MONITORING AND ENFORCEMENT OF STANDARDS AND LABELING PROGRAMS IN AUSTRALIA

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INTRODUCTION

The National Appliance and Equipment Energy Efficiency Program (NAEEEP) in Australia has a The Energy Labeling Scheme for appliance and equipment efficiency comprises mandatory MEPS and labeling requirements and is administered by the National Appliance and Equipment Energy Efficiency Committee (NAEEEC).

NAEEEC comprises State and Territory regulatory agencies responsible for administering mandatory energy efficiency labeling and MEPS called into legislation within their respective jurisdictions. These agencies assume a responsibility to enforce the laws fairly and with appropriate discretion. NAEEEC also includes Commonwealth, State and New Zealand agencies with a mandate to encourage sustainable energy use and reduce greenhouse emissions.

The domestic appliance categories currently in the NAEEEP Energy Labeling Scheme are:

- Clothes Washing Machines
- Dishwashing Machines
- Refrigerative Air-Conditioners (single-phase and up to 7.5 kW output capacity)
- Refrigerating Appliances (MEPS and labeling)
- Clothes Dryers
- Electric Storage Water Heaters (MEPS only)

Starting in 1987, legislation has been put in place in Australian States and Territories for prescribed domestic electrical appliances to be affixed with the Energy Rating label. The legislation makes the person or company displaying the equipment, which is usually an electrical retail outlet, responsible for ensuring that the appliance is correctly labelled.

Accordingly, NAEEEC's monitoring and enforcement initiatives include:

- Developing and maintaining a consistent, up to date national framework for MEPS and labeling, by standards setting and enacting regulations
- Developing and maintaining a targeted program of testing manufacturers compliance with MEPS and labeling – the National Appliance Check Testing Program

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- Developing and maintaining a targeted program of monitoring retailers compliance with display of the energy label – the National Retail Compliance Audit Program
- Using legal and administrative sanctions in cases where suppliers breach the legislation.
- Coordinating State and Territory legislative, regulatory and compliance activity

NAEEEC reports to a committee of government officials, the Energy Management Task Force (EMTF). EMTF is responsible for developing policies and funding these measures using monies collected from all Australian jurisdictions in agreed proportion. Both NAEEEC and EMTF advise the Australian and New Zealand Minerals and Energy Council (ANZMEC) which is made up of the Ministers with portfolio responsibility in this field. This Council of Ministers is committed to supporting the NAEEEP through the National Greenhouse Strategy.

Figure 1 contains a flow chart of the reporting structures for government sponsored energy efficiency activities.

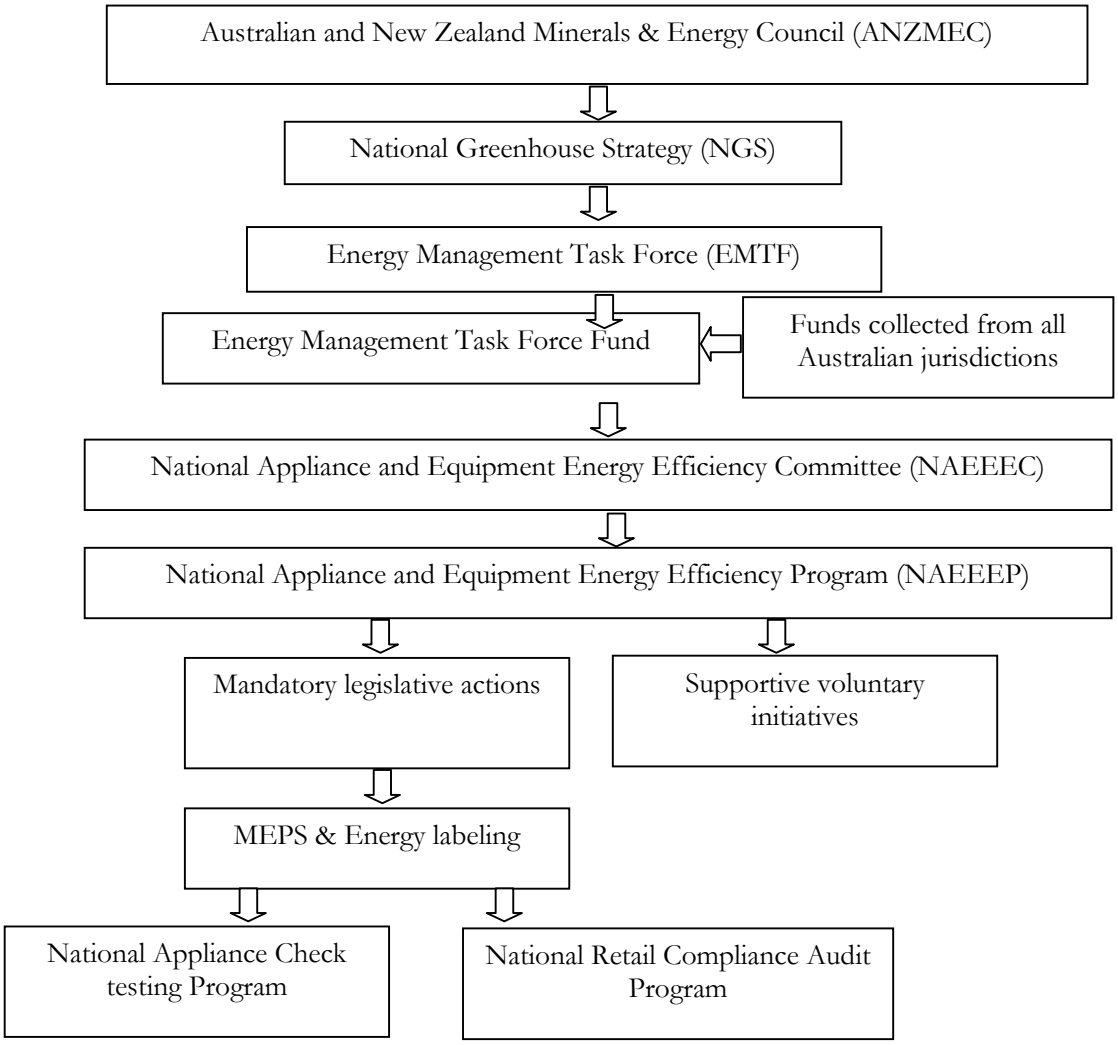

Figure1: Australian Government reporting structures

NAEEEP's National Appliance Check Testing Program and the National Retail Compliance Audit Program, described in this report, ensure that manufacturers/importers and retailers adhere to the mandatory legislative requirements. This in turn ensures that the community and stakeholders are provided with accurate data and there is precise evidence in case of sanctions against non-compliance.

This paper is intended to describe the Australian monitoring and enforcement programs and to provide information that could be useful for policy makers considering similar monitoring programs in their own countries.

NATIONAL APPLIANCE CHECK TESTING PROGRAM

A. BACKGROUND

The aim of the National Appliance Check Testing Program is to ensure that manufacturer's equipment meets their MEPS and labeling performance claims. NAEEEC and its predecessors have conducted check testing programs since 1991. The program entails the purchase of appliances and their testing at independent NATA laboratories. Appliances that fail are de-registered and must be withdrawn from sale if the manufacturer or importer cannot disprove the check test results.

The current expenditure on the program is approximately US$100 000 per annum which covers the testing of approximately 100 to 200 appliances each year. The program is carried out on behalf of all regulators and funding is supplied by the EMTF. State regulators do not carry out individual check testing programs.

The Australian Consumers Association (ACA) also carries out testing on labeled appliances to the Australian Standards for its consumer publication, 'Choice Magazine'. The NAEEEP Check Testing Program has an agreement with the ACA to purchase test reports of failed appliances.

Figure 2 shows a graph of the number of appliances failing a check test as a percentage of total registrations from 1991-1999.

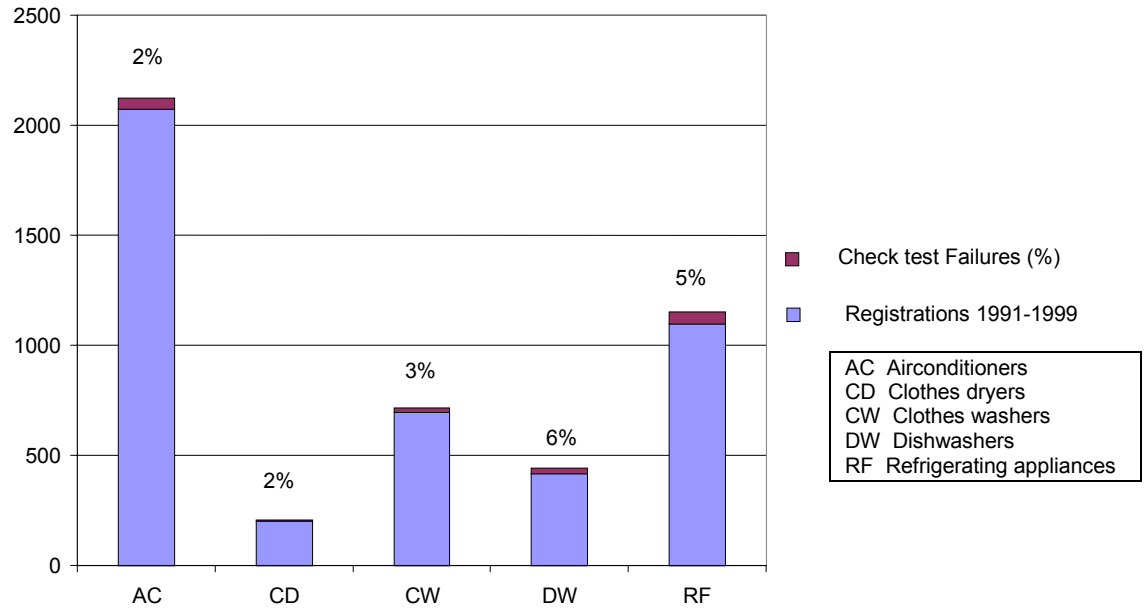

Figure 2: Check tested appliance failures as a percentage of total registrations 1991-1999

Since 1997 the program has devised and utilized sophisticated selection criteria coupled with market intelligence to direct testing to units that are more likely to be non-compliant with the labeling and MEPS requirements.

Figure 3 shows a graph of the percentage of appliances failing check tests as a percentage of total check tests in their category from 1991-1999.

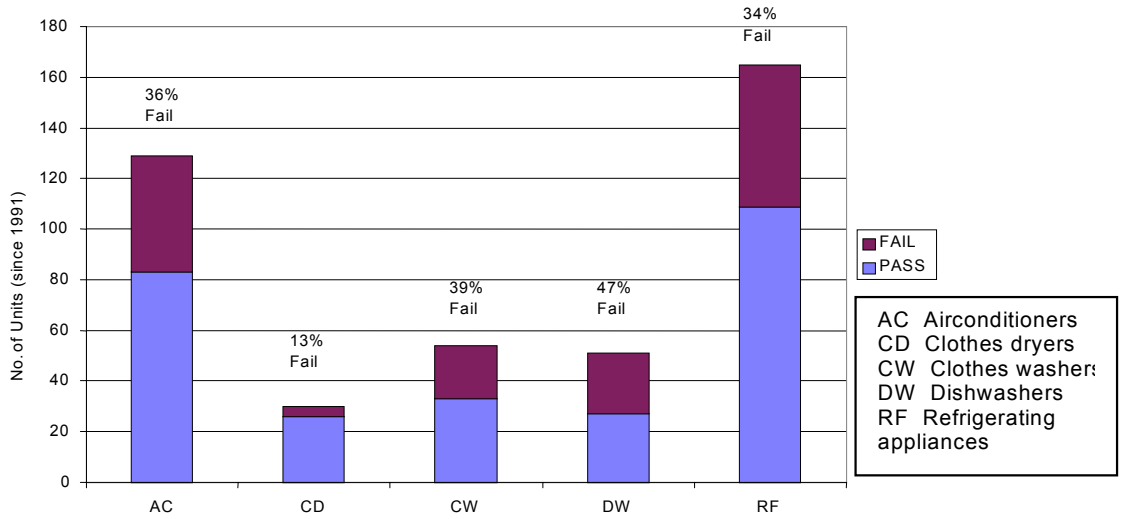

Figure 3: Check tested appliance failures as a percentage of total category check tests 1991-1999

Figure 4 shows a tabular summary of the program for each year, giving the total number of appliances registered in that year, the number of appliance models that failed at check test and the failed appliances as percentage of total registrations.

The percentage of check test failures shows a downward trend from 1996 and this can be attributed to factors such as a higher program profile provided by the Australian Greenhouse Office, revised Australian Standards and increased regulatory program activity. In addition, NAEEEC has published the "Administrative Guidelines for Labeling and MEPS", to explain how the national legislation and regulations are intended to be administered uniformly and consistently. The Guidelines complement the legislation and have simplified the check test procedures, making them more straightforward for manufacturers and importers.

Year	Total number of appliances approved by regulators	Total number of Check test failures	Percentage of Registrations that failed
1999-2000	624	1[1]	0.2 %
1998-1999	525	31	5.9 %
1997-1998	668	20	3.0 %
1996-1997	490	28	5.7 %
1995-1996	359	39	10.9 %
1994-1995	386	11	2.8 %
1993-1994	369	14	3.8 %
1992-1993	414	8	1.9 %
1991-1992	322	0	0.0 %

[1]: This low figure resulted from the reduced scope of the check test program in this year.

Figure 4: Check tested appliance failures as a percentage of total check tests 1991-1999

B. DESIGN

The National Check Testing Program contains three associated strategies:

1. Appliance and Equipment Testing Strategy

Appliances are selected, using a specially developed risk assessment software program and tested in laboratories accredited by the National Association of Testing Authorities (NATA). NATA is recognised by the Australian Government as the national authority for accreditation of laboratories. The aim of the strategy is to verify manufacturers labeling and MEPS claims.

2. Appliance Round-Robin Testing Strategy

Appliances are sent to different NATA laboratories in turn for testing. The aim of this inter-laboratory testing is to confirm a high degree of repeatability - the ability to obtain the same result on the same machine in the same laboratory; and, reproducibility - the ability to obtain the same result on the same machine in a different laboratory.

The results of round-robin testing can lead to the amendment of the testing methods in the Australian Standards.

3. NATA Witness Testing Strategy

In tandem with setting standard test procedures for MEPS and labeling the capacity of laboratories to accurately test appliances is also monitored. The program obtains the assistance of NATA who provide witnesses at each of the tests conducted. The aim is to comprehensively examine the competence of NATA laboratories across the range of labeled appliances.

NAEEEC has also facilitated the membership of NATA on the relevant standard setting committees so that feedback can be incorporated directly into the test procedures.

C. DEVELOPMENT

The development of the program is based on defining and enhancing the following criteria.

1. Risk Assessment

A risk assessment software program has been developed for the purposes of selecting models for check testing. The MS-Excel software consists of several interconnected spreadsheets. The program uses data primarily on:

- Checktest History – includes historical rates of failure for brands (Source of information - Check Test history database).
- Appliance characteristics - includes performance claims (Source of information - National database of registrations).
- Sales Data - volumes of sales (Source of information - GfK Market Research sales data. GfK Market Research is a commercial company supplying retail sales data).

2. Appliance Group Selection

a) Plan to Cover all Appliance Groups
There is a strategic plan to ensure that all major categories and types of appliances are included, to ensure a broad and consistent coverage of the entire market. (Source of Information: Check Test annual reports).
b) Number and Turnover of Models

Regard is given to the numbers of models and the annual turnover of new models of each appliance group. Appliance groups are given attention in proportion to such numbers and/ or turnover. (Source of information: Energy Labelling Internet Register).
c) History of Non Compliance in each Appliance Group
Appliance groups with a demonstrated history of high levels of non compliance are selected because of the likelihood of a continuation of such historical trends. (Source of information: Check Test Database).

3. Model Selection

A system of weighting and prioritization for each the following factors is employed.

a) History of Testing of Specific Models
Models tested in previous years of the checktest program are excluded from further testing, unless specific evidence becomes available to suggest that a re-test is warranted. (Source of information: Check Test Database).

b) Age of Models
Newer models are given preference because of their potential to remain on the market for a longer period as compared to older models. The exception to this rule being models that have been on the market for a considerable period of time (3 years or more) without being subjected to testing. (Source of information: Energy Labelling Internet Register).

c) Volume of Sales of Models
Models with high volumes of sales are given preference because of their greater potential to impact on energy usage as compared to models with low sales volumes. (Source of information: Market Survey Data such as the GfK Whitegoods Survey).

d) Star Rating of Models
Models with the highest claims for energy efficiency (i.e. high star ratings) are given preference because of the markets' higher expectations with respect to the performance of these as compared to models with low star ratings. This is considered one of the most important selection criteria. (Source of information: Energy Labelling Internet Register).

e) History of Non-compliance by Manufacturer
Manufacturers with a record of systemic misuse of the labelling rules are subject to greater scrutiny because of the likelihood of a continuation of such historical trends. (Source of information: Check Test Database, State Regulators).

f) Third-party Referrals
Models which are the subject of complaints by third parties such as competitors, consumers or consumer groups are considered. A decision to include such a model for check testing will depend upon the seriousness of the complaint and how compelling the evidence is of misuse of the labelling rules. (Source of information: manufacturing competitors, Australian Consumers Association, individual consumers, etc.).

g) Australian Consumers Association Testing Program
The ACA is an independent consumer organisation and has an extensive ongoing program of appliance testing in its NATA accredited test laboratory. The NATA test reports of models that have failed testing to the relevant Standard are purchased by NAEEEC under an agreement with ACA. It is not possible to influence the models selected by ACA for testing, but efficiencies are gained by obtaining information from ACA on the products to be tested in the coming year (either product categories or specific models). Where this information is available, it is considered during model selection to minimize possible duplication. (Source of information: ACA)

h) Known History of Test Laboratory Responsible for Label Application Tests

Models which rely upon initial registration test reports produced by NATA registered laboratories with a known history of producing representative test reports are given lower priority because of the higher likelihood that the results of initial reports prepared by such laboratories will be upheld by any subsequent check testing. However, it is noted that changes in production can invalidate initial test reports, no matter how accurate. (Source of information: Check Test Database, NATA, Energy Labelling Internet Register).

4. Comparative Studies of Laboratories

As stated previously, the round-robin strategy entails testing a model at a number of different laboratories for the purpose of gauging the comparative accuracy of each laboratory's test procedures. Such a process may also include some exchange of models between the selected laboratories. Models selected on the basis of there being a representative sample of the appliance in terms of the testing procedures that are being compared. (Source of information: Program Manager, NATA).

D. IMPLEMENTATION

The ongoing National Check Testing Program currently includes approximately 100 to 200 appliances in the six categories per year. As shown in Figure 4, the total number of appliances approved varies from 300 to 600 per year. Check testing can only be carried out in NATA accredited test laboratories, of which there are currently five in Australia.

Due to the relative size and complexity of the program, a Program Manager and Project Manager implement it on behalf of NAEEEC.

1. Program Manager

The program managing organization is normally selected from one of the NAEEEC member State Regulators and currently is the Office of the Chief Electrical Inspector, Victoria. The program manager is responsible for the final selection of appliances for test, selection of test laboratories, contractual agreements and the authorisation of payments through NAEEEC. The program manager is assisted and advised in these tasks by the Project Manager.

2. Program Manager

The project managing organisation is one with technical expertise in the field of appliance and equipment energy efficiency with an extensive knowledge of the testing standards and procedures, regulations and legislative measures. Currently, Energy Efficient Strategies, is the project managing organisation. Energy Efficient Strategies is an energy policy and planning consultant for energy efficiency and renewable energy with national and international experience. The project managing organisation must be independent and there can be no conflict of interest in terms of its relationship with other stakeholders.

3. National Check Testing Program Management Model

The interaction between the program manager, project manager, NAEEEC State Regulators and industry (manufacturer/importer applicants) is shown in the program management model in Appendix 1. The model shows the activities and responsibilities required of each of the parties in the check testing program.

The Program Manager and Project Manager work in conjunction to ensure that the day to day running of the program proceeds smoothly in terms of contractual agreements and issues such as unavailability of appliances selected, technical problems in laboratories and budgetary concerns are resolved. All payments are authorized solely by the Program Manager.

The Project Manager prepares quarterly reports as well as a comprehensive annual report for the program, which is tabled by the Program Manager at NAEEEC. The Project Manager coordinates the requirements of NAEEEC and State Regulators.

The Project Manager provides State Regulators with a list of appliance check test failures and the individual Regulators then initiate action on suppliers according to their State Regulations and the procedures set out in the "Administrative Guidelines for Labeling and MEPS". The supplier receives a full NATA test report of the failed unit from the State Regulator and the supplier can agree to remove the appliance from the market. The supplier must then test three units of the model at a NATA laboratory and re-register the model. Where the models fails to meet the requirements of the Australian Standard, re-registration is not permitted.

The Stage I check test or screen test is normally a single test carried on one unit of an appliance model. The general rule for verification of a supplier's declaration is:

- A single initial Stage I check test must not be more than 10 per cent worse than the declaration (Stage I);
- If this is found to be the case, a further three units (randomly selected by the regulator) are to be check tested at the supplier's expense (Stage II);
- If the mean of the three additional units tested for Stage II check testing is found to be more than 10 per cent worse than the declaration, the product shall fail.

For typical measurement errors and variability, the current rule of allowing a 10 per cent variation as the trigger for additional check tests and as the basis of verification of a further 3 units is sound. This rule does not state that a declaration of up to 10 per cent from actual is acceptable. The above process is used to verify the original claim. The probability of a check testing failure and subsequent de-registration increases markedly in cases where the supplier's original claim exceeds the actual performance level. The probability of de-registration of a model under this rule is extremely small if the supplier's original declaration is in fact accurate.

E. LESSONS LEARNED

1. Consistency

The centralized National Check testing Program has removed any inconsistencies that State-based programs were liable to have, and prevented "forum-shopping" or choosing different State Regulators, by chronic offenders. The risk assessment software developed has ensured that model selection is conducted with absolute impartiality.

2. Communication and Program Profile

The publication of the "Administrative Guidelines for Labeling and MEPS", has clarified the process and expectations of the testing program for all stakeholders and has also addressed the previous low public profile of the program.

3. Cost minimization

The centralized program has allowed a wider scope and coverage as opposed to earlier State-based programs. The recent agreement to purchase failed test reports from the Australian Consumers Association further extends this scope.

4. On-going Technical Expertise

The Project Manager provides advice on the complex technical aspects of testing and standards as well as the testing procedures of the contracted NATA laboratories which enables the State Regulators to carry out their task of monitoring and auditing to achieve compliance more effectively. Confidentiality and conflict of interest issues are controlled by contractual obligations.

NATIONAL RETAIL COMPLIANCE AUDIT PROGRAM

A. BACKGROUND

Since its inception in 1987, energy labelling monitoring and enforcement at the retail level has been carried out in Australian States and Territories. Individual studies by State regulators revealed a high compliance rate among retailers.

In 1998, NAEEEC commissioned a major study to verify the proportion of household electric appliances correctly displaying Energy Rating Labels in retail premises throughout Australia.

The survey audited over 29 000 appliances and covered 400 stores of varying size across the eight capital cities in Australia. The survey confirmed that label compliance across the board was better than 92 per cent for all product types inspected, which represented a level equal to the best compliance rate in any OECD country.

The labeling program was recently revised in response to the continued efforts of manufacturers to improve the energy consumption of their products. With ratings on many appliances clustering at the top end of the scale, it was time for the program to reflect more stringent standards and effectively provide consumers with a more meaningful guide – this involved redesigning the Energy Rating Scheme and Energy Label as shown in Figure 5.

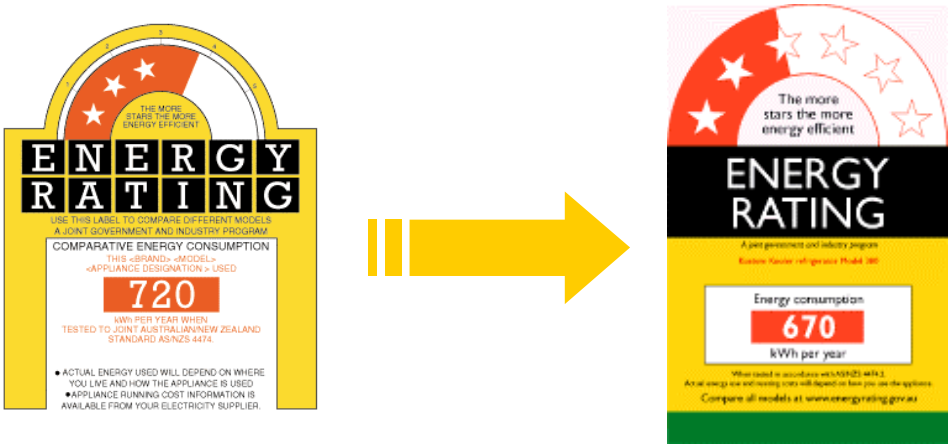

Figure 5: The superseded and current Australian Energy Efficiency Labels

In October 2000, NAEEEC commissioned an independent research company, Millward Brown Australia (MBA), to conduct another survey of electrical appliance retail stores across Australia, in a two part study.

The study was conducted as a "shadow shop" survey where the interviewer does not give advance notice of the visit to the retailer. If retailers are aware of the time of the visit, unlabeled appliances may be temporarily removed from the showroom floor to indicate greater than actual levels of compliance. It was thus deemed to be the optimum method of collecting the data for both stages I and II of the project while allowing interviewers to audit the selected electrical retail site and record the level of labeling compliance. Importantly, it also minimized any inconvenience to retailers. Retailers and suppliers were informed of the general period of the two audits via regular newsletters.

B. DESIGN

The purpose of the 2000/2001 shadow shop was to determine the level of retailer compliance to displaying the new Energy Label. Conducted in two stages, the project was to commence subsequent to

the display of the revised Energy Rating label becoming mandatory on all appliances under the program, as of 1 October 2000. The cost of the two stage national survey was approximately US$25 000.

The first stage was mounted in November 2000, involving the audit of 150 stores in the most populous Australian States of New South Wales, Victoria and Queensland, providing a 'snapshot' of the market environment immediately following the label transition period.

The flow chart in Figure 6 illustrates how the pilot and full-scale surveys have been designed to complement each other.

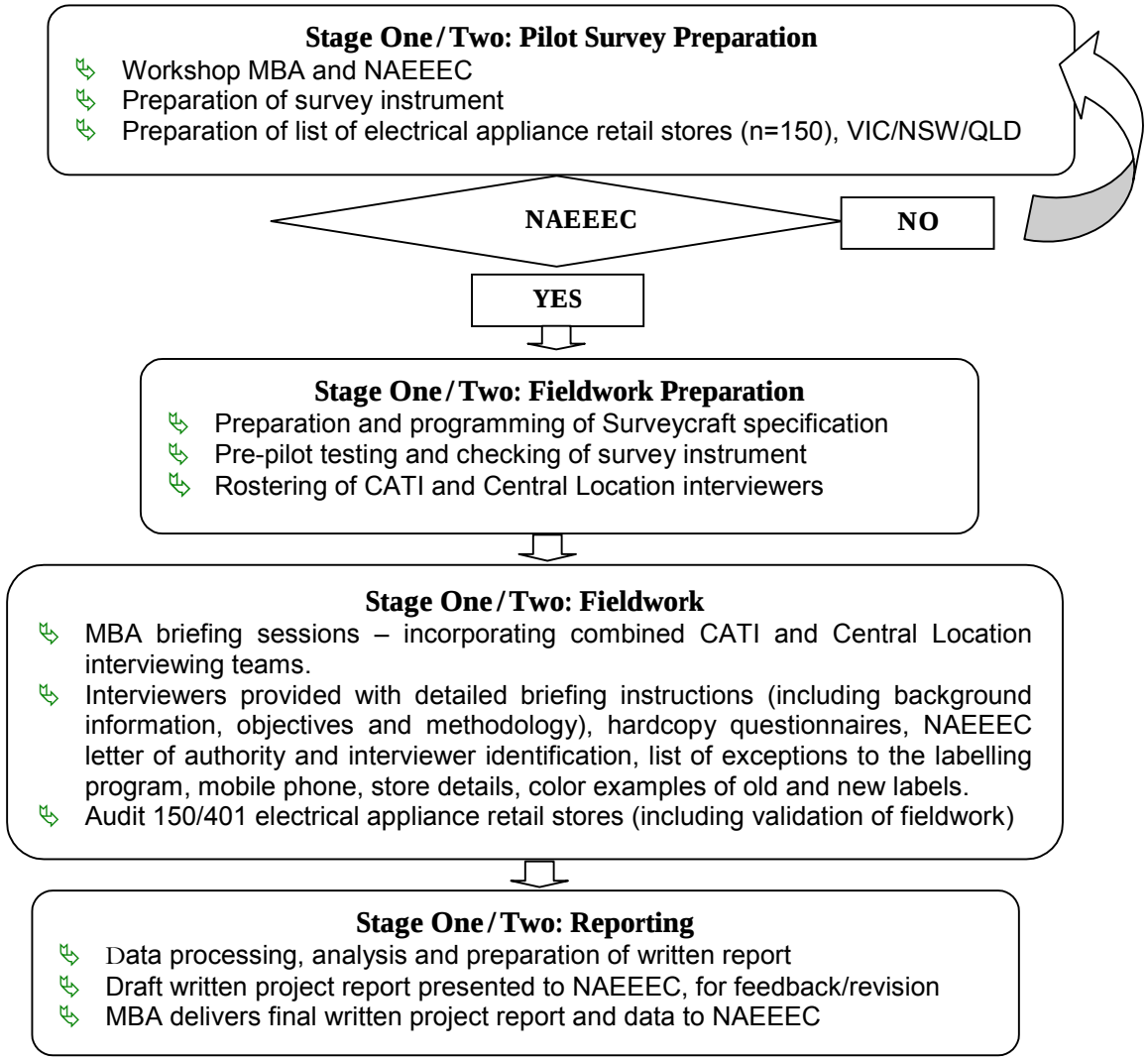

Figure 6: Design of the NAEEEC Stage I and II compliance Audit Studies

D. DEVELOPMENT

The main findings of the Stage I pilot project were:

of the 14 568 retail electrical included in the Stage 1 pilot study, compliance to the new label was 70.4 per cent, eight weeks after it had become mandatory
the poorest compliance results were found in regional areas with an average of 61.6 per cent

among the three size categories, the Mega/Super/Department stores were more likely to have appliances with the new energy label with a compliance rate of 75.8 per cent

Stage II of the study was conducted in March 2001, in a representative sample of 401 stores across all States and Territories of Australia, this time with a view to assisting government jurisdictions to identify breaches of the regulation.

Since the transition an improvement in overall compliance was observed, with 78 per cent of the 30,805 appliances audited bearing the revised Energy Rating label, 13 per cent the superseded label and 9 per cent were unlabelled.

The chart in Figure 7 illustrates the comparative analysis with the 1998 audit and the 2000 and 2001 stages of this particular study. Results are presented in terms of both the proportion and incidence of the 'new' labeled appliances (post-2000 compliant), the 'old' labeled appliances (pre-2000 compliant), and the unlabelled appliances.

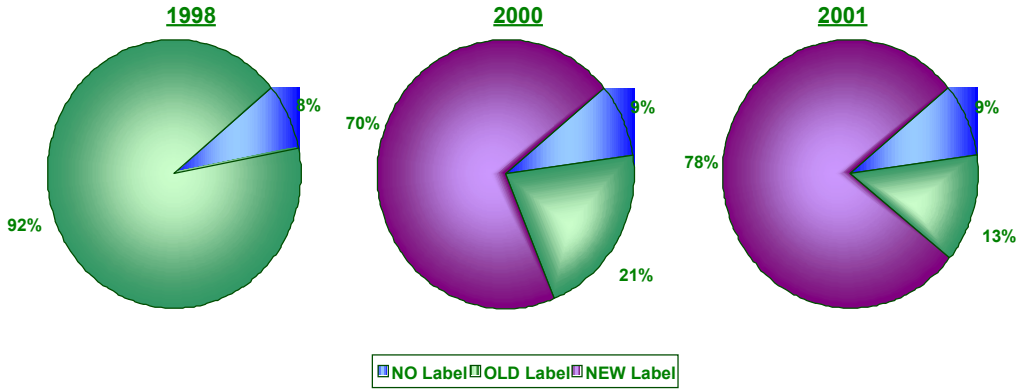

Figure 7: Compliance by Total Sample (1998, 2000 & 2001)

The second stage of the study indicated that considerable regulatory effort is required to achieve 100 per cent compliance, or even to match that of the 1998 audit that MBA also conducted, which revealed that 92 per cent of the 29 024 audited appliances were labeled.

When considering compliance by individual retailers, the majority of stores shifted from the 50-70 per cent compliance range in 2000 to the 80-100 per cent range in 2001. However, it is clear that performance is substantially below the 1998 benchmark level, wherein over three-quarters of stores were 90-100 per cent compliant. The table in Figure 8 details this finding.

Compliance Percentage Range	Number of Stores (1998)	Proportion of Sample (1998)	Number of Stores (2000)	Proportion of Sample (2000)	Number of Stores (2001)	Proportion of Sample (2001)
0-49%	5	1%	23	15%	49	12%
50-69%	15	4%	47	31%	62	15%
70-79%	10	3%	35	23%	92	23%
80-89%	59	15%	34	23%	118	29%
90-100%	311	78%	11	7%	80	20%
Total	400	100%	150	100%	401	100%

Figure 8: Table of Compliance by Total Sample (1998, 2000 & 2001)

An interesting aspect is the variability of compliance in the five labeled categories. The chart in Figure 9 provides a comparison of compliance by appliance type in the 1998, 2000 and 2001 studies.

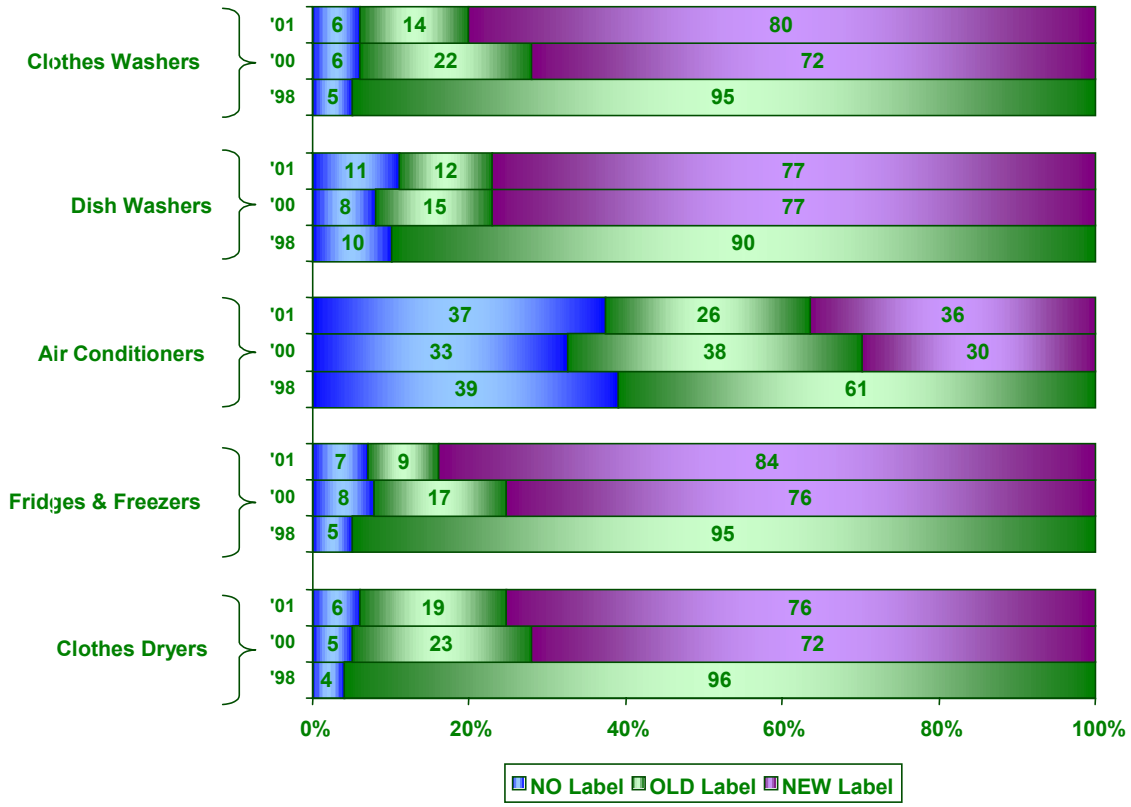

Figure 9: Compliance by Appliance Type (1998, 2000 & 2001)

C. IMPLEMENTATION

1. Shadow Shop Audit

At each store, the MBA interviewer identified which of the five electrical appliance categories each product fell into, then recorded the brand and level of compliance of each unit – whether it had the old label, the current label or no label.

In the 1998 study, the interviewer went to specified electrical appliance retail outlets equipped with a comprehensive list of all electrical appliance brands pertaining to the five product categories. Using this list, the interviewer would identify how many and which appliance brands were correctly labelled or not. This was particularly difficult due to the wide range of appliance categories and brands that needed to be monitored. To overcome these difficulties and ensuring that the data is accurate, the study methodology was revised for 2000/2001. In 2000/2001 the interviewers used MBA's mobile telephone and computer aided telephone interview (CATI) system to record data instead of interview forms.

2. Mobile Telephone Interview and Computer Aided Telephone Interview (CATI) System

In the 2000/2001 research, the interviewers were equipped with a mobile phone and an operator situated at MBA's Melbourne office telephoned them at a specified time to conduct the audit over the phone and enter the data directly into the MBA Surveycraft system, auditing the items one-by-one. This method of data collection provides the following advantages:
It avoids the suspicion that auditors may be recording sensitive information;
Salespeople are less likely to interrupt interviewers if they are talking on the mobile telephone;
Interviewers do not have to remember all of the appliance brand names, along with all the label counts, while filling in the survey forms;

The data is instantly entered into the CATI database at the MBA office and the progress of the study can be monitored more effectively; and,
The data collected is more accurate due to the elimination of the need for subsequent duplicated data entry.

Interviewers were instructed to present their interviewer identification and the letter of authority to the retail store manager or staff at the first available opportunity. If staff were busy serving customers or performing retail activities, the interviewers commenced their audits until such time as staff were free.

E. LESSONS LEARNED

1. Consistency

The National Label Audit Program provides NAEEEC and the industry with independent information as to overall national - regional and metropolitan - labeling compliance rates, at a given point in time. The national approach minimizes any localized or seasonal factors.

2. Communication and Program Profile

The NAEEEC audits, conducted in addition to the State Regulators compliance audits ensure that retailers are aware of the on-going regulatory activities. NAEEEC also provided general information on the survey period, and reasons for the survey, in its industry newsletters, 'Label Update', and 'Switched On', so as not to alienate retailers and industry.

3. Cost minimization

The centralized program has allowed a wider scope and coverage of compliance auditing, and economies of scale, as opposed to State-based programs. Due to Australia's widespread geography, Regulators are not able to monitor stores in remote locations, with regularity, in the course of their normal audits.

4. Benchmarking

The 2000/2001 compliance results, benchmarked against the 1998 compliance levels provided the opportunity to ascertain the compliance trends among suppliers, which is a useful tool in guiding the future activities of the Energy Labeling Scheme as a whole and for comparison with OECD levels of compliance.

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ACRONYMS & ABBREVIATIONS

ACA	Australian Consumers Association
ANZMEC	Australian and New Zealand Minerals and Energy Council
CATI	Computer Aided Telephone Interview
EMTF	Energy Management Task Force
GfK	GfK Market Research
MBA	Millward Brown Australia Market Research
MEPS	Minimum Energy Performance Standards
NAEEEC	National Appliance and Equipment Energy Efficiency Committee
NAEEEP	National Appliance and Equipment Energy Efficiency Program
NATA	National Association of Testing Authorities, Australia
OCEI	Office of the Chief Electrical Inspector, Victoria
OECD	Organisation for Economic Cooperation and Development

APPENDIX 1 - NATIONAL CHECK TESTING PROGRAM MANAGEMENT MODEL