



*National Environment Protection
(National Pollutant Inventory) Measure*

**Draft Variation to the
National Environment Protection
(National Pollutant Inventory) Measure**

Impact Statement

June 2006

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GLOSSARY

ABS	Australian Bureau of Statistics
AGO	Australian Greenhouse Office
CO₂	Carbon dioxide
CO₂-e	Carbon dioxide equivalents
EET	Emissions Estimation Technique
EPA	Environment Protection Agency/ Authority
EPHC	Environment Protection and Heritage Council
MCE	Ministerial Council on Energy
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NGGI	National Greenhouse Gas Inventory
NPI	National Pollutant Inventory
NPRI	National Pollutant Release Inventory (Canada)
NRT	National Reporting Tool
OECD	Organisation of Economic Co-operation and Development
PM	Particulate matter
PRTR	Pollutant release and transfer registers
SEPP	State environment protection policy
TAP	Technical Advisory Panel
TRI	Toxics Release Inventory (US)

1 INTRODUCTION

The National Pollutant Inventory (NPI) is an internet database designed to provide the community, industry and government with information on the types and amounts of certain substances being emitted to air, land and water. The NPI belongs to the general class of pollutant release and transfer registers (PRTs) that have been implemented in a comparatively small number of developed countries.

The main objectives of the NPI are to:

- provide information to industry and government to assist in environmental planning and management;
- satisfy community demand for accessible information on emissions to the environment; and
- promote waste minimisation, cleaner production, and energy and resource savings.

Industrial facilities, such as power plants and steel works, are required to estimate and report annually on their emissions. Emissions from smaller industrial facilities, such as petrol stations and dry cleaners, and emissions from household and other everyday activities, are estimated by the governments of each state and territory. This approach provides a 'total' emissions picture.

The NPI has published facility data since 1998–99 and is currently in its eighth reporting year. The NPI reports on 90 priority substances that were selected following consideration of exposure to health and environmental risks in Australia.

In the 2004–05 reporting year, a total of 3,713 facilities reported to the NPI (an increase of 3% from the previous year).

By making emission information available to the community, governments are able to formulate and assess cost-effective environmental management and pollution reduction policies on the basis of consistent information. Individuals are also able to make informed decisions about issues affecting them and their surroundings.

1.1 NATIONAL ENVIRONMENT PROTECTION COUNCIL

The National Environment Protection Council Acts of the Australian Government and the states and territories establish the National Environment Protection Council (NEPC), which is comprised of ministers representing each of the participating governments. The NEPC is empowered by the acts to develop, make or vary National Environment Protection Measures (NEPMs).

The NPI is implemented through a NEPM made by the NEPC on 27 February 1998. Implementation of this and other NEPMs is the responsibility of each participating jurisdiction.

1.2 NATIONAL ENVIRONMENT PROTECTION MEASURES

NEPMs are broad framework-setting statutory instruments that, through an extensive process of inter-government and community/industry consultation, reflect agreed national objectives for protecting particular aspects of the environment. NEPMs may consist of any combination of goals, standards, protocols and guidelines.

Once a NEPM has been finalised, it is then formally 'made' by NEPC. A decision to make (or to vary) a NEPM requires the support of a two-thirds majority of members of NEPC. NEPMs are implemented by participating jurisdictions within their own jurisdictional legal frameworks.

1.3 PURPOSE OF THE IMPACT STATEMENT

In varying a NEPM, NEPC must have regard to a number of considerations.

These are detailed in section 15 of the NEPC acts and include:

- consistency with the Inter-Governmental Agreement on the Environment 1992;
- environmental, economic, and social impacts;
- relevant international agreements; and
- any regional environmental differences.

As detailed in section 17 of the NEPC acts, in varying a NEPM, a draft variation and an impact statement must be prepared. The impact statement must include the following:

- the desired environmental outcomes;
- the reason for the proposed measure and the environmental impact of not making the measure;
- a statement of the alternative methods of achieving the desired environmental outcomes and the reasons why those alternatives have not been adopted;
- an identification and assessment of the economic and social impact on the community (including industry) of making the proposed measure;
- a statement of the manner in which any regional environmental differences in Australia have been addressed in the development of the proposed measure;
- the intended date for making the proposed measure;
- the timetable (if any) in relation to the proposed measure; and
- the transitional arrangements (if any) in relation to the proposed measure.

In addition to addressing the requirements of the NEPC acts, impact statements are developed in keeping with the requirements of the Council of Australian Governments as outlined in the *Principles and Guidelines for National Standard Setting and Regulatory Action by Ministerial Councils and Standard Setting Bodies*.

The NEPC acts require that both the draft NEPM and the impact statement be made available for public consultation for a period of at least two months. NEPC must have regard to the impact statement and submissions received during public consultation in deciding whether or not to make or vary a NEPM.

2 STATEMENT OF THE PROBLEM

2.1 ROLE OF THE NATIONAL POLLUTANT INVENTORY

Australia's NPI stems from a desire to satisfy community demand for information on the type and amount of substance emissions to air, land and water across the country.

The NPI provides this information from a range of industrial facilities including manufacturing and mining, and from other sources such as households and transport. Facility operators estimate their emissions within prescribed guidelines, based on information provided in the NPI Guide and the Emission Estimation Technique (EET) manuals. 'Diffuse emissions' from households and other everyday activities are estimated by state and territory governments.

The NPI program, which is run cooperatively by the Australian, state and territory governments, provides information on the amount of various substances that are released into the environment

across Australia each year. This, in turn, is used to assist environmental planning and management.

The NPI is the only Australian database of emissions to air, land or water where information is collected in a nationally consistent way.

The NPI can:

- provide estimates of emissions and other details from facilities that report;
- provide a list of pollutant sources in postcode areas;
- provide a map showing locations of facilities;
- provide background information about each of the 90 substances on the NPI reporting list;
- allow data to be downloaded for analysis off-line; and
- encourage cleaner production measures.

More details on the NPI can be found at <www.npi.gov.au>.

2.2 REASON FOR INTERVENTION

2.2.1 Council decisions

At its ninth meeting in December 2004, the Environment Protection and Heritage Council (EPHC) agreed to review the NPI to assess whether any improvements could be made to the program to make it more useful to stakeholders. The review was completed by Environment Link in April 2005 and the final report can be found on the EPHC website at <www.ephc.gov.au/pdf/npi/NPI_Review_April_2005.pdf>. The results of the review were presented to NEPC on 1 July 2005 along with a proposal for a variation to the NPI NEPM.

At this meeting, NEPC agreed to initiate a variation to the NPI NEPM, with the scope covering:

- the inclusion of data on the transfer of substances in waste from one location to another;
- the inclusion of greenhouse gases (noting that there are other mechanisms that could be used) to be informed by the outcomes of the work of the EPHC/Ministerial Council on Energy (MCE) Joint Working Group;
- changes to reporting timeframes;
- removal of the exclusion clause for aquaculture;
- adjustments to the substance reporting list;
- threshold changes for mercury, PM₁₀ and, if included in the NPI, PM_{2.5}; and
- other matters identified in the 2005 NPI Review Report.

2.2.2 Specification of regulatory objectives

The desired environmental outcomes (which relate to clause 14 (1) of the NEPC acts) of providing information through the NPI NEPM are to:

- maintain and improve ambient air quality and ambient water quality;
- reduce the release of hazardous wastes that impact or potentially impact on the environment; and
- expand the re-use and recycling of used materials.

The core elements contained in the NPI NEPM to achieve these desired environmental outcomes include:

- a list of substances and a process for amending that list;
- a method for determining when a facility will report directly (a reporting threshold) and, where appropriate, emission estimations to be made by governments;
- methods for collecting data from facilities and estimating emissions from diffuse sources (such as motor vehicles);
- processes to ensure reporting and to identify commercial-in-confidence issues;
- community access to information;
- enforcement provisions for non-reporters; and
- annual reporting to parliaments by governments.

Amendments to the NEPM are proposed to enhance the desired environmental outcomes outlined above and will improve the NPI in terms of its efficiency and effectiveness. The objectives of these amendments are discussed in the following chapters.

3 TRANSFERS

3.1 STATEMENT OF THE PROBLEM

A transfer has been defined as the transport or movement of a substance contained within a waste for end use including containment, destruction, treatment or energy recovery.

Currently, transfers are not reported under the NPI NEPM. It was the intention at the time of its original implementation that transfers eventually be included to bring the NPI into line with the Organisation of Economic Co-operation and Development (OECD) recommendations that transfers be included in all PRTRs. However, it was decided first to determine other factors before including transfers. Information on transfers of waste complements emissions data, providing a much clearer and more complete picture of the environmental performance of a facility. Without the reporting of transfers it is difficult to totally identify where substances of concern are being generated and treated.

Transferred wastes often contain significant amounts of substances which have potential to cause environmental harm. For example, the placement of substances in landfills and tailings dams should not truly be regarded as 'disposal' but as long term containment. In the absence of transfers reporting as part of a PRTR, information on the location and amounts of substances is largely unavailable.

PRTRs around the world usually include reporting of transfers. However, the type of transfer information collected, and the way it is presented, differs. Most PRTRs only report off-site transfers, the USA's Toxics Release Inventory (TRI) being the main exception. A summary of the status of transfers in the TRI, Canada's National Pollutant Release Inventory (NPRI) and the United Kingdom's National Atmospheric Emissions Inventory (NAEI) is given in the box below. More detailed information on overseas PRTRs is contained in the final report of the Technical Advisory Panel (TAP).

Overseas PRTRs

TRI (USA)

Transfers off-site for disposal, treatment, recycling and energy recovery from combustion are reported, as are estimates for on-site treatment, recycling, and energy recovery from combustion.

The transfers data on the website are presented as total on-site releases and total off-site releases. A further report gives the breakdown of the substance/s transferred by transfers to recycling, transfers to energy recovery, transfers to treatment, transfers to publicly owned treatment works (municipal sewage treatment plants), non-metals and other off-site transfers. A similar report gives the breakdown of waste by recycled on-site, recycled off-site, energy recovery on-site, energy recovery off-site, treated on-site, treated off-site, quantity released on and off-site, total production waste managed, and non-production waste managed. Releases to land within the facility boundary are reported, and this includes disposal to landfill, land treatment/application, surface impoundments (uncovered holding areas) and other land disposal methods (such as waste piles) or releases to land (such as spills).

NPRI (Canada)

Transfers off-site are reported. Transfers are displayed alongside emissions, and are classified as transfers for disposal and transfers for recycling. Reports show the total offsite release, the total transfers for disposal and the total transfers for recycling. There is no indication of the destination of transferred substances. Currently, releases to the environment from tailings or waste rock areas are reported to the NPRI, but substances contained in materials added to tailings or waste rock areas are not reported. This aspect of reporting is currently undergoing a review, with consideration being given as to the reporting for tailings and waste rock.

NAEI (UK)

Off-site transfers are reported and displayed alongside emissions. Transfers are divided into waste and special waste. These two types of waste are reported as disposal (to landfill, incineration or other) or as recovery (as a fuel, recycling or other). From 2003, facilities were required to report waste transferred using the European Waste Catalogue codes to categorise the waste, and Waste Framework Directive codes to categorise the disposal or recovery of the waste transferred off-site. This means that specific substances are not reported, rather, types of waste.

The NPI has been the subject of two reviews since it came into effect in 1998. The 2000 review of the NPI NEPM (report can be found at http://www.ephc.gov.au/pdf/npi/npi_Rae_Report.pdf) recommended that the movement of reportable substances to engineered landfills, either on-site or off-site should be included in the NPI and classified as 'transfers'. The 2005 review also recommended that transfers be included in the NPI and that the NPI NEPM be varied accordingly.

3.2 SPECIFICATION OF REGULATORY OBJECTIVES

It is proposed that a requirement to report transfers be established under the NPI. The objectives of including transfers in the NPI NEPM are to:

- provide more useful and complete information about the movement and treatment of potentially harmful substances¹;
- be a driver for waste minimisation, recycling and cleaner production²³⁴;

¹ Hagreen and Lourie (2004) using mercury as an example, show that unless waste transfers are included in PRTRs more than 50% of waste is not accounted for.

² Khanna et al (1998) show that including waste transfer reporting in a PRTR will result in facilities using better waste management practices (ie operating higher up on the waste hierarchy). Negligible effect on total waste generated however.

³ Sigman (1996) shows the importance of waste transfer data in a PRTR when assessing the effectiveness of a waste management strategy.

- enable the NPI to achieve the status of a PRTR as originally envisaged; and
- provide improved data on hazardous waste in Australia that is useful for reporting waste generation data under international conventions such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and the Rotterdam Convention on Prior Informed Consent⁵.

3.3 CONSIDERATION OF OPTIONS FOR ACHIEVING THE OBJECTIVES

Three options have been identified in relation to the reporting of transfers:

- Option 1 - vary the NPI NEPM to incorporate transfers.
- Option 2 - incorporate transfers in an alternative register (eg a new NEPM).
- Option 3 - do nothing (ie continue not recording transfers in the NPI).

3.3.1 Option 1 – Vary the NPI NEPM

This option involves the incorporation of transfers data in the NPI, with such data from facilities and aggregated sources being separated from the emissions data. Broadly, the advantages and disadvantages of this option are outlined below.

Advantages

- Would provide a nationwide publicly available database of substances in waste transfers from reporting facilities⁶;
- The program and its legal frameworks are already established and would require only minor modification to accept transfer data, leading to comparatively low costs for industry and government;
- Given the existing framework, the NPI has the capacity to report transfer data within a short implementation time;
- A one-stop-shop would be available to search for both emission and transfer information;
- Information on transfers would complement the current NPI emissions data, providing a much clearer and more complete picture of the environmental performance of a facility;
- Can be developed and operated by personnel in jurisdictions who are familiar with the existing NPI reporting system; and
- Would bring the NPI into line with OECD recommendations that transfers be included in all PRTRs⁷.

Disadvantages

- Increases reporting workload (and hence costs) for NPI reporting facilities compared to the 'do nothing' option;
- Requires development of estimation techniques for transfers by regulators and industry;
- Increases data handling and analysis undertaken by jurisdictions; and

⁴ Kolominskas and Sullivan (2004) state that "PRTR reporting can assist in identifying cleaner production opportunities and in generating the data sets required to design, implement and monitor cleaner production programs".

⁵ Harrison and Antweiler (2003) found that PRTRs were important in providing the information needed to guide and assess regulatory programs for pollutant reduction. They also demonstrated that reporting of waste transfers is important to ensure that less visible waste streams and waste disposal are accounted for.

⁶ Lloyd-Smith (1999) and Lloyd-Smith (2002) outline the benefits of PRTRs and criticise the limited nature of the NPI in providing information to the community. She suggests that the program should be substantially expanded.

⁷ OECD (2005) gives a very good summary of the uses of PRTRs to business, government and the community.

- Database expansion would be required to accommodate transfers, the complexity of this task being dependent on the structure of the transfers component and the relationship to the current system.

3.3.2 Option 2 – Incorporate transfers in an alternative register

Within this option, a number of alternatives exist for meeting the objective of mandatory and publicly disclosed industry reporting of transfer information. For example, a new NEPM could be developed specifically for transfers, or current programs such as those involved in waste tracking could be modified to also require substance transfer information to be reported.

Advantages

- Transfers could be categorised on a waste-type basis as is the case in the waste management practices currently in place in jurisdictions. This form of categorisation would not sit comfortably in the NPI, which is based on the reporting of individual substances; and
- Different thresholds could be more easily applied in a separate database, possibly lessening confusion should transfers with different thresholds be included in the NPI.

Disadvantages

- Costs involved in the development of an alternative transfer register (via a new NEPM or some other mechanism) would be high reflecting the cost of developing and implementing a legal framework, administrative system and public disclosure device;
- The timeframes associated with implementing such a new process would be considerable;
- Facilities required to report transfers would largely be drawn from current NPI reporters, provided NPI substance thresholds were maintained. Most of those facilities would have two reports to complete instead of one, adding to the administrative burden. This would be expected to result in a degree of opposition from industry;
- Jurisdictions could be required to set up separate groups of personnel to handle incoming reports; and
- A suitable vehicle for the inclusion of transfers already exists in the NPI and this could be amended to incorporate transfer data without undue difficulty.

3.3.3 Option 3 – Do nothing

In this option, no new program is introduced to require reporting of transfers from industry, but all reporting requirements through the various waste tracking systems in jurisdictions continues. This is the cheapest option since it requires no further outlay of expenditure than is currently budgeted by jurisdictions for their existing programs.

The main disadvantage of this option is that it does not meet the objective of public disclosure of substances in transferred waste⁸⁹.

Advantages

- No increase in reporting workload for NPI reporting facilities;
- No added expenditure is required by jurisdictions to implement legal frameworks, and administrative and database systems; and

⁸ Gamper-Rabindram (2006) found that voluntary programs were not effective in reducing waste. He also demonstrated the importance of having mandatory waste transfer reporting in order to check the effectiveness of waste reduction programs.

⁹ Freedman and Patten (2004) found that voluntary disclosure programs were largely ineffective.

- No perceived duplication of waste tracking.

Disadvantages

- Would not provide a proactive program designed to support achievement of the desired environmental outcomes of the NPI;
- Transfers are not currently captured in any register. Maintenance of the status quo would result in no nationwide publicly available database dealing with waste transfer; and
- Lessens incentive for industry to pursue cleaner production initiatives.

3.3.4 Preferred option

The preferred option is to incorporate transfers in the existing NPI (Option 1).

The key considerations in arriving at this conclusion are that:

- this option will provide an easily accessible, publicly available source of transfer information;
- the majority of stakeholders are more likely to accept this option rather than reporting through a new system;
- transition impacts and the time for implementation will be minimised. It will be moderately easy and short-term to incorporate transfers in the existing NPI;
- it will require only relatively minor additional effort by industry to operate within the existing NPI;
- the administrative and governance burden on governments will be minimised; and
- a better product for industry, government and the community might reasonably be expected from a consolidated program (emissions plus transfers) than from two separate programs.

3.3.5 Description of preferred option

The preferred transfers option, which draws significantly on recommendations of the Technical Advisory Panel (TAP), has the following attributes:

- exclusion of goods/products;
- inclusion of type of reporting facility;
- exclusion of receiving facility name and location details;
- inclusion of on-site transfers to landfill and tailings storage facilities;
- exclusion of reporting for on-site waste rock dumps and overburden;
- inclusion of transfers of contaminated soil and sediments;
- inclusion of Total Nitrogen and Total Phosphorus;
- inclusion of aggregated transfers data;
- report to current NPI substance reporting list;
- report to current NPI thresholds; and
- include in separate section of the database.

Detailed analysis of these attributes is given below.

Exclusion of goods/products

The movement (shipment) of marketable goods and products from a facility, including virgin materials and chemical intermediates, should not be reported as transfers. Therefore, a register of waste transfers should not include transfer of chemical intermediates such as 1,3-butadiene or vinyl chloride, or movement of mineral products such as metal ore concentrates. The regulations that already apply to such transfers are adequate for their control and often include public reporting as part of normal operations. Other goods and activities that would come under this exclusion could include distribution of petroleum and similar fuels from refineries and/or storage to sites where they will be combusted (eg power plants, airports), or stored temporarily before further distribution. If such transfers were to be included in a register, direct reporting would be burdensome and is likely to generate data of doubtful value in relation to cleaner production.

Inclusion of type of receiving facility

The level of detail required in the transfers register should be kept to a minimum, as in the emissions inventory, consistent with the aims of the NPI to provide information that is 'useful, accessible and understandable' to government, industry and the community. Besides information fields relating to the source and quantity of the transfers, it is deemed useful to make mandatory the disclosure of the type (eg landfill or reprocessing) of facility to which the transferred material has been sent.

Such reporting would enable the database user to determine the amount of an NPI substance being transferred, for example, to energy recovery processes, re-use/recycling or destruction, and to determine the veracity/suitability of the final destination.

Exclusion of receiving facility name and location details

Transferred substances are transported to receiving facilities which may or may not be NPI reporting facilities. In either case it would be possible to have facilities reporting transfers to also report detailed information of the transfer destination, including company name, street address, coordinates and postcode. Such detail would allow superior tracking of waste materials.

Although such detail would provide website users with the ability to track wastes, the following reasons are given for rejecting such an approach, and are based on over-complication of the reporting system with little benefit to end-users:

- Publication of receiving facility detail could unfairly highlight non-existent environmental concerns in a locality. It is important to recognise that should there be significant emissions, and if any NPI thresholds (usage or combustion) were exceeded, then the receiving facility would be an NPI reporter in its own right, and the community would be adequately informed;
- The tracking of waste could overly complicate NPI reporting procedures for a reporter, particularly if waste was handled by a number of waste contractors and there were many receiving facilities. The onus would be on the reporter to obtain details of destinations. It should be noted that jurisdictions may already have waste tracking systems in operation;
- Depiction on the NPI website could be complicated and interpretation by website users could prove problematical; and
- Where jurisdictions already have systems in place to track waste, there would be duplication of effort.

Inclusion of on-site transfers to landfill and tailings storage facilities

It is widely accepted that transfers of materials off-site should be included in the register of transfers. However, questions are often raised about transfers to an on-site facility, such as a transfer of the residues of mineral extraction to a tailings dam, or ash from a power station to a storage site. To require reporting of all on-site transfers would involve companies in needless reporting of transfers from production equipment to storage tanks, or other process operations that might involve large quantities of material but still be confined on the industrial site.

The critical issue, however, is not one of location, but of the ultimate fate of the material. While all off-site transfers would need to be reported, only those on-site transfers should be reported that do not involve subsequent movement of the material. This would cover the case of an on-site tailings storage facility or ash pit, to which transfers would need to be reported, but exclude the transfer of material to temporary on-site storage.

Exclusion of reporting for on-site waste rock dumps and overburden

In a mining context, 'waste rock' includes sub-grade rock, compared to grade ore. Overburden includes all overlying soil which is not part of the ore or part of the sub-grade rock. These terms are applied where any of these materials are displaced during underground or surface mining operations. Also included is all soil and rock removed in construction or road building as this is frequently relocated for such uses as grade levelling or other profile augmentation, and capping of landfills. Such transfers are normally approved by jurisdictions when the concentrations of contaminants, such as naturally occurring arsenic for example, are sufficiently low that final placement does not entail significant risk. Where this cannot be assured, the material is directed to an engineered secure landfill and would need to be reported to the NPI as a transfer with net emissions reported. It is not intended to exclude industrial by-products such as red mud generated in alumina refining in this category of waste rock as this has been chemically modified in processing.

The US TRI requires reporting of movements of TRI substances in waste rock and overburden as a release to land (rather than a transfer). The substances are often present at very low concentrations, or in the case of valuable minerals, at concentrations below those that permit economic recovery. A '*de minimis*' ruling can also apply whereby if substances are below a certain concentration they can be excluded from the emissions calculation.

The case is often argued that these are naturally occurring substances, which is true, and that the substance of concern is irretrievably locked into the rock matrix, which is not always the case. The aerial oxidation of damp pyrite, which gives rise to sulfuric acid (and is the cause of acid mine drainage) means that this mineral cannot be regarded as 'irretrievably locked up' since fracturing the rock before its removal will expose at least some of the pyrite. However, this alone is viewed as not sufficient reason to require reporting of rock contents to a transfers register, since such substances in an acid discharge are already reportable to the NPI.

In its considerations, the TAP carefully weighed the science around the issue of transfers reporting for both waste rock and tailings materials. The focus of the TAP was on science-based risk assessment related to differing exposures. There were a number of pieces of scientific evidence considered to reach the TAP recommendation on waste rock/soils. These included:

- Established knowledge that the health and environment risks posed by tailings and soil/waste rock are quite different. While some tailings materials are benign, most tailings pose a greater risk than soils and waste rock because of possible exposure to added processing reagents. In addition, in waste rock/soils, the concentrations of any substances of concern are usually low.

The risk differences between waste rock and tailings go beyond particle size, though the smaller particle size of tailings materials also make for higher exposures and therefore higher risk. Significant bird kills have been recorded in Australia in relation to tailings materials through surface exposure, but not in regard to waste rock/soils and this is testimony to the different risks posed;

- Recognition that emissions from waste rock are already reportable under the NPI, eg in leachates. The TAP decided that the current reporting requirement under the NPI for these emissions did address any significant risks associated with these materials. Should some components mobilise with time to appear in leachates then these are reportable annually. Hence, significant exposures from waste rock are already reportable as emissions under the NPI; and
- Tailings facilities are engineered to varying extents to contain stored materials and the TAP has included in its report, under the section 'Reporting Format', a process to allow the better grade storage facilities to be acknowledged under the NPI in the 'transfers register'. This was a deliberate inclusion by the TAP to encourage cleaner production.

The advantages of excluding waste rock dumps are as follows:

- In most cases waste rock does not pose a major environmental risk. Furthermore, substance emissions from waste rock dumps are reportable to the NPI, if NPI thresholds are exceeded;
- It is unlikely that cleaner production would result should transfers be reportable, since the nature of the deposited material has been determined by economic factors (such as the cost of processing low grade ore);
- Lower reporting costs, including materials analysis and recording, for facilities utilising waste rock dumps; and
- If reportable, there could be generation of huge transfer totals for some facilities, and possible misinterpretation and misuse of the data by end-users. For example, a mine could transfer thousands of tonnes of an NPI substance to waste dumps, even though that substance could be environmentally benign.

Disadvantages of the preferred approach have been identified as follows:

- Although not currently reportable as such, in current NPI terminology, the deposition of waste rock has been described as a transfer, and reporters would be familiar with this term. A change in terminology could confuse some reporters, resulting in incorrect data being placed on the database; and
- The amount of various NPI substances remaining in a dump after mine closure could not be determined from the database. The database user would have no indication of the degree to which the substances had been 'left to the environment'.

Inclusion of transfers of contaminated soil and sediments

The movement of contaminated soil should be reported to the NPI as a transfer of the contaminants where these appear on the reporting list. The present Assessment of Site Contamination NEPM includes a useful definition of contamination:

Contamination means the condition of land or water where any chemical substance or waste has been added above the background level and represents, or potentially represents, an adverse health or environmental impact.

Marine or freshwater sediments transferred from one site to another during dredging operations at ports and harbours (technically relocation of 'dredging spoil') would also be included for reporting in the NPI should thresholds be exceeded.

Inclusion of Total Nitrogen and Total Phosphorus

In the NPI, Total Nitrogen and Total Phosphorus are reported if emitted to water. Very few industrial facilities emit these substances to water, but many discharge them to sewer, and others to land (eg watering of parks or crops). The discharge to sewer is currently classed as a transfer (but not reportable), so reporters are aware of the terminology. Discharge to pasture (ie to land) is currently not reportable.

There would be value in reporting the transfer to sewer of Total Nitrogen and Total Phosphorus given the interest in nutrient loads in waterways (which are often contributed to from sewage treatment plant discharge). Source reduction before sewage treatment would reduce subsequent environmental impacts, hence reporting as transfers should be encouraged.

It is envisaged that Total Nitrogen and Total Phosphorus in liquid or solid waste are reportable as a transfer where effluent or biosolids¹⁰ are applied to land (ie transferred) or some other situation where subsequent transport of these substances to a water body is likely.

Inclusion of aggregated transfer data

The NPI database is comprised of reporting facility emissions and emissions from aggregated sources (such as sub-threshold facilities, households and transport). Aggregated source emissions are estimated periodically by jurisdictions for significant airsheds and water catchments, the estimates being based on various surveys, traffic counts and other data.

Many sub-threshold facilities are generators of waste which is transferred off-site. Inclusion of these sources would provide a more complete picture of transfers from industry. Although it is unlikely that cleaner production initiatives would be taken up by sub-threshold industry based on the aggregated data, and that significant research into practices would be required in order to prepare estimates, useful benefit would accrue to database users.

One drawback would be that data accuracy may be questionable and possibly far inferior to transfer data reported by facilities, but this is not regarded as sufficient reason to exclude aggregated transfers.

The preparation of aggregated emissions data has previously been agreed by the Australian Government and the appropriate jurisdiction and formalised in a Memorandum of Understanding to implement the program. Similarly, it is considered that agreement to prepare aggregated transfer data would follow this process. There is no requirement to amend the NEPM to allow this process to be followed.

Report to current NPI substance reporting list

Transfer criteria could be applied to a list of chemical substances related to, but not necessarily the same as, the current NPI reporting list of 90 substances. Such a transfer reporting list would be determined on the basis of significant risk to human health and the environment, based on the concentrations and bio-availabilities of the chemical substances being transferred.

¹⁰ Biosolids are the organic product that results from sewage treatment processes.

Notwithstanding this criterion, the TAP recommended that the current NPI reporting list be applied when determining transfers, and added that guidance should be provided in the industry guidance documents to assist facilities to estimate transfers.

There appears no viable reason to deviate from the current NPI list. A major advantage of this approach is that it simplifies reporting for facilities, as opposed to the requirement to apply an additional reporting list.

Report to current NPI thresholds

Reporting thresholds in the NPI are set either by quantities 'used' by facilities - 10 tonnes/year for most substances on the NPI list - or by activity thresholds which relate to fuel burning.

One substance has a higher reporting threshold - Total Volatile Organic Compounds (TVOC) at 25 tonnes/year. Two have thresholds based on quantity emitted to water - Total Nitrogen (at 15 tonnes/year) and Total Phosphorus (at 3 tonnes/year).

Maintaining existing NPI thresholds would ensure that the range of reporters remained essentially the same, and there would be no increased burden in deciding whether reporting was necessary. As transfers are not analogous to emissions (ie the environment is not immediately and directly threatened), there appears no case for introducing thresholds more stringent than those applying in the current NPI.

Once a threshold for a substance is tripped, then both emissions and transfers of that substance would need to be estimated and reported.

The TAP did consider whether thresholds for transfers could be based on concentrations of the NPI substances in waste, but concluded that this could lead to unnecessary complexity. Consideration was also given to application of alternative thresholds based on risk, though development of these would entail a comprehensive investigation.

It is recognised that Category 2a and 2b thresholds, being based on fuel burning and electrical energy consumption, may not be directly applicable to the reporting of transfers. Therefore, it is proposed that tripping a Category 2 fuel burning threshold should not result in a requirement to report transfers of those Category 2 substances. This will limit the costs to industry given the high portion of facilities that report to the NPI based on tripping a fuel burning threshold, while being unlikely to result in the loss of useful data since the majority of Category 2 substances are also Category 1, Category 1a and Category 1b substances and so facilities that have significant usage of a substance will still trip a reporting threshold. Hence, facilities would only be required to report on Category 1, Category 1a, Category 1b and Category 3 substances.

Display on the NPI database

It is proposed that facility data for emissions and transfers should be separated in the facility report on the NPI database - ie a separate transfers section should be included. Separating the reporting of emissions and transfers in this way will reduce illogical summing of emissions and transfers to produce large but meaningless totals that could be used as the basis of criticism of industry and/or government.

3.4 IMPACTS OF A VARIED NEPM

This section analyses the likely costs and benefits for industry, government and the community of an NPI program that includes the preferred model of reporting transfers to the NPI. The very nature of quantifying costs and benefits is problematic and in some cases only a qualitative

measure can be applied. This is particularly difficult when formulating environmental and social benefits in economic terms, and allowing for a balanced judgement of benefit versus cost. Therefore the analysis below draws on quantitative costs where possible but is, in the main, qualitative in nature.

Further, it should be noted that a consultancy was undertaken with the aim of investigating the potential methods and costs to industry of reporting transfer data in the NPI program. This work involved a comprehensive literature search for available transfer estimation methodologies, a survey of NPI facilities and case studies that estimate the cost of reporting transfers for three facilities from the oil and gas exploration, manufacturing and food production sectors. The consultancy brief is included as Appendix 1 and the findings are incorporated in the discussion below.

3.4.1 Impacts on industry

It is unlikely that many facilities that are not currently reporting to the NPI will be drawn into the program due to the inclusion of transfers. Under the preferred option, the reporting of transfers is governed by application of the current NPI thresholds. Therefore, in the vast majority of cases, reporting transfers will not require any further consideration about whether or not a threshold is tripped. If a threshold is tripped for Category 1, Category 1a, Category 1b or Category 3 substances, then the facility must report emissions and transfers of that substance.

NPI reporting methodology will largely be known, though additional transfer estimation techniques will need to be applied or developed.

The costs for industry lie mainly in the determination of the mass of NPI substances contained in the waste streams being transferred. In some cases the constituents of the waste, including concentrations of NPI substances, are expected to be well characterised and therefore the annual mass of the substance transferred is expected to be relatively easy to report and associated costs are likely to be low.

In other cases, the constituents of the wastes may not be well characterised and will have to be determined. Significant costs may arise for the reporter if chemical analysis is the only method of determining this information. For some types of waste which are generic across an industry sector, such analysis could be performed most cost efficiently through a coordinated effort, perhaps through an industry association. The result of such generic analysis would be the formulation of 'transfer factors' similar to the 'emission factors' currently used to estimate emissions for the NPI. Alternatively, the cost of the development of such 'transfer factors' could be borne by government.

Costs to industry

The costs to industry can be summarised as follows:

- Consultation/advice to government – this cost would arise due to industry involvement in consultation processes such as those conducted during policy review/development processes (like the current variation), or the development of industry reporting materials. This would be made up of the human resource costs of attending meetings, providing written comments on behalf of companies and lobbying through discussions with government, industry groups and sector-related gatherings. For medium-sized companies, input to such processes is often coordinated through representative industry organisations on their behalf. It is difficult to ascribe a financial cost to this and, given the relatively infrequent requirement for this type of involvement, its voluntary nature, and the relatively small number of companies that have significant direct involvement in such processes, such cost averaged per facility would be

expected to be very low. Consequently this cost is considered negligible and is best quantified as \$zero for analytical purposes.

- Additional compliance costs — these consist of:
 - understanding compliance requirements which involves familiarisation with NPI documentation, including calculation and reporting software tools, and attending presentations from environment agency representatives;
 - data gathering, emissions calculation and quality assurance costs for a facility's transfers. This may include additional analysis of process streams where facilities are required to carry out some test work, either in-house or through consultants, to identify NPI substances in waste and determine their quantity; and
 - general administrative reporting costs covering the collation and submission of results through the use of the paper reporting form or electronic reporting software.

The average cost of reporting to the current NPI program is \$3,139 [Note: this is the average cost over seven years for those facilities which have reported costs] as illustrated by the information in Appendix 2¹¹. The Greenhouse Gas Emission Reporting and Pilot Draft Position Paper¹² provides a speculative breakdown of this cost according to the types of compliance activities described above, based on estimates of likely reporter effort shown in Table 3-1, using estimates of administrative and technical staff salaries.

Table 3-1: Average annual NPI report cost estimated breakdown

Activity	Estimated Time (h) per report	Primary staff effort type	Activity cost	Approx % of total report cost
Understanding compliance requirements	8	Technical	\$600	18.5%
Data collection/calculation	24	Senior technical	\$2400	74%
Administrative reporting cost	5	Administrative	\$250	7.5%
Total report cost	37		\$3250	100%

Note that estimates have been made in round figures resulting in a slightly larger estimate of total report cost.

The costs of understanding compliance requirements should decrease with time, as the program becomes better understood. For the purposes of estimation here, however, this will be assumed to increase by 100% (ie \$600 per report), as transfers are a completely new issue for many NPI reporters.

The administrative reporting cost is expected to be fixed, regardless of incremental addition of extra reporting requirements to the program and as such is quantified as \$zero additional cost per annual facility report.

Data collection/calculation costs are assumed to increase as additional requirements such as transfers are added. Interestingly this has not been observed. The extension of the reporting list from 36 to 90 substances in 2001/02 increased the average number of substances per report from 9.1 to 11.6 but the average cost dropped from \$3,437 to \$2,442. For the purposes of this discussion this will be regarded as an anomaly, and a nominal per substance reporting cost of approximately

¹¹ NPI reporting costs have been provided by NPI facilities since the program's inception in 1998/99 but are not publicly disclosed. They can be combined with the average number of substance emissions reported per facility across the lifetime of the program, to provide a useful guide for estimating costs to companies.

¹² EPA Victoria, *Greenhouse Gas Emissions Reporting and Disclosure Pilot Draft Position Paper*, Publication 1034, February 2005, p.46

\$200 is suggested, determined by dividing the average data collection/calculation component reporting cost of \$2,400 by the average number of substances per report (between 10.0 and 11.6 since the longer substance list was adopted).

Since reporting of transfers will not apply to substances that have been tripped through the Category 2 fuel burning threshold, the number of substances reported as transfers will be significantly less than currently reported for emissions (ie an average of 10 substances per facility). Given that about 1,800 facilities trip the Category 2a threshold requiring reporting of emissions of eight substances, while it is estimated that more than 500 facilities trip Category 2b requiring reporting of 21 substances, it is clear that Category 2 thresholds account for a significant portion of the total number of substance emissions reported to the NPI. A simple analysis of the substances reported to the NPI and likely threshold exceeded indicates that it would be expected that the number of substances where the Category 1, Category 1a, Category 1b or Category 3 threshold is tripped would average between three and four substances per facility. Therefore, a conservative average of four substances per facility would be expected to be reported as transfers.

Using this information, indicative costs for reporting transfers are estimated to increase by an average \$1,400 per facility consisting of \$600 to understand the transfer compliance requirements and \$800 to estimate the transfer amount of the four substances (at \$200 each) that must be reported. Since costs are expected to be higher in the first year to reflect the additional data collection costs plus the costs of understanding compliance (eg attending seminars/training), it is considered that doubling this cost would adequately reflect the higher set-up costs in the first year. Therefore, NPI reporting costs for industry are expected to increase by an average cost of \$2,800 per facility in the first year with on-going costs of \$1,400 per annum per facility.

This figure can be further explained using the NPI emissions reporting cost data (see Appendix 2) by noting that, similar to the cost of emissions reporting, the costs for more than 63% of the facilities would be expected to be below \$1000, while 6% of facilities may have costs in excess of \$10,000. This range of costs reflects the complexities of some sites where multiple processes lead to a variety of sources for emissions and transfers.

Consultancy findings

The industry questionnaire developed by the consultant was distributed to a large selection of reporters Australia-wide and received about 140 replies. A detailed summary of costs estimated by reporters is reproduced in Table 3-2.

Total average costs were estimated by industry respondents at \$8,300 per annum, with an initial set-up cost of \$2,200. The costs are considerably higher than those determined by the earlier analysis, but this can in part be explained by reporters' understanding of the task, and the facility types involved in completing the questionnaire. The questionnaire did not indicate that Category 2a and 2b substances would not be part of transfers reporting, so facilities would have included these substances in their costing of the reporting burden. Also, replies received tended to be from larger facilities (ie those that are likely to have a larger transfers reporting requirement), and the possibility exists that some cost components attributable to transfer reporting may not be strictly additional costs to NPI reporting (eg equipment and consumable costs).

The survey indicated that costs for the reporting of transfers are minor when compared to the average facility's overall waste management cost (\$330,000).

Table 3-2: The estimated average costs associated with transfer reporting

	Cost components*							Total (average)	Total (median)
	Staff - technical	Staff - admin, other	Equipment & consumables	Consultants	Service providers	Other			
Overall waste management costs	\$60,000	\$36,000	\$130,000	included in 'other'	\$140,000 (waste contractors)	\$58,000	\$430,000	\$50,000	
Current waste tracking costs	\$1,200	\$1,300	\$520	\$540	\$1,000 (analytical laboratory)	\$80	\$4,600	\$900	
Current NPI reporting costs	\$1,700	\$760	\$300	\$1,100	\$1,100 (analytical laboratory)	\$20	\$4,900	\$1,100	
Estimated transfer reporting costs	\$1,500	\$1,500	\$1,000	\$1,400	\$2,600 (analytical laboratory)	\$220	\$8,300	\$1,200	
Additional estimated set-up costs for transfer reporting	-	-	-	-	-	-	\$2,200	\$1,000	

*rounded to 2 significant digits

The consultant carried out case studies for the purpose of gaining insight into costs associated with specific industry types (see Case Studies 1 and 2 in boxes below). The case studies resulted from face-to-face interviews with facility personnel, and were designed to gain insight into costs associated with specific industry types. In the two case studies reported, annual costs for transfer reporting were of the order of \$5,000, with initial set-up costs of the same order. For this exercise facilities were aware that Category 2a and 2b substances were not included in transfer reporting.

Although recognised as being a snapshot only of potential reporters, the costs fit reasonably well with the above cost analysis.

Case Study 1 - Major Food Processing Company

The facility manufactures hundreds of food products including canned fruits and vegetables, jams, juices and other beverages, and has over 700 employees. The current NPI reporting requirements are relatively straightforward – the facility trips Category 1a Total VOCs threshold plus the Category 2b fuel burning threshold. Management uses databases for tracking wastes and maintaining the fuel and chemical inventories. Water monitoring is extensive and approximately 50 flow-meters are installed throughout the plant.

Transfers reporting would probably be limited to Category 1a Total VOCs and Category 3 substances since the company does not trip the 10 tonne threshold for any Category 1 substances.

Details of estimated costs of reporting transfers are given in the following table.

Table 3-3: Case Study 1 - Estimated costs of reporting transfers

	Cost components - strong assistance scenario						Additional set-up costs for transfer reporting (first year)
	Staff - Environmental Manager (\$130/hr)	Staff - admin., operational (\$65/hr)	Equipment & consumables	Consultants	Service providers - analytical laboratory	Subtotal	
Understanding regulatory requirements	\$650	\$0	\$65	\$0	\$0	\$715	\$780 staff \$78 equipment
Determining reporting obligations	\$390	\$0	\$39	\$0	\$0	\$429	\$260 staff \$26 equipment
Performing calculations, measurements & estimates	\$1,300	\$715	\$202	\$0	\$200	\$2,417	\$2,015 staff \$202 equipment \$850 analytical
Reporting transfers	\$390	\$65	\$45	\$0	\$0	\$500	\$325 staff \$32 equipment
Total	\$2,730	\$780	\$351	\$0	\$200	\$4,061	\$4,568
Additional costs incurred under a minimal assistance scenario	\$390	\$325	\$72	\$0	\$240	\$1,027	

Case Study 2 – Oil & Gas Extraction Company

The facility is one of a number of on-shore oil and gas facilities run by the parent company. The activities carried out at the facility include oil and gas exploration, extraction and production. There are about 50 site and support staff, and the workforce can be increased up to three-fold with periodic employment of contractors. Current NPI reporting is based on gas emissions and fuel burning. The facility currently exceeds a number of Category 1 usage thresholds, the Category 1a Total VOCs threshold, plus the Category 2b fuel burning threshold.

Transfers reporting would likely lead to the requirement to identify some Category 1 and 1a substances that may be present in waste streams. The introduction of transfers would also be expected to add the requirement to estimate substances in on-site storage of produced water in evaporation ponds.

Details of estimated costs of reporting transfers are given in the following table.

Table 3-4: Case Study 2 – Estimated costs of reporting transfers

	Cost components – strong assistance scenario							Additional set-up costs for transfer reporting (first year)
	Staff – HSE Manager (\$180/hr)	Staff – Environmental Engineer (\$120/hr)	Staff – Field operators (\$90/hr)	Staff – admin (\$65/hr)	Equipment & consumables	Service providers – analytical laboratory	Subtotal	
Understanding regulatory requirements	\$0	\$240	\$0	\$0	\$36	\$0	\$276	\$480 staff \$72 equip
Determining reporting obligations	\$0	\$240	\$0	\$0	\$36	\$0	\$276	\$480 staff \$72 equip
Performing calculations, measurements & estimates	\$360	\$1,800	\$1,080	\$130	\$162	\$400	\$3,932	\$2,880 staff \$432 equip \$2,000 lab
Reporting transfers	\$360	\$480	\$0	\$130	\$72	\$0	\$1,042	\$480 staff \$72 equip
Total	\$720	\$2,760	\$1,080	\$260	\$306	\$400	\$5,526	\$6,968
Additional costs incurred under a minimal assistance scenario	\$0	\$360	\$0	\$0	\$54	\$0	\$414	

Benefits to industry

Transparency builds credibility and trust with the community – reporting to the NPI has enabled some companies to work more closely with their local communities by demonstrating their commitment to transparency of their operations and impacts. Information about emissions provides a basis for engagement with stakeholders - sometimes the existence of information (as opposed to what the information means) is seen as reassuring in itself, ie proof that a company has ‘nothing to hide’. Reporting transfers will extend this.

Disclosure drives competition (financial cost savings) – public reporting through programs such as the NPI has directly or indirectly led to a trend of reduction in emissions reported over time. This is best evidenced by the longest running disclosure inventory in the world, the US TRI. Since companies in a sector can have their emissions scrutinised side-by-side this can create competition to report the lowest emissions or, at least, not report the highest. It has been demonstrated that business often needs some assistance before implementing measures that both help their environmental performance and their economic bottom line (Department of the Environment and Heritage, 2005). Kolominskas and Sullivan (2004) demonstrate the effectiveness of PRTRs in assisting businesses to implement cleaner production programs.

Increases corporate knowledge of waste issues – generally, senior management signs off on NPI data before it is submitted to a jurisdictional environment agency. This elevates the issue of environmental impacts into the consciousness of the decision-makers in an organisation, which can lead to questions that may bring about better performance. By reporting transfers, companies not yet engaged in comprehensive analysis of site resources may gain an improved understanding of their role in the problem and the potential for cost savings through more resource-efficient operation. That is, transfers may provide an additional driver for cleaner production and waste minimisation.

Further benefits to industry include:

- potential expansion of the re-use and recycling of used materials through the identification of substances in waste streams; and
- improved ability to assess the impact activities have on the environment, and promote more careful consideration of the environmental impacts of their actions.

Summary of costs and benefits

As discussed above, the costs for industry mainly lie in the determination of the mass of NPI substances contained in the waste streams being transferred. In some cases the constituents of the waste, including concentrations of NPI substances, are expected to be well characterised and therefore the annual mass of the substance transferred is expected to be relatively easy to report and costs are likely to be low. In other cases the constituents of the wastes are not well characterised and will have to be determined.

The estimated costs for industry are an initial cost increase of \$2,800 per facility (total costs of \$10.4m) with on-going costs of \$1,400 per annum per facility (total costs of \$5.2m).

The benefits to industry of reporting transfers include building trust with community by demonstrating they have ‘nothing to hide’ and the ability to showcase good performance.

3.4.2 Impacts on government

Cost to Government

The costs to the Australian Government of the inclusion of transfers in the NPI NEPM will be:

Legislation development process – the budget approved by EPHC for the current NPI process to consider varying the NPI NEPM is \$218,160. This cost covers the variation process for all proposed amendments and will be incurred whether transfers are added to the NPI NEPM or not. Hence, it is not included as a cost for government since the portion of this cost applicable to reporting of transfers cannot be quantified. In addition, the Australian Government has funded an additional consultancy to provide further information on the costs to industry for transfers¹³.

NPI Australian Government database systems modifications – the addition of transfers to the NPI would require changes to the database systems involved in data collection, jurisdictional program management and public internet display. An in-house assessment by the Australian Government Department of the Environment and Heritage was undertaken in December 2005 to determine the cost impact of modifying existing systems to support both greenhouse gases and the reporting of transfers. This cost is estimated at \$171,000 and for the purposes of this analysis it is considered that 50% of this cost (ie \$85,500) is due to modifying the system to accept reporting of transfers.

Preparation of industry guidance material – it is envisaged that a generic transfers manual will be prepared that will provide information to industry to assist them to estimate their transfers. Potentially there may also be industry-specific information developed that could be included in revised versions of industry-specific EET manuals. An outlay of \$150,000 to cover the preparation of the transfers manual, including industry consultation and waste stream analyses, is a useful representative cost.

The costs to jurisdictions of the inclusion of transfers in the NPI NEPM will be:

- assistance with development of transfer estimation methodologies in NPI manuals and/or the NPI Guide. For the purposes of this analysis, this cost is considered minor compared to other jurisdictional costs and so no value has been assigned to it;
- changes to database systems employed by jurisdictions to accommodate transfer data. Costs are estimated to range from \$10,000 for the smaller jurisdictions to \$30,000 for the larger jurisdictions. Overall, a total one-off cost of \$155,000 is estimated;
- notification and training sessions for NPI reporters – the inclusion of transfers will require jurisdictions to notify industry reporters of the new reporting requirements and additional training (eg through workshops). For a two-staff jurisdictional implementation team this extra effort is estimated at approximately 0.5 full time equivalents (FTE) or 25% of staff costs. Since current NPI implementation costs (\$800,000) are primarily used for staffing, an additional first-year implementation cost for the program nationally can be estimated thus:
 - Australian Government: $\$800,000 \times 25\% = \$200,000$;
 - states/territories matched contribution: $\$800,000 \times 25\% = \$200,000$;
 - total additional implementation cost = \$400,000.

¹³ Department of Environment and Heritage, *Analysis of the financial costs of including transfers in the National Pollutant Inventory*, May 2006.

- for subsequent years, the costs of education can be consolidated into the general administrative cost increase associated with including transfers which consists of administration costs such as data entry/phone assistance, increased industry assistance/data verification costs and the costs of ongoing management. These costs are estimated to vary between jurisdictions. For a two-staff jurisdictional implementation team this extra effort is estimated at ~0.5 full time equivalents (FTE) or 25% of staff costs. Since current NPI implementation costs are primarily used for staffing, an additional implementation cost for the program nationally can be estimated thus:
 - Australian Government: $\$800,000 \times 25\% = \$200,000$;
 - states/territories matched contribution: $\$800,000 \times 25\% = \$200,000$;
 - total additional implementation cost = $\$400,000$.

In summary, total projected costs to Government are as follows:

First year

Australian Government database modifications	\$ 85,500
Industry guidance materials	\$150,000
Jurisdiction database modifications	\$155,000
Additional staffing	\$400,000
TOTAL	\$790,500

Ongoing

Additional staffing	\$400,000
TOTAL	\$400,000

Benefits to Government

The benefits to the government of the inclusion of transfers in the NPI NEPM can be summarised as follows:

- enhancement of decision making and policy formulation for environmental planning and management; and
- the addition of transfers will align the NPI with other international PRTRs such as the US TRI and Canadian NPRI for more consistent international reporting.

3.4.3 Impacts on the community

As a beneficiary of the information generated by such a program, without being a direct stakeholder in the cost of its creation, it is difficult to derive a cost of any quantum that would be incurred by the community. There may be some lobbying/engagement cost as part of public comment processes, as well as the 'cost' of public monies funding the additional component to the program. There is also the cost of accessing the information once published on the internet. However, these costs are inconsequential and a zero cost would most accurately reflect them.

Benefits to the community

The benefits to the community of the inclusion of transfers in the NPI NEPM can be summarised as follows.

Satisfies community right to know — the fundamental premise of community right to know about environment information is the founding purpose for the establishment of the NPI. As its central feature, the NPI is best placed to deliver this to the Australian community, and can do so equally for transfers information as for the emissions information currently captured.

Information empowers and informs public debate on environment issues – including transfers information will allow more robust public debate resulting from improved community access to information about influences on the environment, enabling more informed public involvement in planning, development and policy debates¹⁴¹⁵.

Lloyd-Smith (1999) vehemently expressed concern over the non-inclusion of transfers in the NPI, with the subsequent exclusion of substance data relating to public sewers, tailings dams and landfills.

Groups using PRTR data to arouse public interest include the following:

- The Right-to-Know Network provides a web-based search facility which gives details of off-site transfer information based on TRI and other data; and
- Pollution Watch maintains a website based on NPRI data.

Disclosure drives improved production techniques – the community will have improved information about the sources of transferred wastes. This could lead to increased pressure on facilities to reduce the amounts of transferred wastes by implementing cleaner production and re-use schemes¹⁶¹⁷.

Provides consistent information to assist purchasing/investment decision-making – the community will be better empowered to reward firms that are good environmental performers, and identify firms that are poor environmental performers.

A possible negative impact may be misinterpretation of transfers data. The origins and meaning of current emissions data is not always clear to some NPI users, and misinterpretation sometimes occurs. The addition of transfers data will add to the complexity of the register. However, within the database it is proposed to create a separate section for transfers data. Separating the reporting in this way will reduce vexatious summing of emissions and transfers to produce large but meaningless totals as the basis for criticism of industry and/or government.

3.4.4 Impacts on small business

The Australian Bureau of Statistics (ABS), in its publication 'Small Business in Australia' (1995), has helped to clarify what a small business is by using two complementary approaches or 'tests'. The first test is based on the report of the House of Representatives Standing Committee on Industry, Science and Technology called 'Small Business in Australia - Challenges, Problems and Opportunities' (1990). The report states that a business is regarded as small if it has the following management characteristics:

- the business is independently owned and operated;
- it is closely controlled by owners or managers who contribute most, if not all, of the operating capital; and
- the principal decision-making functions rest with the owners or managers.

¹⁴ OECD (2005) Uses of Pollutant Release and Transfer Register Data and Tools for Their Presentation – Series on Pollutant Release and Transfers Registers No 7.

¹⁵ Several authors have shown the role that PRTRs play in policy making and public debate of issues (Antweiler and Harrison, 2003; Gottlieb et al, 1995; Gunningham, 1995; Gunningham et al, 2004; Harrison and Antweiler, 2003; OECD, 1996; Scorse, 2005).

¹⁶ Many authors demonstrate the effectiveness of PRTRs in reducing emissions (Antweiler and Harrison, 2003; Gunningham, 1995; Khanna et al, 1998; Harrison and Antweiler, 2003; Howes, 2001; Konar and Cohen, 1997; LaBar, 1991).

¹⁷ Kolominskas and Sullivan (2004) demonstrate the effectiveness of PRTRs in assisting businesses to implement cleaner production programs.

The second test is the traditional one of looking at the number of employees. In non-manufacturing industries, a business is small if it employs fewer than twenty employees, and in manufacturing industries a business that employs fewer than 100 employees is considered small.

The ABS adds that the size definition is a functional addition to the first test and should not overshadow it (<http://www.curriculum.edu.au/enterprise/eenwsltr/eenws2.htm>).

Using this definition, the majority of intensive livestock and log sawmilling facilities will be small businesses. However, very few other reporting entities will be. Reporting processes for both of these sectors have been streamlined to greatly minimize the difficulty and time spent reporting. It is estimated that the cost of reporting in these industries (because of streamlined reporting) is less than \$200 per year (Queensland EPA, Annual Summary Report for the NPI, 2006). The addition of transfers (and greenhouse gas emissions) will add some additional requirements for reporting but this is not expected to significantly increase the time or cost involved.

3.4.5 Summary of costs and benefits

The inclusion of transfers in the NPI recognises that such information is an important public good that would not otherwise be publicly available in a comprehensive and integrated fashion. The major benefit is that transfer information will allow more robust public debate resulting from improved community access to information about influences on the environment, enabling more informed public involvement in planning, development and policy debates.

The estimated cost for government is a one-off implementation cost of \$790,500 plus ongoing costs of about \$400,000 per annum. The estimated costs for industry is an average initial cost increase of \$2,800 per facility (total \$10.4m) with on-going costs of \$1,400 per facility (total costs \$5.2m).

4 GREENHOUSE GASES

4.1 STATEMENT OF THE PROBLEM

A range of programs have been implemented in Australia that address in some way the capture of information about greenhouse gas emissions, often with a focus on mitigation. None of these programs, however, report publicly in a nationally comprehensive and entity-based manner on quantitative emissions of the six greenhouse gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride), as the NPI does in relation to the substances on its current reporting list.

The three major issues that have led to a push to include greenhouse gases in the NPI are:

- current greenhouse gas databases are not publicly accessible – this means that company and site emissions data are not available, and hence community right-to-know principles are not being met;
- Greenhouse Challenge data does not include information on all industries and no information on diffuse sources, which are covered by NGGI. This limits the usefulness of Greenhouse Challenge; and
- reporting is not mandatory. There are thus equity and social justice issues in relation to the responsibilities of non-reporters.

Mandatory public disclosure of greenhouse gas emissions at the facility level would support a range of policy outcomes. These include enhancement of community access to information about emissions that have potential impact on the environment; the promotion of competitive greenhouse gas emissions reduction; the provision of information to policy makers to enhance greenhouse gas policy formulation; and the provision of information to assist government,

industry and finance sector initiatives in relation to emission trading schemes and other potential greenhouse gas offset arrangements.

Table 4-1 lists a number of programs that require some level of greenhouse gas reporting and provides a summary of the main aspects of the programs. As can be seen, none of the existing programs has either broad national coverage of industrial emissions or publicly disclose comprehensive company or facility-level greenhouse gas emission data.

Table 4-1: Greenhouse gas reporting programs

Program	Reporting entity	Sectors involved	No. of participants	Public disclosure	Voluntary / Mandatory	Jurisdiction
ABARE Fuel and Energy Survey (FES)	Survey of Business	Stationary energy, waste & industrial	2,350	At aggregate level	Voluntary	National
Greenhouse Challenge Plus (GCH+)	Company & facility	All sectors	800	No	Voluntary (mandatory for some companies)	National
Mandatory Renewable Energy Target (MRET)	Company	Stationary energy – electricity retailers & wholesale buyers	330	Aggregate level	Mandatory	National
Energy Efficiency Opportunity Assessment (EEOA)	Company	Industry, manufacturing, large commercial (energy consumption > 0.5 PJ)	250	Public reporting of energy assessments	Mandatory	National
National Greenhouse Gas Inventory (NGGI)	Company	All Sectors	52	Aggregate level only	Mandatory	National
NSW Greenhouse Gas Abatement Scheme	Company/ Facility	Electricity consumption, emissions from landfill, renewable energy, carbon sequestration, energy efficiency in electricity generation	30 Benchmark participants 30 companies undertaking accredited NGAC projects	Aggregate level	Mandatory	NSW
Qld 13 % Gas Scheme	Company/ Facility	Electricity consumption, gas generation	30-40 electricity retailers	No	Mandatory	Qld
Victorian SEPP-AQM	Facility	Energy consumption, greenhouse gas emissions and abatement actions undertaken.	Approx. 1000	No	Mandatory	Vic

The 2000 review of the NPI NEPM recommended that the six major greenhouse gases be added to the NPI reporting list. The 2005 review also recommended that greenhouse gases be included in the NPI, subject to the outcomes of other processes discussed below.

Use of the NPI is one option for satisfying the mandatory public greenhouse gas disclosure gap. This would have the advantage of taking an already established national program of comprehensive emissions disclosure, with legislative underpinning, and expanding it with relative ease to include greenhouse gases. A number of overseas countries maintaining PRTRs have incorporated a greenhouse gas program in their respective PRTR arrangements. See the 'international greenhouse reporting trends' box below for a summary of some of these initiatives.

The NPI NEPM variation process is running in parallel with other processes relating to greenhouse gas emissions reporting:

- the first is a process of examining the costs and benefits of implementing a nationally consistent framework for greenhouse gas and energy reporting from Australian industry, being conducted by a Joint Working Group formed by the EPHC and the Ministerial Council on Energy. The NPI is considered in this work as one of a number of programs that have reporting requirements relating to greenhouse gas emissions;
- the other initiative, being led by the Victorian Government, is a pilot¹⁸ to test the feasibility of making greenhouse gas emissions reportable under the NPI. The outcomes of this process are being used to inform this NPI NEPM variation process.

International Greenhouse Reporting Trends

Australia's National Greenhouse Gas Inventory (NGGI) is based on international guidelines established by the International Panel for Climate Change and reports on human-induced greenhouse gas emissions in six sectors: energy; industrial processes; solvent and other product use; agriculture; land use, land use change and forestry; and waste.

The US Energy Information Administration (EIA), part of the US Department of Energy, has implemented the *Voluntary Reporting of Greenhouse Gases Program*. This program records the results of voluntary measures to reduce, avoid or sequester greenhouse gas emissions. For the 2003 reporting year, 234 US companies and other organisations reported to the EIA that they had undertaken 2,188 projects to reduce or sequester greenhouse gases.

In Canada, mandatory reporting of direct emissions of the six greenhouse gases has been implemented under the Greenhouse Gas Emissions Reporting Initiative. It is designed to meet the information needs of all jurisdictions, avoid duplication and minimise the burden on both Canadian industry and government alike. Data will be displayed at a site level separate to the Canadian PRTR the National Pollutant Release Inventory.

The European Pollutant Emissions Register (EPER), the first European-wide register of industrial emissions to air and water, receives reports from 10,000 industrial facilities in the 15 Member States of the EU and Hungary and Norway. The EPER also reports on greenhouse gases and has separate emission-based thresholds for each pollutant.

The UK NAEI reports estimates of emissions of a number of greenhouse gases. Similar to Australia's NGGI, estimates are calculated for each source category based on fuel consumption or other activity statistics that are then summed to obtain a total emission for the UK.

In England and Wales, the Pollution Inventory collects site-based information on releases of pollutants and transfers of waste off-site from businesses regulated by the Environment Agency. The six greenhouse gases are included and each has an emission-based threshold for reporting. The Pollution Inventory feeds into the UK NAEI and the EPER.

Japan, who ratified the Kyoto Protocol in June 2002, has established the Greenhouse Gas Inventory Office which is engaged in the development of annual greenhouse inventories and the national inventory report.

¹⁸ EPA Victoria, *Greenhouse Gas Emissions Reporting and Disclosure Pilot Draft Position Paper*, Publication 1034, February 2006, <www.epa.vic.gov.au/greenhouse/>.

4.2 SPECIFICATION OF REGULATORY OBJECTIVES

The primary regulatory objective is to address the absence of national, comprehensive, facility-level greenhouse gas emission data by adding greenhouse gases to the NPI program thereby introducing a mandatory greenhouse gas emissions reporting and public disclosure requirement for industrial sources. Adding greenhouse gases, with appropriate thresholds, to the list of NPI substances will ensure that all facilities across Australia in industries reporting to the NPI submit annual estimates of their greenhouse gas emissions which are then available through the public release of the database each year. Such greenhouse gas data would:

- provide appropriate and consistent information on the greenhouse and energy related performance of companies for:
 - investors and business planners – to improve the flow of market information and thereby facilitate sound market decisions on issues such as carbon risks and energy consumption; and
 - the general public – to inform public debate on greenhouse and energy issues; and
- ensure that data provided by companies to governments is nationally consistent, robust and comparable across programs that may be located in different jurisdictions to inform government emission reduction and energy consumption policy making.

4.3 CONSIDERATION OF OPTIONS FOR ACHIEVING THE OBJECTIVES

The following options have been identified and investigated by the Joint Working Group to meet mandatory greenhouse reporting and public disclosure requirements:

- vary the NPI NEPM to incorporate greenhouse gases;
- develop a new ‘greenhouse gas’ NEPM;
- development of new specific legislation or amendments to other existing legislation, with harmonisation of existing reporting requirements;
- harmonisation of existing reporting requirements through a web-based reporting tool without additional national legislation; or
- the status quo or ‘do nothing’ option, ie all current voluntary and mandatory reporting requirements and prospective requirements, for which there are firm government commitments and reporting requirements (eg mandatory membership of Greenhouse Challenge Plus for fuel tax credit recipients) remain.

From the perspective of this variation process, the last options identified by the Joint Working Group are equivalent since they do not introduce a mandatory reporting requirement, as are the second and third listed options since they both propose to introduce a reporting requirement through a new tool/program. Consequently these condense to three distinct options to achieve the objectives:

- Option 1 – vary the NPI NEPM to incorporate greenhouse gases;
- Option 2 – create another legal requirement to achieve this, for example a new greenhouse NEPM or develop another program;
- Option 3 – do nothing, continue the NPI and other greenhouse programs as is.

4.3.1 Option 1 – vary the NPI NEPM to incorporate greenhouse gases

A qualitative analysis of the costs and benefits of adding greenhouse gases to the NPI suggests that there are significant advantages of this option for industry, government and the community since:

- the program and its legal frameworks are already established and would require only minor modification to accept greenhouse data leading to comparatively low costs for industry and government;
- NPI reporting facilities already calculate and report their fuel usage which would be the basis for determining direct emissions of CO₂ and N₂O using a simple calculation;
- given the existing framework, the NPI has the capacity to report greenhouse data within a short implementation time; and
- the NPI is becoming increasingly well known as an emissions information tool and it appears a logical home for public disclosure of greenhouse data^{19,20,21}.

4.3.2 Option 2 – create another legal requirement to achieve this

The Joint Working Group²² outlined a number of existing greenhouse gas and energy related programs across Australia that exist for various purposes. The most notable are those administered at the Australian Government level, primarily through the Australian Greenhouse Office (AGO) (under the Greenhouse Challenge, which was recently redesigned as Greenhouse Challenge Plus) and the emerging program through the Australian Government Department of Industry, Tourism and Resources - Energy Efficiency Opportunity Assessments (EEOA).

The major disadvantages of using an alternative to the NPI to meet the objectives are associated with cost to industry and efficiency of implementation, specifically:

- for a new requirement, such as a NEPM or some other new program, the cost of developing and implementing a legal framework, administrative system and public disclosure device would be significant;
- for an existing tool, such as the Greenhouse Challenge Plus and its associated database system OSCAR, to require mandatory greenhouse reporting would:
 - not streamline the reporting burden for a large proportion of industry due to the small number of companies that currently report to it compared to the number of existing NPI reporters²³;
 - still require implementing a legal framework to make reporting mandatory; and
 - result in a much longer timeframe before such a system could be operational compared with the short implementation time associated with disclosing industry greenhouse data on the NPI. The NEPM variation process is already in progress and the infrastructure for industry and government already exists, albeit with the need for relatively modest modification.

The major advantage is that a new program can be designed and implemented to achieve very specific objectives through developing the tools that deliver specific datasets without the potential hindrance of being part of a larger program with multiple objectives.

¹⁹ Several authors have shown the role that PRTRs play in policy making and public debate of issues (Antweiler and Harrison, 2003; Gottlieb et al, 1995; Gunningham, 1995; Gunningham et al, 2004; Harrison and Antweiler, 2003; OECD, 1996; Scorse, 2005).

²⁰ OECD (2005) gives a very good summary of the uses of PRTRs to business, government and the community.

²¹ Lloyd-Smith (1999) and Lloyd-Smith (2002) outline the benefits of PRTRs and criticise the limited nature of the NPI in providing information to the community. She suggests that the program should be substantially expanded.

²² Joint Working Group Report on Greenhouse and Energy Reporting for the Environment Protection and Heritage Council and Ministerial Council on Energy, August 2005.

²³ EPA Victoria, *Greenhouse Gas Emissions Reporting and Disclosure Pilot Draft Position Paper*, Publication 1034, February 2006, Figure 12 (reproduced as Table 4.3 in this chapter).

4.3.3 Option 3 – do nothing

In this option, no new greenhouse reporting program is introduced, but all current voluntary and mandatory reporting requirements in the respective jurisdictions continue. This is the cheapest option since it requires no further outlay of expenditure than is currently budgeted by the jurisdictions for their existing programs.

However, the major disadvantage of this option is that it does not meet the objective of public disclosure of industry greenhouse emissions. Examination of the current greenhouse reporting programs in jurisdictions illustrates that public disclosure is the least likely aspect to be picked up by a greenhouse reporting program.

4.3.4 Preferred option

The preferred option is to incorporate greenhouse gas emissions into the NPI (ie Option 1). The key considerations in arriving at this conclusion are:

- the costs, especially the administrative burden, on governments and industry will be minimised due to the current operation of functional reporting mechanisms and databases that can be modified to accept greenhouse data;
- transitional impacts will be minimised - it can be implemented with relative ease and in the shortest timeframe of any available option;
- the NPI, as an established PRTR program, is the pre-eminent information point for the Australian community to access information about environmental emissions. Evidence of this is demonstrated by the growth in internet database use - annual site visits increased from 55,132 in 2002 to 144,324 in 2005. From a right to know perspective, it is hard not to conclude that the NPI is the logical information home for the disclosure of greenhouse gas emission data;
- the opportunity to build flexibility into this option to reduce the industry reporting burden; and
- if framed flexibly as suggested above, the majority of stakeholders are likely to accept this position.

4.4 DELIVERY MODELS FOR THE PREFERRED OPTION

There are a variety of alternatives or delivery models available relating to the type of greenhouse information that could be reported to the NPI, as well as the way in which this information could be reported by industry. These delivery model aspects are discussed separately below.

4.4.1 Reporting elements

'Reporting elements' refer to the types of information to be included in the requirement to report greenhouse gases to the NPI and the framework in which they are determined. These potential reporting elements are:

- the types of emission (ie direct and/or indirect emissions) and energy reporting;
- recording emission reduction (abatement) activities; and
- the thresholds for triggering reporting.

The following discussion on direct and indirect greenhouse emissions uses the definitions published in the World Business Council for Sustainable Development/World Resources Institute (WBCSD/WRI) sponsored protocol²⁴.

Direct emissions (WBCSD/WRI Scope 1)

Direct emissions are produced from sources within the boundary of a facility and as a result of the activities within the facility. They would cover the six Kyoto greenhouse gases - carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). These emissions come mainly from the following activities:

- generation of energy, heat, steam and electricity from the combustion of fuels. Emissions include carbon dioxide and products of incomplete combustion (methane and nitrous oxide);
- manufacturing processes which produce emissions (eg cement, aluminium and ammonia manufacture);
- transportation of materials, products, waste and people. For example, use of mobile combustion sources such as trucks and cars (not including those owned and operated by another organisation); and
- fugitive emissions, ie intentional or unintentional greenhouse gas releases (such as methane emissions from coal mines, landfills and wastewater treatment plants, and natural gas leaks from joints and seals).

For example, a company with a gas-fired boiler would include emissions from the combustion of that gas as a source of direct emissions. A mining company would include methane escaping from a coal seam during mining as fugitive emissions, and a cement manufacturer would include carbon dioxide released during cement production in reporting direct emissions.

A more comprehensive definition is available in the AGO Factors and Methods Workbook²⁵. Direct greenhouse gas emissions are equivalent to the type of emissions currently reported to the NPI, in that they are produced as an emission to air from the reporting facility alongside other reportable substances.

Indirect emissions (WBCSD/WRI Scope 2)

Indirect emissions, sometimes known as 'electricity indirect' emissions are designated as Scope 2 in the WBCSD/WRI protocol and defined as "the emissions from the generation of purchased electricity that is consumed in its owned or controlled equipment or operations". Scope 2 emissions physically occur at the facility where electricity is generated.

Electricity consumption is often the largest source of greenhouse emissions for a company since the direct emissions are produced at the upstream power generator. Indirect greenhouse gas emissions are calculated simply by multiplying a facility's electricity use by the relevant greenhouse intensity coefficient (a state/territory's average greenhouse gas emission per unit of electricity produced), and are expressed in CO₂-e (CO₂ equivalents).

Other upstream/downstream indirect emissions, such as the downstream implications of transporting an organisation's product are categorised as WBCSD/WRI Scope 3 emissions and are not included in the elements proposed to be reported to the NPI.

²⁴ World Business Council for Sustainable Development and World Resources Institute (2004) *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised edition*, Available online: <<http://www.ghgprotocol.org/DocRoot/N89QWUXN6jXlwkmijPss/ghg-protocol-revised.pdf>>.

²⁵ Australian Greenhouse Office, AGO Factors and Methods Workbook, December 2005, Australian Government, Canberra, p 1, <www.greenhouse.gov.au/workbook/index.html>.

Energy

Information concerning energy, in the form of both fuel usage and electricity consumption, has been suggested as desirable in a public reporting framework. Both of these are already reported to the NPI voluntarily, as a means of demonstrating compliance with thresholds and activity data for the calculation of emissions. This is not publicly disclosed, as there has to date been no interest for it in a public emissions program. If desired however, collection could be mandated without further change to the NEPM since clause 9(1)(c) specifies that “any information that may be required to assess the integrity of the emission data” is to be provided, and this information is used specifically for that purpose at present. Public disclosure of this information, according to the current NEPM, requires the consent of the reporting facility. Notwithstanding the current ability of the NEPM to collect this information, it would be desirable to be explicit in this requirement by introducing an additional clause that specifies this.

Energy production information has also been suggested, particularly in light of the streamlining of reporting programs being investigated by the joint EPHC/MCE working groups, where the Australian Government’s ABARE Fuel and Electricity Survey voluntary program currently requests such information. The NEPM could be modified to mandate this, but what policy objectives or market failure this would address is not clear. It seems more appropriate if NPI is required to collect energy data not “required to assess the integrity of the emission data” then it do so voluntarily, as it does for other information such as emissions reduction information at present.

Emission reduction (abatement) activity

The current NPI reporting requirements are split over four sections:

- facility information;
- substance usage and emission information;
- emission reduction activities; and
- certification.

Section C is designed entirely for the reporting of information about emission reduction actions both through descriptive entries categorised as either at source or ‘end of pipe’. This is identical in concept to the term ‘abatement’ or abatement actions used in the greenhouse context, since abate means “to reduce in degree or intensity”²⁶. It would therefore seem that the reporting and disclosure of greenhouse abatement actions is entirely appropriate to the current NPI structure.

Reporting thresholds

The reporting threshold is the minimum emission or energy use criteria that need to be met in order to qualify an operation as significant enough to report. Various greenhouse and energy related programs adopt different approaches to threshold setting. As in the current NPI, thresholds may also be chosen in terms of surrogate activity data readily available to companies to minimise the cost of the ‘do we report/ don’t we report’ decision. Examples of this are the substance usage (Category 1) and fuel consumption thresholds (Category 2) in the current NPI, which are determined without requiring a technical understanding of the emissions estimation itself.

Table 4-2 illustrates examples of thresholds used in some programs across Australia. The Greenhouse Challenge no longer has tiers for participation, but ‘small’ emitters (labelled as <1000t CO₂-e) are encouraged to participate through industry associations.

²⁶ Merriam-Webster Online Dictionary, <www.m-w.com>, 13 March 2006.

Table 4-2: Reporting thresholds used in some greenhouse reporting programs across Australia

Scheme	Threshold	Comments
NPI - category 2a fuel combustion	400 tonnes of fuel or waste/year	Converts to: 1100t CO ₂ -e for coal in steel industry, 980t CO ₂ -e NSW washed black coal, 1200t CO ₂ -e LPG non-transport, 930t CO ₂ -e brown coal briquettes
NPI - category 2b fuel combustion	2000 tonnes of fuel or waste/year	Converts to: 5500t CO ₂ -e for coal in steel industry, 4900t CO ₂ -e NSW washed black coal, 5900t CO ₂ -e LPG non-transport, 4600t CO ₂ -e brown coal briquettes
Greenhouse Challenge Tier 1 (now defunct)	100,000t CO ₂ -e/year	
Greenhouse Challenge Tier 2 (now defunct)	1,000t CO ₂ -e/year	
Vic State Environment Protection Policies (SEPP) (category A) - no energy audit required	100t CO ₂ -e or 500 GJ/year	
Vic SEPP (category B) - level 1 audit & action plan for 'excessive' energy use	100 to 1400t CO ₂ -e or 500 to 7000 GJ/year	
Vic SEPP (category C) - level 2 audit & best practice action plan	>1400t CO ₂ -e or >7000 GJ/year	Covered about 35% of licensees and accounted for 99% of CO ₂ -e emissions reported to the program
Western Australian Greenhouse Gas Inventory (WAGGI)	500,000t CO ₂ -e/year	To drop to 100,000t CO ₂ -e /year in 2 years
NSW Greenhouse Gas Abatement Scheme (GGAS) energy users	100 GWh / 360 TJ	Converts to 72,000t CO ₂ -e
Australian Government Energy Efficiency Opportunity Assessments (EEOA)	500 TJ (0.5 PJ)	Converts to 100,000t CO ₂ -e

Philosophically and practically there are two broad options for setting thresholds in respect of including greenhouse gases in the NPI. These are setting a new purpose-built threshold or making use of the existing threshold structure, particularly relating to fuel combustion (NPI Category 2a or 2b). The decision on which threshold alternative to choose should be driven by the approach that delivers the necessary information needed to meet the policy objective for reporting in the most cost-effective way for business.

Three categories of threshold need to be considered:

1. direct emissions from combustion processes (carbon dioxide and nitrous oxide);
2. direct emissions from non-combustion processes (predominantly methane, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride); and

3. indirect emissions.

Direct emissions from combustion processes

Given that the NPI already has relevant thresholds for combustion of fuels (Category 2a and 2b), it would clearly be more cost-effective for current reporters not to have to consider an additional threshold for greenhouse emissions, should the existing emission categories suit the purpose.

Existing reporters could continue to report combustion emissions as they do now, with no additional inputs, and the calculation tools available to them (updated to include the relevant emission factors) would calculate the additional outputs (emissions of carbon dioxide and nitrous oxide). This would result in the reporting of direct emissions to the NPI at no additional cost to the reporter using the NRT, courtesy of the existing fuel threshold system. For a reporter using a calculation tool developed on-site or who calculates emissions by hand each year, there would only be a minor additional cost due to either the time required to amend the calculation tool or calculate the emissions of extra substances.

From Table 4-2, the NPI Category 2a threshold (400 t fuel consumed) equates to approximately 1,000 t (1 kt) CO₂-e, depending on the properties of the various fuel types. Equally NPI Category 2b (2,000 t fuel consumed) is roughly equivalent to 5 kt CO₂-e.

It is worth noting that, on the basis of data reported to the NPI in 2003/04, a Category 2a threshold capturing greenhouse gases would have resulted in approximately 1,800²⁷ facility reports of carbon dioxide and nitrous oxide emissions across Australia from existing NPI reporters. This would have been delivered at essentially zero net cost to business.

Direct emissions from non-combustion processes

This category includes the reporting of all greenhouse gases - carbon dioxide, nitrous oxide methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Unlike the major source of greenhouse gas emissions, those directly from combustion, there is no existing NPI threshold category that fits non-combustion processes perfectly. However, the Category 1 usage threshold system, which considers 'substance use' as a surrogate for emissions, could be applied individually to each of the greenhouse gases. Alternatively, a new threshold could be introduced for the purposes of simplicity. The joint EPHC/MCE work suggests a threshold of 25,000 tonnes of greenhouse gas emissions, expressed in carbon dioxide equivalents, which is applied at the company rather than facility level. This could be applied in addition to the combustion-related 2a or 2b thresholds, which by definition apply to existing reporters only.

Indirect emissions

As in 'direct emissions from non-combustion processes' above, the uniform threshold of 25,000 tonnes of greenhouse gas emissions, expressed in carbon dioxide equivalents and applied at the company level could also apply to indirect emissions from electricity usage. The 'substance' in this case would therefore be 'carbon dioxide equivalents (indirect)', a grouped emission along similar lines to toxic equivalents reporting of PAHs, polychlorinated dioxins and furans or total VOCs. A more helpful way to express this threshold could be in terms of energy use, which converts to 100 terajoules (TJ).

It is worth noting that the NPI currently collects energy information from reporters (though this is neither compulsory nor made public) as a means of assessing whether the Category 2b electricity

²⁷ Note that Table 4-3 below estimates that there would be 4,806 facilities that may trip a category 2a equivalent threshold. The difference between these two estimates may also be due to the incorporation of many facilities in the latter figure who emit more than 1 kt CO₂-e because of their methane emissions and indirect emissions (the majority).

use threshold of 60,000 MWh has been triggered. This aspect of the Category 2b threshold is in place to capture electric arc furnaces used in aluminium smelting, which emit substances to air from the smelting process that would not otherwise be captured. The NPI's current capture of this information means that, as in the case of the CO₂ and N₂O, indirect emissions can be reported to the NPI at no additional cost for those existing reporters that use the NRT (the majority) since there are no additional inputs required.

Suggested threshold model

For the non-combustion and indirect greenhouse gas emissions, the choice of a uniform threshold of 25,000 tonnes of greenhouse gas emissions, expressed in carbon dioxide equivalents, equivalent to 100TJ of energy use (applied at the company or business entity level) would seem appropriate. The combustion-related gases of carbon monoxide and nitrous oxide would seem to fit well into the existing category 2 threshold system – it would seem nonsensical to drop this requirement in favour of a blanket 25,000 tonne threshold when this level of reporting is occurring to the NPI already. Since this involves no new entrants, reporting to category 2 for carbon dioxide and nitrous oxide makes sense. The decision remains, however, in the choice of 1 kt or 5 kt CO₂-e, which relates to either existing Category 2a or 2b. The answer to this question lies in the potential number of facilities affected by each threshold and the coverage of emissions this captures in turn.

Table 4-3 reproduces an estimate of the number of business sites likely to trip various CO₂-e threshold levels, recently carried out in a study²⁸ for the Joint Working Group. It should be noted that the number of business sites in each category takes into account the direct and indirect greenhouse emissions and so cannot be directly related to a specific NPI threshold. However, it does indicate that 4,805 sites (generation, mining and manufacturing) emit more than 1 kt CO₂-e which is about 1,200 sites more than the current number of NPI reports received, and about 3,000 facilities more than the number that trip the Category 2a fuel usage threshold. When the further category of commercial businesses is considered (which the current NPI has limited capture of) the number above 1 kt CO₂-e swells to 12,155. It should be noted that commercial businesses are currently not subject to any NPI reporting requirement.

The next highest category considered by this work was 5 kt CO₂-e. Table 4-3 indicates that 3,775 sites are likely to trigger this threshold, 2,425 of these in traditional NPI sectors with the remainder (1,350) suggested as coming from the commercial sector.

This information, and indeed the broader cost benefit work from which it is taken, suggest that the choice of a 1 kt threshold could capture a large number of additional reporters to the NPI program (and therefore increase cost) for limited gain in terms of increased coverage of overall emissions. This work points to an optimum choice of threshold at 10 kt or even 5 kt CO₂-e.

On the basis of this work, and in keeping with the structure of the current program, the following thresholds are recommended:

- Category 2b fuel combustion (2,000 t fuel, which is approximately equivalent to 5 kt CO₂-e emissions) - carbon dioxide and nitrous oxide; and
- a new category 4 (25,000 tonnes of greenhouse gas emissions by a business entity, expressed in carbon dioxide equivalents, equivalent to 100TJ of energy use) – carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride.

²⁸ George Wilkenfeld and Associates for Department of Environment and Heritage, *Costs and Benefits of a National Greenhouse and Energy Reporting Requirement: Regulation Impact Assessment*, January 2006, Table 14.

Table 4-3: Estimated number of business sites in each emissions category in Australia²⁹

Category kt CO ₂ -e/yr	Generation	Mining	Manufacturing	Commercial
>125	41	80	65	0
25-125	52	150	138	50
10-25	39	300	435	400
5-10	55	400	670	900
1-5	40	500	1,840	6,000
<1	0	1,751	70,064	619,037
Total	227	3,181	73,212	626,387

Note: NPI category 2a threshold is approximately equal to 1 kt CO₂-e and category 2b threshold is approximately equal to 5 kt CO₂-e

It should be noted that introducing these reporting thresholds for greenhouse gases only applies to industry sectors currently reporting to the NPI. New industry sectors are only introduced into the NPI when industry reporting materials are published for that sector after agreement by participating jurisdictions. Hence, there is no impact on commercial businesses or non-intensive agricultural production since they are not subject to current NPI requirements.

4.4.2 Reporting system

As noted previously, streamlining greenhouse reporting is a function of the EPHC/MCE Joint Working Group, but must also be at the forefront of designs for the expansion of the NPI. It must also be recognised that the Greenhouse Challenge Plus, the NPI and other programs will continue to exist for their own purposes.

To satisfy efficiency requirements, an NPI containing greenhouse gases cannot be constructed as mutually exclusive to other major programs, most notably those coordinated by the AGO. Taking into account this objective to provide the most efficient reporting system for industry, the Pilot looked at four potential delivery models and concluded that the best model would be to provide a flexible reporting system for reporting greenhouse gases which allows the reporter to determine the more efficient of two possible reporting systems for their purposes (OSCAR or NPI), allowing the most effective outcome for industry. Public disclosure aspects from OSCAR-logged reports would be 'siphoned' to the NPI web database by way of a data transfer protocol between systems.

In other words, a reporting obligation under the NPI NEPM could be discharged through the use of the OSCAR system or through the NPI reporting form or NRT (or subsequent upgraded NPI systems). Such an approach would allow a company currently reporting on a greenhouse program through OSCAR to have their relevant information 'siphoned' to the NPI, to fulfil the public disclosure requirement, while not duplicating their efforts in reporting to a broader program such as Challenge Plus. The other advantage of this approach is that the centrality of the relationship between Challenge Plus companies and the AGO on greenhouse issues is not lost.

Alternatively, a current NPI reporter (faced with an NPI greenhouse reporting obligation) who has no involvement with Challenge Plus can continue to report through the NPI channels, rather than being forced into using what would be a duplicative system for them.

²⁹ George Wilkenfeld and Associates for Department of the Environment and Heritage, *Costs and Benefits of a National Greenhouse and Energy Reporting Requirement: Regulation Impact Assessment*, January 2006.

Understanding that neither greenhouse reporting or NPI reporting exist for a company in isolation is crucial to understanding the likely ‘two-stop-shop’ nature of any ‘one-stop-shop’ solution that falls short of dealing with both greenhouse gas and NPI substance reporting together.

In the case of the existing NPI reporter who does not report to Challenge Plus, it is likely that they will find using NPI systems more efficient, because they can truly use a ‘one-stop-shop’ to discharge their requirement. In this case, the reporting form and NRT (and the combustion in boilers emissions estimation tool) could be modified to include the six substances as direct emissions, the current capacity to collect energy consumption broadened to accommodate indirect emissions and the Emission Reduction Activities page revised to accommodate abatement savings. Costs of these changes would be expected to be relatively modest in IT terms.

In the case of the existing Challenge Plus reporter, they would continue to report to that program using OSCAR. From the outset they would need to identify themselves as also discharging their NPI (greenhouse reporting) requirement, which would establish a user profile requiring facility-level reporting. Only those required data fields for NPI purposes would then be subsequently available for access and assessment by state and territory NPI verification staff, who could access OSCAR with an appropriate jurisdictional user profile to verify reports prior to submission to the NPI web database.

The Pilot looked at the overlap of companies (as opposed to facilities) that report to the NPI and the Greenhouse Challenge Plus program and Table 4-4³⁰ shows that 1,434 out of 1,577 NPI reporting companies (90%) are not members of Greenhouse Challenge Plus. Hence, the option of reporting greenhouse emissions to the NPI via the OSCAR reporting tool may be taken up by 10% of companies reporting greenhouse emissions to the NPI.

Table 4-4: Analysis of companies currently reporting to Greenhouse Challenge and the NPI

Number of company participants	Greenhouse Challenge	National Pollutant Inventory
Total company participants	780	1577
Unique company participants	637	1434
Companies common to both	143	143

4.4.3 Possible reporting model options

The combinations of reporting elements can be distilled down to three choices:

- 1 direct emissions only;
- 2 direct and indirect emissions; and
- 3 direct and indirect emissions and emission reduction activities.

Choice 1 is aligned most consistently with the current NPI programme and would be a minimalist model of putting greenhouse gas emissions into the public domain.

Choice 2 adds the indirect emissions associated with site energy use. This information, and its greenhouse-intensive context, is not well understood at present by governments, the public or indeed many businesses themselves. For many companies, energy use represents their most significant greenhouse impact. For a true reflection of the greenhouse footprint, both direct and indirect emissions are required – indeed the NPI objectives of promoting cleaner

³⁰ EPA Victoria, *Greenhouse Gas Emissions Reporting and Disclosure Pilot Draft Position Paper*, Publication 1034, February 2006, Figure 13, p. 64.

production/waste minimisation could be better served by the inclusion of indirect emissions, since more efficient electricity use is within the grasp of all companies.

Choice 3 includes emission reduction activities in the form of abatement actions through reduction in direct greenhouse gas emissions or through reduced electricity use, typically carried out as a result of an energy audit. The inclusion of this element of reporting is in line with the current NPI program but could use the positive aspects of innovation and emission reduction activity to take the NPI program to a whole new level in terms of showcasing leaders. With the variety of abatement-focussed programs run by governments, plus the range of programs implemented by companies to improve their business efficiency through resource efficiency, there are many examples of approaches companies are using to tackle their greenhouse impact that are not currently in the public domain in any transparent sense.

4.4.4 Preferred model for greenhouse reporting to the NPI

Based on the discussions associated with the Victorian greenhouse gas Pilot and the information provided above, the preferred model for greenhouse reporting to the NPI is that it should capture both direct emissions of the six major greenhouse gases and energy-indirect emissions in CO₂-e. Reporting the greenhouse data would be permissible via either the NPI or Greenhouse Challenge Plus systems to provide flexibility and minimise the reporting burden on industry. This is characterised in Table 4-5 below.

Table 4-5: Preferred model for greenhouse reporting to the NPI

Structural Elements	
Legal instrument	NPI
Reporting system	NPI/ OSCAR* choice
Disclosure mechanism	NPI website
Data Elements	
Reporting Boundary	Site-based with company linkage - reporting of emissions at a facility level with public disclosure at a business entity (as identified by the Australian Business Number) level
Thresholds	Existing NPI threshold (cat 2b) plus 25,000 t CO ₂ -e emissions threshold (cat 4), equivalent to 100TJ 25,000GWh - applied at a business entity level
Direct emissions	6 major greenhouse gases (scope 1) - utilising the existing Category 2b fuel burning threshold for direct emissions of carbon dioxide and nitrous oxide at individual facilities
Indirect Emissions	Energy-indirect (scope 2) - includes activities conducted outside the boundary of the business entity's facilities, but attributable to the activities of the business entity, such as a transport fleet or the off-site generation of electrical energy where that electrical energy is used by the business entity
Energy	As per existing program needs
Abatement Actions/ Savings	CO ₂ -e savings from implementation of abatement actions; listing of actions
Contextual data	Explanatory comment text

* OSCAR is the online database to be used by the AGO Greenhouse Challenge Plus program

This approach will provide comprehensive coverage of greenhouse gas emissions in Australia and allow the program to meet its objectives. Further, by incorporating the flexibility to accept data reported through another mechanism, this approach does not pre-empt the report from the EPHC/MCE Joint Working Group which may recommend that greenhouse gas emissions data be reported through another program. Under the framework outlined above, the NPI could still be used as a public disclosure tool for the greenhouse data with all the benefits of having a single entry point for emissions data for those facilities participating in other greenhouse programs.

4.4.5 Displaying aggregated greenhouse data from diffuse sources on the NPI

Aggregated emissions are emissions from diffuse sources, natural sources and non-reporting sources (ie facilities that are exempt or facilities which do not meet the thresholds). Estimates of aggregated sources are necessary to gain an understanding of overall emission levels and to put point source emission levels into context.

Similarly, it should not be expected that facilities would provide greenhouse gas emissions data unless their emissions are put into context by including diffuse greenhouse gas emissions in the airshed data prepared by jurisdictions. The preparation of aggregated emissions data has previously been agreed to by the Australian Government and the appropriate jurisdiction and formalised in a Memorandum of Understanding to implement the program. It is considered that agreement to add greenhouse data to future updates of airsheds or preparation of new airsheds would follow this process. There is no requirement to amend the NEPM to allow this process to be followed.

4.5 IMPACTS OF A VARIED NEPM

This section analyses the likely costs and benefits for industry, government and the community of an NPI program that includes the preferred model of greenhouse gas reporting to the NPI. The very nature of quantifying costs and benefits is problematic and in some cases only a qualitative measure can be applied. This is particularly so for putting environmental and social benefits in economic terms, to allow for a balanced judgement of benefit versus cost. Therefore the analysis below draws on quantitative costs where estimation is possible but is, in the main, qualitative in estimating benefit and passing judgement on the relative merits of these costs and benefits.

4.5.1 Impacts on industry

The NPI was designed in such a way as to elicit emissions information from businesses and other sources to serve policy purposes without unduly impacting on those businesses. In particular, the program was designed to specifically exclude small business where possible:

It should be noted that thresholds have been set high enough to exempt small business from any reporting burden. In addition, some specific activities have been exempted from reporting..." (Technical Advisory Panel Report 1999, p30).

The spirit of designing thresholds for the NPI requires that small businesses should not be caught in any reporting obligation. (Technical Advisory Panel Report 1999, p34).

By adhering to a threshold framework similarly constructed to the current system, and noting the simplicity of Scope 2 indirect emission calculation (a simple multiplication), adding greenhouse gases to the NPI would maintain the low impost characteristics of the program to small business.

Costs to industry

Consultation/advice — this cost would be attributed to industry involvement in consultation processes such as those conducted during policy review/development processes or other development projects such as this one. This would be made up of the human resource costs of attending meetings, providing written comments on behalf of companies and lobbying through discussions with government, industry groups and sector-related gatherings. For medium-sized companies, input to such processes is often coordinated through representative industry organisations on their behalf. It is difficult to ascribe a financial cost to this and, given the relatively infrequent requirement for this type of involvement and the relatively small percentage of companies that have significant direct involvement in such processes, such cost averaged per facility would be expected to be very low. Consequently this cost is considered negligible and is best quantified as \$zero for analytical purposes.

Compliance costs — these consist of:

- understanding compliance requirements which involves time spent reading handbooks and guidance documentation, the NPI NEPM itself and familiarisation with calculation and reporting software tools;
- data gathering, emissions calculation and quality assurance costs for a facility’s Scope 1 and Scope 2 emissions; and
- general administrative reporting costs representing the more administrative nature of collating the results and submitting them through the use of the paper reporting form or the NRT reporting software.

The average cost of reporting to the current NPI program is \$3,139 as illustrated by the information in Appendix 2³¹. The Pilot (p46) provided a speculative breakdown of this cost according to the types of compliance activities described above, based on estimates of likely reporter effort shown in Table 4-6, using estimates of administrative and technical staff salaries.

Table 4-6: Average annual NPI report cost estimated breakdown

Activity	Estimated Time (h) per report	Primary staff effort type	Activity cost	Approx % of total report cost
Understanding compliance requirements	8	Technical	\$600	18%
Data collection/calculation	24	Senior technical	\$2400	74%
Administrative reporting cost	5	Administrative	\$250	8%
Total report cost	37		\$3250	100%

Note that estimates have been made in round figures resulting in a slightly larger estimate of total report cost.

The costs of understanding compliance requirements should decrease with time, as the program becomes better understood. For the purposes of estimation here however, this will be assumed to increase by 50% (ie \$300 per report), as greenhouse is a completely new issue for many NPI reporters.

The administrative reporting cost is expected to be fixed, regardless of incremental addition of new substances to the program and as such is quantified as \$zero additional cost.

Data collection/calculation costs are assumed to increase as additional requirements such as greenhouse gases are added. Interestingly this has not been observed. The extension of the reporting list from 36 to 90 substances in 2001/02 increased the average number of substances per report from 9.1 to 11.6 but surprisingly the average cost dropped from \$3,437 to \$2,442. For the purposes of this discussion this will be regarded as an anomaly and a nominal per substance reporting cost of approximately \$200 is suggested, determined by dividing the average data collection/calculation component reporting cost of \$2,400 by the average number of substances per report (between 10.0 and 11.6 since the longer substance list was adopted).

For the vast majority of NPI reporters, the additional reporting requirement for Scope 1 direct emissions will only involve the reporting of the combustion greenhouse gases CO₂ and N₂O. As previously discussed, these are determined from the same input data required currently for combustion gas emissions calculation and would have only minimal additional reporting cost. For

³¹ NPI reporting costs have been provided by NPI facilities since the program’s inception in 1998/99 but are not publicly disclosed. The average reported cost can be combined with the average number of substance emissions reported per facility across the lifetime of the program, to provide a useful guide for estimating costs to companies.

particular sectors such as wastewater treatment, landfills, iron and steel production and some mining, CH₄ is likely to be reportable and SF₆ will only become reportable for particular sectors such as aluminium and electricity supply. Thresholds for reporting of PFCs and HFCs would not be expected to capture smaller scale air-conditioning emissions and should only apply to larger scale refrigeration operations.

Similarly, in terms of energy-indirect Scope 2 emissions, the vast majority of reporters will be required only to use a simple calculation (energy use multiplied by the greenhouse coefficient), with many facilities already reporting energy usage (though not displayed publicly) for current threshold assessment purposes.

In summary, for most reporters, the additional greenhouse requirement will consist of CO₂ and N₂O reporting (no new input data) and energy-indirect emissions reporting (simple calculation and no new input data for many). For a small number of specific sectors (and therefore facilities) thresholds for SF₆, PFCs and HFCs will be triggered while CH₄ reporting will be required from a moderate number of facilities due to the prevalence of wastewater treatment plants and waste disposal services (255 and 178 facilities reported in these sectors in 2004/05, respectively). On balance, due to these factors, this is estimated to be equivalent to the addition of one new substance, or \$200 per facility report.

Hence, costs associated with the addition of greenhouse gas requirements for data collection and calculation for both Scope 1 and Scope 2 emissions are estimated to be \$200 per facility report.

Therefore, costs to facilities currently reporting to the NPI can be summarised as:

- \$300 per facility for compliance measures;
- \$200 per facility for data collection/calculation; and
- total costs of \$500 per annum.

Adding greenhouse gases to the NPI may also lead to facilities from the current industry sectors reporting to the program exceeding a threshold and being required to submit an NPI report for the first time. Such a facility would trip a Category 1 threshold for one of the six greenhouse gases and/or the 2c threshold. It is difficult to estimate the possible number of new reporters. Table 4-3 estimates that there are 2,425 facilities that exceed 5 kt CO₂-e emissions annually in the mining, manufacturing and generation sectors – noting that the CO₂-e value also takes into account the greenhouse intensity of the substances which is not relevant to the NPI threshold (ie each kilogram of methane emitted counts for 21 kg of CO₂). Given that currently about 3,700 facilities report to the NPI, there should not be too many facilities in these sectors that are high energy users and do not currently trip a Category 2 fuel usage threshold. Nevertheless, there may be some facilities that do not burn fuel on site and may trip the proposed Category 2c energy use threshold. Also, there may be some facilities that trip a Category 1 threshold.

In order to understand the magnitude of Category 2c threshold and the types of facilities that would trip this threshold, it is useful to convert energy use into an energy cost. Based on an electricity price of 10 cents/kWh, facilities affected by the Category 2c threshold will have an energy bill of about \$0.5m. Clearly, this would only impact on facilities with significant electricity use.

It is estimated that a maximum of 100 new facilities is a conservative estimate of the possible number of new facilities that would trip an NPI reporting threshold. Further, it would be likely that these facilities would only trip the threshold for a single substance (for example, methane or

CO₂-e) leading to a relatively simple reporting requirement and therefore reporting costs for these facilities are not expected to be great.

It is considered that the median NPI reporting cost of \$600 per annum per facility would conservatively cover the costs of understanding the compliance requirements and the minor data gathering costs for their reporting requirements. Costs in subsequent years would be expected to decrease although this is not assumed in the costing. Therefore, the total cost of an estimated 100 new reporting facilities in current NPI industry sectors for the addition of the six greenhouse gases is estimated at \$60,000 per year.

Costs to possible new industry sectors

As discussed above, facilities from industry sectors that do not have industry reporting materials published for them are not subject to NPI reporting requirements. Therefore costs from potential new sectors, such as the commercial sector, were not included in the information above. It is emphasised that no new industry is required to report until industry reporting materials are published after agreement from participating jurisdictions.

An analysis of potential new industry reporting costs has been undertaken based on the possible inclusion of the 'commercial and services' sector. The interest in this sector from a greenhouse perspective arises from the rapid growth of energy consumption in the commercial sector compared with other sectors. Table 4-3 estimates that there are 1,350 facilities in this sector that exceed 5 kt CO₂-e emissions annually. Therefore, if it was agreed to subject this sector to NPI reporting requirements, then all of these facilities may trip the Category 2c energy use threshold. Once again, it should be recognised that the 5 kt CO₂-e value used in Table 4-3 is the sum of all greenhouse gas emissions and also takes into account the greenhouse intensity of the substances which is not relevant to the NPI threshold. Hence, it is unlikely that all 1,350 facilities would trip the Category 2c threshold which is based solely on electricity usage since this requires electricity expenditure in the order of \$0.5m. However, since there is little information available to determine the breakdown of greenhouse emissions from this sector, it will be assumed, for cost calculation purposes, that all 1,350 facilities would trip the Category 2c threshold.

It is possible that some of these facilities could trip other NPI thresholds, for example Category 1 in the case of acids or solvents used in cleaning, or the Category 2a fuel burning threshold for fire boilers or back-up generators on site. However, while possible, it is unlikely that commercial facilities would trip these thresholds and for the purposes of this analysis it will be assumed that no Category 1, 2a, 2b or 3 thresholds are exceeded by these facilities.

It is considered that the median NPI reporting cost of \$600 per annum per facility would conservatively cover the costs of understanding the compliance requirements and the minor data gathering costs for their reporting requirements. Costs in subsequent years would be expected to decrease although this will not be assumed in the costing. Therefore, the total cost for facilities in the 'commercial and services' sector if it were introduced into the NPI is estimated at \$810,000 per year.

Benefits to industry

Regulatory certainty (level playing field) – there is currently no nationally consistent approach or regulatory requirement for reporting and disclosure of greenhouse gas information. This has created a degree of hesitancy for industry to respond to reducing their greenhouse impact. The use of an existing, well-understood legal mechanism to enable this could create certainty and consistency for industry.

Flexible reporting process — allowing a flexible route for discharge of an NPI NEPM (or other legal instrument) requirement for greenhouse gas emissions reporting and disclosure would provide the least additional reporting burden possible for all businesses that would be expected to trigger the suggested NPI greenhouse thresholds. A greenhouse gas reporting system that was limited to a single reporting tool (such as mandating the use of OSCAR alone or the NPI reporting software alone) would disenfranchise significant numbers of reporters in either case.

Consistent and comparable data — applying consistent methodologies, thresholds and boundary definitions and allowing public access to this information through one platform allows for consistent and comparable information about emissions. The use of the NPI for public disclosure could deliver these benefits³².

Information to encourage arrangements between businesses (and governments) such as sector-wide approaches or offset-type agreements — with the benefit of such information, strategic and entrepreneurial approaches to lowest-effort abatement action could be encouraged. Forward thinking companies could make more informed investment decisions such as the increased use of cogeneration.

As previously discussed there exists no company emissions data consistently calculated and reported in the public domain. With the benefit of such information, strategic and entrepreneurial approaches to lowest effort abatement action could be encouraged. This may take the form of agreements between companies in a region or within a sector, perhaps as part of a voluntary commitment to abatement. Equally such information could be used by companies to position themselves for action ahead of a formalised scheme such as an offsets program.

For example company A, a pivotal provider to the local economy, may be contemplating its investment options for the deployment of lower greenhouse-intensity plant or large-scale energy efficiency measures, as part of delivering on commitments for greenhouse gas reduction, in this example through lowered CO₂ emissions. In light of more information about company B, a quite different industry also important to regional prosperity, company A gains a better understanding of company B's greenhouse liability, in this case as a significant methane emitter. With an opportunity of support through a regional investment body or similar, company A may now decide that synergies exist for a co-operative agreement between the two companies (perhaps a co-generative venture capturing that methane) which comes at ultimately lower cost, greater greenhouse benefit and a range of other benefits to both companies.

Without knowledge of the amount of methane emitted by company B, company A would not have known enough to recognise this opportunity.

Good performance showcased — by including information about a company's emission reductions through implementation of measures such as energy efficiency improvements, a disclosure tool such as the NPI can act as a transparent record of good performance. Such performance can be readily compared with other companies reporting to the program.

Transparency builds credibility and trust with community — reporting to the NPI has enabled some companies to work more closely with their local communities by demonstrating their commitment to transparency of their operations and impacts. Information about emissions provides a basis for engagement with stakeholders and sometimes the existence of information (as

³² Pew Centre on Global Climate Change, *Greenhouse gas reporting and disclosure: key elements of a prospective US program*, p. 11, <http://www.pewclimate.org/docUploads/policy%5Finbrief%5Fghg%2Epdf>.

opposed to what the information means) is seen as reassuring in itself, ie proof that a company has 'nothing to hide'.

Disclosure drives competition (financial cost savings) – public reporting through programs such as the NPI have directly or indirectly led to a trend of reduction in emissions reported over time. This is best evidenced by the longest running disclosure inventory in the world, the US TRI. Since companies in a sector can have their emissions scrutinised side-by-side this can create competition to report the lowest emissions or, at least, not report the highest³³.

Increases corporate knowledge of greenhouse issue – generally senior management sign-off on NPI data before it is submitted to a jurisdictional environment agency. This elevates the issue of environmental impacts into the consciousness of the decision-makers in an organisation, which can lead to questions that may bring about better performance. By reporting their greenhouse gas emissions, companies not yet engaged in the issue may gain a better understanding of their role in the problem and the potential for cost savings through more resource-efficient operation.

Summary - costs and benefits to industry

Introducing facility-level reporting for greenhouse gas emissions is a significant shift from the current greenhouse programs in place across Australia where data is generally reported at a company or industry sector level (see Table 4-2). By using an established reporting mechanism like the NPI, there are clear advantages since industry is already familiar with the definition of facility and has already been gathering the majority of the data required for other purposes.

The costs and benefits of the preferred option for greenhouse and energy reporting in the NPI to industry are summarised in Table 4-7.

Table 4-7: Impacts to industry of including greenhouse gases in the NPI

	Costs	Benefits
	Consultation/ advice to government	Regulatory certainty - level playing field
	Understanding compliance requirements	Flexibility provides most efficient reporting process
	Data collection/ calculation (scope 1)	Consistent and comparable data
	Data collection/ calculation (scope 2)	Good performance showcased
	Administrative reporting cost	Transparency builds credibility and trust with community
		Disclosure drives competition
		Increases corporate knowledge of greenhouse issue
Summary	Major expense is additional compliance cost of approximately \$500 per current reporting facility and \$600 for new facilities.	Benefits varied - predominantly market certainty, building community confidence, low-cost burden reporting and greenhouse reporting equity for industry.

The estimated costs to current reporting facilities resulting from the addition of greenhouse gases to the NPI, in the form of the Scope 1 and 2 emissions (and abatement savings) model, are \$1.8m per year. This is extrapolated from an estimate of average cost per facility report of an additional \$500 per annum or 16% of the current \$3,139 average and makes the assumption that every facility

³³ Pew Centre on Global Climate Change, *Greenhouse gas reporting and disclosure: key elements of a prospective US program*, p. 11, <http://www.pewclimate.org/docUploads/policy%5Finbrief%5Fghg%2Epdf>.

will report on greenhouse emissions. This estimate does not include the cost to new entrants which will, by and large, be those captured by the indirect electricity threshold alone.

The benefits to business of using this option for reporting and disclosure include business certainty through the application of a known national regulatory requirement, consistency and transparency of information, building trust with community by demonstrating they have 'nothing to hide' and the ability to showcase good performers.

However, the key benefit to business in adopting the proposed model is the capacity to discharge their obligation using whichever reporting channel they are most aligned with (ie the NPI or Greenhouse Challenge Plus reporting frameworks), based on their existing reporting practices. Such flexibility is critical to minimising duplication and providing a net benefit, otherwise the cost of 'doubling up' will clearly outweigh any benefit for business.

Should the flexible reporting approach be adopted, the addition of greenhouse gases to the NPI under this model could be summarised as a low cost burden with moderate benefit for business.

4.5.2 Impacts on government

Costs to Government

Legislation development process — the budget approved by EPHC for the current NPI process to consider varying the NPI NEPM is \$218,160. This cost covers the variation process for all proposed amendments and will be incurred whether greenhouse gases are added to the NPI NEPM or not. Hence, it is not included as a cost for government since the portion of this cost applicable to greenhouse reporting cannot be quantified.

NPI database systems modifications — the addition of greenhouse gases to the NPI would require changes to the database systems involved in data collection, jurisdictional program management and public internet display. An in-house assessment by the Australian Government Department of the Environment and Heritage was undertaken in December 2005 to determine the cost impact of modifying existing systems to support both greenhouse gases and the reporting of transfers. This cost is estimated at \$171,000 and for the purposes of this analysis it is considered that 50% of this cost (ie \$85,500) is due to modifying the system to accept greenhouse gas emissions reporting.

Challenge Plus database systems modifications — modifications of the OSCAR system would be required to allow for flexibility of reporting and secure data transfer arrangements between the OSCAR and NPI systems. These are not able to be quantified with any certainty at this time, but would be expected to be modest as the capacity to accept the data required from companies for the proposed NPI greenhouse gas reporting already exists within the OSCAR system. Hence, \$100,000 is suggested as an approximate and conservative figure for this analysis.

Preparation of guidance material for industry — while it is envisaged that the existing AGO Factors and Methods Workbook would be the primary methodology guidance document, all NPI emission estimation technique manuals may need to be administratively amended to include the extended substance list and a very brief description of the requirement. It may also be useful to encapsulate the new greenhouse requirement in a single greenhouse reporting document or manual (or the existing NPI Guide), which would outline the obligation, thresholds and relationship with other programs and reference factors and methods. NPI calculation tools, such as the Combustion Database, would need to have additional CO₂ and N₂O emission factors added and the paper reporting form would have to be remodelled to accommodate greenhouse gas reporting. These costs, using the administrative, technical and consultant staff rates of \$50/h, \$75/h and \$100/h respectively, are estimated below:

- all 125 manuals: $125 \times 2 \text{ h} \times \$50/\text{h} = \$12,500$;
- dedicated greenhouse manual: $300\text{h} \times \$100/\text{h} = \$30,000$;
- combustion database update: $100\text{h} \times \$75/\text{h} = \$7,500$;
- paper reporting form: $50\text{h} \times \$75/\text{h} = \$3,250$;
- total guidance material = \$53,250.

Additional implementation resources for jurisdictions — implementation of the NPI NEPM is the responsibility of the states and territories. Currently \$800,000 per annum is provided by the Australian Government and matched by the states/territories (in cash or in kind). A further \$700,000 per annum is allocated to the Department of the Environment and Heritage (Australian Government) to coordinate the program at the national level, bringing the total program cost to governments to \$2.5m per annum. Implementation activities include training of reporters in the new requirement, increased administration costs such as data entry/phone assistance, increased industry assistance/data verification costs and the costs of ongoing management and integration of two collection systems (OSCAR and NPI systems). For a two-staff jurisdictional implementation team this extra effort is estimated at ~0.5 full time equivalents (FTE) or 25% of staff costs. Since current NPI implementation costs are primarily used for staffing, an additional implementation cost for the program nationally can be estimated thus:

- Australian Government: $\$800,000 \times 25\% = \$200,000$;
- states/territories matched contribution: $\$800,000 \times 25\% = \$200,000$;
- total additional implementation cost = \$400,000.

In reviewing all of the estimated costs to government resulting from the addition of greenhouse gases to the NPI in the form of the preferred option of Scope 1 and 2 emissions and abatement savings, the majority of costs discussed above are one-off establishment expenses, while the additional implementation resources for jurisdictions are an ongoing additional expense.

Therefore, the total projected costs to government are:

- \$238,750 establishment costs³⁴; and
- \$400,000 per annum ongoing costs.

Benefits to Government

Provides consistent and comparable data to inform policy decisions — applying consistent methodologies, thresholds and boundary definitions and allowing public access to this information through one platform allows for consistent and comparable information about emissions. This would provide information currently not available to governments to inform policy development and future decision-making.

Low cost and expeditious development and implementation — by utilising the capacity of existing established systems and the NPI NEPM, government can make significant savings compared with developing a new reporting tool and public disclosure instrument.

Harmonisation of existing programs — to look at the NPI as a solution on its own would under-recognise the value of various AGO and other government programs focused on receiving reductions in greenhouse gas emissions, as well as the considerable effort currently expended by

³⁴ Note that there is variation between this figure and that contained in the Pilot papers because the Pilot included the total cost of the NEPM process plus the total cost of the database changes (which includes the changes for implementing transfers).

business in reporting to these initiatives. The advantage of the model suggested allows programs such as the NPI and Challenge Plus to continue to exist and serve their purposes without duplication of reporting effort by participating companies. Importantly, it also allows the work of the joint ministerial councils (EPHC and MCE) to continue to align data reporting for the various greenhouse programs through a single reporting entry point such as the proposed OSCAR system.

Drives competitive emission reduction — public reporting through programs such as the NPI have directly or indirectly led to a trend of reduction in emissions reported over time as evidenced by the US TRI. This contributes to delivery of government policy outcomes to bring about reduction in greenhouse gases in the atmosphere³⁵.

Delivers on commitment for lowest reporting cost burden to business — by enabling a low-cost non-duplicative reporting model, this approach delivers on a key commitment in the joint MCE/EPHC Policy Working Group terms of reference to streamline greenhouse and energy reporting by business.

Summary of Costs and Benefits to Government

Table 4-8 summarises the costs and benefits to government of including greenhouse gas emissions reporting in the NPI.

Table 4-8: Impacts to governments of including greenhouse gases in the NPI

	Costs	Benefits
	Legislation development process	Provides consistent and comparable data to inform policy decisions
	NPI database systems modifications	Low cost and expeditious development and implementation
	Challenge Plus system modifications	Harmonisation of existing programs
	Preparation of guidance material for business	Drives competitive emission reduction (policy outcome)
	Additional implementation resourcing for jurisdictions	Delivers on commitment for lowest reporting cost burden to business
Summary	Establishment costs \$238,750, ongoing costs \$400,000 pa. Relatively low despite additional Government burden of integrating two reporting systems.	Low cost, efficient implementation while delivering on low cost burden for business commitment without hindering progress on streamlining other greenhouse program reporting.

The estimated costs to government resulting from the addition of greenhouse gases to the NPI, in the form of the preferred option of Scope 1 and 2 emissions and abatement savings information, can be summarised as:

- \$238,750 establishment cost; and
- \$400,000 per annum ongoing costs.

The benefits that accrue to government are substantial, largely due to the low cost of using the existing NPI infrastructure and resource capacity, with the added cost bonus of the existing commitment to change through the variation process. These benefits of reduced cost exist despite the operational complexity of management of two reporting systems for government, which is necessary to eliminate duplication inefficiencies for business.

³⁵ Pew Centre on Global Climate Change, *Greenhouse gas reporting and disclosure: key elements of a prospective US program*, p. 11, <http://www.pewclimate.org/docUploads/policy%5Finbrief%5Fghg%2Epdf>.

A quantitative indication of the cost-effectiveness of this option can be gained by comparison of the industry:government implementation cost ratio, expressed on a per reporting facility basis (NPI Review Report 2005, p56). The current NPI program operates at a ratio of 4.7:1. The greenhouse implementation cost per facility (\$400,000/3,629 NPI facility reports in the last reporting year) comes to \$110. Comparing this with the estimated implementation cost to industry of \$500 per facility, the industry:government cost ratio becomes 4.5:1, virtually identical to the current program. Interestingly, at 16% (\$400,000/\$2.5m), the percentage increase in annual implementation costs to government is identical to that for business.

The addition of greenhouse gases to the NPI under this model could be summarised as a low cost burden with high benefit for government, due to the efficiency gains offered by the adoption of an existing system.

4.5.3 Impacts on the community

As a beneficiary of the information generated by such a program, without being a direct stakeholder in the cost of its creation, it is difficult to derive a cost of any quantum that would be incurred by the community. There may be some lobbying/engagement costs as part of public comment processes, as well as the 'cost' of public monies funding the additional component to the program. There is also the cost of accessing the information once published on the internet. However, these costs are inconsequential and a zero cost would most accurately reflect them.

The benefits to the community are outlined below.

Satisfies community right to know — the fundamental premise of community right to know about emissions involving significant impact to the environment is the founding purpose for establishment of the NPI. As its central feature, the NPI is best placed to deliver this to the Australian community, and can do so equally for greenhouse emissions information as for the emissions information currently captured.

Information empowers and informs public debate on greenhouse issues — while the NGGI currently provides some breakdown of greenhouse gas emissions by state, by Kyoto sector and industrial sector and by gas and fuel type, there are no data publicly available comparing greenhouse gas emissions for individual facilities. A consistent and defensible greenhouse data set will facilitate constructive public debate.

Disclosure drives emission reduction — as discussed in the previous sections, disclosure plays an important (albeit blunt) role in bringing emission reduction strategies to bear, which is clearly the community outcome desired.

Single information source for emissions to the environment — the NPI has established itself as a broad information point for public access to information about emissions impacting the environment. Including greenhouse information in the NPI will give a more complete view of a company's environmental footprint (the NPI will be a 'one-stop-shop' for environmental information) so that individuals can make informed purchasing and investment decisions and track the performance of business.

Provides consistent information to assist investment sector decision-making — the finance community through the banking, investment and insurance sectors are a key user of current environmental performance data such as that currently supplied through the NPI. This information is used in determining risks for lending and financing, investment decision-making and insuring companies, particularly with regard to the setting of premiums. Through programs

such as the Carbon Disclosure Project³⁶, investor groups have repeatedly called for more information about greenhouse gas emissions. In some cases this call has specifically been via augmentation of the NPI, so data is consistent, transparent and readily and regularly accessible³⁷.

Increases value and relevance of NPI program – concern about climate change continues to grow in the community to the point where the issue may be equal to or overtaking concerns about air and water pollution, issues that are more in line with current NPI reporting.

Summary of Costs and Benefits to the Community

Table 4-9: Impacts to the community of including greenhouse gases in the NPI

	Costs	Benefits
	Essentially nil	Satisfies community right to know
		Information empowers and informs public debate on greenhouse issues
		Disclosure drives emission reduction
		Single information source for emissions to the environment
		Provides consistent information to assist investment sector decision-making
		Increases value and relevance of NPI program
Summary	Costs not directly attributable to the community	High social benefit to community from increased knowledge of the issue and more capacity to engage in the debate.

It is uncertain whether systems would evolve to provide regular community access to greenhouse data as envisaged under the NPI program. As illustrated by the current programs in jurisdictions that require some form of greenhouse emissions reporting, public disclosure is the least likely aspect to be picked up by a greenhouse program as they evolve. Clearly the social benefit of providing the community with a strong information base about greenhouse gas emissions is particularly high, empowering interest groups and individuals to engage more informatively in the debate about dealing with the problem of climate change. The nature of the problem requires global-scale cooperation to be tackled effectively, which is best harnessed through political channels after public pressure has been exerted. A proper system of public disclosure of emissions could accelerate this pressure, contributing to the principle benefit of greater action.

The costs of incorporating greenhouse gases in the NPI via the proposed model are incurred more directly by industry and government and, as such, costs are not considered to accrue to the community at all.

4.5.4 Summary of costs and benefits

The costs of adding greenhouse gases to the NPI would appear to be relatively low for both industry and government, with both coincidentally incurring an estimated 16% increase over current costs of reporting to/implementing the program. This is due to the established nature of the program and its legal frameworks, as well as the flexibility of the reporting system proposed. No significant cost as a result of modifying the NPI in this way accrues to the community.

³⁶ The Carbon Disclosure Project is a survey of investment-relevant information concerning greenhouse gas emissions, carbon and energy management of the largest 500 companies globally. See www.cdproject.net for more information.

³⁷ Innovest, Victorian Energy and Carbon Management Study: relative corporate performance analysis and benchmarking of Victorian based ASX listed companies, December 2005.

The estimated benefits for industry are moderate and are expressed as regulatory certainty, credibility and consistency of information (in the event of uptake of market-based initiatives), community engagement and the ability to showcase good performance. The key benefit to industry is the flexibility to discharge their reporting obligation using whichever reporting channel they are most aligned with (NPI or Greenhouse Challenge reporting frameworks), based on their existing reporting practices, thus minimising duplication.

The estimated benefits to government are high, largely due to the low cost of using the existing NPI infrastructure and resource capacity, with the added cost bonus of the current commitment to change through the variation process. The estimated benefits to the community are also high given the level of public disclosure inherent in the NPI, empowering interest groups and individuals to engage more informatively in the debate about dealing with the problem of climate change, using a central information point.

5 OTHER PROPOSED NEPM AMENDMENTS

5.1 INTRODUCTION

The inclusion of transfers and greenhouse gases in the NPI are the most significant proposed changes to the NEPM in policy terms, however many other amendments to the NEPM have been proposed. These include:

- removing the reporting exemption for aquaculture;
- adjustments to the NPI substance reporting list;
- amendment to the mercury and PM_{2.5} thresholds;
- changes to reporting timeframes; and
- other minor technical issues.

These are areas in which the NPI can be significantly improved in terms of its efficiency and effectiveness. These matters arise from either or both the 2000 and 2005 NPI reviews, and result from an analysis of the Australian experience with the NPI to date and/or a review of international standards and trends in relation to PRTRs and their applicability to the Australian situation.

In this chapter, all these amendments will be discussed individually. The Statement of the Problem, Specification of Regulatory Objectives, Consideration of Options for Achieving the Objectives and Impacts of a Varied NEPM will be addressed under the heading of each proposed NEPM amendment.

5.2 REMOVING THE REPORTING EXEMPTION FOR AQUACULTURE

Aquaculture facilities are currently exempt from NPI reporting. Effluent quality from aquaculture activities including land-based and marine-caged facilities have improved over the last decade, however there is still a variable range of performance within the industry. A number of submissions to the 2005 NPI Review suggested that aquaculture is in many respects similar to intensive animal industries which are required to report. They point to the potentially large nutrient loads imposed on the local environment, with aquaculture facilities in some catchments discharging volumes of wastewater and nutrients of a similar order of magnitude to the discharges from sewage treatment plants.

Although it is known that aquaculture facilities emit large amounts of Total Nitrogen and Total Phosphorus (as high as some sewage treatment facilities) this information is not publicly available and the aquaculture industry is not exposed to the same incentives to reduce emissions as other similar industries are (eg intensive livestock, sewage treatment plants).

The problems arising from the current reporting exemption of aquaculture include:

- lack of equity with other intensive livestock industries that must report to the NPI such as pig, livestock and poultry farming; and
- the potential for impacts of nutrients and other substances on water quality and the lack of information about the emissions.

The regulatory objective of this amendment is to improve the coverage of industries emitting significant quantities of nutrients to waterways and to remove the inequity whereby aquaculture facilities do not report to the NPI but similar intensive livestock facilities are required to report. By removing the current reporting exemption for aquaculture, facilities conducting this activity may become subject to NPI requirements, reporting NPI substances such as Total Nitrogen and Total Phosphorus. However, it should be noted that removing the reporting exemption from the NEPM does not immediately trigger a reporting requirement. No reporting requirements are placed upon facilities in this sector until industry reporting materials are published.

The following analysis is provided to assess the potential impact of NPI reporting on this industry sector if industry reporting material is published.

5.2.1 Impacts on industry

Australian Bureau of Statistics (ABS) data³⁸ indicate that there are over 3,000 facilities with aquaculture licences in Australia. However, not all of these aquaculture types would be expected to report, nor would all facilities conducting certain aquaculture be likely to trip reporting thresholds. It is envisaged that NPI reporting requirements would only apply to aquaculture facilities involved in artificial feeding – ie finfish facilities may be expected to report, but oyster farming would be unlikely to report since oysters are not artificially fed.

For example, in New South Wales, all aquaculture facilities, except oyster farming, need to have an environment protection licence where they are involved in artificial feeding in tanks or water bodies, or the discharge of waste to waters. New South Wales has only 19 aquaculture licensees (ie facilities that discharge) while the ABS data indicates 327 (non-oyster) licensees. Hence, over 300 of the aquaculture facilities in New South Wales classified by the ABS would not be required to report to the NPI. Further, examination of environment protection licence information from these facilities indicates that not all these facilities will trip Category 3 reporting thresholds³⁹. Hence, in New South Wales, it is likely that only 10 or less of the aquaculture facilities may report to the NPI. Extrapolating this information across Australia, it is considered that 60 aquaculture facilities may be required to report to the NPI.

As was the case for the majority of industry sectors and facilities, it is considered that the initial report for aquaculture facilities may prove challenging and time consuming for some facilities as they try to understand the requirements of the NPI program and set up internal processes to simplify reporting. The average annual cost of reporting over the seven years in which the NPI has been operating is approximately \$3,139 (see Appendix 2).

³⁸ ABARE 2005, Australian Fisheries Statistics 2004, Canberra, February.

³⁹ The public register under the New South Wales *Protection of the Environment Operations Act 1997*, <<http://www.epa.nsw.gov.au/prpoeo/searchregister.aspx>>.

However, given that aquaculture facilities are only expected to report Category 3 substances and that facilities in many jurisdictions will be licensed and currently required to conduct monitoring for Total Nitrogen and Total Phosphorus emissions, it is likely that reporting may be quite simple for many facilities. Therefore, similar to other intensive livestock facilities (such as piggeries which only trip the ammonia usage threshold) and sewage treatment plants, reporting costs may be quite low and applying an average cost of \$600 (the median reported cost) per year is considered a conservative estimate. Therefore, total costs for the estimated 60 facilities from the aquaculture sector that may be required to report to the NPI are estimated at \$36,000 per annum.

The potential benefits of NPI reporting for industry is that it may provide an incentive for operators of land-based facilities to minimise discharge volumes and pollutant concentrations by implementing practices such as the use of settlement dams (to reduce levels of nutrients), recycling/reuse of effluent (to reduce discharge volumes) and feed management strategies (to reduce levels of nutrients). Likewise, NPI reporting may provide an incentive for the operators of marine-caged facilities to optimise feed management strategies (to reduce levels of nutrients).

5.2.2 Impact on government

There will be some additional costs to government to educate the industry about reporting requirements, produce industry reporting materials and to collect, process and publish the reports as follows:

- **industry education** — the additional liaison with reporters is not expected to increase costs in jurisdictions significantly. It is considered that these costs could be incorporated into the current program running costs, therefore additional costs of industry education are negligible.
- **data entry and verification** — the cost of these procedures is estimated to be in the vicinity of \$50 per facility. For the projected increase of 60 facilities, this leads to an extra cost of \$3,000 per annum across all jurisdictions.
- **industry reporting materials** — a diffuse source emission estimation manual exists for aquaculture and this could be easily adapted to produce suitable industry reporting materials. Hence, a conservative estimate of \$20,000 to review and amend the manual for use by facilities.

5.2.3 Summary of costs and benefits

It is desirable to develop an overall picture of emissions from aquaculture facilities and the NPI provides a suitable mechanism. The equity case for requiring aquaculture facilities to report to the NPI appears sound given the similarities with current reporting sectors, especially intensive livestock facilities, and the impacts of their emissions on water quality.

The additional costs of this amendment would be reporting costs totalling \$36,000 per annum to industry, and initial set-up costs of \$20,000 to government plus ongoing costs of about \$3000 per annum. No costs are expected to be attributable to the community, however the benefit of providing the community with better information on a growing sector is particularly high.

5.3 CATEGORY 3 THRESHOLDS

Nutrient pollution causes significant problems for ecosystems. The most common effect of nutrient pollution is stimulating the growth of cyanobacteria and nuisance plants to form algal blooms⁴⁰. Algal blooms affect not only the amenity of the waterway but also pose risks to human health, animal health, crops and aquatic ecosystems.

⁴⁰ ANZECC and ARMCANZ 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. p. 8.2-2.

The Category 3 threshold deals with emissions of the nutrients Total Nitrogen and Total Phosphorus to water. Currently, emissions of Total Nitrogen must be reported where a facility emits more than 15 tonnes to water and Total Phosphorus must be reported where a facility emits more than three tonnes to water. It is proposed to change the application of these thresholds so that if the threshold for any Category 3 substance is exceeded, then all Category 3 substances must be reported.

The problem arising from the current thresholds is that data on emissions of nutrients from large nutrient emitters is not comprehensive because some facilities trip on and report emissions of only one of the nutrients. Given the interplay between these two macronutrients, it is considered that a better understanding of their effects in waterways will be obtained by requiring facilities that must report for one substance, to report on both substances (ie trigger the threshold for one substance, report both substances).

Altering the reporting arrangements to require all facilities that trip one Category 3 substance threshold to report both Category 3 substances will ensure that comprehensive nutrient data is reported by all significant emitters of these nutrients, thus increasing the amount of information available to NPI users on emissions of nutrients to water.

5.3.1 Impact on industry

Table 5-1 lists the number of facilities that report Total Nitrogen and Total Phosphorus. It indicates that the majority of facilities already report on both substances. Mandating the reporting of both substances would have resulted in 75 facilities having to report an additional substance in 2004/05.

Table 5-1: Number of facilities that reported Category 3 substances in 2004/05

Jurisdiction	Total N	Total P	Both
NSW	66	61	47
Qld	61	61	55
Tas	33	35	33
Vic	31	25	23
WA	19	14	10
SA	16	15	13
NT	6	7	6
ACT	3	2	2
Total	233	220	189

The majority of facilities (> 80%) reporting these substances are sewage treatment plants that are already likely to be monitoring both nutrients as part of their operating licences. These facilities should easily be able to extend their NPI report to cover both nutrients at low cost.

For other types of facilities (eg chemical manufacturers), many will also be required to monitor both nutrients as part of their licence conditions. Hence, it is not considered that requiring facilities that trip either Total Nitrogen or Total Phosphorus to also report on the other substance will place any significant additional costs on NPI reporters.

For the purposes of this analysis, a cost of \$200 per additional pollutant to be reported is considered appropriate to cover additional costs (see Appendix 2 for more details) although, as mentioned, it is likely that most facilities already have access to the data required. Since all the facilities are already reporting to the NPI, no other compliance costs are likely. Therefore, total costs to industry of this amendment are estimated as \$15,000 per annum.

5.3.2 Impacts on government

Costs to jurisdictions will also be minimal with an additional 75 substances reported across Australia (based on 2004/05 NPI data) leading to a negligible increase in education, data entry and verification costs spread across the jurisdictions. It would be expected that these costs could easily be absorbed within the current program costs.

There will be some minor editing required to a number of manuals in order to facilitate this change. A conservative one-off cost of \$5,000 is estimated to cover this work.

5.3.3 Summary of costs and benefits

Requiring facilities that trip a Category 3 substance to report emissions of all Category 3 substances will result in a better understanding of facility nutrient emissions for only a minor increase in reporting costs for industry, local government and environment agencies. Overall costs to industry are very conservatively estimated as \$15,000 per annum with government costs increasing with a one-off cost of \$5,000. No costs are expected to be attributable to the community.

5.4 SUBSTANCE DELETIONS/ADDITIONS

There are clearly some differences in the types of substances that have the potential to impact adversely on the environment in different regions (eg urban and rural), and on different media in those regions. These differences were taken into account by having a reporting list that encompasses substances with the potential for significant adverse impacts on diverse environments and media.

One national list of substances was chosen for the NPI in order to allow users of NPI information to identify and compare the significance of emissions of particular substances on a national, jurisdictional, regional or local basis. It was recognised that in some areas of Australia there would be no, or minimal, emissions of particular substances on the list.

After seven years of operation of the NPI program, further refinement of the substance list and associated thresholds can be made to improve the program for both reporters and database users.

Refinement of the substance list and associated thresholds will impact all three main objectives of the NPI, but impact mostly on the goals to:

- provide information to enhance and facilitate policy formulation and decision making for environmental planning and management; and
- satisfy community needs by providing publicly accessible and available information.

With respect to the selection of substances and thresholds, the objective is to include those substances that pose the greatest threat to the environment based on human health attributes, environmental attributes and exposure. Substance thresholds are to be set at a level where potential emissions justify the cost of estimating and reporting, and do not add undue complexity to the NPI program.

Table 5-2: List of substances to be added or deleted from the NPI Substance List

SUBSTANCE	CAS No.	CATEGORY	CHANGE
Acrolein	107-02-8	1	Add substance
Particulate matter $\leq 2.5 \mu\text{m}$ (PM _{2.5})	N/A	2a	Add substance
Polychlorinated biphenyls (PCBs)	1336-36-3	1	Add substance

Nickel subsulfide	12035-72-2	1	Remove from Category 2b
Acrylamide	79-06-1	1	Delete substance
Aniline (benzeneamine)	62-53-3	1	Delete substance
2-Ethoxyethanol	110-80-5	1	Delete substance
Ethyl butyl ketone	106-35-4	1	Delete substance
2-Methoxyethanol	109-86-4	1	Delete substance
2-Methoxyethanol acetate	110-49-6	1	Delete substance
4,4-Methylene bis 2,4 aniline (MOCA)	101-14-4	1	Delete substance
Nickel carbonyl	13463-39-3	1 and 2b	Delete substance

By altering the substance list to delete those substances where no or minimal data is being provided to the NPI because industry processes in Australia do not use/produce that substance, costs for government and industry can be targeted towards producing information that is of greater benefit for database users. Similarly, refinement of substance thresholds should minimise resource wastage and improve the usefulness of the data.

Specific information is provided below for the substances proposed to be added to the NPI substance list.

5.4.1 Acrolein

The TAP recommended that Acrolein be included in the NPI due to its toxicity, usage and potential for exposure. Acrolein is mainly used as a chemical intermediate. It is also used as a pesticide in irrigation channels to control algae and slime growth, and may be found in hazardous wastes sites. Acrolein is also formed when organic materials, such as petrol or oil, burn in bushfires or in building fires.

As the TAP report notes⁴¹ there is little information available on the use of acrolein in Australia. Therefore it is difficult to analyse the likely impact of reporting this substance on industry. Data from the 2004 Canadian NPRI indicates that 33 facilities reported acrolein and all were from wood processing industries. Similarly, it may be expected that wood processing facilities in Australia may report Acrolein as part of the emission of volatile organic compounds (VOCs) during drying processes. Data from the 2004/05 NPI shows that 90 facilities from the log sawmilling/wood product manufacturing sectors reported, and of these, 14 facilities tripped the Category 1a threshold of individual VOCs such as formaldehyde. Correspondingly, an estimate of 14 facilities may be a useful approximation of the possible number of Acrolein reporters.

Another method used to estimate the number of facilities that may have to report Acrolein emissions was to analyse the number of reports of six other complex VOCs in the NPI⁴². This analysis suggests that complex VOCs generally receive about 14 emission reports per year. Given this, it is reasonable to expect a similar number of reports of Acrolein emissions per year which agrees with the information above.

Applying the average substance emission reporting cost of \$200 per substance gives a total impact of \$400 per facility for reporting emissions and transfers of acrolein (ie \$200 for emissions and \$200 for transfers) or a total estimated additional cost of \$5,600 on Australian industry for reporting Acrolein.

⁴¹ Technical Advisory Panel, Final Report to the National Environment Protection Council, March 2006, p35.

⁴² The average number of facilities reporting the organic compounds hexachlorobenzene, biphenyl, dibutyl phthalate, methylenebis(phenylisocyanate), methyl methacrylate and toluene-2,4-diisocyanate over the previous three reporting periods.

In summary, although there is some uncertainty over the number of facilities that would be affected by the addition of Acrolein to the NPI list of substances, it seems likely that few facilities will be required to report Acrolein emissions and that overall costs to industry are very low.

The alternative option to including Acrolein in the NPI is to continue with the current situation where there is no national mandatory public disclosure of Acrolein emissions and transfers. However, this option would not lead to improved data about the emission and transfer of Acrolein achieved at minimal cost to industry and government.

5.4.2 Particulate Matter $\leq 2.5 \mu\text{m}$ (PM_{2.5})

The TAP recommended the inclusion of reporting for PM_{2.5} due to the increasing concern over the effects of smaller particles on human health since studies have shown that PM_{2.5} gives a better correlation with severe respiratory impacts in humans than PM₁₀. The inclusion of PM_{2.5} in the NPI would be in line with current moves for emission reporting in the UK, EU and elsewhere.

It is proposed that, similar to PM₁₀, PM_{2.5} would be a reportable substance when the Category 2a fuel usage threshold is exceeded. Due to perceived uncertainties associated with PM_{2.5} from diffuse sources such as wheel generated dust or stockpiles, the TAP recommended that PM_{2.5} only be reportable from combustion sources.

Impacts on industry

Over the three reporting periods from 2002/03 to 2004/05, about 1,800 facilities reported emissions of PM₁₀ each year. Hence, with the proposed inclusion of PM_{2.5} as part of Category 2a threshold, these facilities would also be required to report PM_{2.5}.

The TAP report provided information about methods for determining PM_{2.5} emissions using monitoring and also suggested there are various emission factors that could be applied. The two US EPA AP-42 documents⁴³ (*Appendix B1 - Particle size distribution data and sized emission factors for selected sources* and *Appendix B2 - Generalized particle size distributions*) provide useful information and this particle size distribution data would seem readily adaptable to provide emission factors for PM_{2.5} emissions from combustion sources. Hence, it is envisaged that emission factors will be available to estimate all PM_{2.5} combustion emissions which will limit the added costs to industry, although some facilities may choose to conduct monitoring to improve the accuracy of their data.

Therefore, the costs of reporting PM_{2.5} are not considered significant since it will require facilities to do calculations based on their fuel usage for each process. The average NPI substance reporting cost of \$200 easily covers this expense. This leads to a total reporting cost for adding PM_{2.5} to the NPI of \$360,000 although this is considered a very conservative cost estimation. After the initial expense of determining which PM_{2.5} emission factor is relevant to the processes at the facility and updating facility software programs to reflect this, it would be expected that the PM_{2.5} reporting costs would decrease to essentially a nil cost in subsequent years.

Costs to government

The major cost to government is the preparation of industry reporting materials to provide guidance, specifically relevant emission factors, for industry to report PM_{2.5} emissions. The majority of NPI emission estimation technique manuals contain information on combustion and so each of those would need to be amended to include the additional substance PM_{2.5} and appropriate emission factors. NPI calculation tools such as the Combustion Database would need to have additional emission factors added. These costs, using the administrative and technical staff rates of \$50/h and \$75/h respectively, are estimated below:

⁴³ <http://www.epa.gov/ttn/chief/ap42/index.html>.

- all 125 manuals: $125 \times 2 \text{ h} \times \$50/\text{h} = \$12,500$;
- combustion database update: $100 \text{ h} \times \$75/\text{h} = \$7,500$;
- total costs to amend industry reporting material = \$20,000.

Although the paper reporting form, the NRT and jurisdiction databases would need to be amended to accept the new substances, it is considered that these would be a minor cost that would be easily incorporated in the changes to these tools resulting from the other alterations to the program and therefore no specific cost has been applied to them.

Jurisdictions will also incur a negligible increase in the costs for reporter education, data entry and verification for the expected 1,800 reports of PM_{2.5} spread across the jurisdictions. It would be expected that these costs could easily be absorbed within the current program costs.

There are no costs that directly accrue to the community.

Summary of the costs and benefits of PM_{2.5} reporting

The cost to industry of reporting PM_{2.5} is conservatively estimated at \$360,000 in the first year dropping to essentially a nil cost in subsequent years. Costs to government are also negligible with a \$20,000 outlay in the first year required to provide industry reporting guidance. There are no costs that directly accrue to the community.

The benefits of including PM_{2.5} in the NPI are:

- satisfies community right to know;
- provides consistent and comparable data about the PM_{2.5} emissions from industry to inform policy decisions; and
- low development and implementation costs for both government and industry.

The alternative option to including PM_{2.5} reporting in the NPI is not to include this substance. However, this option would not lead to clear benefits outlined above that can be achieved at minimal cost to industry and government.

5.4.3 Polychlorinated biphenyls (PCBs)

Polychlorinated biphenyls (PCBs) are mixtures of various isomers and congeners. They have been widely used as dielectric fluids for capacitors and transformers, as heat transfer fluids, plasticisers and lubricants. Due to their high lipid solubility and resistance to degradation, PCBs tend to bioaccumulate in terrestrial and aquatic environments.

Import of PCBs ceased many years ago, however PCBs remain an important hazardous waste because of the large amounts previously imported and amounts that are remaining. While they are not likely to be a major environmental release, the TAP considered that they should be added because of their importance as a hazardous waste and the large volumes that remain on hazardous waste inventories. They would likely be reported as transfers only.

The costs to industry of including PCBs on the NPI substance list include:

- amending internal spreadsheets and software to reflect the altered reporting list;
- examining processes and waste streams to determine whether PCBs are used on site in amounts that exceed the reporting thresholds; and
- determining emissions of PCBs if the 10 tonne threshold is exceeded.

Similar to Acrolein, it is considered that approximately 14 facilities across Australia may trip the 10 tonne usage threshold and be required to report emissions and transfers of PCBs. This would result in a cost in the vicinity of \$400 per annum per facility (\$200 each for reporting of emissions and transfers, respectively) or a total cost to industry of \$5,600 per annum.

The costs to government include:

- amending the NPI Guide and other industry reporting materials to facilitate reporting of PCBs by industry;
- amending the reporting form, NRT and jurisdiction databases to accept the new substances – these are minor changes and would be expected to be able to be rolled into the costs of amending these devices as part of the other changes. Therefore, no specific cost has been applied;
- a minor increase in jurisdiction costs for reporter education, data entry and verification for the expected 14 reports of PCBs spread across the jurisdictions. It would be expected that these costs could easily be absorbed within the current program costs.

There are no costs that directly accrue to the community.

The alternative option to including PCBs in the NPI is to continue with the current situation where there is no national mandatory public disclosure of PCBs emissions and transfers. However, this option would not lead to improved data about the emission and transfer of PCBs achieved at minimal cost to industry and government.

5.5 REDUCTION IN THE MERCURY THRESHOLD (CATEGORY 1B)

Exposure to mercury is a well established environmental health hazard. Recent studies show that mercury exposure may still arise in the environment, and increasingly in occupational and domestic settings.

Mercury is currently included in the NPI as a Category 1 substance with a 10 tonne usage threshold and as a Category 2b substance that must be reported when a facility burns more than 2,000 tonnes of fuel. Compared with the emission thresholds of other international PRTRs, the NPI 10 tonne usage threshold is very high – for example, the threshold of the US TRI is 4.5kg, while the UK NAIE has a threshold of 1kg for emissions to air and 0.1kg for emissions to water. It is relevant to note that the mercury usage threshold in the Canadian NPRI was decreased from 10 tonnes to 5kg in 2000 on the basis that minimal releases of mercury may result in significant adverse effects.

Noting these concerns, the TAP recommended⁴⁴ that the mercury threshold be lowered from 10 tonne to 5kg since there may well be significant potential for release by users of lesser amounts. Therefore, it is proposed that mercury be added as a new Category 1b with a usage threshold of 5kg.

Facilities likely to be affected by this amended threshold are:

- facilities involved in some forms of chemical manufacture using mercury (eg manufacture of dental amalgam);
- primary metal manufacturers;
- incinerators; and
- mining companies that do not currently trip the Category 2b fuel usage threshold, but would have trace mercury levels in overburden and waste rock that would exceed the 5kg threshold.

⁴⁴ Technical Advisory Panel, Final Report to the National Environment Protection Council, March 2006, p. 53

It is difficult to identify the number of facilities that would be affected by this amendment, but it is considered that most facilities that would trip the threshold would have significant fuel usage and would already be reporting mercury emissions because they trip Category 2b. For facilities affected by the new Category 1b, additional reporting costs are estimated as \$200 per annum per facility (ie the estimated NPI reporting cost per substance).

The alternative option to reducing the mercury usage threshold is to continue with a 10 tonne usage threshold. However this option does not recognise the significant concerns regarding mercury emissions due to its high level of toxicity, and would not lead to improved data on industrial mercury emissions.

5.6 CHANGE TO PUBLICATION DATE

Currently, the timeframe from when jurisdictions provide data to the Commonwealth and when this information is subsequently provided to the community is tight. The tight timeframe has the potential to lead to errors in the published data resulting in corrections being undertaken in subsequent months.

To achieve this objective, one option is to add a two-month 'correction time' by having a pre-release data set. Extending the public release date would allow jurisdictions and industry to correct errors before the data is publicly released. Final public release would therefore occur on 31 March of each year.

The alternative to making this change is to do nothing and retain the existing publication date of 31 January. This would result in the continuing errors that are associated with the data. Changing the publication date will ensure that data provided to the community is of improved quality and will not have to be altered in the months after it is released.

5.7 CHANGE TO PUBLICATION REQUIREMENTS

The NEPM currently requires the Australian Government to provide CD-Roms annually to local libraries, universities and education institutions, and state, territory and local governments.

When the NEPM was originally made, this technology was the best way to provide this information to the community. The internet is now much more accessible to the community and the information can be accessed on-line. The objective is to remove the requirement to provide CD-Roms to stakeholders and focus on keeping the NPI website dynamic and up-to-date.

5.8 CHANGE IN DEFINITION FOR CASR NUMBER

The definition of CASR Number in the NEPM as a Chemical Abstract Series Registered number is incorrect. The definition should be changed to read that the CAS Number refers to the Chemical Abstracts Service number as developed and published by the Chemical Abstracts Service, a division of the American Chemical Society. The American Chemical Society assigns these identifiers to every chemical that has been described in the literature. The intention is to make database searches more convenient, as chemicals often have many names. Although this number is interchangeably referred to the Chemical Abstracts Service Registry Number (CASR Number) and the Chemical Abstracts Service Number (CAS Number) the shorter form (CAS Number) is more commonly used.

The objective is to provide the correct definition and enhance the credibility of the NEPM. To do nothing is to continue using the incorrect definition.

5.9 CHANGE FROM 'CONTEXTUAL INFORMATION' TO 'SUBSTANCE INFORMATION'

The term 'contextual information', when used with respect to the NPI, has evolved a common usage meaning of aggregated emissions data that puts industry data into context when assessing total emissions. The NEPM, however, uses this term to describe and provide information on each substance.

The objective is to improve common understanding of the terminology used by changing the term 'contextual information' to 'substance information'.

The alternative to making this change is to do nothing and retain the term as 'contextual information'. This will result in continued misunderstanding when the term is used.

Changing the term to 'substance information' will make it more meaningful and improve user understanding and subsequent efficiency of NPI database use.

5.10 REWORDING OF DEFINITIONS

Several of the definitions in the NEPM use the term being defined as part of the definition (eg 'emission' means emission of a substance...). This can make the definitions confusing. In most cases an alternative word can be used which provides greater clarity (eg 'emission' means release of a substance...).

The objective is to improve understanding of the terms used in the NEPM by not using the term being defined as part of the definition unless this is unavoidable.

The alternative to making these changes is to do nothing. This will result in the continued use of possibly confusing definitions and resultant misunderstanding by users.

Changing the definitions will make the NEPM easier to understand.

5.11 CLARIFYING THE DEFINITION OF 'FACILITY'

The definition of 'facility' does not provide adequate guidance for determining what sources of emissions can be grouped together to form a discrete 'facility'. It also does not contain reference to a site which is a term commonly used by industry to define the extent of the facility.

The objective is to improve understanding of the term 'facility' in order to facilitate implementation of the NEPM and to make the NEPM easier to understand.

The alternative to making these changes is to do nothing. This will result in the continued use of an unclear definition and resultant misunderstanding by users.

5.12 CHANGING 'INDUSTRY HANDBOOK' TO 'INDUSTRY REPORTING MATERIALS'

When the NEPM was developed in 1998, it failed to take into consideration the rapid growth and acceptance of information delivery through electronic means such as the Internet. Hence, industry reporting materials were developed as hardcopy 'handbooks'. The 2005 review of the NPI recommended:

Consideration of alternative ways of delivering manuals to reduce the effort and simplify their use is worth exploring. This would be via an electronic database of estimation techniques for specific processes, unit operations and equipment that is coded. Use of the code would bring up the correct

set of Emission Estimation Techniques for that industry. Thus for example an industry could insert their industry code and a set of relevant pages and list of substances expected to be emitted could be provided on line. This is a longer term project with the potential to make large efficiency gains.

Maintaining the current definition as 'handbooks' will restrict the effective development and delivery of electronic information and tools.

The objective is to improve the delivery and ease of use of industry reporting materials by industry.

The alternative to making these changes is to do nothing. This will result in the continued requirement to produce manuals that have limited useability. It is also likely to stifle innovation that will make reporting easier for industry.

Changing the term 'industry handbook' to 'industry reporting materials' will allow for electronic tools and materials to be developed for reporting where appropriate. This change will not abrogate the requirement for the Australian Government to publish appropriate reporting materials before requiring an industry sector to report.

5.13 CHANGING THE TITLE OF THE MEASURE

If the NEPM is varied to include reporting of waste transfers and emissions of greenhouse gases, there is a perception that the NPI is no longer descriptive of the functions carried out by the program. Furthermore, the NPI Review reported that a major concern for industry regarding the inclusion of greenhouse gases is that:

there could be ramifications for the application of environmental impact assessment and related regulations potentially affecting, for example, geo-sequestration.

Upon investigation, this concern was found to relate to a perception that the inclusion of greenhouse gases in the National *Pollutant* Inventory would, in some way, lead to the classification of these gases as pollutants, which in turn, could lead to restrictions in commercial opportunities and conflicts with environmental licensing conditions. Further investigation, through the Victorian Greenhouse Gas Emissions Reporting and Disclosure Pilot has revealed that this concern has no real substance. It is also notable that the only reference to 'pollutants' in the NEPM is in the title. Also of relevance is that the European Pollutant Emission Register (EPER) established in July 2000 includes reporting of greenhouse gases and transfers without any apparent difficulties or conflicts related to the way it is named.

A change in the name of the NPI, which removes the word 'pollutant' may, however, further allay this concern as well as provide the opportunity for re-branding and re-launching the program.

The objective is to change the name of the NEPM to the *National Environmental Protection (National Emissions Inventory) Measure* and the acronym to NEI.

Making this change partly addresses having a title that is descriptive of the function of the program. It is noted that fully encapsulating the functions of the program in the title would be unwieldy and counterproductive. A general rule of thumb is that a three word name (and thus a three letter acronym) is far more acceptable than one with four or more words. A review of international programs similar to the NPI has revealed that they generally do not include reference to 'transfers' in the title. The change may also make it easier for industry to accept the inclusion of greenhouse gases and reporting of transfers into the program. Cosmetic changes would be required to the Internet website and updating of reporting materials would be required. These

changes can be achieved simply and at minimal cost in electronic documents. The new name would have to be promoted to gain recognition, however given the recognised need for more promotion, the cost is not expected to exceed that which is already planned. A name change also provides the opportunity to create a change of image and shed negative connotations (if any) that the old name and program may have had.

The alternative to making this change is to retain the existing name as the *National Environmental Protection (National Pollutant Inventory) Measure*. The advantage of this is that this name has some market recognition and is an established 'brand'. There is also a view that it is important to retain the term 'pollutant' as this is easily interpretable by the general public.

5.14 OECD CODE REMOVAL

The Australia and New Zealand Standard Industrial Classification (ANZSIC) codes are used in Australia to identify and classify industry types rather than the OECD codes. Furthermore, OECD codes can be derived from the ANZSIC codes if needed. Therefore, reporting of OECD codes as well as ANZSIC codes is unnecessary and the OECD codes have not been reported since the commencement of the NEPM.

The objective of this amendment is to remove the duplication of reporting of industrial classification codes. The alternative to making these changes is to do nothing. This will result in the continued inclusion of a reporting requirement that has not been enforced and which does not provide any useful information.

There is no impact from this change beyond the NEPM reflecting what is actually occurring.

5.15 CHANGE TO REPORTING PERIOD DEFINITION TO MAKE REPORTING MORE FLEXIBLE.

The annual reporting period is currently defined as being the financial year (1 July to 30 June) unless a jurisdiction already requires a facility to report similar data on the basis of a different annual period. This definition has restricted the ability for a jurisdiction to legally permit another reporting period (eg calendar year) when there are compelling reasons from industry for such a reporting period. The normal practice of jurisdictions is to allow such changed reporting periods. However, there may be some question of validity of reports from facilities that currently report for a period other than the financial year and do not have specific approval from the relevant jurisdiction.

The objective is to provide jurisdictions with the ability to legally approve alternative reporting periods.

The alternative to making these changes is to do nothing. This would result in the continuation of the inflexibility of the current situation. It may also bring into question the validity of some facilities reporting on the basis of a calendar year or other annual period.

This change will provide a legal basis for the continuation of jurisdictions having flexibility to meet the reporting efficiency needs of facilities.

5.16 INCLUSION OF ABN

Since the formulation of the NEPM, the Australian Business Number (ABN) has become a widespread means of identifying the entity carrying out a business activity. Previously, the Australian Company Number (ACN) provided this identification, however this only applied to a limited number of business entities. Currently the NPI requires reporting of ACN but not ABN.

The objective is to improve the validity of reporting by requiring all business entities to provide an identifying ABN when reporting.

The alternative to making this change is to do nothing. This will prevent the incorporation of a valuable source of data.

Inclusion of this change will require reporting facilities to provide their ABN as part of the report. This number is readily available and used on a daily basis by the majority of reporters so will pose no additional burden when completing the NPI report. Currently this information is reported voluntarily and will not require any modification to current reporting systems. It will have the benefit of allowing jurisdictions to cross check other business entity information such as Registered Name. It may also facilitate the introduction of streamlined reporting systems such as on-line reporting by industry.

5.17 CLARIFYING THE INTENT OF THE NEPM

The NPI Review found that a revision of the goals of the Measure was warranted to clarify its intent. Clause 5(c) of the NEPM refers to 'the re-use and recycling of used materials'. However, there would be broader application and a better reflection of what is achievable by the NEPM if this was changed to 'an improvement in the sustainable use of resources'. Clause 6 is overly complicated and refers to reducing impacts when in reality the NEPM does not aim to reduce impacts, it only aims to collect and publish information to provide impetus for other programs and activities aimed at reducing emissions and increasing sustainability.

The objective is to clarify the environmental outcomes, goals and functions of the NEPM.

The alternative to changing the NEPM is to do nothing. The result of this would mean that the NEPM may appear out of step with current policy objectives.

Changing the wording of the outcomes, goals and functions enhances the NEPM and makes communicating the achievements of the NEPM easier.

5.18 CLARIFYING THAT POULTRY RAISING IS INCLUDED AS 'INTENSIVE LIVESTOCK'

Poultry facilities have been included as a reporting sector since June 2002 and the legal basis for this inclusion is sound. A substantial number of facilities are reporting. However, the current wording of Clause 9(5) only gives piggeries and cattle feedlots as examples of intensive live-stock production and therefore the intent that the poultry industry must report is not obvious.

The objective is to clarify the reporting requirement of poultry facilities by including them as an example.

The alternative to changing the NEPM is to do nothing. The impact of this would be minimal as poultry facilities would still have a reporting requirement. It could, however, be construed that the NEPM is not as open and informative as it could be.

The impact of changing the clause would be to make obvious the inclusion of poultry facilities. This may lead to better reporting by the poultry industry.

5.19 CHANGE DEFINITION OF 'BULK FACILITIES'

The reporting threshold of a Category 1a substance excludes bulk facilities if their design capacity is less than 25 kt. This exclusion was made on the basis that the environmental controls of bulk

fuel facilities are sometimes superior than other fuel handling facilities and that unless the bulk facility has a capacity of at least 25 kt, then emissions from that facility will be significantly lower. This, however, has led to an inequitable situation and confusion on what actually constitutes a 'bulk' facility.

The objective is to enhance reporting by clarifying the intent of the NEPM with respect to reporting of Category 1a substances.

The alternative to changing the NEPM is to do nothing. This would result in continued confusion for industry.

Changing the NEPM is not expected to significantly impact the bulk petroleum wholesaling industry. It will provide greater clarity for other reporters and will lead to better reporting of Category 1a substances.

5.20 CHANGE 'ENERGY' DEFINITION TO RESTRICT IT TO 'ELECTRICAL ENERGY' AND EXCLUDE LIGHTING AND MOTIVE POWER

The reporting threshold for Category 2b substances contains an energy usage component. This energy component was originally intended to capture facilities (eg those utilizing electric arc furnaces) that use electrical energy to heat substances to high temperatures (eg producing molten metal) resulting in the emission of NPI substances. However the way in which the clause was drafted has meant that energy use that had minimal or no emissions associated with it was captured by this clause (eg use of electricity for lighting or motive power or use of other energy sources such as hot water or steam). The following Implementation Working Group (IWG) decision was made at the 9th IWG meeting on 8-9 December 1998:

Power usage thresholds were originally intended to ensure operators of electric furnaces would be required to report. It was not intended to force operators of large commercial or industrial facilities using electricity for motive or lighting purposes to report. Agreement that facilities operating electric arc furnaces will be required to report power usage. Facilities using electricity only for motive or lighting purposes are not required to report their power usage.

The objective is to clarify the energy threshold for reporting to ensure that it refers only to electrical energy usage for something other than lighting and motive power purposes.

The alternative to changing the NEPM is to do nothing. This will continue the current situation where a policy decision has been made to ignore an unintended legislative requirement.

This change will clarify the clause and negate the need for the policy decision. As, in practice, there will be no change in the application of the clause, there will be no other impact.

5.21 CHANGE IN COMMENCEMENT OF REPORTING CLAUSE FOR CLARITY

Commencement of reporting for a new industry sector is dealt with under Clause 4(2), 4(3) and Clause 14. These clauses are disjointed and confusing.

The objective is to simplify and consolidate the commencement of reporting clauses to make them more understandable.

The alternative to changing the NEPM is to do nothing. This will result in the continued misunderstanding of the requirements.

These changes will clarify the requirements. Some changes will be required to gazettal procedures by the Australian Government but these are expected to involve minimal or no additional cost.

5.22 REMOVAL OF RELIABILITY SUBCLAUSE

Clause 19(f) requires jurisdictions to report the level of reliability of the occupier's emission estimate to the Australian Government. Originally, a scale of reliability for the use of emission factors was developed but this was never implemented because it did not appear to add any useful information to the report. Occupiers are not required to report the level of reliability to jurisdictions and therefore jurisdictions are unable to pass this information onto the Australian Government. Jurisdictions carry out a series of checking procedures on data received and only provide the Australian Government with data that they consider is of adequate reliability.

The objective is to remove the requirement that jurisdictions provide the Australian Government with a level of reliability of the occupier's estimate of facility emissions.

There are two alternatives to making this change. Firstly, to keep the requirement to report the level of reliability and to develop a suitable scale of reliability requires facilities to report this level to jurisdictions. It is considered the cost of implementation, including modification of reporting systems, reporter education and training and Internet database changes would outweigh the benefits from reporting. Currently, all data provided is on the basis that it is of acceptable reliability. Secondly, is to do nothing and continue with the current situation where an unworkable requirement is ignored.

This change will simply bring the NEPM into line with what is actually happening in practice.

5.23 REMOVAL OF THE TEXT 'THE COUNCIL ENVISAGES' IN VARIOUS CLAUSES

When the NEPM was made, supporting jurisdictional legislation, policies and practises had not yet been developed. The NEPM has been in operation since 1998/1999 and these have now been developed. The uncertainty in the wording of the NEPM (ie 'the Council envisages') is no longer required and if left may cause confusion about the requirements.

The objective is to remove uncertain wording from the NEPM, including the phrase 'the Council envisages' to provide certainty.

The alternative to changing the NEPM is to do nothing. This will result in continued difficulty in interpreting requirements under the NEPM.

5.24 CLARIFY ENFORCEMENT PROVISIONS

Clause 25, which deals with enforcement provisions, was formulated prior to the development of appropriate legislation by each jurisdiction. Enforcement is a jurisdictional issue and must be implemented in a way that is consistent with other enforcement provisions within each jurisdiction. The clause, as it stands, may unnecessarily restrict enforcement action by jurisdictions or lead to inconsistency with other enforcement provisions.

Making it clear that enforcement is a jurisdictional matter would simplify this clause.

The alternative to changing the NEPM is to do nothing. This will continue to restrict enforcement options for jurisdictions.

The change to the clause will reflect the intent of the legislation, ie that enforcement is a jurisdictional issue. Most jurisdictions have already established enforcement legislation and this

change will ensure that, in future changes to such legislation, NPI enforcement is dealt with in a manner that is consistent.

5.25 CHANGE TO REVIEW REQUIREMENTS

Clause 33 contains outdated information referring to reviewing the measure. This clause needs to be updated and re-written so it will not need to be updated after every future review.

The objective is to reformulate the NEPM clause dealing with 'Review of the Measure' so that it does not have a finite application. This change will give certainty that future reviews will occur within five years but allow the Council flexibility to define exactly when the review should occur and, if necessary, review the NEPM at a shorter interval.

The alternative to changing the NEPM is to do nothing. This will mean that the clause continues to have limited meaning.

5.26 CHANGE TO THE CHLORINE DEFINITION

The current definition, in Schedule A, of the threshold and emission of Chlorine may unintentionally restrict reporting of emissions to the diatomic gas Cl₂. The original intent and thus the reporting materials referring to Chlorine was that all Chlorine compounds with the potential for environmental harm or affecting human health should be included. It was not, however, the intent that chloride salts be included (eg sodium chloride or potassium chloride).

The objective is to clarify the reporting requirements for Chlorine.

The alternative to changing the NEPM is to do nothing. This will continue the uncertainty about reporting requirements for Chlorine and mean that Chlorine emissions are not reported consistently or comprehensively.

This change will make Chlorine reporting requirements more understandable. Reporting materials referring to Chlorine may need some changes although the cost associated with this is expected to be minimal. Likewise, there will need to be some communication activities with facilities likely to have a reporting requirement for Chlorine. Such facilities are also likely to have some costs, albeit minimal, in changing their reporting systems.

5.27 REMOVE PHENOL DEFINITION

The current definition in Schedule A of the threshold and emission of Phenol, or phenols, is imprecise.

The objective is to clarify the reporting requirements for Phenol and phenols.

The original Technical Advisory Panel Report (NEPC 1999) stated:

Because of the great similarities in chemical and biological properties between phenol and simple substituted phenols (cresols and xylenols), and the fact that mixtures are often encountered in industrial applications, facilities may choose to consider all such phenols as "phenol" when measuring against the threshold and when reporting their emissions.

This approach has led to a situation where it is uncertain what is being reported from individual facilities. One facility may report only their emissions of phenol while another similar facility may report emissions of phenol, cresols and xylenols and appear to be a larger emitter of 'phenol'. The data could therefore be so imprecise as to be of little value.

The removal of the definition of Phenol will mean that only the compound Phenol (CAS Number 108-95-2) is reportable. Other phenol compounds will no longer be required to be reported.

There are two alternatives to making this change to the NEPM. Firstly, the NEPM could be changed to alter the reporting of Phenol (CAS Number 108-95-2) to the reporting of Phenol and simple substituted phenols such as cresols and xylenols. The disadvantage of this approach is that it may capture phenol compounds that do not have the toxicity of Phenol and therefore make it difficult to compare emissions from different sources. The second alternative is to do nothing. This will continue the uncertainty about reporting requirements for Phenol and phenols and mean that these emissions are not reported consistently or comprehensively.

Reporting materials referring to Phenol and phenol compounds may need some changes although the cost associated with this is expected to be minimal. The current fact sheet on the NPI website only refers to Phenol. There will need to be some communication activities with facilities likely to have a reporting requirement for Phenol and phenol compounds. Such facilities are also likely to have some costs, albeit minimal, in changing their reporting systems.

5.28 INCLUSION OF POLYCHLORINATED DIOXINS AND FURANS (TEQ) DEFINITION

Polychlorinated dioxins and furans are reported as a single NPI substance that is currently reported as a total mass of the individual congeners. World practice is that dioxins and furans are reported based on the toxicity of the various congeners relative to the most toxic dioxin, 2,3,7,8-tetrachlorodibenzo-p-dioxin. This is called I-TEQ and is determined by giving the most toxic dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) a Toxic Equivalence Factor (TEF) of one, and each of the other 16 dioxins and furans a rating of less than one to reflect their toxicity. The emission in terms of I-TEQ is the sum of the emission of each substance multiplied by its TEF. The reason that I-TEQ is the preferred reporting mode is that it gives a better indication of the environmental and health impacts of the substances because it is directly related to their toxicity. Further, I-TEQ is internationally recognised as a consistent and effective way to report the emissions of these substances.

Using I-TEQ is the agreed protocol for PRTRs such as the European Union EPER and Canadian NPRI. The US TRI program does not report dioxins and dioxin-like substances in terms of I-TEQ, however, it does require reporting of the individual congeners.

The National Dioxins Program, established by the Australian Government to improve knowledge of dioxins in Australia, reports emissions of dioxins in terms of I-TEQ.

The objective is to require reporting of polychlorinated dioxins and furans as the TEQ amount to make the NPI consistent with standard international practices.

The alternative to changing the NEPM is to do nothing. This will mean that the NPI continues to be out of step with other national and international reporting programs.

Changing to TEQ reporting for dioxins and furans will require the relevant reporting materials to be updated. This can be achieved at minimal cost. There will need to be some communication activities with facilities likely to have a reporting requirement for dioxins and furans. Such facilities are also likely to have some costs, albeit minimal, in changing their reporting systems.

5.29 INCLUSION OF POLYCYCLIC AROMATIC HYDROCARBONS (B[A]PEQ) DEFINITION

Polycyclic Aromatic Hydrocarbons (PAHs) are currently reported as a single substance that is obtained by calculating the total mass of the individual congeners. This leads to an overemphasis of the emissions of naphthalene, which is one of the PAHs of lesser toxicity. To reflect emissions which are linked more closely to the health and environmental effects of these substances, it is more desirable to have a reporting requirement based on the TEQ amount of emissions when compared to Benzo[a]pyrene.

The objective is to require reporting of PAHs as the TEQ amount.

The alternative to changing the NEPM is to do nothing. The benefit of doing nothing is that while (arguably) using a TEQ-type definition may provide data that is linked more closely to the health and environmental effects of these substances, it would certainly be a smaller list than the current NPI 'definition':

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 chemicals. Some of the most commonly occurring polycyclic aromatic hydrocarbons are acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene.

The change will provide data that is linked more closely to the health and environmental effects of these substances. Changing to TEQ reporting for PAHs will require the relevant reporting materials to be updated. This can be achieved at minimal cost. There will need to be some communication activities with facilities likely to have a reporting requirement for PAHs. Such facilities are also likely to have some costs, albeit minimal, in changing their reporting systems.

6 NEPM IMPLEMENTATION

6.1 PROPOSED DATE FOR VARYING THE NEPM

The NEPC Acts set out in detail the process for making and varying NEPMs. These processes include a statutory consultation period of a minimum duration on the draft NEPM and impact statement.

For the variation to the NPI NEPM, the draft variation and impact statement will be released for public consultation for the statutory two-month period starting in July 2006.

It is envisaged that the final varied NEPM will commence on 1 July 2007. Some requirements have the potential to be implemented in a staged manner.

The NEPM, as varied, will require implementation through the NPI implementation instruments established in participating jurisdictions. The time taken to achieve variations to these instruments will depend on the nature of those instruments. Where principal legislation needs to be passed through Parliament, parliamentary business priorities and other factors will have an effect. If a regulation or other non-parliamentary instrument is appropriate, there may be compulsory assessment and consultation procedures at jurisdictional level. It is anticipated variation processes for jurisdictional instruments will commence immediately after the NEPC decision.

The process for developing the variation to the NPI NEPM commenced with the Review of the NPI in April 2005. In order to assess the potential impacts of the Review recommendations on all stakeholders, and taking into account the objectives of the regulators, a high level of cooperation from stakeholders was considered desirable. Public comment on the Review from interested parties was sought for two months in July/August 2005 with a total of 34 submissions received, the majority of which focused on greenhouse gases and transfers.

EPHC/NEPC considered the Review results and agreed to initiate a variation process for the NPI NEPM and the scope of the variation.

An NPI NEPM variation project team consisting of representatives from the Australian Government, New South Wales, Victoria, Queensland, Western Australia and Tasmania has been formed to undertake the NEPM variation process. A Technical Advisory Panel (TAP) consisting of nine members with expertise in a wide range of areas including toxicology, health and environmental risk assessment and waste management has been formed to provide technical and scientific advice on specified matters.

The draft NEPM variation and its associated impact statement have been developed by the project team with significant input from the TAP.

A Jurisdictional Reference Network (JRN), consisting of representatives from all participating states and territories, and a Non-Government Organisation (NGO) Advisory Group, consisting of representatives from eighteen industry, business, environmental and community peak bodies, have been established. Meetings with the JRN and the NGO Advisory Group were conducted on 7 April 2006, and feedback from these forums and from subsequent written comments has been taken into account in developing the variation documentation.

Information has also been exchanged and briefings provided to representatives of the joint EPHC/Ministerial Council on Energy Policy and Technical Working Groups and to the consultant engaged by the Policy Working Group to undertake an analysis of the costs and benefits of a national greenhouse and energy reporting framework.

The NEPC Acts require that both the draft NEPM variation and the impact statement be made available for public consultation for a period of at least two months. It is envisaged that this consultation period will occur in July/September 2006. The views of stakeholders on these documents will be sought through public forums in all Australian capital cities, and written submissions on them are encouraged.

Following the public consultation period, the NEPC is required to prepare a summary of the issues raised in submissions and responses to them. NGO Advisory Group and JRN views on this summary will again be sought. In deciding whether or not to make the NEPM variation, the NEPC must take both the impact statement and the summary of submissions and responses into account.

Table 7-1 lists the documents released by the NEPC to facilitate public consultation on the NEPM variation.

Table 7-1: Documents released for consultation on the NPI NEPM Variation

No.	Title	Released
1	Draft NEPM Variation	July 2006
2	Impact Statement	July 2006
3	TAP Final Report	July 2006
4	Transfers Consultancy Report	July 2006

It is envisaged that the NEPC will consider making the NEPM variation in April 2007.

APPENDIX 1 CONSULTANTS BRIEF FOR TRANSFERS

Proposal for a consultancy to undertake and report on an analysis of the financial costs of the implementation of Transfers into the NPI

The Australian Government Department of the Environment and Heritage invites you to submit a proposal to undertake an analysis and report on the likely costs to industry reporters and jurisdictions of the inclusion of transfers to the National Pollutant Inventory

BACKGROUND

The NPI is an internet database <www.npi.gov.au> designed to provide publicly available information on the types and amounts of certain chemicals being emitted to the air, land and water.

Australia's National Pollutant Inventory (NPI) is one of a number of Pollutant Release and Transfer Registers (PRTRs) that have been adopted by OECD countries to provide publicly accessible information and, through disclosure, encourage cleaner production and in doing so drive down releases which may present risks to human health or the environment.

The National Environment Protection Council (NEPC) has commenced a variation process for the National Environment Protection (National Pollutant Inventory) Measure (NPI NEPM). As a result, NEPC Service Corporation and the Commonwealth have established a Commonwealth and Jurisdictional Project Team, and to assist with the substance issues, a Technical Advisory Panel.

The Technical Advisory Panel (TAP) has now submitted a report on transfers (at Attachment A - note that this document is technically a draft and is still commercial in confidence) which recommends a definition of transfers and identifies a preferred international substance-based framework that could be adopted by the NPI. Based on these recommendations and consistency with other legislative requirements, the following definition has been adopted:

“transfer” is the transport or movement, on-site or off-site, of substances contained in waste for:

- (a) containment;
- (b) destruction;
- (c) treatment which leads to
 - (i) reuse, recycling or reprocessing;
 - (ii) purification or partial purification;
 - (iii) remediation; or
 - (iv) immobilization.
- (d) energy recovery.

It includes the transport or movement of substances contained in waste to a sewerage system. It does not include the transport or movement of substances contained in overburden, waste rock or uncontaminated soil or rock removed in construction or road building.

“transfer data” for a substance, means an estimate of the amount of the substance transferred in a reporting period that identifies:

- (a) the type of transfer (for example, for containment, destruction, reuse, recycling or reprocessing, purification, remediation, immobilization or energy recovery);
- (b) the type and grade of containment or treatment, if applicable;
- (c) whether the transfer is on-site or off-site; and
- (d) the estimation technique used;

Transfer data will apply to the same list of substances and thresholds as for emissions data in the National Pollutant Inventory.

OBJECTIVES

The report should outline the financial costs of reporting of transfers and must include the elements outlined below:

- Investigation of guidance documents from international Pollutant Release and Transfer Registers (PRTRs) (such as the US Toxics Release Inventory (TRI), the Canadian National Pollutant Release Inventory and the European Pollutant Emission Inventory) to assess applicability for Australian reporting.
- Investigate other sources of information to develop estimation techniques for transfers.
- Comment on which industries types will be most affected and their likely concerns.
- Comment on the relationship of transfer data to existing waste tracking systems.
- Assess the likely need to perform chemical analysis of wastes in order for a facility to report or for jurisdictions to develop emission factors for waste reporting.
- Perform 3 case studies (from a major food processing facility, a metal manufacturing facility and a mining facility) outlining the likely cost of reporting transfers expressed as cost in staff time and cost for external work including chemical analysis and consultancy fees.
- Any other relevant information.

PRESENTATION OF FINDINGS

Representative(s) of the successful tenderer may be requested to present their findings at meetings of the NPI Project Team. Costs for travel and associated expenses should be identified separately in the tender.

Timetable - Request for Tender

Event	Date
Issue of Request for Tender	3 March
Closure of Request for Tender	10 March 2006
Notification to preferred Tenderer	17 March 2006
Commencement of services	20 March 2006
a) First draft of the report to be submitted to the NPI Project team for consideration.	17 April 2006 - COB
b) Comments received on draft report.	21 April 2006 - COB
c) Delivery of Final report.	1 May 2006 - COB
<i>Note: The timetable for completing the NPI Project team's NEPM Variation is very tight. There is no room for slippage in preparation and submission of the consultant's report.</i>	

The proposal

The proposal should contain:

- consultant's understanding of the research issues and the broader context;
- an executive summary of no more than two pages (complete proposal to be no more than 20 pages);
- clear outline of the proposed method and the rationale for such an approach case studies would be useful;

- detailed timeline;
- detailed breakdown of costs;
- an indication of demonstrated capacity to complete the task
- details of similar projects the consultant has worked on, including references; and
- an ABN number and specified consultant to be signatory to the contract.

Tenders should be emailed to debbi.e.lawrence@deh.gov.au by 4.00 pm Friday 10 March 2006

Selection will be on the basis of the response to the brief.

SELECTION CRITERIA

The assessment of proposals will be based on the following with the first being the highest priority:

- value for money;
- ability to meet the budget and timing of the project;
- quality and clarity of the proposed research methodology;
- demonstrated understanding of the brief;
- demonstrated organizational ability to undertake the research;
- demonstrated proposed methods to ensure data quality; and
- quality of the proposed personnel.

CONFLICT OF INTEREST

The consultant will be engaged using the standard Departmental contract which requires the consultant to declare any conflict or risk of conflict of interest. Where the Department establishes, from information provided by the consultant or from other information available to it, that a conflict of interest exists, such conflict may be grounds for excluding the consultant from consideration for this consultancy.

Proposals should include a statement addressing the possibility that a conflict of interest may result from the award of this consultancy. During the life of this consultancy, the successful tenderer will also be required to notify the Department of the Environment and Heritage in writing of any changes with regard to its conflict of interest status.

In the event that the Department establishes a conflict of interest exists after the engagement of the consultancy, the contract may be terminated by letter, in accordance with the terms and conditions of the contract.

SECURITY, CONFIDENTIALITY AND COPYRIGHT

The consultant and other people working on this project will be bound by the Public Service regulations regarding confidentiality. All information gathered in relation to the project is the property of the Australian Government. The successful consultancy is not at liberty to disclose any of this information to any other party.

APPENDIX 2
INDUSTRY NPI REPORTED COSTS ACROSS AUSTRALIA

Year	Average cost (\$)	Median cost (\$)	% \$200 or below	% \$1000 or below	% \$10,000 or below	% Above \$10,000	Average substances per report
1998/99	6,507	250	44%	69%	87%	13%	5.8
1999/00	3,901	667	24%	63%	92%	8%	8.4
2000/01	3,437	320	29%	63%	94%	6%	9.1
2001/02	2,442	500	37%	66%	96%	4%	11.6
2002/03	2,489	600	26%	61%	95%	5%	10.6
2003/04	2,897	700	28%	61%	94%	6%	10.3
2004/05	2,895	650	28%	65%	96%	4%	10.0
Overall	\$3,139	\$600	28%	63%	94%	6%	n/a

NPI reporting costs are averaged from the costs reported by 7,460 facilities over the seven years of the NPI program

A speculative breakdown of average annual NPI reported cost per facility

Activity	Estimated Time (h) per report	Primary staff effort type	Activity cost	Approx % of total report cost
Understanding compliance requirements	8	Technical	\$600	18.5%
Data collection/calculation	24	Senior technical	\$2400	74%
Administrative reporting cost	5	Administrative	\$250	7.5%
Total reported cost	37		\$3250	100%

Note that estimates have been made:

1. in round figures resulting in a slightly larger estimate of total reported cost.
2. using approximations of administrative staff salary \$50,000pa (equivalent to \$50/h), technical staff salary \$75,000pa (equivalent to \$75/h) and senior technical staff (or chargeable hours consultant) salary \$100,000pa (\$100/h).

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