdictions in forested areas, a significant part of the waste stream may consist of forest debris (slash) from fire control requirements and other sources, which can contain high amounts of woody materials and other materials that are less desirable for composting operations. There may be limited opportunities to divert these materials in rural areas.

Transformation recommendations: The synthesis group recommended removing the ten percent diversion limit for direct-burn transformation processes for forest debris when used for power generation. This recommendation is based on the argument that eliminating the ten percent diversion restriction for these materials would encourage jurisdictions to divert these materials from landfills, would provide fuel for power generation, and would provide an alternative that is cost-effective for many rural jurisdictions. Co-generation facilities are often located near the waste generation source, and the forest debris provides an excellent fuel source that composters do not want. *The Board's recently adopted strategic plan supports, in general, efforts to increase power generation through various activities.*

Training

There are few opportunities for college-level training in waste management. Both State and local government staff assigned to waste management programs and code enforcement need information, libraries, and training in the field of waste management. New local government staff with limited experience would benefit from the opportunity to receive a minimum level of training for IWMA compliance. In the past, several colleges and universities had certificate programs in waste management issues, but few are available currently. The only state-originated program related to waste management is the Registered Environmental Assessor. California's diversion rate measurement system implemented a new comprehensive method for the tracking and measuring of waste, which can be a difficult task in areas with complex waste management systems in place.

Issues addressed: There is widespread lack of knowledge about many aspects of the IWMA at all levels in local government, and by waste haulers and facility operators subject to DRS. The diversion rate measurement system itself is complex. Limited local government travel budgets and employee turnover reduce the effectiveness of Board training unless it is frequent, high quality, and offered in convenient locations. In general, there is insufficient knowledge of DRS requirements at disposal facilities, which contributes to the problems of inaccurate data collected and reported by disposal facilities. Additionally, the DRS working group identified a need at the county level for training and increased access to DRS reports and information. Training is particularly critical at facilities and counties when there is high staff turnover. Also, IWMA compliance by jurisdictions can be hindered by a lack of formal training and education opportunities for local program coordinators, and by lack of professional requirements in

resource management issues and strategies. Without a consistent training program, waste managers at many levels are left to develop their own expertise which could be inconsistent and uneven. Overall, the complexity of the system and its requirements, coupled with lack of training of local government staff and other affected parties, can negatively impact the success of diversion programs as well as the appropriate application of the goal measurement system.

Recommendations: More Board training and Web site information on DRS, the adjustment method, and program implementation is needed. The Board should provide DRS training to facility supervisors and county staff. The Board should also increase the number and types of standard DRS reports available on the Board's Web site. Specifically, the group requested reports showing ADC by material type and jurisdiction disposal data by facility. Some topics that should be covered in regular periodic regional workshops and/or in more detail on the Board's Web site include:

- Inherent limits of base-level generation amount, adjustment method formula, and measurement year disposal amount.
- Potentially acceptable alternative source adjustment method factors.
- Suggested study sequence to master disposal reporting and adjustment method principles and practice.
- Economic activity included in the taxable sales adjustment method factor.
- Extent and scope of potential error in Board estimates of fourth quarter taxable sales.

While there will always be some error in the diversion rate measurement system, more training and information dissemination should minimize it. The Board supports this recommendation.

The Board should provide standard curriculum or training for local government staff (especially new recycling coordinators) responsible for program implementation and other IWMA and waste management duties. The State of California and Board could provide the funding and programs for standard curriculum and training, and various levels of certification, for waste managers at all levels: private businesses (that is, large corporations) as well as State and local government staff. The training process could include a Board certification program that would cover minimum standards, program implementation, and other waste management duties. The Board takes no position on this recommendation.

Ideas Merit Further Study

Throughout the working group process, many ideas on improving and changing the system were discussed and either proposed as a recommendation or rejected. A few ideas emerged which have merit, but due to time constraints, they could not be fully analyzed to determine their potential to improve the system. Rather than reject these ideas out of hand, the working group felt they should be further studied.

Adjustment method issues addressed: Existing statistical documentation of adjustment method formula accuracy is based on 1990 through 1993 waste generation data. This gives rise to questions about the formula's ability to accurately estimate jurisdiction waste generation when demographic and economic change between 1990 and 2000 is well beyond that experienced between 1990 and 1993.

Adjustment method recommendations: Continue further analysis of the adjustment method formula, including, but not limited to:

- Factor weighting.
- Long term accuracy.
- Interrelationships between measures of population, employment, taxable sales, and CPI.
- Merits of using State taxable sales deflator rather than CPI.

While additional Board staff and/or contract funding may be required, and while there is no assurance that greater adjustment method accuracy would result without adding complexity to the formula, the cost should be reasonable considering the large number of jurisdictions that would benefit from the added knowledge. The Board supports this recommendation.

Program issues addressed: In providing waste management services, local governments are often left with the burden of dealing with wastes that are difficult to handle, such as cathode ray tubes (CRT) in computers and televisions that have recently been classified as hazardous waste. Providing citizens with proper opportunities to dispose of these wastes means jurisdictions often pay high costs in their handling and disposal.

Because the diversion rate measurement system is complex, significant resources are spent on measuring and tracking waste and calculating diversion rates. Jurisdictions of all sizes could better spend these resources on diversion program implementation and achieve higher diversion overall.

Program recommendations: More responsibility needs to be placed on manufacturers and generators of difficult-to-handle waste. There should be a shared responsibility on the part of all those involved in the generation of waste. The working group would like the Board to further investigate and support programs such as advance disposal fees for other “difficult to dispose” products, including paint, pesticides, mattresses, furniture, and large appliances. The Board supports this recommendation, which is consistent with Goal #1 of the Board’s new Strategic Plan. This goal promotes product stewardship and manufacturer responsibility. The Board has already given specific direction for product stewardship policies for paint as well as other products. In addition, the Board is participating in the National Electronic Product Stewardship Initiative (NEPSI).

Jurisdictions should be allowed the option of only reporting on diversion programs, not reporting a diversion rate. From a Board-established menu of diversion programs, jurisdictions would choose programs appropriate for local implementation. Jurisdictions would submit a document describing their diversion programs, which must be certified by the Board as adequate, to be audited and monitored by Board staff. The Board would establish evaluation criteria for diversion programs which the Board would certify as adequate, such as program guidelines, monitoring for effectiveness, and proof of implementation. This would be an alternative way for jurisdictions to demonstrate compliance with the IWMA. It would not affect implementation of the DRS. The Board takes no position on this recommendation.

Transformation issues addressed: The law defines transformation to include both burning (incineration) and non-burn processes such as pyrolysis, distillation, gasification, or biological conversion other than composting; *transformation also* does not include biomass conversion. Regulations limit the amount of transformation that can be claimed by jurisdictions as diversion to ten percent of the jurisdiction’s waste stream. This diversion claim is only valid if certain conditions are met, and one of the conditions is that the facility use front-end methods or programs to remove all recyclable materials from the waste stream prior to transformation to the maximum extent feasible. Transformation facilities also must have been permitted and operational prior to 1995 for diversion credit to be obtained. Limiting the amount of diversion allowed through non-burn transformation discourages the development of these facilities and technologies that may be viable alternatives to landfilling for materials that are difficult to divert through other means.

Transformation recommendations: The synthesis group recommended removing the existing ten percent diversion limit for non-burn transformation processes such as gasification, pyrolysis, etc. This recommendation is based on the argument that allowing jurisdictions to take full credit for diversion from

new non-burn transformation facilities in new base-level studies would encourage development of innovative non-burn transformation technologies, and it would encourage diversion and energy production through these technologies. This may indirectly assist in promoting alternatives that will ease the energy crisis. Since there is a requirement for front-end recycling, these non-burn transformation methods would deal with materials that are harder to divert and do not compete with markets for recyclables. The Board's recently adopted Strategic Plan supports, in general, efforts to increase power generation through various activities.

Summary

One of the key findings of this review of the diversion rate measurement system is that a diversion rate is an estimate, not an absolute value, and there are potential inaccuracies in each part of the diversion rate measurement system. One difficulty faced by jurisdictions and decision-makers is how to fairly assess the accuracy of a diversion rate estimate, given the many variables and the potential for inaccuracies involved. Stated differently, a key issue is how should an estimated diversion rate be weighted in comparison to diversion program information? Another key issue for jurisdictions and decision makers is the level of resources required to improve accuracy, and the appropriate balance between resources to improve accuracy and resources to implement diversion programs.

The working group and public review processes identified a variety of recommendations for improving accuracy of the diversion rate measurement system. The recommendations in this report could significantly improve the diversion rate measurement system and reduce inaccuracies. Many of the recommended improvements could be implemented by changes in Board policy or regulations revisions; others would require statutory change. The Board recognizes that, as the recommendations may later be incorporated into State regulations or new laws, there may be legal and procedural constraints on the implementation of the recommendations.

Tables of Recommendations

The following tables contain recommendations from the SB 2202 working groups and the Board. The Board agrees activities that support successful diversion are critical to achieving and maintaining 50 percent diversion. However, the Board's recommendations are focused on those activities that improve the diversion rate measurement system.

Members of the synthesis group recommend the Board reconsider the emphasis in implementing existing policy, adopt proposed new policies or regulatory changes, and support statutory changes. Almost all working group members recommend a greater recognition of the limitations of the diversion rate measurement estimation process in general, and an increased emphasis placed on the value of program implementation.

These recommendations are the result of a synthesis group reviewing, combining, and grouping recommendations forwarded by three previous working groups (disposal reporting system [DRS] group, the adjustment method [AM] group, and the alternatives group). Synthesis group members felt that this set of recommendations taken as a whole will increase accuracy in the diversion rate measurement process. Therefore, the synthesis group did not prioritize or order these recommendations, except for placing them in broad categories. These recommendations are grouped with similar ideas; and policy, regulatory, and statutory actions are identified.

The synthesis group identified seven major categories for presenting the recommendations. The synthesis group did not choose to present all the recommendations forwarded by the prior working groups. Complete lists of recommendations from each of the three working groups (DRS, AM, and alternatives) can be found in the technical appendices of this report, available at <http://forum.ciwm.ca.gov:8080/~LGTalk>. The categories and their associated definitions are listed next:

ACC	Accuracy-related issues and recommendations.
ATNC	Alternatives to numerical compliance recommendations.
R & C	Expand responsibility and enhance control recommendations.
Markets (MKT)	Market-related recommendations.
Change What Counts (CWC)	Recommendations that change what counts as disposal.
Training (TRN)	Training related recommendations.
Further Study (FS)	Ideas that have merit, but further study is recommended to determine if the ideas should be pursued

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Table 3-1. SB2202 Synthesis group recommendations approved by the Board

Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
Accuracy (ACC 1)	Policy	Recognize there are various sources/types of errors that make the diversion rate estimate an indicator, not an absolute measured diversion rate value.	Diversion rate measurements are based on a number of estimates.	<ol style="list-style-type: none"> No additional cost anticipated. Reaffirms that diversion rates are estimates, not absolute measurements. May prompt added emphasis on diversion program implementation information. 	Recommended by Board.
Accuracy (ACC 2)	Policy	Board should conduct increased county or regional audits of the facility disposal records.	Obtaining records from disposal facilities to correct accuracy issues is time-consuming and difficult.	<ol style="list-style-type: none"> Jurisdictions have limited time and resources to audit facility records. More efficient to have single Board audit to improve accuracy for all jurisdictions using a disposal facility rather than multiple audits. Facility audits can improve accuracy and provide verifiable results. Enforcement activity allowed under the existing regulations. 	<ol style="list-style-type: none"> Recommended by Board. Potential increased cost to the Board, depending on the number and frequency of the audits. Past audits have resolved issues.
Accuracy (ACC 3)	Policy	Update Local Enforcement Agency (LEA) Alternative Daily Cover (ADC) Advisory #48, establishing performance standards using industry standards and current law. Shall include input from stakeholders/LEA community.	ADC may be overused or misreported at some landfills.	<ol style="list-style-type: none"> The use of industry standards may ensure consistency in how ADC is used at facilities. Will reduce misreporting. Requirements will reduce chance of overuse of ADC. Increase accuracy. 	<ol style="list-style-type: none"> Recommended by Board. Some changes could require regulatory change. Board approval needed for revised advisory.

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
Accuracy (ACC 4)	Regulation	<ul style="list-style-type: none"> • Board should require: <ul style="list-style-type: none"> • Daily surveys and weighing of every load, except loads transported in pickup trucks/cars (pickup trucks are defined as less than one ton). • Exemption of small rural facilities from the daily waste origin survey. • Scales at all solid waste facilities above a certain tonnage per day. • Facilities to post signs about origin collection on site. Language drafted by the State. • Standards for collecting origin and disposal tonnage information, dispatch-based allocation, and cash customer information. 	<p>Lack of consistent standards or guidelines for collection of origin data leads to data inaccuracy.</p> <p>Major waste generating events that occur during the survey week skew disposal numbers.</p> <p>Lack of scales and inconsistent standard conversion weight factors for vehicles may cause inaccuracies in waste allocation.</p>	<ol style="list-style-type: none"> 1. Would increase accuracy of the disposal data. 2. Consistent operating practice would also increase accuracy of the data. 3. Increased cost to facility operators/jurisdictions. 4. Rural counties' waste makes up small percentage of the state's waste stream. 5. Rural counties would not have an increased financial burden from daily surveys, and would not be required to buy scales. 6. Exempting pickup trucks and small loads would allow smoother traffic flow at the scale house. 7. Some facilities currently have signs posted, which have proven to be successful in acquiring origin information. 	<ol style="list-style-type: none"> 1. Recommended by Board. 2. Requires change in regulation and/or statute. 3. Could be easier to train scale house staff to conduct daily, rather than trying to remember the survey week. 4. If exempting pickup trucks less than one ton is intended to exempt disposal tonnages from DRS, there will be no ability to cross-check the data with Board Of Equalization.
Accuracy (ACC 6)	Statute	<p>Increase incentives and remove disincentives for jurisdictions to form regional agencies, such as allow a lower diversion rate or no penalties for individual regional agency members who fully implement their approved SRRE.</p>	<p>California's waste stream is complex and it is very difficult and costly to accurately measure diversion at the jurisdiction level. Waste origin data is more accurate for a larger region.</p> <p>Haulers/drivers do not know or do not have</p>	<ol style="list-style-type: none"> 1. Meets the intent of the IWMA by focusing on regional management and measurement of waste reduction and recycling programs by allowing for the measurement to be taken by region. 2. Encourages regional approaches and results in savings in time and cost for program implementation, 	<ol style="list-style-type: none"> 1. Recommended by Board. 2. Requires statutory and/or regulatory change. 3. Additional incentives could include reducing potential maximum fines (currently are \$10,000/day per jurisdiction); grants or loans specifically for programs in regional agencies; preference to regional agencies for existing Board grants and loans. 4. Because of the configuration of

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
Accuracy (ACC 7)	Policy	Allow continuing use of the existing adjustment method because it estimates waste generation for majority of jurisdictions.	incentive to obtain accurate waste origin. Does the adjustment method accurately estimate waste generation?	<ol style="list-style-type: none"> 3. The many existing regional authorities demonstrate the feasibility and practicality of the regional approach. 4. A regional measurement and reporting system would improve accuracy by unifying the reporting procedure under one authority for all jurisdictions in the regional. 5. Regional agencies must meet the mandates of the IWMA. 	<p>their waste sheds, some counties may wish to participate in more than one regional agency; but this makes them liable for multiple fines, and this disincentive should be addressed.</p> <ol style="list-style-type: none"> 1. Recommended by Board. 2. No additional cost anticipated. No change in adjustment method accuracy. 3. Reaffirms that AM produces an estimate, not an absolute measurement. 4. May prompt added emphasis on diversion program implementation information.
Accuracy (ACC 8)	Policy	The Board should continue to use existing default factors in the adjustment method: <ul style="list-style-type: none"> • Department of Finance (DOF) population. • County level Employment Development Department labor force employment. • Board Of Equalization (BOE) taxable sales. 	How accurate are adjustment method default factors?	<ol style="list-style-type: none"> 1. Cost-effective. 2. Adequate for most jurisdictions. 3. Consistent year-to-year methodology. 4. Data is accessible. 5. Does not correct for other types of errors in the diversion rate measurement system. 6. Easy to use. 	<ol style="list-style-type: none"> 1. Recommended by Board 2. No additional cost. 3. No regulation changes needed for default or alternative factors that meet regulatory requirements. 4. Future impact of census data on diversion rates unknown. 5. Alternative factors increase jurisdiction flexibility, does not necessarily improve adjustment

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
		<p>(BOE) taxable sales.</p> <ul style="list-style-type: none"> • Consumer price index. • Add county level EDD industry employment as default factor. • Monitor 2000 Census data publication & investigate potential issues. <p>The Board should allow use of alternative adjustment factors:</p> <ul style="list-style-type: none"> • U.S. Department of Commerce Bureau of Economic Analysis industry employment. • Third-party private sector employment. • Jurisdiction employment data from business licenses if it meets regulatory requirements of use of same data collection methodology over time. 		<p>benefit jurisdictions with low population and large industrial bases that have always had adjustment method accuracy issues.</p>	<p>method accuracy.</p>
Accuracy (ACC 9)	Regulation	<p>Consider use of alternative adjustment method factors and formulas that require regulations revisions:</p> <ul style="list-style-type: none"> • City level EDD industry employment. 	<p>How do alternative adjustment method factors compare to existing default factors? Do alternative factors address adjustment method issues for low population and large industrial base?</p>	<ol style="list-style-type: none"> 1. City level EDD data not available for 1990 base-year. 2. Allow use of 1991 data for 1990 base year if city shows trend was increasing. This reduces the diversion rates for jurisdictions using this employment factor. 3. Substantial EDD charge for data. 4. Data is by zip code; zip codes change over time. 	<ol style="list-style-type: none"> 1. Recommended by Board. 2. Data acquisition cost for jurisdictions proportional to jurisdiction size. 3. Increases jurisdiction flexibility, does not necessarily improve adjustment method accuracy. 4. Data for a year not available until December of the following year. 5. Will require some additional Board review of data submitted.

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
		<ul style="list-style-type: none"> EDD labor force employment for residential adjustment calculation, and EDD industry employment for non-residential calculation. 		<p>5. Zip code may not coincide with jurisdiction boundaries.</p>	
Accuracy (ACC 10)	Policy &/or Regulation	Jurisdictions will be asked to explain why base-level generation is valid when growth rates of adjustment method demographic and/or economic factors are greater than 14 percent.	Due to limitations of the availability of data, the adjustment method formula was originally tested for growth factors (demographic and economic) of no greater than 14 percent. Note that error increases as growth factor percent increase.	<ol style="list-style-type: none"> Not recommended by synthesis group. 	<ol style="list-style-type: none"> Recommended by Board. Will require additional Board review of data submitted. May require additional statistical assistance. May reduce compliance order frequency. Should improve accuracy of base-level generation over time if jurisdictions replace obsolete base years.
Alternatives to Numerical Compliance (ATNC 1)	Policy	The Board should recognize there is the potential for significant errors in the disposal reporting system and the adjustment method. Focus more emphasis on diversion programs rather than tonnage/diversion rates.	<p>Many factors cause inaccuracies in origin information including, but not limited to:</p> <ul style="list-style-type: none"> Significant errors in tonnage estimates with one-week surveys. 	<ol style="list-style-type: none"> Board and jurisdictions would focus less time and expense on using the adjustment method and tracking each disposal ton, focusing more on diversion program implementation. Potential errors strongly 	<ol style="list-style-type: none"> Recommended by Board. Staff believe the disposal reporting system and adjustment method work reasonably well for most jurisdictions. The Board currently has the ability to consider good faith efforts when jurisdictions are

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
			<ul style="list-style-type: none"> • Misallocation to jurisdictions with similar names. • Drivers may not know waste origin, or they may give misinformation. • Lack of scales. 	<p>supported by data in this report.</p> <p>3. Low cost.</p>	<p>unable to achieve the goal.</p>
<p>Alternatives to Numerical Compliance (ATNC 2)</p>	<p>Policy</p>	<p>Develop tiered approach to evaluating diversion rate accuracy in biennial review. For example: <i>Level 1:</i> Diversion rate estimate is acceptable due to lack of special circumstances. <i>Level 2:</i> Diversion rate estimate accuracy is somewhat less due to special circumstances. Focus more on programs. <i>Level 3:</i> Diversion rate estimate accuracy is questionable due to special circumstances. Focus more on programs.</p> <p>Add standard "red flag" table of circumstances that may decrease accuracy of diversion rate estimate to jurisdiction annual report & Board's biennial review agenda item.</p> <p><i>Adjustment Method "red flags:"</i></p>	<p>What jurisdiction characteristics affect diversion rate accuracy?</p>	<ol style="list-style-type: none"> 1. Low cost. 2. Addresses limits of data. 3. Not a quantitative measure of error. 4. Provides Board similar information for each jurisdiction. 5. Identifies jurisdictions that might have special circumstances that decrease accuracy. 6. Diversion rate is rough indicator. 	<ol style="list-style-type: none"> 1. Recommended by Board. 2. Minimal to moderate Board cost to implement. 3. Moderate jurisdiction cost. 4. Provides jurisdictions and Board more comprehensive data for informed judgments. 5. May prompt more jurisdictions to initiate new base-year studies. 6. May prompt added emphasis on diversion program implementation information. 7. May need Board discussion on implementing tiered approach and "red flag" table of circumstances. 8. No data identified that shows annexations add error to adjustment method estimate. 9. No useful data identified to adjust for jurisdiction rainfall.

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
		<ul style="list-style-type: none"> • Base-year age. • Jurisdiction size. • Jurisdiction growth rate. • Unbalanced jurisdiction growth. • Extreme high/low base year. • Residential generation %. • Jobs to population ratio. • Significant change in nature of solid waste production. • Diversion rate decline despite same or greater diversion program implementation. • Annexations. • Rainfall. • Large visitor influx. • Large construction projects. • Drastic change in adjustment method factor . <p><i>Disposal Reporting System</i> <i>"red flag:"</i></p> <ul style="list-style-type: none"> • Jurisdiction size. • Waste origin survey frequency. • Waste flow variability—seasonal and other. • No scales at landfills. • Complex jurisdiction boundaries. • City and county share same name. 			

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
Alternatives to Numerical Compliance (ATNC 3)	<ul style="list-style-type: none"> • Major one-time events. • Lack of cooperation between transfer stations and landfills. 	<p>In addition to existing statutory provisions for rural reductions, allow rural jurisdictions to demonstrate IWMA compliance based on local program implementation and effectiveness instead of data and calculations that may contain errors that are difficult to resolve or require a new base-year study.</p>	<p>Inherent difficulties are associated with obtaining accurate waste disposal and diversion rate data for rural counties. Small rural counties and rural counties have limited resources to correct inaccuracies through new base year studies and documenting diversion.</p>	<ol style="list-style-type: none"> 1. Meets the intent of the IWMA by focusing on effective program implementation and requiring "good faith performance efforts." "Good faith efforts" are determined at the end of the Board's biennial review process. 2. Waste loadings from rural jurisdictions represent < 5% of state's total waste volume. 3. Board and Board staff could focus on more significant waste streams. 4. Small or rural counties would still need to implement DRS, but the data would be used as an indicator. 5. May need to reconsider the definition of rural to address rural cities in non-rural counties. 	<ol style="list-style-type: none"> 1. Board recommends changing regulations or statute rather than relying on "good faith efforts" at the end of the biennial review process. 2. Disposal reporting system and adjustment method system data supports the fact that small jurisdictions have greater errors and will continue to have greater errors. Even if errors are fixed now, mathematically they are likely to experience the same types of errors in the future. 3. Need to determine how jurisdictions would demonstrate program effectiveness, which could mean counting diversion. 4. Larger jurisdictions may see this solution as unfair. 5. Some Board resources would be required to develop methods and/or regulations.
Alternatives to Numerical Compliance (ATNC 4)	<p>Statute</p> <p>Verify program implementation at the jurisdictional level. If all jurisdictions within the county are implementing programs, and all jurisdictions agree to be</p>	<p>Numbers are more accurate at the countywide level. Disposal reporting and base-year inaccuracies within a single county</p>	<ol style="list-style-type: none"> 1. Shifts focus to implementing, without sacrificing accountability or 50% mandate. 2. Shifts limited resources to implementation. 	<ol style="list-style-type: none"> 1. Recommended by Board. 2. Requires statutory and regulatory change, unlike regional agencies. 3. No clear enforcement mechanism. 	

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
		<p>counted together, then they may use the countywide diversion rate.</p>	<p>have larger impact on smaller jurisdictions.</p>	<ol style="list-style-type: none"> 3. Easy to implement, cost-effective. 4. Provides flexibility and local decision-making. 5. Improves accuracy of measurement. 6. Compatible with existing regional agency alternative. 7. Increases accuracy; verifiable. 	
Responsibility & Control (R&C 2)	Regulation	<p>Revise regulations to require that solid waste facility cooperation in DRS waste origin surveys be a requirement of the solid waste facility permit, and require State to provide enforcement authority. Adds an additional tool to assist jurisdictions and the allows the Board to obtain the information they need.</p>	<p>Sometimes it is difficult to get information from solid waste facilities. It is costly and time consuming to verify facility information. There are no penalties for misinformation or untimely information.</p>	<ol style="list-style-type: none"> 1. Adds an additional enforcement tool to improve accuracy. 2. Provides additional review of facility practices. 	<ol style="list-style-type: none"> 1. Recommended by Board. 2. Would require regulatory or statutory change. 3. Increased cost to the Board. 4. Increased responsibility for local enforcement agencies. 5. Disposal data more accurate.
Responsibility & Control (R&C 3)	Regulation	<p>Landfill and transfer station operators shall be required to send jurisdictions a copy of information at the same time they send it to the county and notify affected cities of any changes to the reported numbers at the same time they notify the county.</p>	<p>There is a delay in obtaining information, making disposal verification difficult.</p>	<ol style="list-style-type: none"> 1. Would allow jurisdictions to more quickly verify disposal data and increase accuracy. 2. Increases ability to verify information. 3. Cost-effective for jurisdictions. 	<ol style="list-style-type: none"> 1. Recommended by Board. 2. Would require regulatory change. 3. Landfill and transfer station operators may say this is costly and time consuming.
Responsibility & Control (R&C 4)	Statute	<p>Modify State law to establish and authorize:</p> <ul style="list-style-type: none"> • Assessment of penalties for misinformation and untimely information. • Due process procedures to address errors in DRS. 	<p>Lack of penalties for misinformation and untimely information is a barrier to improving accuracy of the disposal reporting system.</p>	<ol style="list-style-type: none"> 1. The potential for penalties for misinformation and untimely information would increase disposal reporting system accuracy. 2. Adds an additional enforcement tool to 	<ol style="list-style-type: none"> 1. Recommended by Board. 2. Requires statutory and/or regulatory change. 3. Potential for significant cost to the Board for enforcement. 4. Could be modified to allow jurisdictions to take enforcement

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
		<ul style="list-style-type: none"> Penalties to apply to waste haulers, landfills, materials recovery facilities, and transfer stations. Board enforcement and assessment of penalties. 		improve accuracy.	action as well as the Board.
Responsibility & Control (R&C 5)	Policy	Further promote the focus on largest individual generators, largest sectors, and most common materials to reduce waste and recycle.	Jurisdictions typically don't have control over all the waste generated within their borders. More diversion could be achieved by moving responsibility for reducing waste "upstream" on those that may have more control or impact on waste generation.	<ol style="list-style-type: none"> Could improve diversion by identifying areas with less existing diversion and the most potential for improvement. Doesn't address current measurement system problems. Could increase costs and resource needs for local governments and the Board, but may result in focusing resources where most needed. CIWMB has tools to assist with this approach, but could perhaps increase direct assistance. Could require statutory changes if new requirements are placed on businesses. 	<ol style="list-style-type: none"> Recommended by Board. This approach has been successful in increasing diversion rates for many jurisdictions. Some jurisdictions currently take this approach and could be used as models.
Markets (MKT 1)	Statute	Take the following steps to improve markets for recyclable materials: <ul style="list-style-type: none"> Focus on developing markets for recycled materials to "pull" materials out of the waste stream, rather than focusing on measurement 	Without markets, diversion programs fall apart.	<ol style="list-style-type: none"> Meets the intent of the IWMA by not only keeping materials out of the landfill but also conserving resources by using those materials in new products and markets. Doesn't specifically address measurement issues but 	<ol style="list-style-type: none"> The Board's recently adopted strategic plan addresses sustainability and increasing markets for recyclables. State and local governments can do more to buy recycled products. The Board is co-sponsoring a recycled products trade show in 2002 and will target local

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
		<ul style="list-style-type: none"> • focusing on measurement of waste. • Enhance recycling market development zone (RMDZ) program. • Mandate minimum recycled content from manufacturers for an expanded list of materials. • Quantify recycled product market development efforts and programs Implemented by the State. • Promote recycling by leveraging funding from various sources (separate from the RMDZ program), such as U.S. Environmental Protection Agency, Housing and Urban Development, Dept. of Commerce, private foundations, etc. For example, through grants and programs such as California Jobs Through Recycling. 		<p>shifts focus from measurement to efforts that help programs.</p> <ul style="list-style-type: none"> 3. Requires statutory and regulatory changes. 4. Could result in increased cost to State and local government agencies for purchase of recycled content materials. 	<p>government purchasers. Also, the Board is working to incorporate the State Agency Buy Recycled Campaign minimum content requirements into Statewide contracts.</p> <ul style="list-style-type: none"> 3. The Board is improving the RMDZ program through several activities including investigating how best to leverage RMDZ loan funds. 4. Rather than minimum content programs, Board staff is focusing on development of specifications for recycled content for a list of products for environmentally preferable purchasing. 5. The Board and the Dept. of Conservation are working on a plastics white paper that includes examining how State programs can help increase the use of postconsumer plastics. 6. Moderate-to-large impact on Board resources could result, if new programs and/or loans and grants are developed. 7. May also require significant Board resources for implementation, compliance monitoring, and enforcement.
Change What Counts (CWC 3)	Statute	Remove the 10% diversion limit for direct burn transformation processes for forest debris (also called slash) used for power generation.	In some areas of the state, there are no alternative economical ways of diverting forest debris.	<ul style="list-style-type: none"> 1. Meets the intent of the IWMA to the extent that waste materials are diverted from landfills, but would “elevate” direct burn 	<ul style="list-style-type: none"> 1. Board’s recently adopted Strategic Plan supports, in general, energy recovery from waste through clean technology. 2. May require tracking and

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
Training (TRN 1)	<p>Policy</p> <ul style="list-style-type: none"> The Board shall provide training to increase knowledge of the diversion rate measurement system: <ul style="list-style-type: none"> Disposal reporting system training to facility supervisors and counties. Disseminate information on adjustment method factors that have been accepted or denied previously by publishing information on Board Web site. Publish information on what economic activities are included in taxable sales. 		<p>Lack of knowledge of the requirements and importance of the disposal reporting system and adjustment method is widespread. Training and education could reduce errors.</p>	<ol style="list-style-type: none"> disposal in the waste hierarchy. Would address statewide energy issues by increasing feedstock materials for under-utilized cogeneration facilities. Forest debris and wood waste are poor feedstock materials for compost operations, and there are limited alternative reuse options for these materials. Would require controversial legislative action. 	<p>regulating of facilities not currently part of measured waste system.</p> <ol style="list-style-type: none"> Regulating new types of facilities is often controversial. MSW transformation facilities may see lifting limits on other types of transformation as unfair. Some have expressed concerns that this would open the door to allowing credits for incineration of other types of waste. <p>Legislation could limit the scope based on material type and apply the allowance only to areas where there are no alternative economical ways of handling the material, except landfilling.</p>
				<ol style="list-style-type: none"> A cost-effective way to improve knowledge and increase accuracy. Flexible. Beneficial to jurisdictions. Relatively easy to implement. 	<ol style="list-style-type: none"> Recommended by Board. Some cost to the Board. Additional travel funds/staffing may be needed if solution cannot be accomplished within existing budget. May require policy or guidelines to address alternative adjustment factor data. May increase success rate of new alternative adjustment factor proposals. Unknown impact on number of new alternative adjustment factor proposals.

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
		<ul style="list-style-type: none"> • Publish information on the extent and scope of errors in CIWMB estimates of fourth quarter taxable sales. • Publish information on inherent limits of base-year generation amounts, adjustment method formula, and report-year disposal. • Publish steps jurisdictions may take to understand adjustment method. • Conduct public workshops on an ongoing basis. 			
Training (TRN 2)	Policy	<p>Increase the number and types of disposal reporting system reports available on the Board Web site, including ADC by material type and jurisdiction disposal data by disposal facility.</p>	<p>Not all the types of data presented to the working group are available on the Web site for wide-spread use.</p>	<ol style="list-style-type: none"> 1. Low cost to develop reports. 2. Graphics similar to those presented to working group make it easier to identify potential errors. 	<ol style="list-style-type: none"> 1. Recommended by Board. 2. Would not require regulatory or statutory change. 3. Supports the Board's efforts to make information and data readily available.
Further Study (FS 1)	Policy	<p>Continue further analysis of the accuracy of adjustment method formula, including:</p> <ul style="list-style-type: none"> • Factor weighting. • Long term accuracy. • Interrelationships between independent variables. • Merits of using Board of Equalization's taxable sales deflator, rather than the consumer price index. 	<p>Do the existing adjustment method formula and factors accurately estimate waste generation?</p>	<ol style="list-style-type: none"> 1. Improve accuracy over time. 2. Reasonable cost. 3. May require additional statistical assistance. 4. Benefits a large number of jurisdictions 	<ol style="list-style-type: none"> 1. Recommended by Board. 2. May require additional staff and/or contract funding by the Board. 3. Greater adjustment method accuracy may require more complex formula. 4. May or may not benefit many jurisdictions.

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Recommendations and Additional Comments
<p>Further Study (FS 2)</p>	<p>Statute</p>	<p>Place more responsibility on generators of difficult-to-handle waste.</p>	<p>Existing law places an unequal burden on local governments, which cannot prevent the production of waste by manufacturers without a mechanism for increasing shared responsibility.</p>	<ol style="list-style-type: none"> Enhances both potential conservation of resources and reduction in landfill disposal through expanded financial incentives and disincentives at all levels. Targeted implementation based on existing models will be essential in reaching goals. Shifts focus from counting to implementation. 	<ol style="list-style-type: none"> Recommended by Board. Already part of Board's recently adopted strategic plan. May cause a shift in costs for consumers from government diversion programs to higher cost products. May discourage generation of difficult-to-handle waste and encourage alternatives. Requires statutory and regulatory changes.
<p>Further Study (FS 3)</p>	<p>Statute</p>	<p>Remove the existing 10% diversion limit for non-burn transformation processes such as bioreactors, gasification, pyrolysis, etc.</p>	<p>Under existing law, jurisdictions can claim only a portion of transformed waste as diversion. This has created a waste stream that is neither disposed nor diverted. It also serves to discourage development of innovative non-burn technologies that provide a means of waste diversion from landfills.</p>	<ol style="list-style-type: none"> Meets the intent of the IWMA to the extent that it provides credit for diverting waste from landfills. Would eliminate confusion about reporting on certain parts of the waste stream that are neither diversion nor disposal under existing rules—this becomes an issue for jurisdictions establishing new base years. Provides incentives for innovative waste diversion activities for materials that are harder to divert. Would require legislative and regulatory action. 	<ol style="list-style-type: none"> Board's recently adopted strategic plan supports, in general, energy recovery from waste through clean technology. For materials currently handled outside the measured waste stream, there is no 10% limit. May require tracking and regulating of facilities not currently part of measured waste system. Regulating new types of facilities is often controversial. Would require some Board resources. Could be seen as moving transformation up the waste management hierarchy.

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Table 3-1. SB2202 Synthesis Group Recommendations On Which the Board Adopted a Different Position or No Position

Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Positions and Additional Comments
Accuracy (ACC 5)	Regulation &/or Statute	Remove uncertainties/inconsistencies with how some materials are counted for disposal at different facilities; for example, special waste. May need to change the definition of solid waste in PRC section 40191(a), but issue should be addressed with input from stakeholders.	Treating some facilities differently causes inequity because some waste types are counted as disposal and others are not, depending on regional boards and local agency requirements and location and permit status of the disposal facility. Also, disposal of some materials is extremely variable year-to-year, which makes it difficult for jurisdictions to plan and implement diversion programs.	<ol style="list-style-type: none"> 1. May require changes to the current law defining solid waste. 2. Would eliminate diversion credit for materials that are not defined as waste. 3. Could require increased tracking by waste types or categories. 4. Could require new base years. 5. Increases accuracy and eliminates equity issues when similar materials are counted differently at different facilities. 6. Need additional information to determine impacts on diversion rates. 7. Verifiable and enforceable. 	<ol style="list-style-type: none"> 1. At the July 2001 Board meeting the Board voted inerts at Board-permitted mine reclamation sites counted as disposal. 2. Issue of inert facilities may be revisited in upcoming C&D regulations. 3. Existing Board policy on Class II facilities allows exclusion of Class II wastes that are required to be disposed by control agencies (for example, regional water quality control boards and air districts). 4. Class II issues may require a regulatory change if existing procedure is insufficient.
Responsibility & Control (R&C 1)	Policy	Board should draft model ordinance and recommend local jurisdictions pass ordinances to regulate haulers to implement reporting procedures, to assess penalties to obtain accurate data and other information, and to enforce timeliness of reporting information. Board should encourage jurisdictions to require	There are no penalties for misinformation or untimely information in the disposal reporting system. This results in inaccurate origin information.	<ol style="list-style-type: none"> 1. Some jurisdictions have successfully used this approach to increase accuracy of waste origin information. 2. Provides an additional enforcement mechanism based on verifiable information. 	<ol style="list-style-type: none"> 1. No Board position. 2. Some increased cost to the Board to develop model ordinance. 3. Increased cost to the jurisdictions to pass ordinances and enforce reporting.

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Positions and Additional Comments
		<p>commercial self-haulers to report origin information to the county. Information feedback—when a hauler has misreported origin information, a jurisdiction could inform the hauler to report correctly or they will apply penalties.</p>			
<p>Responsibility & Control (R&C 6)</p>	<p>Policy &/or Regulation</p>	<p>Remove institutional barriers to diversion programs. Examples: streamline/fast-track permitting of diversion activities such as C&D processing; support development and siting of businesses that process gypsum; educate local enforcement agencies and Board staff to assist in program/facilities development. The Board should look at its own policies as well as other barriers that may inhibit the development of diversion programs.</p>	<p>Barriers exist that inadvertently delay implementation of diversion programs.</p>	<ol style="list-style-type: none"> Does not specifically address diversion measurement problems, but addresses unintended consequences of policies or procedures that delay programs. Could be easily implemented by directing Board staff to address barriers as they arise. Small or moderate changes at the State level can have big results at the local level. Would not address local barriers to diversion programs or processing of materials. Regulatory and/or statutory changes may be required. 	<ol style="list-style-type: none"> No Board position. Board would need to set up system to review policies and/or address unintended consequences as they are brought to the Board's attention. Regulations for C&D processing are currently being developed and can be modified as needed. The Board must carefully consider specific types of facilities as new regulations and policies are developed, in order to balance the advantages of streamlining with protecting the health and safety of Californians and the environment.
<p>Responsibility & Control (R&C 7)</p>	<p>Statute</p>	<p>Adopt new laws to expand responsibility for diverting waste beyond cities and counties by requiring disposal facilities to divert waste from self-haulers.</p>	<p>In many cities and counties, waste that is self-hauled makes up a significant portion of the waste stream (up to 30 to 40%). This self-haul waste</p>	<ol style="list-style-type: none"> Expands responsibility for meeting IWMA goals beyond local governments to parties in the best position to divert self-haul wastes. Implementing new 	<ol style="list-style-type: none"> No Board position. Self-haul waste is predominantly construction and demolition waste, which could perhaps be easily diverted. Many facilities have existing programs that could be used as

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Positions and Additional Comments
			<p>escapes the regulation of cities and counties and cannot be "cost effectively" diverted by local requirements or programs.</p>	<p>programs impacts resources and costs of disposal facility operators.</p> <ol style="list-style-type: none"> Tracking and measuring systems would need to be established and monitored by the Board—could be coupled with DRS. Could result in significant diversion from a perhaps "untapped" waste stream that local governments find difficult to divert. Would require statutory and regulatory change. 	<p>models.</p> <ol style="list-style-type: none"> May not be reasonable requirement for all facilities or regions—flexibility is important. Some Board resources required if regulations are required. Shifts some part of the burden from jurisdictions to facilities, which could be viewed as inconsistent with the intent of the IWMA which placed responsibility for diversion directly on jurisdictions.
<p>Responsibility & Control (R&C 8)</p>	<p>Statute</p>	<p>Adopt new laws to expand responsibility for diverting waste beyond cities and counties; that is, require schools to work with local government recycling coordinators to divert waste.</p>	<p>Jurisdictions typically don't have control over all the waste generated within their borders. More diversion could be achieved by moving responsibility for reducing waste "upstream" on those that may have more control or impact on waste generation.</p>	<ol style="list-style-type: none"> Widens circle of responsibility for meeting the intent of the IWMA, which helps jurisdictions meet the goals. Impacts costs and resources to schools to implement new programs; increased cost and resources needed by the Board to monitor schools. Does not address problems of current measurement system; may complicate measurement if schools must also measure goal achievement. Opportunities for solid waste and environmental education in schools could increase if schools run their own programs. 	<ol style="list-style-type: none"> No Board position. SB 373 (Tortakson), recently signed by the Governor, requires the Board, by 1/1/2004, to evaluate implementation of school waste reduction programs, and if less than 75% of schools have implemented programs, the Board shall recommend statutory changes to require schools to implement diversion programs. This bill also contains other provisions for school diversion programs. State agencies are required to divert waste, but they are not required to work with local government recycling coordinators.

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Positions and Additional Comments
Change What Counts (CWC 1)	Statute &/or Regulation	Exclude inert waste not subject to the BOE fee and disposed at mine reclamation facilities from the disposal reporting system (including the four Los Angeles County inert sites that are currently permitted).	Treating some facilities differently causes inequity; some waste types are counted as disposal and others are not, depending on regional boards and local agency requirements and location and permit status of disposal facility.	<p>5. Requires statutory and regulatory change.</p> <p>1. Addresses equity issues and gives jurisdiction more certainty since all similar tonnage would not count.</p> <p>2. Eliminates DRS enforcement issue at mine reclamation sites.</p>	<p>1. Board voted at the July 2001 Board meeting to count inert sites as disposal; may be revisited in upcoming construction and demolition regulations.</p> <p>2. Would require regulatory or statutory change.</p> <p>3. Jurisdictions that send inert waste to those facilities will need to take tonnages out of their base year amounts, and would not be able to count any of the diversion at those sites.</p> <p>4. This could affect jurisdictions that changed their base year as part of the "LA fix" to include tonnage from these inert facilities.</p>
Change What Counts (CWC 2)	Statute	Board supports proposed legislation that will exclude Class II-type waste from counting as disposal in the disposal reporting system.	<p>There are limited diversion opportunities for special wastes as a whole.</p> <p>Special waste handling takes away from the implementation of diversion programs.</p>	<p>1. Addresses equity issues and gives jurisdiction more certainty since all similar tonnage would not count.</p> <p>2. Verifiable.</p> <p>3. Enforceable.</p>	<p>1. The Board will continue its existing policy that allows exclusion of Class II waste required to be disposed by a control agency (for example, regional water quality control board or air district).</p> <p>2. If Class II tonnages were included in the jurisdiction's base year, the amounts would need to be removed.</p> <p>3. This might discourage any treatment to allow the materials to be reused or recycled.</p>
Training (TRN 3)	Policy	Board shall provide standard curriculum training for local government staff (especially	Problem in the IWMA compliance caused by lack of formal training	<p>1. Facilitates implementation of IWMA programs by providing help to those</p>	<p>1. No Board position.</p> <p>2. In the past, several colleges and universities have had certificate</p>

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Category & Reference #	Required Action	Solution Considered	Issue Addressed	Working Group Considerations/ Criteria Met	Board Positions and Additional Comments
		<p>new recycling coordinators) responsible for IWMA program implementation and other waste management duties.</p>	<p>and education opportunities or requirements for local program coordinators in resource management issues and strategies.</p>	<p>made responsible for the IWMA—local jurisdictions. Moderate resources may be needed at the Board to set up training and certification. 2. Does not directly address measurement issues. 3. Models exist at the State level already.</p>	<p>programs in solid waste management.</p>
<p>Further Study (FS 4)</p>	<p>Statute</p>	<p>Establish a menu of diversion programs appropriate for jurisdiction characteristics and evaluate jurisdiction performance based on implementing programs and meeting effectiveness criteria such as participation levels.</p>	<p>Many jurisdictions currently spend significant resources on documentation of existing diversion rather than program implementation. By shifting the emphasis to development of programs and implementation, millions of dollars in resources each year can be shifted, resulting in higher overall diversion. Also allows jurisdictions with very difficult measurement problems to move toward meeting the IWMA goals despite measurement problems.</p>	<ol style="list-style-type: none"> 1. Essential to develop method of determining program effectiveness/monitoring progress, such as establishing program criteria and/or using waste sorts to check on recyclables in waste stream. 2. Shifts resources from documentation to implementation and monitoring of programs. 3. The Board would still need to monitor and enforce program implementation requirements. 4. Would remove measurement of numerical diversion rate. 5. Removes pressure to show 50% diversion and puts pressure on implementing effective programs. 6. May require regulatory or legislative changes. 7. Cost-effective, flexible. 8. Enforceable. 	<ol style="list-style-type: none"> 1. No Board position. 2. Determining program effectiveness and monitoring progress may mean diversion needs to be counted. 3. Evaluating private diversion programs may be difficult and/or controversial for local governments and the Board. 4. Some Board resources would be required to develop methods and/or regulations.

Chapter 4 Review of the Disposal Reporting System

Historical Perspective

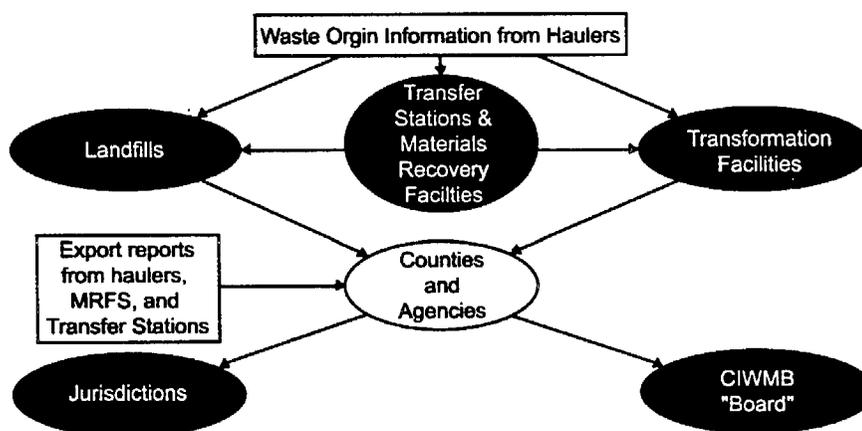
With the passage of Chapter 1292, Statutes of 1992 (Sher, AB 2494), measurement of 25 percent and 50 percent diversion required by the Integrated Waste Management Act of 1989 (AB 939, Sher, Chapter 1095, Statutes of 1989 [IWMA, 1989]) was changed from a generation-based diversion rate measurement system to a disposal-based system. Measuring waste generation (disposal plus diversion) amounts in the base-level calculation proved costly and difficult for local governments; for most this was the first time they had quantified this information. As a result, many of the base-level generation studies contained inaccurate and incomplete data. Often portions of the waste stream, such as self-haul (hailed by someone whose primary business is not hauling waste) and construction and demolition waste, were either undercounted or left out of the studies entirely. In the proposed disposal-based diversion rate measurement system, disposal amounts—rather than diversion amounts—would be used to determine compliance with the diversion mandates. Accurate disposal data is critical in a disposal-based system.

The Existing Disposal Reporting System

The Board's disposal reporting system, which took effect in 1995, tracks landfill disposal amounts by jurisdiction (that is, city, county, and regional agency). Each operator of Board-permitted solid waste disposal facilities (landfills, transfer stations, materials recovery facilities, and transformation facilities) reports disposal data to the county or regional agency. Counties or regional agencies, in turn, report these disposal tonnages each quarter to the Board and to the jurisdictions disposing waste within its boundaries.

The disposal reporting system relies on the waste origin and tonnage allocation information provided by responsible parties as shown in the following flowchart. (Figure 4-1)

Figure 4-1. Disposal reporting information flowchart.



Waste origin information is key in determining jurisdictions' disposal amounts. Title 14, California Code of Regulations, sections 18805–18810, require that waste origin information (“waste origin” refers to the city, county, or regional agency in which the waste was produced) be gathered, at a minimum, for one week in each quarter of the year for all solid waste disposed at permitted solid waste facilities. Solid waste facility operators are required to obtain waste origin information on all loads delivered by residential and commercial haulers during the required survey week periods of the 8th through the 14th of March, June, September, and December.

The disposal reporting system regulations provide minimum requirements in order to allow for the local flexibility requested by counties during the rulemaking process. If a county determines that another method of collecting data or another survey week would better meet its needs, the county may request an alternative method or survey week period with Board staff approval. To date, only one county has requested and received approval to implement an alternative method of reporting. Humboldt County has received approval from the Board to require haulers to report origin information directly to the county.

Counties may require operators to conduct more frequent surveys or may impose other more restrictive requirements on facility operators, such as surveying and weighing every load every day, without requesting Board staff approval. Some counties have requested that facility operators within their boundaries conduct daily surveys. Also, many facility operators are choosing to conduct daily surveys on their own because they believe it to be more accurate. Additionally, they believe it is easier to train gatehouse staff to obtain origin information on a daily basis rather than to have to remember to obtain origin information during the quarterly survey week period.

During the quarterly survey week, each operator must collect data on the amount of waste received for disposal from each jurisdiction at its facility. Waste amounts are totaled for each jurisdiction for the entire survey week. The operator divides the amount received from each jurisdiction by the total amount of waste received for disposal from all jurisdictions at its facility. The operator then arrives at a percentage of waste disposed by each jurisdiction for the survey week. The percentage of waste disposed for each jurisdiction during the survey week is then extrapolated for the quarter to estimate waste disposed for each jurisdiction for that quarter.

Every landfill operator reports each jurisdiction's waste origin and estimated amounts to the county or regional agency each quarter. The amount of material segregated for use as alternative daily cover (that is, Board-approved materials other than soil used as a temporary overlay on an exposed landfill face) is also reported in the quarterly reports, but it is not counted as disposal. Unlike the minimum one-week per quarter waste origin surveys, the regulations require operators to collect alternative daily cover amounts, types, and jurisdiction of origin on a daily basis.

Counties or regional agencies report jurisdiction estimated disposal amounts to the affected jurisdictions and to the Board for input into the Board's disposal reporting system database. The county and regional agency reports include disposal information from operators on waste disposed within the county as well as information from haulers on waste exported out of state (including exports to tribal lands). Counties may revise the disposal allocation amounts between April 15 and May 15, to correct inaccuracies for the previous reporting year.

Jurisdictions use the disposal allocation amounts when calculating their diversion rates. If jurisdictions disagree with the disposal amounts, they have the opportunity to address their concerns and provide additional information in their annual reports to the Board.

The accuracy of this data could greatly affect a jurisdiction's diversion rate. Therefore, it is imperative that the various parties involved with disposal reporting work cooperatively to provide the most accurate data possible to ensure the integrity of the disposal reporting system.

November 1999 Disposal Reporting System Hearing Issues

In the first years of the disposal reporting system, the Board learned a great deal about the state's waste flow patterns and variation. In 1999, with four years of disposal reporting experience gained by the various parties involved with the disposal reporting system, the Board held a hearing to discuss some of the major disposal reporting issues. During a special Board meeting held November 17, 1999, representatives from the waste hauling industry, solid waste facilities, local government, environmental groups, and consulting firms addressed various reporting issues and proposed potential solutions to some of the common problems.

Allocation and Self-haul

Allocation of waste among jurisdictions has been a topic of concern since the very beginning of the disposal reporting system. There is concern about the accuracy of disposal amounts assigned to jurisdictions based on the periodic waste origin surveys. Accuracy is often directly proportional to the frequency of the waste origin surveys. For example, counties that require daily surveys of every load typically have higher data accuracy than counties that conduct the minimum weekly surveys and extrapolate the disposal data for the quarter.

During the hearing in 1999, some people expressed concern that haulers sometimes inaccurately report waste origin because of unclear jurisdiction boundaries or because there may be an economic incentive to give incorrect origin information if the facility charges different fees for different jurisdictions, or for other reasons. Another major concern is allocation of tonnage when waste origin cannot be determined at the disposal site. In these cases, the waste tonnage is allocated to the jurisdiction in which the disposal facility is located (host assigned). Host assigned waste tonnage can significantly impact the host jurisdiction's diversion rate calculation.

Self-haul is defined as waste delivered to a disposal facility by someone whose primary business is not hauling waste. Self-haul waste is typically more difficult to track or attribute to a jurisdiction of origin than waste delivered by franchised haulers who have accounts with the solid waste facilities they use. In the larger more urban counties, self-haul may constitute only a small percentage of the incoming disposed waste stream, whereas in the smaller more remote rural communities, or areas where there is no garbage pickup service, self-haul makes up the vast majority of the incoming disposed waste stream. Therefore, misallocating self-haul could have varying impacts on the disposal tonnage for the jurisdictions sending their waste to the facilities, depending on the size or population of the county.

Special Waste

Another issue addressed was special waste. Special waste consists of waste types typically disposed in Class II landfills, such as non-friable asbestos, sludge, auto shredder fluff, and ash. Questions regarding non-hazardous wastes have been an issue since the development of the 1990 base level data. Jurisdictions may or may not have included special waste going to Class II landfills (as defined by each of the regional water quality control boards), construction and demolition wastes, and/or inert wastes in their planning documents or base-level generation. The inclusion of these waste types in reporting year disposal was a significant problem for jurisdictions that did not include the waste types in their base-level generation.

Not including these waste types in the base level, but including them in annual disposal reporting, can cause significant drops in diversion rates. In addition, some special wastes, such as contaminated soil, ash, non-friable asbestos, and auto shredder fluff are required by regional water quality control boards to be disposed due to their contamination levels. Comments were made about the fact that diversion opportunities for these special materials are limited, and jurisdictions do not want to be penalized for waste they cannot divert.

Waste-derived alternative daily cover (ADC) usage was also a concern. Participants in the hearing were concerned that accurate tracking of alternative daily cover materials was a problem in some areas of the state, and that there is a perception that some landfills have a significantly high use of ADC.

Additional Issues

Other issues that impact the disposal reporting system accuracy have also been raised. In some cases, waste amounts are not accurate for waste exported out of state and to tribal lands. Waste allocation from landfills without scales is also problematic in obtaining accurate amounts and origins of waste. Facilities without scales, particularly in rural areas, may use conversion factors when calculating cubic yards of waste received into tonnage. Types of waste differ from load to load, and the best conversion factor may not be used. Further, with some jurisdictions disagreeing on their annual tonnage amounts and amending their disposal amounts in their annual reports to the Board, it is uncertain whether all tons disposed are captured statewide.

The Board recognized the seriousness of the issues raised at the hearing and provided additional staff resources, and it directed staff to focus efforts on improving the disposal reporting system. The Board also instructed staff to publicize methods used by jurisdictions that have solved disposal reporting problems as a model for others to consider. The following section discusses these efforts of the Board.

Fact Gathering/Data Analysis Efforts

To determine possible sources for error in disposal allocation, the Board began a series of fact-gathering programs and data analysis projects. Those programs and projects included facility site visits, telephone surveys, landfill record audits, quarterly survey data analysis, analysis of disposal trends, and an evaluation of ADC use. The results of these analyses were presented to the DRS working group and serve as the basis for many of their recommendations (see Appendix D for more detailed information on analyses).

Facility Site Visits

Much of the information about disposal reporting issues has come from jurisdictions and others. Because of concerns raised at the November 1999 hearing about self-haul, the Board decided to take a closer look at what occurs at the disposal facility gatehouse, the first point of contact between the self-hauler and the disposal facility staff. So, beginning with the required June 2000 waste origin survey week, staff began a series of unannounced disposal facility site visits around the state. At each facility visited, drivers would arrive in a small pickup truck or similar vehicle, with a load of waste, and represent themselves as a local residential self-hauler. The Board staff would then record what waste origin questions, if any, were asked, as well as other data about the site. After the site visits were completed, the operator for each site visited was sent a letter explaining the unannounced visit and given the results of the visit.

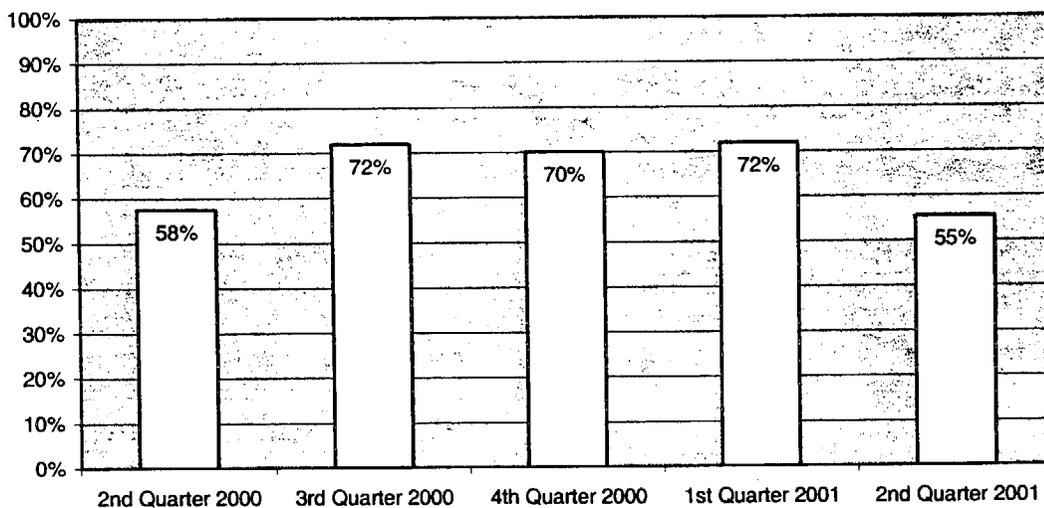
For those sites where no waste origin questions were asked of the driver, operators were asked to respond with an explanation of their procedures for allocating waste to jurisdictions. It must be emphasized here

that, at this time, residential self-haul is the only sector of the disposed waste stream that the Board has the ability to evaluate in this manner.

According to the Board's 1999 statewide waste disposal characterization study, self-haul comprises about 13 percent of the disposed waste stream, with commercial self-haul accounting for approximately ten percent and residential self-haul contributing about 3 percent.

More than 150 facility visits were conducted during scheduled waste origin survey weeks in 2000. Emphasis was placed on revisiting sites that failed to ask waste origin questions on the previous visit. About 90 facilities have been visited in the first half of 2001. A graphic representation of the results of the visits is shown in Figure 4-2.

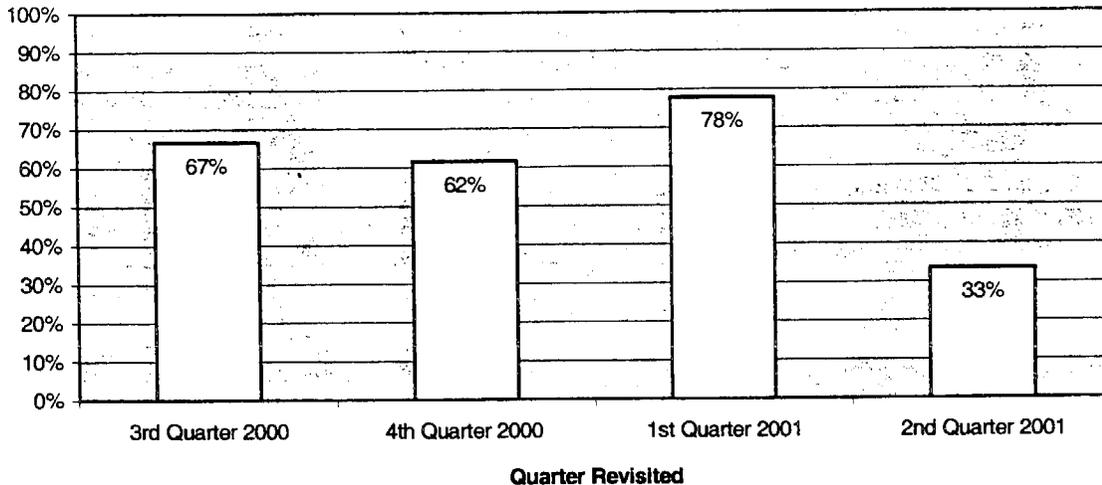
Figure 4-2. Percentage of facilities visited that asked origin questions of small residential self-haulers in 2000-01.



Note: Residential self-haul constitutes approximately three percent of the total waste stream.
Source: CIWMB

The following graph (Figure 4-3) shows the results of the facilities that were revisited.

Figure 4-3. Percentage of facilities asking small residential self-hauler origin questions when revisited in 2000–01.



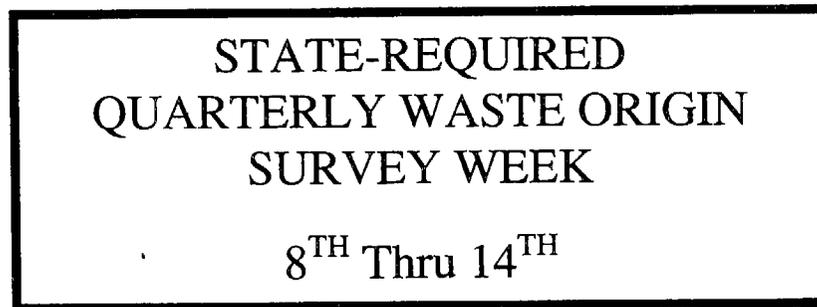
Note: Residential self-haul constitutes approximately 3 percent of the total waste stream.
Source: CIWMB

The figure shows less than eighty percent of facility operators were in compliance with the residential self-haul minimum waste origin survey requirements for residential self-haul waste loads.

Based on responses to the follow-up letters sent out by the Board, it appears that facility operators want to comply with waste origin survey requirements. However, lack of gatehouse staff training and oversight seems to be a problem. In conducting the visits, staff found that some gate attendants were not aware they were required to conduct waste origin surveys to obtain waste origin information, or why it was required. Additionally, most gate attendants who did ask waste origin questions generally asked where the driver was from, rather than where the waste was from. This can have a significant effect on the allocation of self-haul waste, especially for commercial self-haul. For example, a roofer may do business in several jurisdictions. If he/she is asked where the debris is from, the answer may be different than the driver's residence. Many of the facility operators responded they have included revised procedures to require gatehouse staff to obtain daily waste origin information, surveying every load of waste every day of the facility operation. Other facility operators are implementing innovative ways to assist in the collection of origin data. Given this information, the DRS working group discussed ways operators could improve the collection of origin data.

Some of those are:

- Post signs explaining a survey week is underway and waste origin questions are being asked. For example:



- Post signs in multiple languages to eliminate language barriers between gatehouse attendants and haulers.
- Distribute information flyers to all customers explaining the purpose and importance of survey week.
- Request a utility bill or a rent receipt to verify the origin of self-haul customers.
- Estimate an average weight for self-haul vehicles by randomly weighing a percentage of the self-haul vehicles. This information can be used as an estimated weight for incoming unweighed self-haul vehicles.
- Place decals with the vehicle's empty weight on the inside door of regular customer self-haul vehicles. This information can be used to obtain an accurate weight of the waste.
- Request and record self-haul business licenses. This information can be used to double-check the validity of having a license to do business in the jurisdiction from which the waste is being reported.

Landfill Survey of Waste Origin Practices

Because the regulations allow local flexibility, there is no statewide standard method for collecting waste origin data. Board staff inventoried data collection practices at landfills statewide. Such an inventory of practices could ultimately lead to improvements to reporting system practices by either setting statewide standards or identifying a list of best landfill practices. There are 181 permitted landfills in the state, but the study excluded the landfills that allocate all their accepted waste to the "host" jurisdiction (that is, the jurisdiction where the facility is located). In early 2001, the Board staff conducted a telephone survey of 143 landfills throughout the state. The respondents were told the purpose of the survey and that participation in the survey was voluntary. Ninety-six of the 143 landfills surveyed responded to questions concerning waste origin survey frequency, scale use, and methods used to verify waste origin. Questions asked included:

- How often does your facility conduct origin surveys?
- Do you use the same survey for self-haul as for commercial haulers?
- How do you verify origin of waste?
- Do you have scales?
- Do you weigh self-haul and commercial loads?
- Do you use computers to track data?

Concerning the question of waste origin survey frequency, the data showed:

- 77 percent conduct daily origin surveys.
- 8 percent conduct origin surveys only during the survey week.
- 8 percent conduct daily origin surveys only for commercial loads.
- 6 percent either do not accept public waste or all waste loads are assigned to the host jurisdiction.

Scale use data produced the following results:

- 58 percent weigh both commercial and self-haul loads.
- 23 percent weigh commercial loads only.
- 10 percent did not respond.
- 7 percent either do not have scales or do not use scales, for either self-haul or commercial loads.

Finally, in response to methods used to verify waste origin, the analysis showed:

- 76 of the 96 operators responded.
- 80 percent do not verify waste origin.
- 8 percent require a driver's license/other identification or utility bill.
- 4 percent accept other forms of verification (for example, demolition permit).
- 2 percent require a pre-purchased ticket.

The Board will continue to periodically conduct the landfill surveys to update and monitor landfill practices for conducting origin surveys, their use of scales, and methods to verify origin information. This data may also be used in efforts to assist jurisdictions in resolving DRS issues.

Landfill Record Audits

When discrepancies arise between the disposal amounts reported in the DRS and to the Board of Equalization (BOE), the Board conducts a landfill record audit. The BOE collects the integrated waste management fee on each ton of waste disposed at Board-permitted landfills. This process involves visiting the landfill where the discrepancy exists and reviewing their records for the quarter in question. Sources for the discrepancies are determined and corrections are made to the appropriate reporting system. This is an ongoing process, employed on a case-by-case basis as necessary to reconcile the county-reported disposal tons from the DRS with the BOE disposal tons reported by landfill operators. As a result of the landfill record audits, a number of reporting errors have been discovered. Several facilities were paying fees on recycled waste, but fees are only charged for disposed waste. Other facilities were not reporting ADC correctly, and still others were found to have made addition errors or had transposed numbers in their DRS reports. Some corrections resulted in fee refunds for several facilities. All of the errors have been easily rectified but required research to identify the proper correction. The Board will continue to investigate any discrepancies between tonnage reported to the DRS and tonnage reported for fee purposes.

Quarterly Survey Data Analysis

Chapter 740, Statutes of 2000 (Sher, SB 2202) requires that the Board evaluate the accuracy of the disposal reporting system under differing circumstances. Some have described this as determining a "margin of error" for the DRS. As a part of that evaluation, the Board performed some data analysis using the DRS data. Data used for this analysis came from a study conducted for the Board in 1997 and 2000 data provided by Riverside County. The 1997 study utilized actual daily disposal data obtained

from two Southern California counties, Riverside and San Diego. The data contains the total tonnage disposed by each jurisdiction within the county, at landfills within the county, for each of the 52 weeks of 1995.

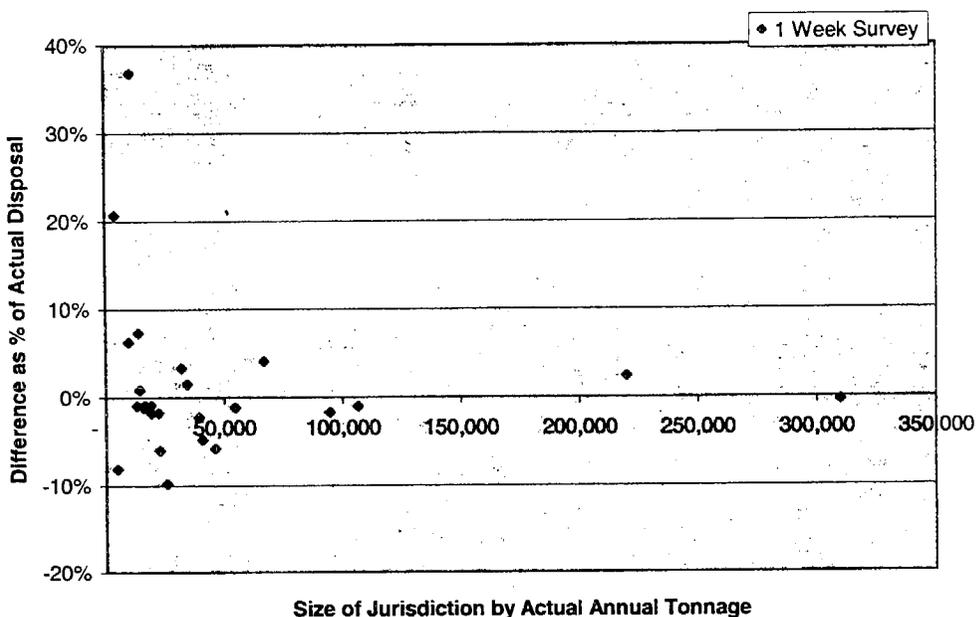
The premise for this analysis is that there are three potential major error sources in the disposal reporting system. First, there is the inherent error due to extrapolation. This comes from determining a weekly allocation percentage for each jurisdiction and applying that percentage to the total quarterly tonnage to estimate disposal. The assumption is that the selected week or weeks are representative of the entire quarter. Even under ideal conditions, a jurisdiction's disposed tonnage will vary from week to week due to a number of factors, such as rain, holidays, hauler routings, etc.

The second inherent error comes from non-regular disposal (that is, increased disposal amounts due to one-time events, such as building demolition, major sports events, etc.). This error occurs from extrapolating tonnage for a jurisdiction who: (a) disposed during the survey week, but not during the rest of the quarter; or (b) did not dispose during the survey week, but disposed during the rest of the quarter. In the first case, their disposal tonnage is overestimated in the DRS. In the second instance, their tonnage is divided among the remaining jurisdictions for the entire quarter.

The final error can be described as transactional or translational error; that is, allocating waste to the wrong jurisdiction. This frequently occurs when unincorporated areas of a county and an incorporated city have the same name, or when a driver has picked up loads in multiple jurisdictions and does not know the percentage of each jurisdiction's waste amounts. Sometimes it is economically advantageous for the driver to provide the incorrect jurisdiction for the origin of waste. This often occurs in areas where landfills charge reduced fees for disposal from specific jurisdictions, or where local ordinances limit the jurisdictions from which the landfills may accept waste. The crux of the analysis addressed the inherent errors that result from the mathematical extrapolation technique and non-regular disposal.

To determine the extent of the inherent errors in the system, 1995 data from Riverside County was evaluated. Disposal data that was recorded for each jurisdiction during the required quarterly survey week was used to extrapolate a quarterly disposal tonnage for that jurisdiction. Those extrapolated quarterly tonnages were added to compute an extrapolated annual tonnage for each jurisdiction. Then for each jurisdiction, the extrapolated annual tonnage was compared to the actual annual tonnage and a percent error determined. The following graph (Figure 4-4) shows the results of this comparison. The percent error is plotted against the total annual tonnage disposed.

Figure 4-4. Potential error resulting from using one-week origin survey tonnage data vs. actual daily recorded tonnage data. Riverside County—1995

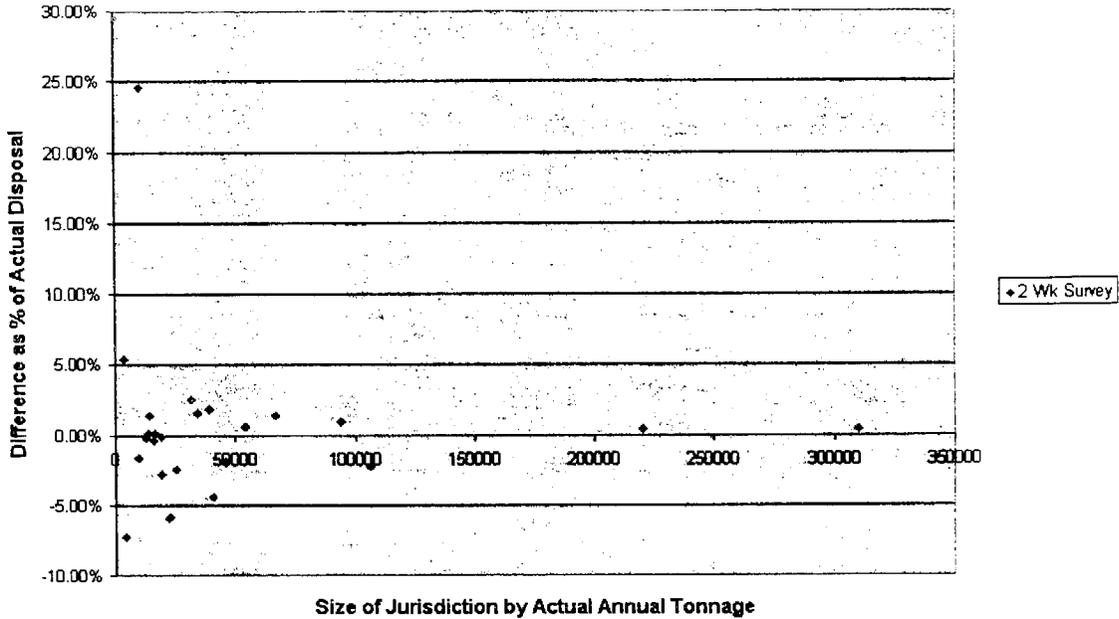


If the extrapolated data matched the actual data, all the data points would fall along the 0 percent difference or “zero error” line. The further away from the zero error line, the larger the error. Actual annual tons disposed can be used as an indicator of jurisdiction size. In this graph we see that the largest variability in the percent errors are at the lower end of the actual annual tons disposed axis. Thus, this data indicates that the smaller the jurisdiction, the greater the potential for allocation error.

To evaluate the premise that a longer survey period would improve results, study data was used to simulate a two-week survey period encompassing the designated survey week. The results of that analysis are shown in the graph below.

The accuracy of the goal measurement system for a particular jurisdiction is affected by three main parts: the jurisdiction’s base-level waste generation study, which established its waste generation amount in 1990; the disposal reporting system, which measures the tonnage of disposed waste originating in the jurisdiction; and the adjustment method, which estimates the change in waste generation over time due to changes in demographic and economic factors. The Board recently adopted guidance for jurisdictions on establishing new base-level generation.

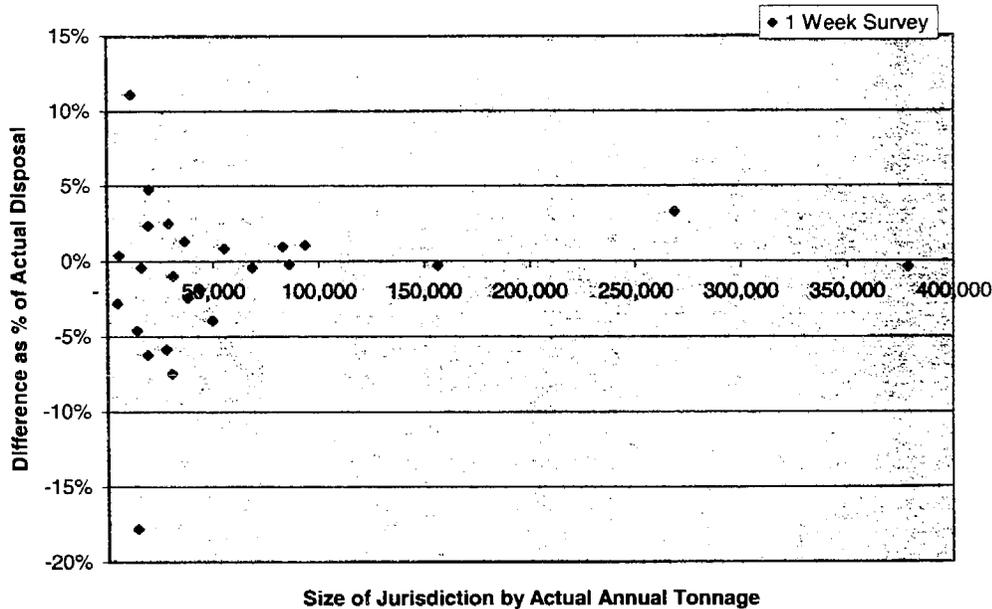
Figure 4-5. Potential error resulting from using two-week origin survey tonnage data vs. actual daily recorded tonnage data. Riverside County—1995



This graph (Figure 4-5) shows that for the two-week survey period, the data points move closer to the “zero error” line, reinforcing the premise that more data points produce more precise results. Both of these graphs also show that there is no trend toward either over- or under projecting disposal tons by the DRS. The number of disposal “over” projections is pretty close to the number of “under” projections.

Riverside is the only county that provided the Board daily disposal data for 2000. Similar analyses were done with calendar year 2000 data obtained from Riverside County, as displayed in the following graph (Figure 4-6).

Figure 4-6. Potential error resulting from using one-week origin survey tonnage data vs. actual daily recorded tonnage data. Riverside County—2000



From this graph it appears the Riverside County DRS data has improved because the percent errors are less than for 1995. Though the percentages are lower, the largest variability still occurs around the smaller jurisdictions.

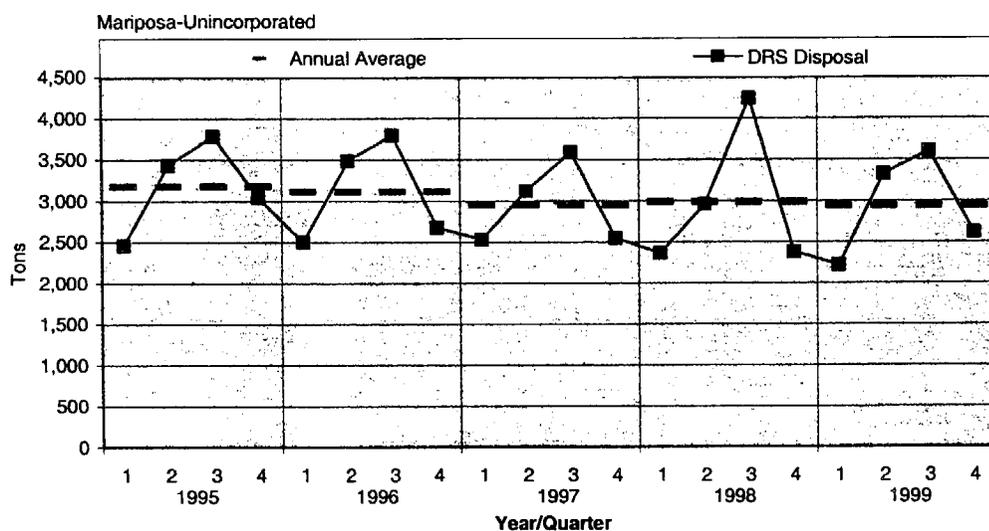
It is important to note that this data is from only one county and may not be representative of all counties. More data from more counties is needed to conduct a thorough analysis. However, analysis of this Riverside County data does provide several indicators. First, estimates obtained by extrapolating from DRS survey weeks do not tend to either overestimate or underestimate disposal, because data points are both above and below the “zero” error line. Second, it appears that smaller jurisdictions are the most adversely affected by DRS errors. That is shown by the fact that the largest variability of difference errors occurs around the area of smallest annual disposal. Third, the length of survey has a pronounced effect on the precision of DRS data. The longer the survey period (that is, the more data points), the more precise the allocation. Finally, the transactional errors are not quantifiable. There is no statistical routine that can account for misinformation on waste origin, intentional or otherwise. Thus, creating a reliable “margin of error” percentage that can be applied to DRS data is not feasible.

Analysis of Disposal Trends

The purpose of this analysis was to determine whether trends and patterns exist in jurisdictional disposal data. (See Appendix A for more detailed information.) In this analysis, “patterns” would include seasonal variations, whereas “trends” would describe increases or decreases over several years. Identifying outliers, or extreme points, in these patterns and trends may determine which jurisdictions, or types of jurisdictions, have potential accuracy issues. The analysis showed that quarterly DRS disposal is highly variable at the jurisdiction level. Some jurisdictions show strong patterns or trends, while others don’t. In fact, some jurisdictions show no patterns or trends at all.

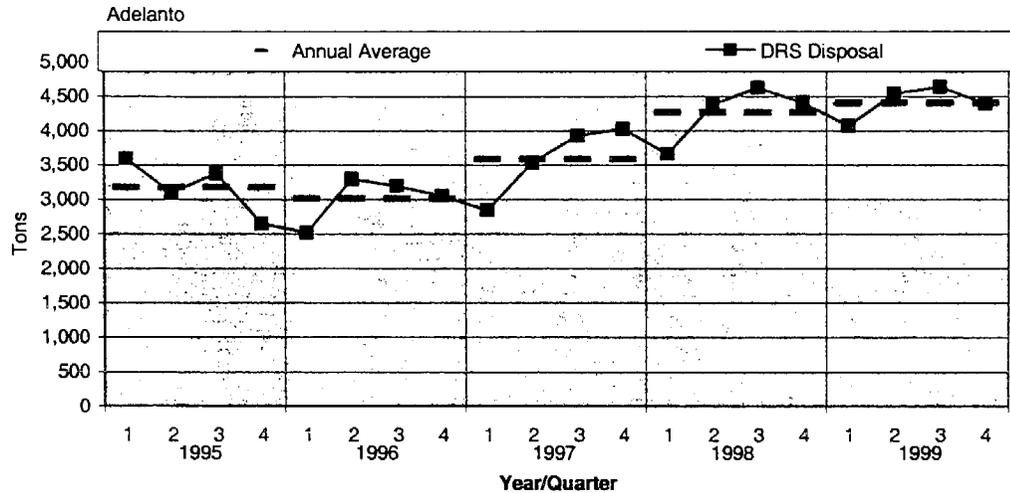
The analysis sought to identify three basic types of outliers: annual average, seasonal, and quarterly. The following graph (Figure 4-7) is an example of a jurisdiction with a strong seasonal pattern, showing obvious peaks in the third quarter disposal for each year. Even with the unusually high third quarter in 1998, the seasonal variation in disposal is obvious.

Figure 4-7. DRS quarterly disposal and annual average, 1995–99: seasonal pattern example.



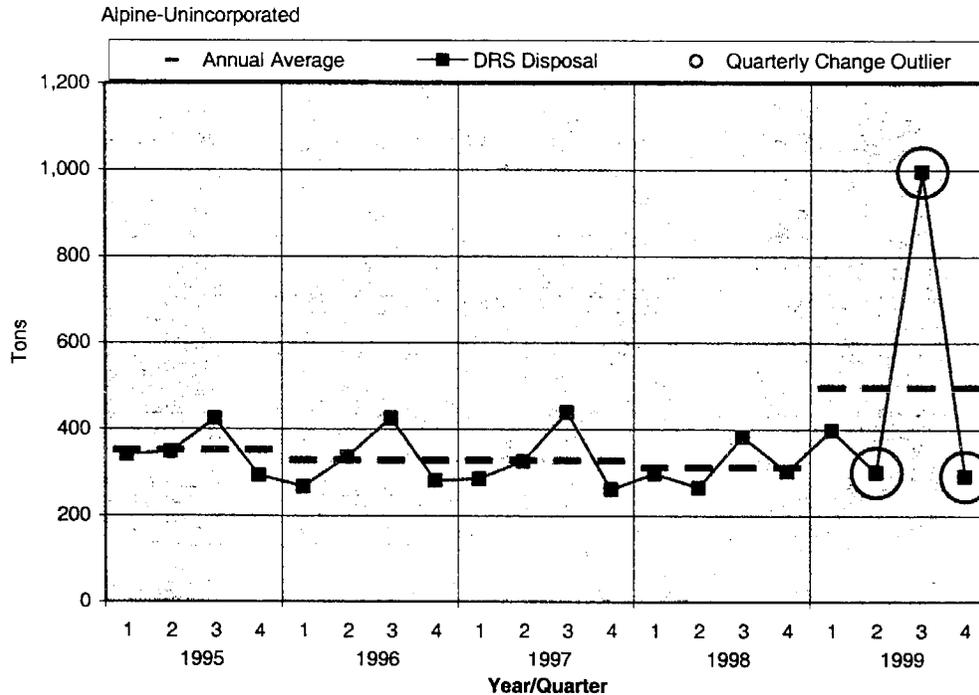
The next graph (Figure 4-8) is an example of a jurisdiction with a strong trend in disposal over time. Disposal is clearly going up, as you can see by the annual averages, which are indicated by the dashed lines.

Figure 4-8. DRS quarterly disposal and annual average, 1995–99: quarterly trend example.



The analysis also looked at extreme changes in disposal from quarter to quarter. The following graph (Figure 4-9) shows a pretty strong seasonal pattern from 1995–1998. In 1999, the extreme data point for the third quarter pulls the 1999 annual average up, causing the second, third, and fourth quarters to be flagged as outliers. The data for third quarter 1999 should be investigated further to determine if it is correct.

Figure 4-9. DRS quarterly disposal and annual average, 1995-99: extreme point example.



The Board then analyzed the number of outliers in jurisdiction-level data compared to the number of outliers in countywide data. In most counties, jurisdiction-level data shows more potential outliers than countywide data. In fact, in 28 counties, all of the jurisdiction outliers disappear when the disposal data is examined at the countywide level. In nine other counties, the outlier rates for countywide data decrease significantly. This does not necessarily mean that there are no errors in the countywide data. It simply means the data is less variable and more stable at the county level. The data also shows that most of the counties that have high outlier rates dispose very small amounts. The average disposal for 23 of the 25 counties with at least one quarterly outlier was about 56,000 tons.

As a result of these trend analyses, the working group's discussion led to several conclusions:

- The DRS data shows that jurisdiction level data is very variable. Many jurisdictions show patterns, such as seasonality, and trends over time, while others do not. Individual jurisdictions with annual disposal less than 25,000 tons show more variability and outliers than jurisdictions with more than 25,000 tons annually. Jurisdictions with more than 100,000 tons disposal show considerably less variability and fewer potential outliers.
- Countywide patterns and trends are generally more stable, in general, than jurisdiction data, and most potential outliers disappear when the data is aggregated to the county level.

- However, smaller counties with annual disposal of less than 60,000 tons may not have more stable countywide data. Many of the small single-county rural regional agencies have unstable disposal patterns and trends, and many potential outliers. Therefore, single-county regionalization may not necessarily create better disposal data for smaller counties.
- Finally, in counties where daily waste origin surveys are conducted, even the smaller jurisdictions have fairly stable disposal, with less variability and fewer potential outliers. Daily surveys may prove to be the solution in counties with disposal allocation issues.

Evaluation of Alternative Daily Cover (ADC) Use

The use of ADC for waste diversion at solid waste landfills—especially green material that could otherwise be used as compost feedstock—has been subject to significant debate and controversy since the development of related Board policies in the early 1990s. In some locations, alternative materials are more plentiful than soil and therefore less expensive.

ADC is defined as any material other than soil that is used as daily cover at landfills. The Board must approve materials that are allowed to be used for this purpose. Currently, the Board has approved eight material types: ash, auto shredder waste or “fluff,” construction and demolition debris, compost material, green material, contaminated sediment (soil), sludge, and tires. Other materials are approved on a case-by-case basis.

Chapter 978 of the Statutes of 1996 (Bustamante, AB 1647) clarified the legislative intent that the use of waste-derived ADC (and other beneficial use of wastes at landfills) constitutes diversion through recycling (Public Resources Code [PRC] section 41781.3). Regulations adopted by the Board on ADC to comply with statute became effective on November 5, 1997, and February 3, 1998 (Title 27, California Code of Regulations [27 CCR], sections 20680, 20690, 20695, and 20700). These regulations established disposal site standards governing the use of ADC, alternative intermediate cover (AIC) and earthen material cover. The disposal reporting regulations were revised so that facility operators would not have to count materials used as ADC as disposal.

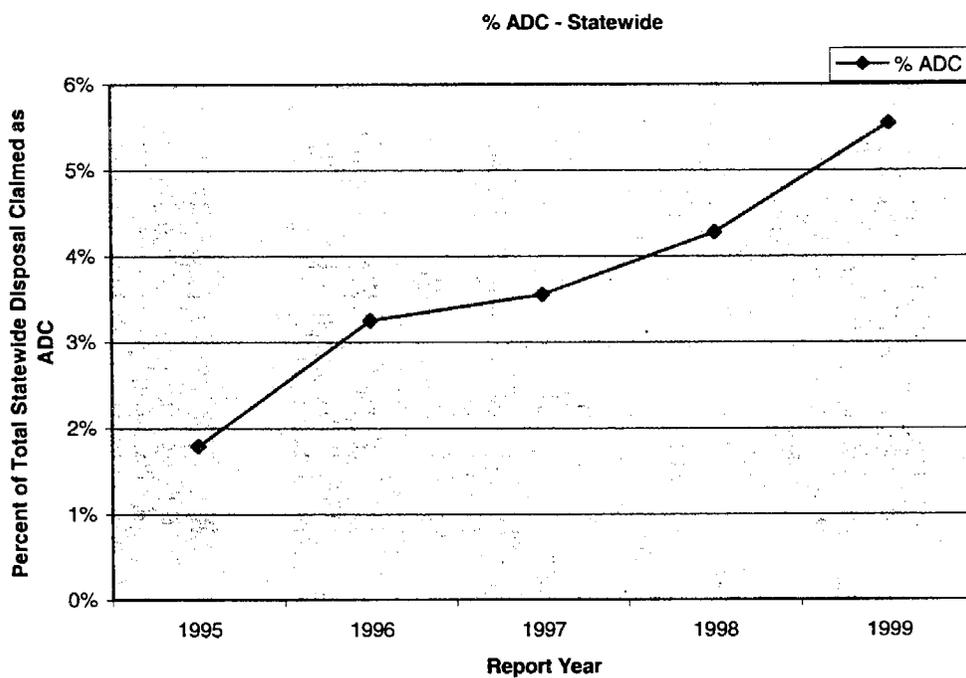
Local Enforcement Advisory #48 guides local enforcement agencies (LEA) on the use of ADC at landfill sites. The Board monitors and controls ADC use and potential overuse primarily through the implementation of State minimum standards by LEAs. The Board’s Permitting and Inspection Branch also conducts inspections of solid waste landfills every 18 months. Part of that inspection includes evaluation of daily cover and ADC. In addition, the disposal reporting system (DRS) within the Board’s Diversion, Planning and Local Assistance Division (DPLA) requires reporting of ADC from local jurisdictions and landfill operators. The Board also contracts with the State Board of Equalization (BOE) to collect and monitor State disposal fees. Compliance issues with ADC overuse and unauthorized use can be addressed through the combined activities of permitted facilities inspection, the DRS and the biennial review process, and BOE monitoring.

Potential overuse of ADC has been a concern of some stakeholders primarily because of the impact on composting facilities that compete for feedstock with ADC usage. In September 1999, the Board discussed the status of overall ADC use and potential overuse. Potential overuse of ADC was investigated but not confirmed. There have been problems with evaluating overuse of ADC using the disposal reporting system because other beneficial uses of ADC materials (for example, green material as mulch, construction and demolition debris for wet weather decks, etc.) were also being reported as ADC.

Board staff conducted an evaluation of ADC use reported to the DRS. The purpose of the evaluation was threefold. The first step in the process was to determine who uses ADC. Next, of those that claim ADC use, how much—as a percentage of reported total waste—is claimed. Finally, the analysis looked to see if there were any trends in ADC use.

ADC data was gathered from the DRS database for the years 1995 through 1999. The information was compiled for all the landfills within each county that reported ADC use. There were only 30 counties who reported significant ADC use in those years. However, in several cases, ADC was not claimed in each of those years. The following graph (Figure 4-10) shows the statewide ADC use as a percentage of total landfill intake. There has been a definite trend upward in the use of ADC statewide.

Figure 4-10. Percent ADC claimed of total statewide disposal



For 1999, the total reported intake of waste in all the landfills was 39,480,980 tons. Of this, 37,293,168 tons was reported as disposal, and the remaining 2,187,812 tons (5.5 percent) was claimed as ADC. The following table (Table 4-1) shows a breakdown of ADC claimed for that year by material type. Green material constitutes over half of the ADC claimed for 1999 statewide. Sludge, the next most common ADC material, constitutes about 15 percent of 1999 ADC claimed.

Table 4-1. 1999 ADC materials

Ash	7,445 tons
Auto Shredder Waste	240,236 tons
C & D	188,920 tons
Compost	472 tons
Green Material	1,396,026 tons
Contaminated Sediment	17 tons
Sludge	320,546 tons
Tires	8,457 tons
Mixed	4,783 tons
Other	20,911 tons

Source: CIWMB

For each of the 30 counties where ADC was claimed, the amount of ADC claimed in each year was computed as a percentage of the total landfill intake for that year. The data was then graphed for each county in order to identify possible trends. Some of the counties showed a definite increase in the amount of ADC used. Others showed a steady decrease. Many counties displayed unique spikes in certain years, while others showed a large variance from year to year.

The working group's discussion of this analysis led to several conclusions. First, there is definitely an upward trend, statewide, in the claiming of ADC. There could be any number of reasons for this, such as increases in the size and number of landfills, or decisions to employ substitute materials for daily cover rather than excavating tillable soil. Other reasons could include misreporting of ADC when the materials were actually used for other beneficial uses, such as for erosion control, road base, winter weather pads, etc.

Second, there doesn't appear to be any trend among the 30 counties claiming ADC. That is, it's not clearly defined whether larger counties use a greater percentage of ADC than smaller counties. Furthermore, a county's previous use of ADC does not reliably predict its future use. Finally, Board staff has been conducting on-site evaluations at landfills throughout the state to assist in monitoring ADC usage and reporting. During fall 2001, the Board heard several agenda items on the issues, impacts, and solutions concerning ADC use at several landfill sites throughout California that reported significantly high amounts of ADC use during report years 1999 and 2000. Most of the ADC issues were determined to be misreporting and the ADC data has been corrected. The Board will be considering potential overuse of ADC at two landfills at Board meetings in late 2001 or early 2002.

Inert Landfills

Working group members were concerned about the inequity in what counts as disposal at landfills. Historically, some inert landfills were not required to have Board solid waste permits, while others, specifically four inert mine reclamation sites in Los Angeles County, were required by local agencies to obtain Board solid waste permits. Local agencies required these inert facilities to obtain a solid waste permit to ensure groundwater protection. The DRS system only tracks disposal at permitted facilities. This causes inequity as jurisdictions disposing inerts at permitted facilities are allocated disposal tonnage, while jurisdictions disposing inerts at nearby unpermitted facilities are not allocated disposal tonnage for the same waste types. Tons disposed at an unpermitted facility effectively count as diversion in a disposal-based measurement system.

The Board has worked to resolve the issue. The Board approved the Los Angeles fix (a policy to correct for the base-level inaccuracies in Los Angeles County) to allow jurisdictions to establish a new base-level generation to include waste disposed at the permitted inert facilities. A jurisdiction may include this tonnage in revised base-level generation if they did not include it in their original base-level generation amount. In addition, the Board is gathering data to prepare regulations for construction and demolition waste.

Chapter 600, Statutes of 1999 (Chesbro, SB 515) allowed the four mine reclamation facilities an exemption from paying the Integrated Waste Management Fee until January 2002. The law also states that an exemption from the fee will not impact what waste counts as disposal and diversion. Therefore, since the permitted inert landfills have reported disposal to DRS since 1995, any disposal at the permitted inert landfills is reported as disposal in the DRS.

Special Waste

Special waste consists of waste types typically requiring disposal in Class II landfills or Class II cells in landfills, such as non-friable asbestos, sludge, auto shredder fluff, petroleum-contaminated soil, and ash. At least 94 landfills accept special waste. Questions arose from the working group regarding non-hazardous wastes disposed and used beneficially. Businesses rather than jurisdictions usually control which facilities receive the materials. Often the lowest bidding facility gets the contract for these wastes, and the disposal site may be hundreds of miles from where the waste was generated. Each regional water quality control board and air district determines if special waste materials may be used beneficially or must be disposed. So the same waste type can count as disposal or diversion depending on the environmental protection regulations in effect at a disposal site. There is no consistent method for tracking these materials.

The laws relating to special waste have changed significantly over the last ten years. Some jurisdictions were not aware of special waste when they originally did their waste generation studies. The inclusion of these waste types in reporting year disposal has been a significant problem for jurisdictions that did not include the waste types in their base-level generation. Some jurisdictions have seen significant drops in their diversion rates due to disposal of special wastes.

There are few diversion opportunities for special wastes, and jurisdictions do not want to be penalized for waste they cannot divert. In March 2001, the Board recognized these inconsistencies and established a policy to allow subtraction of certain special wastes from disposal amounts. To deduct special waste tonnage, jurisdictions must show that the special waste types are tracked at the Class II landfill and that the regional water quality control board, air district, or local control agency requires disposal of the materials.

Before making a decision on how to deal with special waste issues, both jurisdictions and the Board need to consider the diversion impact of not counting special waste as disposal. Only waste types that are disposed can count as diversion. If special waste is removed from disposal, then it could not count as diversion. A number of jurisdictions rely on special waste diversion for ADC in particular. Special waste ADC was more than 350,000 tons in 2000.

Self Haul Study

The disposal reporting system (DRS) working group was concerned with the amount of self-haul tonnage and self-haul traffic at solid waste facilities. Many group members recognized that self-haul customers in cars and small pickup trucks transport only a minimal portion of the total waste disposed while contributing to delays in processing vehicles at landfill gates. The County of Orange Integrated Waste Management Department shared the results of a ten-month study that examined self-haul waste.

The Orange County study tracked the number of self-haul loads per month, the pounds per load, and the total tons per month at the county's three permitted active landfills from May 1998 through February 1999. The results showed that self-haul customers in cars or small pickup trucks only delivered about 1.3 percent of the total tons disposed. Of all the loads brought to the landfill, almost a quarter were attributed to these smaller vehicles. The small vehicle self-haul customers delivered only 12 percent of all self-haul tonnage.

The following table was included in Orange County's study. In this table, loads per month and tons per month were averaged for the three landfills and for the entire county.

Table 4-2. Orange County residential self-haul study

May 1998 - February 1999

	<i>Average LOADS per month</i>			
	<i>Brea</i>	<i>Prima</i>	<i>FRB</i>	<i>Total</i>
Passenger car	69	188	20	277
Less than 880 lb P/U truck	3,759	3,756	3,871	11,385
	<i>Average TOTAL Tons per Month</i>			
Passenger car	12	34	4	50
Less than 880 lb P/U truck	1,654	1,653	1,703	5,010

Above survey covers 1.3% of total tons, 24% of total loads.

The study concluded, based on the ten months of data, that if cars and pickup trucks were excluded from the DRS, the county could speed the processing of almost a quarter of the incoming vehicles. Further, the county could omit origin codes on 1.3 percent of the total tonnage at the landfills but would still capture 88 percent of all self-haul tonnage.

Orange County's documented findings supported the contention that the small vehicle self-haul customers contribute little to the overall disposed waste stream, and yet they contribute considerably to delays at the landfill gates. Therefore, the group recommended that self-haul vehicles under one ton should be excluded from the DRS.

Issues and Solutions

The disposal reporting system working group brought a broad range of perspectives to the discussion of the data. The group consisted of members from large and small jurisdictions, waste haulers and facility operators, and waste management consultants. Each was able to provide valuable insight into the variety of factors that affect the issues addressed. The following summarizes the discussion of the issues and identifies the general themes of the proposed solutions.

Waste Hauler Information

One of the primary issues raised was the reliance on waste hauler drivers for origin information. Commercial waste collection practices, especially in areas where jurisdictional boundaries are not easily defined and collection routes cross those boundaries, result in drivers of waste collection vehicles not having an accurate accounting of the origin of their loads. Jurisdiction-of-origin data collected from a more accurate source of information is available through the use of commercial hauler dispatcher-supplied origin data. Over the last several years, computerized record keeping has increased, so there would be less of a burden on waste haulers to supply origin information.

Obtaining accurate information from self-haul is another frequently raised issue, and it was extensively discussed by the working group. Commercial self-haul (for example, remodelers, landscapers, etc.) accounts for the majority of self-haul waste and constitutes approximately ten percent of the overall statewide disposed waste stream. Waste origin accuracy for this sector has been improved in some jurisdictions by requiring business licenses, which provide jurisdictions with a paper trail to aid in resolving origin issues. Residential self-haul, however, comprises a small portion of the waste stream in the more urban areas (and only about 3 percent statewide) but may represent a large portion of the vehicle traffic at disposal facilities.

Orange County conducted a survey in 1998–1999 of self-haul disposed by truck type. The residential self-haul in pickups or cars carrying less than 880 pounds of waste accounted for about one-quarter of all vehicles at the gatehouse but only 1.3 percent of total tons landfilled. It takes considerable time to process the residential self-haul loads, and information may not be accurate.

Obtaining accurate information from residential self-haul drivers is more problematic compared to the commercial self-haul sector. Better public education and verification of origin procedures have improved accuracy, but they are time consuming. Another option considered by the working group would be to only ask origin information of self-haul vehicles larger than a pickup truck.

Scales

In the course of their deliberations, the working group determined that the accuracy of amounts disposed could be improved through the use of scales at all facilities. In 1990, only about one-half of the landfills had scales. A recent survey conducted by the Board indicates that today that number is greater than 90 percent. Recording actual waste weights rather than estimating average weight based on volume would

provide a more accurate picture of the disposal stream. However, the working group realizes the cost of implementing the use of scales may be prohibitive to small or rural jurisdictions and may require exemptions for those communities.

Origin Surveys

The working group devoted a considerable amount of discussion to the issue of improving accuracy in allocating waste. The analyses conducted on the DRS information point to several solutions. The consensus of the working group is that the data clearly supports the superiority of daily waste origin surveys over the currently required minimum one week per quarter. A recent Board-conducted survey of selected landfills throughout the state indicates that the number of facilities conducting daily origin surveys is steadily increasing. Requiring daily origin surveys at all facilities would require regulatory change, but it would greatly improve accuracy. The working group understands the problems such a requirement would create for some small rural landfills that operate on the “honor system” without benefit of a gate attendant. Since there are few such rural facilities, and rural counties account for less than five percent of California’s waste, making exceptions for them would not severely impact allocation accuracy.

Finally, the working group addressed the issue of disposal data verification. The discussion centered on the inordinate amounts of time and resources needed to verify disposal data reported by facility operators. Several working group members noted that some jurisdictions have a degree of difficulty in extracting the level of cooperation from operators and haulers that would allow them a more timely verification of disputed allocation amounts. They feel that jurisdictions’ time could be better spent verifying program implementation and effectiveness rather than “chasing numbers.” The working group requests the Board exercise its authority and increase the number of formal facility audits it conducts to assist in obtaining more accurate data. In addition to reconciling disputed allocation numbers, they feel the audits would provide a secondary benefit of impressing upon the operators the importance of well-organized data collection and timely, accurate reporting. Furthermore, the Board should, either through policy or regulation, encourage and/or require better cooperation and more timely reporting of disposal data by facility operators. Such action will help to ease the burden of verification on the jurisdiction. Finally, the working group believes the Board should institute procedures to effect a comprehensive cross-checking of disposal data reported by facilities to both the disposal reporting system and the Board of Equalization.

Regional Approach

The analyses also indicate that the DRS data is more stable when aggregated at the county level, rather than the jurisdiction level. Thus, forming regional agencies would benefit many jurisdictions in satisfying IWMA requirements. The working group realizes, however, that regionalization will not work everywhere. Discussion of the analyses centered around the fact the data indicates that for small rural areas, aggregating disposal information at the county level did not necessarily reduce the variability of the data. Furthermore, they noted that for some larger counties, it is neither economically prudent nor politically feasible to combine all the jurisdictions into one regional agency. However, the working group believes that those jurisdictions that would benefit most from regionalization should be encouraged to do so through the use of newly created incentives.

Standardize What Counts

The group discussed the inconsistencies of how some materials are counted for disposal in different areas of the state. In some cases, different facilities account for the same type of waste in different ways. This is especially true in the ways different facilities track or treat special wastes and ADC. (See previous discussion concerning inert landfills.) The working group concluded that standardized procedures may need to be created, and the definition of solid waste in PRC, section 40191(a) may need to be amended to address these inconsistencies. The working group wants all stakeholders to have input into any changes in the law. The working group also expressed a desire for the Board to support pending legislation that will exclude special waste requiring disposal at Class II landfills from counting as disposal in the disposal reporting system.

Additionally, the working group believes that some jurisdictions are being penalized with lower diversion rates for disposing inerts at permitted landfills while other jurisdictions are rewarded with higher diversion rates for disposing their inerts at unpermitted inert landfills. There is not a level playing field for facilities accepting only inert waste for disposal. Therefore, the group recommends that inerts disposed at mine reclamation facilities, which are not subject to the BOE fee, should be excluded from the DRS reporting.

Enforcement

The final issue addressed by the working group is that of enforcement. The group concluded that currently, jurisdictions have no method to ensure that haulers and facility operators comply with the intent and requirements of DRS data collection and reporting. There is no standardized requirement as to how haulers and facility operators collect, record, maintain, and report disposal data. Thus, haulers and operators institute individual policies and procedures. If the individual policies and procedures fall short of meeting the needs of the jurisdictions, there is little incentive to improve because there is no penalty for this failure. Jurisdictions are hesitant to enact ordinances to ensure the cooperation of their haulers and operators because of the resources required to create, implement, and enforce such ordinances. The working group recommends that the Board provide grants and other incentives to jurisdictions to enact ordinances requiring hauler and operator compliance with the intent to improve DRS data collection and reporting. They believe such action would greatly help to mitigate this issue. Additionally, the working group recommends creating enforcement authority at the State level.

Summary

In summary, the working group concluded that some of the proposed solutions can be accomplished through policy changes at the Board. Others will require regulatory and/or statutory change. Discussions and recommendations from the working groups fell into several broad areas:

- Emphasize diversion programs, not diversion rates – The focus of the system should be on programs, not numbers. The working group believes it is more economically efficient to spend resources on creating and implementing effective programs, rather than attempting to assign disposal tonnage and calculate diversion rates.
- Rural and small jurisdictions bear a disproportionate share of error. The DRS data show that errors are higher for small and rural jurisdictions. The working group agreed that DRS practices and procedures need to be changed for these jurisdictions.

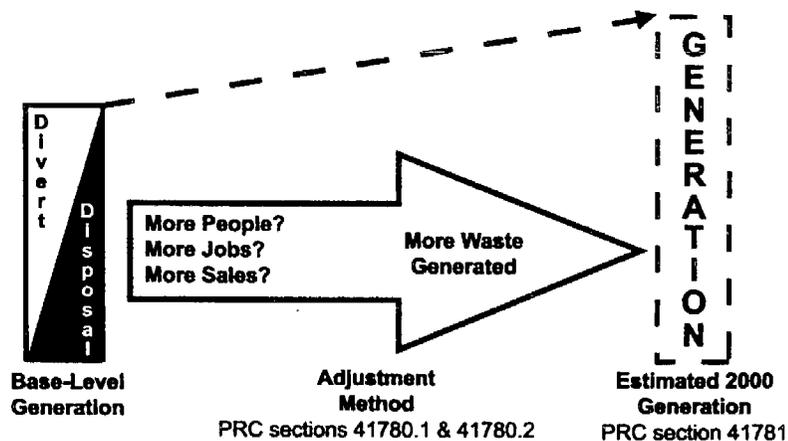
- Promote regional solutions – Preliminary analysis indicates that disposal reporting data is more stable for larger jurisdictions and when data is aggregated to the county level. The working group agreed incentives to regionalize should be increased; disincentives should be removed.
- Increase Board assistance – The working group concluded that the Board should provide increased economic incentives and expand types and numbers of tools available to assist jurisdictions in meeting their goals. Also, the Board should review and remove any of its policies, as well as any other institutional barriers, that may inhibit the development of effective diversion programs.
- Expand disposal reporting system enforcement – Jurisdictions currently have little or no enforcement mechanisms to ensure haulers and facilities provide accurate and timely disposal reporting data. The working group believes the Board should evaluate methods to improve enforcement through oversight activities and increased permitting requirements.
- Resolve special waste issues – Certain materials, such as special waste, are treated differently (disposal vs. non-disposal) at different facilities. The working group suggests the Board take action to remove these uncertainties/inconsistencies and work to standardize how waste is reported.
- Improve/ease reporting – There are a number of causes for inaccurate allocation of disposal to jurisdictions. The working group determined that the Board should work to establish, in statute, statewide standards for the collection and dissemination of waste origin data and due process procedures to address errors in the DRS.

The working group believes that the DRS has given jurisdictions a better understanding of their waste flow and disposal data. The working group also recognizes that the DRS values are only estimates, but they are a useful indicator of a jurisdiction's disposal activity. However, the working group wishes the Board to recognize there is the potential for inaccuracies in the DRS. The primary factors leading to these inaccuracies are the nature of waste disposal, the difficulty in allocating waste at the jurisdiction level, and the lack of enforcement capability. Based on data analyses, the Board believes the disposal reporting system reasonably estimates disposal for most jurisdictions. The Board believes there are ways to address these issues that can result in minimizing their effect.

Chapter 5 Adjustment Method Review

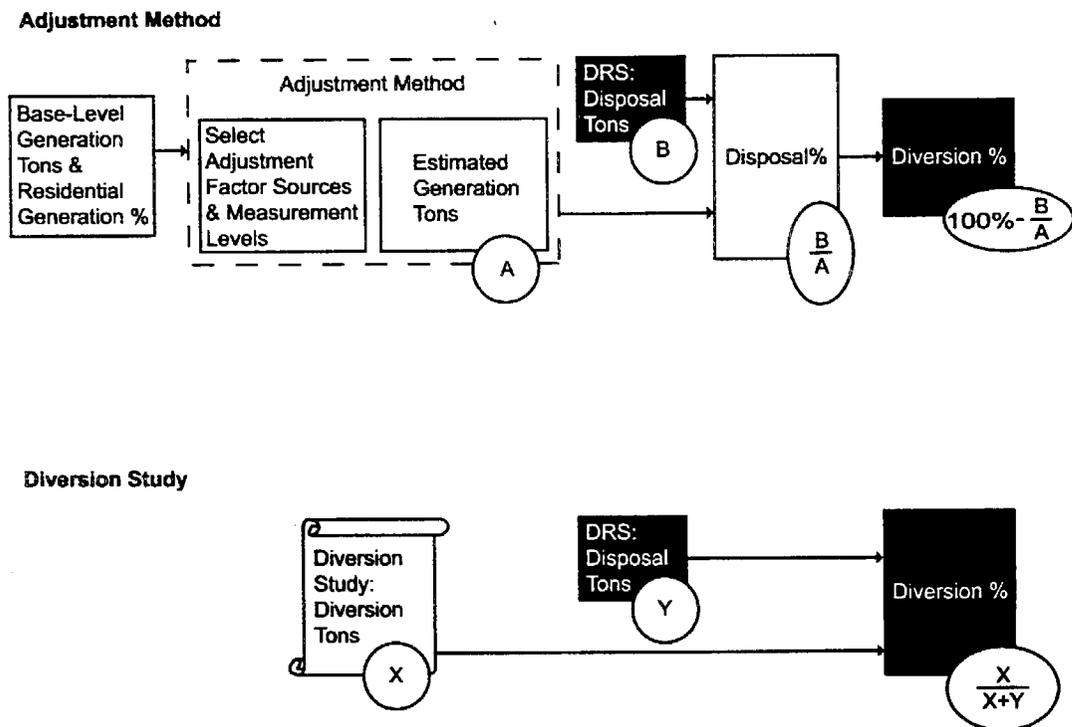
When the California Integrated Waste Management Act of 1989 (AB 939, Sher, Chapter 1095, Statutes of 1989 [IWMA, 1989]) was established, jurisdictions were concerned that through population growth and economic booms their diversion rates would be distorted, thus preventing them from achieving 50 percent diversion. Disposal-based measurement of diversion rates became law in 1993, which further heightened jurisdictions' concerns, and the Board was required to develop a method to adjust for population and economic change and estimate generation (Figure 5-1).

Figure 5-1. Adjustment method concept



Since it is not feasible to determine a jurisdiction's actual diversion rate, it has to be estimated. This adjustment method was considered an attractive shortcut because it estimated a diversion rate without the delays, costs, and difficulties of a diversion study. The adjustment method is an estimation tool that depends on an accurate base-level generation amount. It estimates generation based on jurisdiction change in population, employment, and inflation-adjusted taxable sales since the base-level calculation (14 CCR section 18794 et. seq.). For the adjustment method, the challenge is to reduce potential inaccuracies by continuing to improve it, expanding awareness of its strengths and weaknesses, and using it appropriately. Figure 5-2 shows how the adjustment method fits into the overall disposal-based measurement of diversion rates.

Figure 5-2. Adjustment method vs. diversion study.



A more detailed description of the adjustment method formula (Figures 5-3 through 5-7) to adjust base-level generation tons to arrive at estimated measurement year generation tons is:

1. Determine base-level residential and non-residential generation:
 - Multiply generation tons by residential generation percentage to determine residential generation.
 - Subtract residential generation tons from generation tons to determine non-residential generation.
2. Estimate measurement year non-residential waste generation:
 - Adjust measurement year taxable sales for inflation (Figure 5-3).
 - Average employment and taxable sales change ratios (Figure 5-3) to determine economic change ratio.
 - Multiply economic change ratio by non-residential generation tons (Figure 5-4) to estimate non-residential generation.
3. Estimate measurement year residential waste generation:
 - Average population and economic change ratios (Figure 5-5) to determine demographic change ratio.
 - Multiply demographic change ratio by residential generation tons (Figure 5-6) to estimate residential generation.
4. Add steps 2 and 3:
 - Add estimated non-residential waste generation to estimated residential waste generation (Figure 5-7) to estimate total measurement year generation.

Figure 5-3. Calculating the economic change ratio.

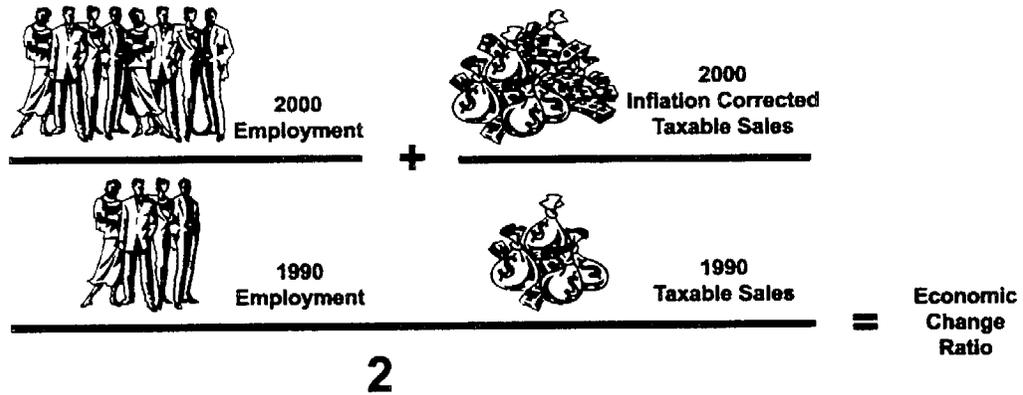


Figure 5-4. Estimating measurement-year non-residential generation.

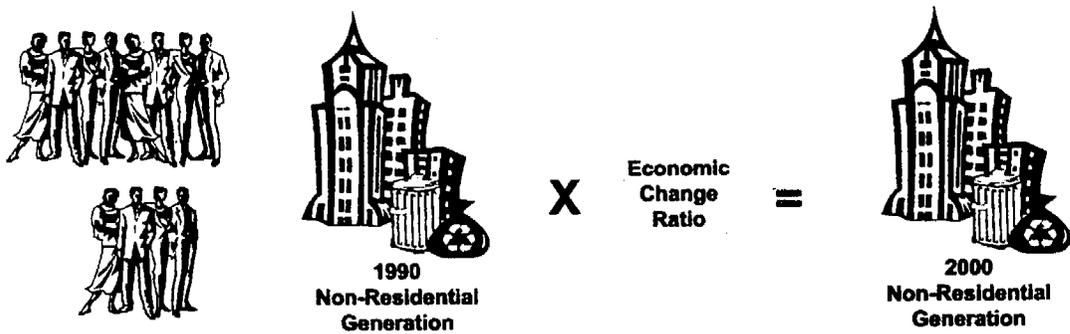


Figure 5-5. Calculating the demographic change ratio.

$$\frac{\text{2000 Population}}{\text{1990 Population}} + \text{Economic Change Ratio} = \text{Demographic Change Ratio}$$

Figure 5-6. Estimating measurement-year residential generation

$$\text{1990 Residential Generation} \times \text{Demographic Change Ratio} = \text{2000 Residential Generation}$$

Figure 5-7. Calculating estimated measurement-year non-residential and residential generation.



Two diversion rate estimate steps follow the adjustment of base-level generation tons: calculating the disposal rate and the diversion rate. The disposal rate is determined by comparing disposal to the adjustment method's estimated waste generation; that is, divide disposal by estimated generation (Figure 5-8). The diversion rate is then determined by subtracting the disposal rate from 100 percent (Figure 5-9).

Figure 5-8. Calculating the measurement-year disposal rate.

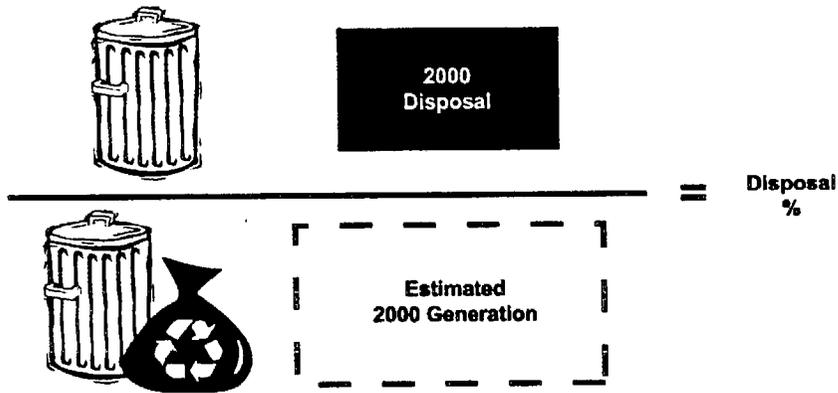
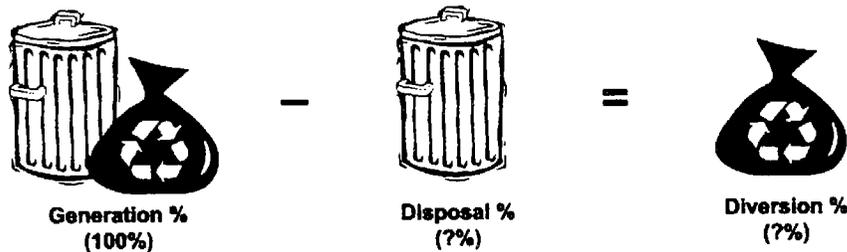


Figure 5-9. Calculating the diversion rate.



The adjustment method treats residential waste differently than non-residential waste, as these sectors respond differently to changes.

Many factors were tested to determine what set of factors and what formula best estimated solid waste generation. The cost of using the adjustment method was minimized using readily available data.

Diversion rate accuracy depends on the interaction of the base-level generation amount, the adjustment method, and the measurement year disposal amount. The adjustment method does not correct an inaccurate base-level generation or measurement year disposal amount (Appendix B, Meeting 1, *Adjustment Method Overview*). At its April 2001 meeting, the Board approved a diversion study guide for collecting complete, accurate data to establish a new base-level generation amount (CIWMB, *Conducting A Diversion Study: A Guide For Local Jurisdictions*, 2001). An earlier section of this report covered the disposal reporting system and how measurement year disposal amount accuracy may be improved.

Adjustment Method Analysis and Issues

The working group examined potential alternative data for each factor (Appendix B, Meetings 1, 2, and 3). No other source for population data was identified that covers each jurisdiction. One concern identified for future work is the impact of 2000 census data on the population ratio: this needs to be investigated further as the census data becomes available.

Use of the State Board of Equalization's (BOE) taxable sales as an economic indicator was also discussed at length. Taxable sales do not include several types of activities that impact the economy such as wholesale transactions, food, housing, prescription medicine, and transportation. Despite these limitations, there is no other data source that provides uniform economic data (closely related to waste generation) for each jurisdiction.

The working group also analyzed alternative ways to adjust taxable sales to account for inflation. The adjustment method currently uses the consumer price index (CPI) to adjust for inflation. This raises issues because the CPI includes some activities that are not included in taxable sales. Another potential option that might be better aligned with taxable sales is BOE's taxable sales deflator. More research in

collaboration with BOE is needed to determine if it is appropriate to use this deflator in the adjustment method formula.

There are many alternative sources of employment data. The Board's current default employment factor (Employment Development Department labor force employment) was selected because it was the only data source available for each county. Labor force employment reflects the number of county residents that are employed. Jurisdictions most affected by use of this data have residents who commute to jobs in other counties or have jobs held by residents of other counties.

To examine the impacts of using alternative employment data, 1999 diversion rates were calculated using default and the alternative data. Then the diversion rates were compared.

State Labor Force vs. Industry Employment

State labor force data, the current default factor, reflects employment of individuals by "place of residence," whereas state industry employment data reflects jobs by "place of work" (Appendix A, Employment Development Department, *Employment by Industry Data Compared to Employment Data in Labor Force Statistics*). According to the Employment Development Department, "In most geographic areas, the difference between the employment in labor force statistics and the industry employment is minimal. However, in areas such as Ventura County, where a large portion of the residence population commutes to Los Angeles County to work, Labor Force Employment can be almost 100,000 people higher than [Industry Employment]." Industry employment data for a given year is not available for every jurisdiction in California until at least the end of August the subsequent year. Ninety-two percent of jurisdictions had less than three percentage points difference in their 1999 diversion rate when state industry employment was substituted for labor force employment. The majority of the 35 remaining jurisdictions that had greater difference in their 1999 diversion rate were small jurisdictions.

State Labor Force vs. Federal Industry Employment

The federal government also collects industry employment data. U.S. Department of Labor, Bureau of Economic Analysis industry employment reflects jobs by "place of work." Ninety percent of jurisdictions had less than three percentage points difference in their 1999 diversion rate when federal industry employment was substituted for state labor force employment. About half the 40 remaining jurisdictions that had a greater difference in their 1999 diversion rate were small jurisdictions.

Unusual Extremes of Population, Employment, and Taxable Sale

Adjustment method testing in 1993–94 showed that the method was less accurate for certain types of jurisdictions. This was confirmed during the review of the adjustment method. If a jurisdiction has an extremely low residential population, then the adjustment method formula weight given to population may not be accurate. Also, the method weights employment and taxable sales equally. If this weighting does not reflect the jurisdiction's characteristics, the adjustment method estimate will be less accurate (Appendix B, Meeting 2, *Subject: Margin of Error for Adjustment Methodology Annual Generation Tons*). Heavily industrial jurisdictions are likely to have high employment and low taxable sales since the goods are sold wholesale and are not subject to sales tax, so adjustment method factor weighting can be an issue.

Modifying the Adjustment Method Formula

Another option analyzed was changing the adjustment method formula to apply the number of employed residents to the residential portion of the method and the number of people employed to the non-

residential portion of the method. Ninety-five percent of jurisdictions had less than three percentage points difference in their 1999 diversion rate using the modified formula. Most of the remaining 20 jurisdictions that had a greater difference in the 1999 diversion rate were small jurisdictions. A change to allow jurisdictions the option to use this formula will require regulations revisions.

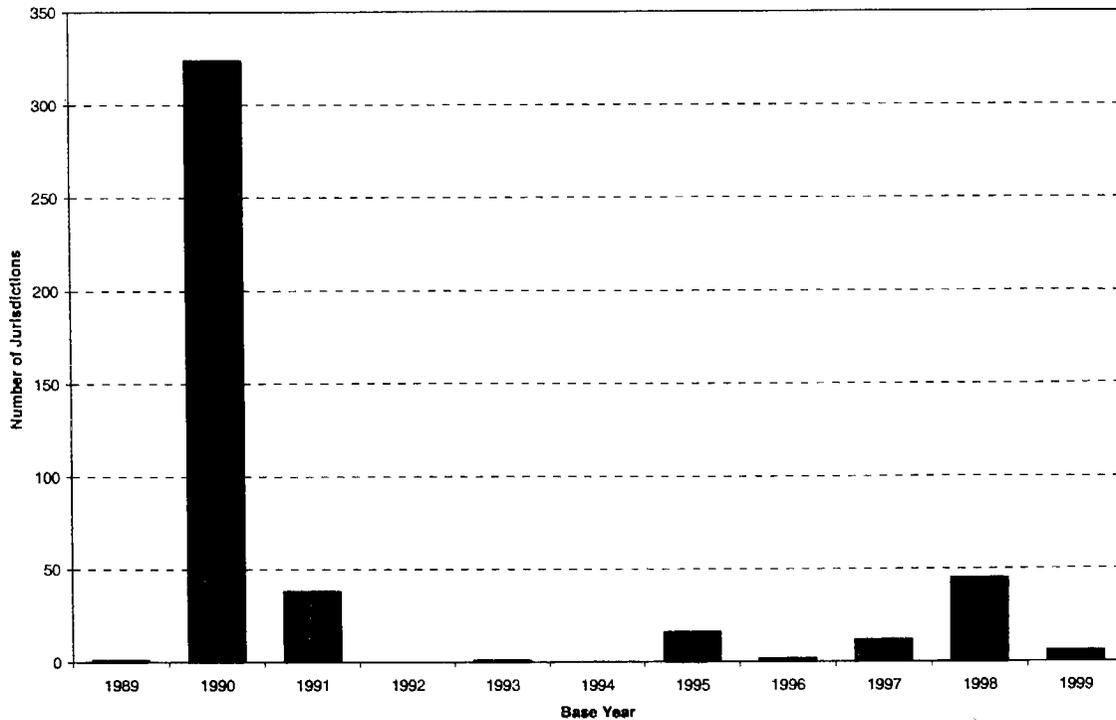
Statistical Analysis

Several issues were identified when the adjustment method working group discussed the feasibility of conducting a new statistical analysis of the adjustment method similar to the analysis done in 1993–94. The most serious issue is lack of actual waste generation data, or a valid proxy, to compare with adjustment method results. Without this data, a statistical analysis to determine adjustment method accuracy cannot be completed. The data would need to be gathered from many jurisdictions over a period of four years at an estimated cost of several million dollars. Because of these issues, the working group does not recommend a new statistical analysis.

Old Base-Level

The adjustment method depends on the accuracy of base-level generation and on whether a jurisdiction's base-level generation amount has become inaccurate due to change in the amounts and types of waste currently produced. With unbalanced jurisdiction population and economic change, or a significant shift in the types and quantities of residential and/or non-residential solid waste produced, a base-level generation amount will eventually need replacement. Estimated diversion rates will be more affected by an old inaccurate base-level generation amount than by choice of adjustment method factors. More than 70 percent of jurisdictions have a 1990 base-level generation amount (Figure 5-10).

Figure 5-10. Jurisdiction base-level dates.



Unbalanced Growth

The factors used in the adjustment method will change over time, but they may not all increase or decrease, and they may not change at the same rate (Figures 5-11 and 5-12). Disparity in adjustment factor growth rates of 20 or more percentage points is unbalanced growth. About 150 jurisdictions have unbalanced adjustment method factor change for 1999.

If change in population, employment, and taxable sales are not approximately the same, then the solid waste stream is probably much different than it was in 1990. If population growth has outstripped employment and taxable sales, the jurisdiction waste stream may now be more similar to a bedroom community. If taxable sales increase significantly, and both population and employment remain constant, the non-residential waste stream may now be radically different. For example, a city with a 1990 base level selects 2000 adjustment method factors and finds that in 10 years it had six percent employment growth and 42 percent taxable sales growth.

Figure 5-11. Statewide adjustment factor change since 1990.

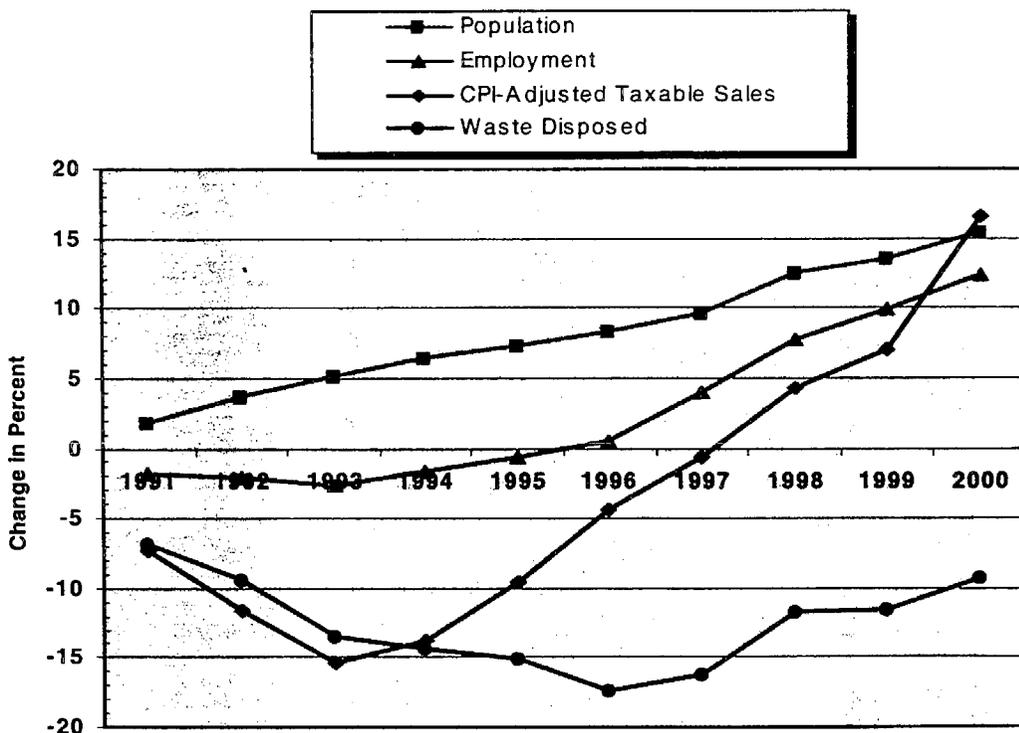


Figure 5-12. Jurisdictions: diverse and dynamic.

	1999	1990 - 99 Change (Decline/Growth)
 Population	Range: 85 to 3.8 Million People	-31% to +223%
 Employment	Range: 460 to 4.4 Million Jobs	-21% to +64%
 Taxable Sales	\$155,000 to \$28.4 Billion	-50%* to +171%* *Adjusted for inflation

Substantial Growth

The adjustment method was developed in 1993–94 using factors that had a maximum growth rate of 14 percent. The growth rates were balanced. Although exceeding 14 percent balanced growth does not necessarily mean a new base-level generation amount must be established, the statistical accuracy of the adjustment method steadily declined as the balanced growth rate increased from two percent to fourteen percent (Appendix B, *Interactions Between The Adjustment Method, Base-Year Generation, & Report-Year Disposal*). However, balanced growth between 1990 and 2000 is rare. What is more common is unbalanced growth. Before deciding to establish a new base-level generation amount, other factors ought to be considered, such as jurisdiction size, adjustment factor selection, change in business types and business wastes, and DRS error.

Margin Of Error

The adjustment method working group considered the feasibility of calculating a “margin of error” for adjustment method waste generation estimates. Due to potential error in jurisdiction base-level generation studies and in the adjustment method, it is not possible at this time to obtain a margin of total error (Appendix B, Meeting 2, *Subject: Margin of Error for Adjustment Methodology Annual Generation Tons*).

Solutions

Based on the analyses performed, the adjustment method works well for most jurisdictions if:

1. Base-level waste generation characteristics reasonably reflect the nature of measurement year waste generation.
2. Jurisdiction size is medium to large.
3. Jurisdiction characteristics are not exceptional.
4. Population and economic factor measurement levels selected are the most representative.
5. Measurement year disposal is accurate.
6. Measurement year disposal corrections are accurate for: disaster and treated medical waste, regional diversion facility residual waste, sludge and out-of-state export subsequently diverted, and transformation or biomass conversion diversion credit.

Given these conditions, the adjustment method may be used with reasonable confidence. Accordingly, the synthesis group recommends the default adjustment method factors be retained and the default employment factor be expanded to an “either/or” labor force employment (where people live) or industry employment (where people work). This does not require regulations change.

Small Jurisdictions

Data presented in the DRS review shows there are more errors for jurisdictions with population less than 25,000, or for those with annual disposal less than 25,000 tons, or for countywide disposal of less than 60,000 tons. For year 2000, about 40 percent of all jurisdictions meet at least one of these criteria. The adjustment method formula is not designed to compensate for errors in measurement year disposal. Analysis of alternative adjustment method factors shows that small jurisdictions are more likely to be impacted by the choice of a factor. Relative to large jurisdictions, small jurisdiction measurements will tend to be less accurate if the same measurement tool is used. There are ways to improve goal measurement for a small jurisdiction.

However, none change the adjustment method formula:

- Use more accurate local adjustment method factor values.
- Form a regional agency so that regional adjustment method factor values will be used.
- Establish a new, more accurate base-level generation amount and apply the adjustment method.
- Perform a generation study to determine a yearly diversion rate.

Base-Level Generation

One difficulty faced by jurisdictions and decision-makers is how to fairly assess the accuracy of a diversion rate estimate given the many variables and the potential for inaccuracies involved (Figure 5-2). Stated differently, how should an estimated diversion rate be weighted in comparison to diversion program information? Another issue is how to determine when a jurisdiction base-level generation is so inaccurate that it adversely affects the diversion rate estimate. In other words, when is an old base-level generation amount too old? The Board staff and working group have different recommendations regarding old base-level generation. The synthesis working group does not believe the testing limits warrant establishing criteria for when to examine whether base-level generation still reflects the jurisdiction characteristics. Board staff and the adjustment method working group believe jurisdictions with growth rates beyond the tested level should examine base-level generation and explain why the base level is still valid (for example, number and type of business waste generators have remained the same, balanced growth in adjustment method factors, residential percent of waste stream is the same). If there is significant change, establishing a new base level should improve accuracy.

Increased Jurisdiction Flexibility To Use Alternative Source Factors

The working group recommends optional use of a few potentially viable alternative source adjustment method factors in place of the default state labor force employment factor. These alternative employment measures are nearly identical to the default factor for most jurisdictions (Appendix B, Meeting 2, *How Do Alternative Employment Measures Affect 1999 Diversion Rates?*).

Must Comply With Regulations

1. County-level federal industry employment.
2. Third-party private sector employment data.
3. City-level state industry employment (see item 2 below).
4. Jurisdiction employment data from business licenses.

Requires Regulations Change

1. County-level state labor force employment for demographic change ratio, county-level state industry employment for economic change ratio.
2. City-level state industry employment if 1991 data is substituted for 1990 base-level data.

Increase Training and Improve Tools and Assistance

While the Board must consider approval of alternative source adjustment method factors, more complete data may be published to assist jurisdictions and the Board. The working group recommends the Board expand its *Adjustment Method Factors* Web page to identify known potential alternative sources for adjustment factors. The group also recommends listing each annual report alternative source adjustment

factor proposal with information on the biennial review outcome (Appendix A, *Adjustment Method Factors*). The end result may be a higher success rate for new alternative source adjustment factor proposals, increased jurisdiction flexibility, and more efficient Board staff review and biennial review hearings.

The need to expand awareness of adjustment method strengths and weaknesses is supported by working group recommendations to conduct public workshops and publish data on:

1. Inherent limits of base-level generation amounts, adjustment method formula, and measurement year disposal amounts
2. Steps jurisdictions may take to understand the adjustment method.
3. Jurisdiction alternative adjustment factor proposal outcomes.
4. Economic activity reflected in taxable sales.
5. Error in state estimates of taxable sales.

Additional Work Needed

The working group recommends the Board:

- Publish information on what economic activities are included in state taxable sales.
- Publish information on the extent and scope of errors in Board estimates of fourth quarter taxable sales.
- Do more statistical analysis of adjustment method formula accuracy, including factor weights, long-term accuracy, and interrelationships between independent variables.
- Monitor 2000 Census data impact on state population estimates.
- Research merits of using CPI alternative in adjustment method formula.
- Publish information on inherent limits of base-level generation amounts, adjustment method formula, and measurement year disposal.
- Publish steps jurisdictions may take to understand adjustment method.
- Conduct public workshops on an ongoing basis.

More Research

The synthesis group also recommends more research on weighting of formula components comprising the adjustment method formula, the 2000 Census data impact on state population estimates and subsequent measurement-year diversion rates, and an alternative inflation measure. Although the synthesis group does not recommend the Board require jurisdictions to establish a new base-level generation amount given specified circumstances, it does acknowledge the need for accurate base-level generation amounts by recommending the Board provide economic incentives or funding for cooperative solid waste generation studies to establish new jurisdiction base levels. If a jurisdiction is dynamic, its base-level generation amount may no longer be useful when estimating measurement year generation.

Evaluating Diversion Rate Accuracy at Biennial Review

A key working group recommendation is to provide the Board information on potential inaccuracies and allow the Board to take a tiered approach to evaluating diversion rate accuracy at the biennial review. This tiered approach places jurisdictions into one of several diversion rate accuracy categories based on accuracy indicators (or red flags) that concisely profile a jurisdiction's potential diversion rate estimate

error. It should help clarify how much emphasis to place on the diversion rate estimate vs. diversion program information and provide the Board with data needed to make equitable biennial review decisions.

Summary

The adjustment method is an estimation tool that works reasonably well for most jurisdictions. Base-level generation tonnage must be accurate as well as reflect the nature of solid waste produced. Disposal tonnage must also be accurate. Since each jurisdiction's diversion rate is an estimate, the Board should have information on potential accuracies indicators in diversion rate measurement red flags as it considers biennial reviews. Alternative source adjustment method factors seem to help the most if the jurisdiction is small or has unusual extremes of population, employment, and taxable sales. Further statistical analysis is needed to determine if entirely new adjustment method factors and weights would improve the accuracy of the adjustment method formula. Expanded dissemination of existing information and publication of new study results should improve adjustment method understanding and application.

Chapter 6 Review of Alternatives to the Existing System

Historical Perspective

Various ideas on diversion rate measurement methods and diversion requirements, as well as ideas on which entities should be responsible for meeting requirements, have been debated since the late 1980s when the legislature and interested parties crafted the Integrated Waste Management Act of 1989 (AB 939, Sher, Chapter 1095, Statutes of 1989 [IWMA, 1989]). Additionally, many alternatives to the diversion rate measurement system were debated in 1992 prior to, and as part of, the development of Chapter 1292, Statutes of 1992 (AB 2494, Sher), which switched to a disposal-based diversion rate measurement system. Some of the alternatives included below reflect those earlier discussions.

Framework for Considering Alternatives

As the goal measurement system has been implemented over the years, issues have been identified concerning the accuracy and efficacy of the system. Potential ways to address these issues have also been identified. These range from minor or major adjustments in the present system to perhaps completely different systems designed to meet waste reduction and resource conservation goals in new ways. When one considers the possibility of wholesale changes to the system, the following questions can be considered:

- Does the system measure the *right things* to provide information on diversion progress?
- Does it measure these things in the *right way* to provide an accurate picture of diversion?
- Is the measurement data being used in the best way?
- Do the measurements truly reflect the diversion occurring in local jurisdictions?
- Are resources being used in the appropriate ratio for both implementing diversion programs and assessing the results of the programs?

The alternatives working group developed recommendations on how to improve the measurement system to make it more accurate, more flexible, and more conducive to shifting resources from measurement to program implementation. Additionally, the alternatives working group chose to make recommendations that are not directly related to the measurement system but that could improve meeting the goals and spirit of the California Integrated Waste Management Act (AB 939, Sher, Chapter 1095, Statutes of 1989 as amended [IWMA]). Throughout the process, ideas to improve diversion were held to be equally important as ideas to improve measurement. The group agreed upon the following two “mission statements”:

- Consider alternatives to the way the State determines compliance with the IWMA.
- Consider alternative ways to meet the goals of the IWMA.

Alternatives Issues

While CIWMB has been discussing the diversion rate measurement system during the past few years, various stakeholders have raised the following issues. These issues were the basis for developing the proposed alternatives considered.

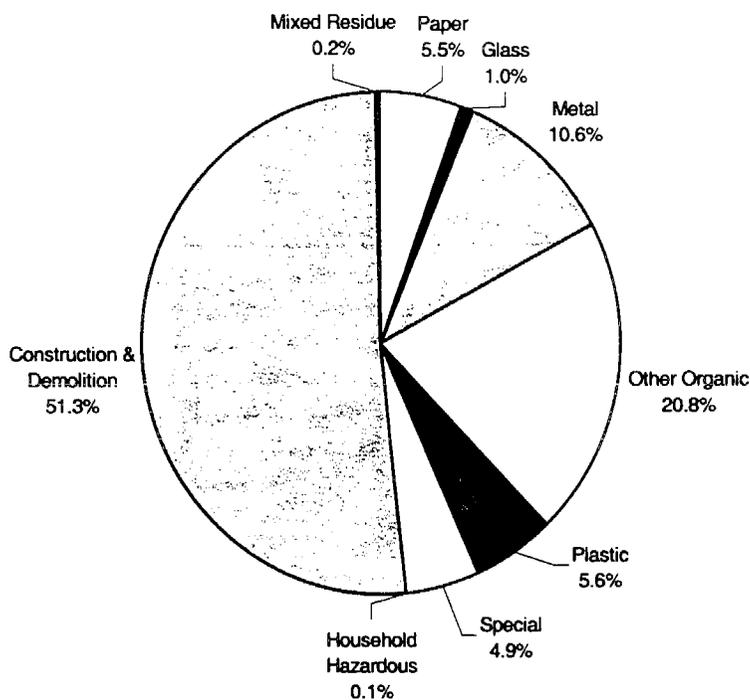
1. Due to the diverse conditions in climate, population, urbanization, and economic and other factors, California's waste stream is complex and can be difficult to measure accurately at various locations under various conditions. It can be especially difficult to track waste origin to within specific city or unincorporated county areas due to complicated jurisdiction borders, the position of many jurisdictions contiguous to one another in a small area, hauling routes crossing jurisdictional boundaries, or businesses and individuals hauling waste to disposal facilities themselves.
2. Rural areas are especially affected by errors in measurement because of low overall tonnage amounts. Rural jurisdictions tend to have fewer resources for public services such as IWMA compliance, and a disproportionate amount of these resources may end up being spent addressing measurement problems.
3. For larger jurisdictions, as well as smaller ones, measurement activities can take resources away from diversion program implementation. However, measurement is necessary to assess progress. The right balance needs to be struck between resources spent on implementing programs and those spent on measuring the success of those programs.
4. It may be less costly and more effective to measure compliance with IWMA goals in a different way. For example, in the current diversion rate measurement system, disposal amounts are the only information on the waste stream that is truly measured. The alternatives considered included: can a new measurement system be devised that takes advantage of measuring disposal amounts and perhaps the types of materials being disposed that will move us further toward the goals? Or should jurisdictions be held to different goals based on the nature of their local waste streams? Should use of landfill capacity be the measurement standard?
5. Markets for materials that are diverted are critical for the success of programs. More diversion might be achieved if there were more emphasis and resources spent on market development than on waste stream measurement.
6. Although jurisdictions bear the responsibility of meeting IWMA goals, they do not have control over all the waste generated within their borders. More parties, such as large waste generators or product manufacturers, should be included in the circle of responsibility for the waste they produce.
7. More diversion might occur by providing incentives to divert, rather than imposing penalties for not diverting. Positive reinforcement may be more effective than negative reinforcement.

Data Analysis

For many of the concepts considered by the alternatives group, no current data exists or can be developed because the ideas deal with new ways to measure or are broader concepts. However, for some ideas, data exists that can aid in assessing impact on the measurement system. The group considered pertinent data contained in the information for the disposal reporting and adjustment method working groups. Two additional types of data reviewed by the alternatives group are found below.

One of the solutions proposed by the alternatives working group is to expand responsibility for diverting waste beyond cities and counties by requiring disposal facilities to divert waste from self-haulers (disposers whose primary business is not hauling waste, such as landscapers). The Board conducted a statewide waste disposal characterization study in 1999 that included the self-haul waste stream. Statewide, self-haul accounts for about 4.7 million tons or 13.1 percent of the waste stream (10.5 percent from commercial sources and 2.6 percent from residential), but this can vary widely from jurisdiction to jurisdiction. The figure below shows an overview of the composition of the self-haul waste stream. Table 6-1 shows the top ten materials typically found in self-hauled waste, and Table 6-2 shows the sources of self-haul waste statewide. Again, this can vary greatly at the local level.

Figure 6-1. Overview of statewide overall self-haul waste, 1999.



Source: CIWMB, Statewide Waste Characterization Study, Results and Final Report, 1999.

Table 6-1. Most prevalent materials in overall self-haul waste.

Material Type	Est. Pct.	Est. Tons	Cumulative Pct.
Lumber	19.2%	894,304	19.2%
Remainder/Composite Construct. & Demolition	10.6%	491,760	29.8%
Remainder/Composite Organic	8.2%	379,753	38.0%
Other Ferrous Metal	6.7%	312,257	44.7%
Concrete	6.7%	311,396	51.4%
Gypsum Board	5.5%	254,298	56.8%
Pruning & Trimmings	5.4%	250,685	62.2%
Asphalt Roofing	5.4%	249,748	67.6%
Leaves & Grass	4.0%	185,816	71.6%
Bulky Items	3.9%	182,372	75.5%

Source: Statewide Waste Characterization Study, Results and Final Report, CIWMB, 1999.

Table 6-2. Sources of statewide overall self-haul waste, 1999.

Source	Percent of Self-Haul Waste Stream, Statewide, 1999	Percent of Total Waste Stream, Statewide, 1999
Residential	19.8	2.6
Commercial – C&D activities	34.3	4.5
Commercial – Roofing	8.4	1.1
Commercial – Landscaping	6.9	0.9
Commercial – Other	31.3	4.3
TOTAL	100%	13.1%

Source: Statewide Waste Characterization Study, Results and Final Report, CIWMB, 1999.

Other alternatives considered by the working group would allow all jurisdictions in a county to jointly measure diversion. Table 6-3 contains preliminary information on diversion rates taking counties as single entities; that is, all cities in the county and the county unincorporated area are treated as one “all-county” jurisdiction.

Diversion rates shown below are based on information readily available to the Board, not on information submitted in each jurisdiction’s 1999 annual report. This consists of DRS data reported for each jurisdiction in 1999 by the counties and does not include any corrections that may have been submitted by jurisdictions in their 1999 Annual Reports. It also consists of the default adjustment method factors and does not include any alternate factors that may have been submitted by jurisdictions in their 1999 Annual Reports.

Preliminary diversion rate calculations for 1999 show that only 7 of the 58 counties would be at or above 50 percent diversion if measured this way. Only 20 would be at or above 45 percent.

Table 6-3. Preliminary calculations for 1999 all-county diversion rates.

For details on how rates were calculated, see Appendix C, Alternatives Working Group, “Expanded Information To Assist Working Group Members In Evaluating Alternatives,” information for Alt 1-a-1.

County	1999 County-wide Diversion Rate	Number of Jurisdictions in County*	Number of Jurisdictions Over 50%	Number of Jurisdictions Under 50%	County	1999 Countywide Diversion Rate	Number of Jurisdictions in County*	Number of Jurisdictions Over 50%	Number of Jurisdictions Under 50%
Alameda	42%	15	6	9	Orange	49%	32	12	20
Alpine	52%	1	1	0	Placer	30%	7	1	6
Amador	60%	1	1	0	Plumas	34%	2	0	2
Butte	32%	3	0	3	Riverside	49%	25	8	17
Calaveras	36%	2	0	2	Sacramento	35%	5	1	4
Colusa	43%	1	0	1	San Benito	10%	1	0	1
Contra Costa	31%	15	2	13	San Bernardino	39%	25	4	21
Del Norte	45%	1	0	1	San Diego	45%	19	3	16
El Dorado	39%	3	0	3	San Francisco	32%	1	0	1

County	1999 County-wide Diversion Rate	Number of Jurisdictions in County*	Number of Jurisdictions Over 50%	Number of Jurisdictions Under 50%	County	1999 Countywide Diversion Rate	Number of Jurisdictions in County*	Number of Jurisdictions Over 50%	Number of Jurisdictions Under 50%
Fresno	34%	16	6	10	San Joaquin	28%	8	2	6
Glenn	49%	1	0	1	San Luis Obispo	49%	2	1	1
Humboldt	56%	8	3	5	San Mateo	34%	21	1	20
Imperial	71%	8	1	7	Santa Barbara	44%	8	3	5
Inyo	41%	1	0	1	Santa Clara	46%	16	5	11
Kern	46%	12	7	5	Santa Cruz	35%	5	1	4
Kings	41%	2	0	2	Shasta	49%	2	1	1
Lake	17%	3	0	3	Sierra	29%	1	0	1
Lassen	54%	1	1	0	Siskiyou	44%	1	0	1
Los Angeles	40%	89	22	67	Solano	49%	8	6	2
Madera	35%	3	0	3	Sonoma	37%	1	0	1
Marin	42%	1	0	1	Stanislaus	38%	10	1	9
Mariposa	31%	1	0	1	Tehama	46%	1	0	1
Mendocino	21%	5	0	5	Trinity	66%	1	1	0
Merced	43%	1	0	1	Tulare	46%	5	1	4
Modoc	39%	2	0	2	Tuolumne	48%	2	1	1
Mono	41%	2	1	1	Ventura	55%	11	3	8
Monterey	35%	13	4	9	Yolo	41%	5	0	5
Napa	36%	4	1	3	Yuba/ Sutter	26%	1	0	1
Nevada	44%	4	2	2	Totals		445	114	331

* One jurisdiction in county indicates a regional agency.

Description of Solutions Proposed by the Alternatives Working Group

During the course of the working group meetings as ideas were researched, evaluated and discussed, some of the alternatives were combined, some were changed, and some were deemed to be ideas that did not clearly improve the measurement system and were not forwarded to the synthesis group. Brief descriptions of the solutions that were forwarded are found below. For all the ideas considered, more detailed descriptions and information on evaluating them were developed by Board staff and working group members. These can be found in Appendix C, Alternatives Working Group, in the two documents entitled "Expanded Information To Assist Working Group Members In Evaluating Alternatives," and "Priority List Statements of Alternatives Organized by Draft Priority Ranking."

Regional Approaches

1. Increase incentives, and decrease disincentives, for forming regional agencies.

Jurisdictions are allowed to work together by forming a regional agency (RA) to measure and report diversion and disposal numbers as one entity instead of by individual jurisdiction. The Board must

approve a joint powers agreement for each RA, which must include a description of the method by which any fines imposed by the Board will be allocated among the participating jurisdictions.

Analyses conducted for the disposal reporting system group and the adjustment method group showed that the diversion rate measurement system tends to be more accurate at the regional level than the individual jurisdiction level. RAs take advantage of this increased accuracy and save time, effort, and resources spent for measuring and reporting by individual jurisdictions. RAs can also take advantage of economies of scale to reduce costs of implementing diversion programs. The 22 Board-approved RAs, containing 106 jurisdictions, have taken advantage of this approach.

Significant disincentives exist for this approach. The strongest may be fines. The total potential fine is \$10,000 per member jurisdiction per day, and the RA must determine how fines will be allocated among the jurisdictions should the RA not meet compliance. This requirement tends to cause members of the RA to want to track disposal amounts and diversion rates for each member jurisdiction, so that an under-performing jurisdiction may be identified if goals are not met. This individual tracking negates many of the advantages of RAs. Also, some county unincorporated areas may wish to participate in more than one regional agency, but they would be liable for fines as described above in *each* RA they join.

Specific incentives could include: allowing diversion rates less than 50 percent; waiving penalties for member jurisdictions which fully implement their approved source reduction and recycling element programs; reducing potential maximum fines; new grants or loans specifically for RAs; and preferences to RAs for existing Board grants and loans. Some of these incentives would require statutory and/or regulatory changes.

2. Verify Program implementation at the jurisdictional level. If all jurisdictions within the county are implementing programs, and all jurisdictions agree to be counted together, then they may use the countywide diversion rate.

Currently, if jurisdictions wish to measure diversion rates together with other jurisdictions, they must form a regional agency (see discussion above). This solution would also allow jurisdictions to take advantage of the increased accuracy and efficiency of measuring at the county level. However, it allows them to avoid the often problematic issues of entering into a joint powers agreement and allocating fines. This alternative would allow jurisdictions to return to individual measurement if not all jurisdictions meet the requirements or not all want to measure jointly. Individual jurisdictions would still be held accountable for local program implementation. This approach simplifies reporting to the Board, thus reducing both local government and Board staff time dedicated to determining compliance with the IWMA.

Use Program Implementation and Success to Determine Compliance.

1. From a Board-established menu of diversion programs, jurisdictions would choose those appropriate for local implementation. Jurisdictions would submit a document describing their diversion programs—which must be certified by the Board as adequate—to be audited and monitored by Board staff. The Board would establish evaluation criteria for diversion programs on which jurisdictions must report annually, such as program guidelines, monitoring for effectiveness, and proof of implementation. This would be an alternative way for jurisdictions to demonstrate compliance with the IWMA. It would not affect implementation of the DRS.

The Board's method of determining compliance with the IWMA includes both assessment of the diversion rate and determination of whether adequate diversion programs have been implemented. Many jurisdictions are concerned that there is too much emphasis on the numerical achievement of a diversion rate, especially when the measurement system can potentially significantly under- or overestimate the rate. This emphasis causes jurisdictions to expend significant resources on tracking numbers, addressing

measurement errors which may be difficult to resolve, or on documenting diversion amounts for new base-level studies. These resources could be better spent on program implementation.

This solution would allow jurisdictions the option to demonstrate compliance solely through meeting requirements for program implementation, and no diversion rate would be calculated. By shifting the emphasis to development, implementation, and monitoring of diversion programs, significant resources each year can be shifted from measurement to implementation, resulting in higher overall diversion. Also, this option allows jurisdictions with very difficult diversion rate measurement problems to move forward toward achieving greater diversion despite these measurement problems. This solution would require regulatory and statutory changes, and it would be critical for the Board to develop a fair and effective method to assess diversion program success and enforce implementation. Assessing diversion programs may result in significant resources focused on diversion program measurement. It may not reduce the time and resources a jurisdiction spends on preparing its annual report to the Board.

2. In addition to existing statutory provisions for rural reductions, allow rural jurisdictions to demonstrate Integrated Waste Management Act compliance based on local program implementation and effectiveness, instead of basing compliance on data that may contain errors that are difficult to resolve or require a new base level study to correct.

Rural jurisdictions contribute less than five percent of all waste disposed in California. However, errors in measuring disposal and in calculating waste generation are especially detrimental for rural jurisdictions' diversion rates. Waste allocation errors within the DRS impact small jurisdictions with small disposal tonnages proportionally more than large jurisdictions with large disposal amounts. Additionally, demographic and economic data for individual small jurisdictions that is used in the adjustment method may also be proportionately less accurate.

Moreover, if the limited resources of small, rural communities are focused on quantifying generation or diversion or on investigating errors in the current measurement system, the issues may be resolved only for a short time and variations in future estimates may lead to the same problems. If the limited resources are focused on implementing, expanding, and improving rural diversion programs, more actual diversion of waste will occur, whatever variability or errors occur in waste measurement from year to year.

Because even small errors in measurement can have big impacts on small jurisdictions, it may be more effective and efficient to judge smaller jurisdictions by the number, type, and effectiveness of the waste diversion programs they implement. The Board would need to devise criteria to measure the effectiveness of diversion programs.

The alternatives working group advocated the implementation of this alternative because it would “free up” resources currently spent by rural jurisdictions on measurement and shift them toward increased program development. Eventually, Board resources would also be freed to focus on larger waste streams with greater potential for significantly contributing to statewide achievement of 50 percent diversion. Savings would occur at the State and local level because this alternative means that rural jurisdictions could avoid the expense and time required to prepare new base levels, base-level corrections, or report-year disposal corrections. The Board and its staff would not have to review, revise, and approve these documents.

The working group envisioned this as a supplemental “measurement” system, not a replacement for the existing system. Large jurisdictions and other jurisdictions that successfully use the current system would continue to do so. The working group believes that existing provisions for “good faith” efforts and rural petitions for goal reduction set a precedent for this type of treatment, but the group would like to see the process formalized. This may require statutory or regulatory changes.

Make Specific Changes In How Some Materials And Processes Are Counted.

1. Remove uncertainties/inconsistencies with how some materials are counted for disposal at different facilities; for example, special waste.

“Solid waste” is specifically defined in PRC, section 40191(a) for the purposes of the IWMA; that is, for determining what is counted for disposal. Some special waste types are counted as disposal at some facilities and not counted at others, depending on regional water quality control board, air district, and local agency requirements as well as location and permit status of the disposal facility. This causes inequities among facilities and among jurisdictions using those facilities. These inequities may have unpredictable and adverse impacts on a jurisdiction’s diversion rates. This solution could result in increasing accuracy and eliminating equity issues when similar materials are counted differently at different facilities, and reducing the unpredictability of planning for waste types whose disposal is extremely variable from year to year.

Addressing these inequities may mean changing how disposal is counted at facilities, which is likely to require changes to the current law defining solid waste. If waste types are not counted in the disposed waste stream, jurisdictions will not be able to count diversion of these materials. Many jurisdictions have spent resources developing, and rely on, programs for diversion of special waste. Adding more types of waste counted as disposal could require increased tracking of waste types or categories by landfill operators and jurisdictions. Finally, jurisdictions may have to do new base levels to account for the new types of wastes tracked in disposal.

2. Remove the existing ten percent diversion limit for non-burn transformation processes such as gasification, pyrolysis, etc.

The law defines transformation to include both burning (incineration) and non-burn processes such as pyrolysis, distillation, gasification, or biological conversion other than composting; transformation also does not include biomass conversion. Regulations limit the amount of transformation counted in the disposal reporting system to waste sent to the three Board-permitted transformation (waste-to-energy) facilities. These three facilities incinerate about 2.3 percent of the state’s waste stream originating from about 155 jurisdictions. Before 2000, waste sent for transformation at the three permitted facilities counted as disposal; in 2000 and beyond, jurisdictions may claim up to ten percent of the 50 percent diversion requirement through transformation at these permitted facilities. This diversion claim is only valid if certain conditions are met. One of the conditions is that, prior to transformation, the facility use front-end methods or programs to remove all recyclable materials from the waste stream to the maximum extent feasible.

Currently there are no Board-permitted non-burn transformation facilities. Consequently, materials diverted from landfills through non-permitted facilities effectively count as diversion since they keep materials out of the measured disposal system. Measurement of non-burn transformation only becomes important for jurisdictions conducting new base-level studies, because they must quantify all diversion activities to get an accurate measurement of waste generation.

The alternatives group suggests that allowing jurisdictions to take full credit for diversion from newly-developed non-burn transformation facilities in new base-level studies would encourage development of innovative non-burn transformation technologies and encourages diversion and energy production through these technologies. This may indirectly assist in promoting alternatives that will ease the energy crisis. Since there is a requirement for front-end recycling, these non-burn transformation methods would deal with materials that are harder to divert and would not compete with markets for recyclables. For jurisdictions to receive diversion credit for materials sent to these facilities, the facilities may need to be tracked and regulated by the Board.

Consider Only Disposal Data In Assessing Goal Achievement.

1. Investigate use of disposal data (not generation) as an alternative way to demonstrate compliance.

Disposal data is the only piece of the waste stream that is actually measured in the current diversion rate measurement system. Some individual jurisdictions measure diversion as they establish new base levels or calculate their annual diversion rate. However, the vast majority of jurisdictions have not measured diversion since 1990; they estimate current generation data from the base-level generation, using the adjustment method. Therefore, disposal data is the most current and “firm” information we have on the waste stream. It is also the easiest part of the waste stream to measure. Disposal takes place at a limited number of sites, while diversion occurs in many forms in homes and businesses throughout California. Using disposal data alone could resolve measurement errors because it eliminates problems with old base-level data, the need for new base levels, and the need for projecting current generation using the adjustment method.

The Board’s disposal reporting system (DRS) was initiated in 1995 to track all waste entering Board-permitted disposal facilities. The system works well for many jurisdictions but encounters difficulties in areas where many jurisdictions share the same disposal facilities or where jurisdictions are close together and have irregular borders. Any compliance system based solely upon disposal data is predicated upon making improvements in DRS.

Members of the working group were interested in whether disposal data alone could provide a reliable alternative to the current measurement system. The group considered the following options:

- Whether disposal should be calculated on a per-capita basis.
- Whether disposal trends should be measured over time.
- Whether this compliance system should be used only for those jurisdictions which have already achieved 50 percent diversion.
- How compliance might be measured using only disposal data when population growth and economic booms increase waste generation.

This approach simplifies the measurement system but emphasizes the need for accurate disposal data. Each of the several methods discussed for determining compliance using disposal data alone has advantages and drawbacks. Due to time constraints, the group could not determine which methods would be viable alternatives. However, the group recommended further research on these matters.

2. Combine disposal-based measurement with implementing a suite of diversion programs and show a reduction in disposal every year. Jurisdictions can petition for relief in showing yearly decrease in disposal amounts based on significant growth and proposed programs to address the growth.

This proposal is similar to the previous one, but it goes one step further. It would shift the measurement system to a disposal-based system combined with assessment of program implementation. Basing the measurement system on disposal and implementing programs could address inaccuracies of base levels and the adjustment method by only using disposal data (see discussion in preceding alternative). Under this measurement alternative, jurisdictions would meet IWMA compliance by showing a reduction in total disposal amount each year; that is, a trend of constantly decreasing disposal amounts. Program implementation would also be emphasized with requirements for jurisdictions to implement a suite of programs, as previously described for alternative number “1” in the proposed alternative solution entitled “Use program implementation and success to determine compliance.”

Relying on the disposal reporting system (DRS) would make the accuracy of the DRS even more critical,

as described above. Research would need to be done to determine how factors such as population, employment, and taxable sales relate to waste disposal rather than waste generation. Jurisdictions with inaccurate DRS data in which the errors cannot be corrected would have the burden of relying more on program implementation for compliance.

The working group proposed this solution because of the advantages of emphasizing disposal data and program implementation over the current measurement system. Relying solely on disposal data may simplify and increase accuracy of measurement by using only “real” measurements to assess IWMA compliance. The current field measurement system for DRS would not change, only how the data is used. By focusing on DRS data, there would be more incentive to fix errors in the system. An overall simpler system of measuring disposal and emphasizing program implementation would allow jurisdictions to shift resources to programs rather than correcting diversion rate and base-level inaccuracies.

Focus More On Developing Markets.

Focus on developing markets for recycled materials to “pull” materials out of the waste stream, rather than focusing on measuring waste.

Currently, the Board operates several market development programs, including Recycled Market Development Zone (RMDZ) loans. Other loans include those to encourage the development of products made from crumb rubber derived from old tires. The Board enforces minimum recycled content in several types of products, including newsprint and rigid plastic containers, and in addition, the Department of Conservation’s Division of Recycling operates minimum content programs for fiberglass insulation and glass containers. The Board also purchases recycled products for its own operational needs and coordinates campaigns encouraging others in the public and private sectors to do the same.

Markets for recycled materials continue to be volatile, however, and low prices for certain materials undermine recycling efforts. Although many jurisdictions now separate plastic, metal, paper, and glass from the waste stream, the prices they receive for these materials often do not even cover the costs of collection. This is particularly true for rural areas far from commodity markets, where transportation costs cut deeply into returns.

Although this alternative does not address the measurement system directly, working group members feel that recycled material value is a critical component of diversion program success and proliferation. Wildly fluctuating but generally low material values have financially hurt jurisdictions and prevented diversion programs from being implemented. The Board, as an entity with statewide influence, ought to do more to develop stable markets for those materials being removed from the waste stream.

The group's recommendations include the following:

- Expand the list of materials for which minimum recycled content is required.
- Mandate the purchase of products made from recycled materials by government agencies.
- Leverage existing programs with funds from the federal government and private foundations, similar to the U.S. EPA's "Jobs Through Recycling" grants.
- Quantify the impacts of the Board's market development efforts (much the same way that jurisdictions must now quantify their waste diversion efforts).
- Expand and improve the RMDZ program as follows:
 - Expand RMDZ loan program eligibility to include sustainable business practices, including energy conservation, sustainable energy generation, and water conservation.
 - Provide RMDZ businesses with a State tax credit for the full value of the capital investment in sustainable recycling, energy conservation, sustainable energy generation or water conservation.
 - Create a secondary market for RMDZ loans by implementing the recommendations of the report "Creating a Secondary Market for Community and Economic Development Loans: a Feasibility Study" prepared for the California State Legislature pursuant to Chapter 923, Statutes of 1997 (AB 1219, Bustamante). Designate the Board as lead agency to implement the recommendations, with cooperation from the Trade and Commerce Agency and the State Treasurer's Office.
 - Clarify RMDZ revolving loan program, including:
 - Authorization to assist startup businesses through credit enhancements, including financial assurances and interest write-downs, and equity participation through the RMDZ revolving loan program.
 - Clear authority for Board loan sales, if needed.
 - Sunset extension, coterminous with zone re-designation and new zone designation.
 - The Board should prepare an updated market development plan, considering the expanded sustainable program eligibility and secondary market financing resources. The Board should include the California Association of Recycling Market Development Zones in all aspects of the market development plan update. The updated market development plan should include consideration of renewable and sustainable energy generation, as distinct from transformation.

The Board will co-sponsor a recycled products trade show in 2002 which will specifically target local government purchasers. Rather than minimum content programs, Board staff is focusing on development of specifications for recycled content for a list of products for environmentally preferable purchasing. Also, the Board and the Department of Conservation are currently engaged in the development of a Plastics White Paper to examine how the State programs can be most effective in addressing the plastics manufacturing and use to: 1) conserve natural resources, 2) increase the plastics recycling, rate and 3) increase the use of postconsumer plastics. Stakeholder workshops will be held and the SB 2202 work group is encouraged to participate.

The Board recently revised the RMDZ loan eligibility criteria to include sustainable practices in the criteria. A tax credit program for RMDZ businesses could provide incentives to recycling businesses, but this would require a change in legislation. Given the current fiscal situation of the State's budget, passage of a tax credit program would be unlikely.

The Board is about to enter into a contract that will comprehensively look at all private, nonprofit, and public options for leveraging the limited RMDZ loan dollars. This study is expected to be complete in the

Spring of 2002. Staff recommends that this study be completed before deciding on the best program to leverage limited RMDZ dollars and novel approaches for startup businesses.

The RMDZ revolving loan program sunset is scheduled for July of 2006, while the first cycle of zone redesignations is to take place in 2003. Guidance to zone administrators for the re-designation process will begin in 2002, much before the loan program sunset date. It would make better sense to request an elimination of the sunset date closer to actual expiration date, beginning that process in 2004. However, to the extent that the two processes can be coordinated, it will be done.

The Board will shortly adopt its strategic plan that includes strong recommendations relating to sustainability and increased markets for recyclables.

Expand Responsibility For Diverting Materials.

1. Adopt new laws to require schools to work with local government recycling coordinators to divert waste.

Current responsibility for meeting waste reduction goals falls on local governments only, but they do not have control over all waste generated within their borders. The working group proposed this solution because of the benefits of shifting responsibility to “upstream” generators. Widening the circle of responsibility for meeting the intent of the IWMA would help jurisdictions meet the diversion goals, because they would have more influence over schools as “upstream” generators. Waste generators may comply with local recycling programs but aren’t individually responsible for meeting waste reduction goals. In many cities and counties, schools are significant generators. Statewide, all education services (including colleges and universities) contribute about four percent to the disposed waste stream. Schools are exempt from using franchised waste haulers that often provide recycling services to a community. They are free to contract with any waste hauler or recycling service provider and may choose not to recycle because of added costs. Requiring schools to run their own diversion programs could increase opportunities for solid waste and environmental education.

More diversion could be achieved by moving responsibility for reducing waste “upstream” on those that may have more control or impact on waste generation. This alternative calls for schools to more actively share responsibility with local governments for meeting diversion goals. Impacts to schools include the costs and resources to implement waste diversion programs; Board resources would also be needed to monitor schools compliance. Finally, statutory change would be required to implement this proposal, because current law encourages cooperation.

2. Put more responsibility on generators of difficult-to-handle waste.

This alternative emphasizes a shared responsibility on the part of all those involved in the generation of waste. Many jurisdictions that have met and exceeded the goals of the IWMA could not have done so without the cooperation of local businesses and manufacturers; however, members of the working group believe more effort is needed on the part of businesses and manufacturers to carry their share of the solid waste burden, especially for wastes that are difficult to handle. Chapter 764, Statutes of 1999 (AB 75, Strom-Martin), which expanded the circle to include state agencies as responsible parties in meeting the goals and spirit of the IWMA, is a step in the right direction.

“Take Back” laws and financial incentives for containers, tires, auto batteries, and motor oil already exist in California. Existing regulation of disposal of cathode ray tubes (CRTs) in computers and televisions emphasizes the need to expand this program in order to prevent an undue burden on local governments. Additionally, a number of producer-responsibility laws passed by the European Commission serve as examples to form the basis of pursuing this alternative.

The working group would like the Board to further investigate and support programs such as advance disposal fees for other “difficult to dispose” products, including paint, pesticides, mattresses, furniture, and large appliances. The Board’s new strategic plan addresses this in goal #1 which promotes “product stewardship and manufacturer responsibility to reduce waste and create a sustainable infrastructure.” The Board has already given specific direction for product stewardship policies for paint as well as other products. In addition, the Board is participating in the National Electronic Product Stewardship Initiative (NEPSI).

Although this measure does not address the measurement system directly, the working group members assert that local governments currently bear a disproportionate share of the waste diversion burden. When a larger group shares the responsibility for solid waste, the resource requirements for all parties involved is more equitable.

3. Adopt new laws to require disposal facilities to divert waste from self-haulers.

Self-haul waste is disposed by those whose primary business is not waste hauling, such as homeowners, roofers, landscapers, construction companies, and many other types of generators. Self-haul can make up a significant portion of a jurisdiction’s waste. The Board’s 1999 statewide waste characterization study found self-haul to make up about 13 percent of the state’s overall waste stream. The study showed self-haul waste contains a large proportion of construction and demolition waste (such as lumber, ferrous metal, and concrete) which potentially could be recycled.

Although jurisdictions carry the responsibility for meeting diversion goals, they typically do not have control over all the waste generated within their borders. Since self-haul waste is taken by the waste generator directly to disposal sites, it may not be easily captured or addressed by local diversion programs. Disposal facilities themselves may be in the best position to divert materials from this waste stream and should be required to divert 50 percent of self-haul waste that enters the facility.

Further Support Jurisdictions In Their Local Diversion Efforts.

1. Further promote the focus on largest individual generators, largest sectors, and most common materials to reduce waste and recycle. Include this approach in the menu of programs to be developed (as discussed under the heading “Use program implementation and success to determine compliance” above).

This solution is similar to the “gross polluter” approach taken in other environmental areas, in that it focuses on the individual waste generators and sectors that produce the largest amounts of waste. A jurisdiction could focus on the largest tonnages of waste from generators, usually businesses, and identify waste prevention practices to reduce or eliminate the tonnage going to the landfill.

Although jurisdictions have sole responsibility for IWMA compliance, they typically don’t have control over all the waste generated within their borders. Focusing on large generators gives jurisdictions greater influence over a waste stream they normally don’t control. The responsibility for reducing waste is shifted “upstream” to those that may have more control or impact on waste generation.

Several questions exist concerning this proposal. The proposal would require significant resources and commitment from the Board, jurisdictions, and individual generators. Local governments and the Board would have to identify generator’s waste streams and develop programs for reducing their waste streams. Individual generators would have to be committed to reducing their waste streams and spending the money to do so. Focusing on generators does not address current measurement system problems. Finally, this proposal could require statutory changes if new requirements are put on businesses.

This solution provides many advantages for helping jurisdictions reach IWMA compliance. Focusing on waste generators could help jurisdictions improve diversion by identifying areas with less existing diversion and the most potential for increased diversion. This approach has been used by several jurisdictions and has been successful in increasing diversion rates. By including this approach as part of a menu of programs, jurisdictions will have an additional solution for reaching IWMA compliance.

2. The Board should provide standard curriculum or training for local government staff (especially new recycling coordinators) responsible for program implementation and other IWMA and waste management duties.

There are few opportunities for college-level training in waste management. Both State and local government staff assigned to waste management programs and code enforcement need information, libraries, and training in the field of waste management. New local government staff with limited experience would benefit from the opportunity to receive a minimum level of training for IWMA compliance. In the past, several colleges and universities had certificate programs in waste management issues, but few are available currently. The only state-originated program related to waste management is the Registered Environmental Assessor.

IWMA compliance by jurisdictions can be hindered by a lack of formal training and education opportunities for local program coordinators, and by lack of professional requirements in resource management issues and strategies. Without a consistent training program, waste managers at many levels are left to develop their own expertise which could be inconsistent and uneven. The proposal would shift the responsibility of training related to IWMA compliance to the state. The State of California and CIWMB could provide the funding and programs for standard curriculum and training and various levels of certification for waste managers at all levels, and private businesses (that is, large corporations) as well as state and local government staff. The training process could include a CIWMB certification program that would cover minimum standards, program implementation, and other waste management duties. Programs used by the Board and other state and local agencies could be used as training models, such as the Board's LEA certification program.

A moderate level of Board resources could be needed to set up a training program. This could include adding new staff or reassigning staff to develop and provide the training as well as money for curriculum materials. Shifting the responsibility of training to the state may require changes in statute and regulation. Providing training to local government staff does not directly address disposal and measurement issues, but it enhances jurisdictions' ability to meet diversion goals.

3. Remove institutional barriers to diversion.

Jurisdictions, facilities, and entrepreneurs have encountered barriers to establishing new diversion opportunities due to State policies or institutional requirements. One scenario is: under pressure to meet the 50 percent waste diversion requirement, a jurisdiction performs a waste characterization study that determines that construction and demolition (C&D) waste makes up a significant percentage of its disposed waste stream. As a result, the jurisdiction proposes to establish a mixed C&D processor or gypsum reprocessing facility. Then, the jurisdiction or facility operator has difficulties and delays in determining what local and state permits may or may not be necessary to open the facility and/or in obtaining those permits.

This type of situation causes some stakeholders to view the Board as inconsistent. The working group recommends the Board review its internal policies, particularly those involved with the permitting of new diversion facilities, to ensure they are consistent with the goals and mission of the Board and the messages the Board is sending to local government. The Board should also investigate other institutional barriers, especially those at the state level, that inadvertently hinder the development of diversion opportunities. Regulations pertaining to the transfer and processing of construction, demolition, and inert

debris are in currently in process and will be released for public comment in the next few months. Therefore, the Board has an immediate opportunity to modify regulations as needed to address this alternative. The Board must carefully consider specific types of facilities as new regulations and policies are developed in order to balance the advantages of streamlining with protecting the health and safety of Californians and the environment.

Summary

The solutions recommended reflect several broad themes that echoed throughout the discussions of all of the working groups. Many members of each of the working groups expressed concern over the danger of judging compliance with the IWMA based solely on a calculated diversion rate, especially when that rate is derived from a measurement system with recognized potential errors. The working group members emphasized over and over the importance of considering information on diversion program implementation, especially if calculated diversion rates may not reflect program efforts and successes. Since small and/or rural jurisdictions are prone to more measurement problems, this consideration is especially important for them.

All of the groups recognized the benefits of measuring at a higher level than the individual jurisdiction, and data developed for the DRS group and the adjustment method group support this finding. Therefore any efforts that can be taken to promote countywide and/or other types of regional measurements should be undertaken.

The alternatives working group included recommendations to address specific problems with measuring disposal (special waste), as did the DRS group. The alternatives group further recommended investigating new ways to use disposal data and measurement systems based on disposal data alone. These ideas can perhaps yield better information on disposal reduction as well as program effectiveness, and they are worth further research.

Finally, the alternatives group recommends that specific actions be taken to aid and enhance local government efforts to achieve the diversion goals. These include continuing to increase market development efforts, including more parties in the responsibility for waste diversion and resource conservation, removing inadvertent barriers to diversion, and improving training and education for those on the front lines of waste diversion efforts.

