THE BUREAU OF METEOROLOGY

SUBMISSION

TO THE

PRODUCTIVITY COMMISSION
INQUIRY INTO COST RECOVERY ARRANGEMENTS BY COMMONWEALTH GOVERNMENT REGULATORY, ADMINISTRATION AND INFORMATION AGENCIES

November 2000

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SUBMISSION BY THE BUREAU OF METEOROLOGY

EXECUTIVE SUMMARY

In the context of the terms of reference of the Cost Recovery Inquiry, the Bureau of Meteorology is primarily an information provider. The Bureau is a statutory body established by the *Meteorology Act 1955* to provide a wide range of meteorological and related services in the public interest generally and for the specific benefit of a number of major community and industry sectors identified in the Act. The Bureau's operation of the official national meteorological infrastructure and most of the weather and climate services it provides to the community at large have the non-excludability and non-rival consumption properties of public goods. It also provides a wide range of specialised services with mixed public-private and purely private good characteristics.

2. The Bureau's basic infrastructure and public good services are appropriation funded, its specialised mixed public-private good services are mostly provided on the basis of recovery of the incremental cost of their provision and the private good services, which it provides in competition or potential competition with the private sector, are charged at commercial rates with the profit returned to Consolidated Revenue.

Extent of Cost Recovery

3. In a total annual cost of operation (1999-2000), in accrual terms, of $202.9 million the extent of cost recovery for the provision of services by the Bureau of Meteorology may be summarised as follows:

- Cost of basic infrastructure (appropriation funded) $ 125.3 million
- Cost of basic public services (appropriation funded) $ 50.8 million
- Cost of services provided for the cost of access $ 0.7 million
- Cost of services to aviation (cost recovered) $ 13.0 million
- Cost of services to defence (cost recovered) $ 3.1 million
- Other cost recovered services[1] $ 4.6 million
- Services provided on a commercial basis $ 9.0 million

1 This component does not include revenue received to support research etc.

Thus in a total cost of operation of $202.9 million, the costs recovered for the provision of services from sources other than directly from government appropriations are $30.4 million or 15% of the cost of operation of the Bureau.

Rationale for Cost Recovery

4. The overall rationale for the Bureau's cost recovery and charging policies is based on a substantial body of analysis of the economic benefits and costs of meteorological services and of funding and pricing policies for meteorological service provision around the world. The rationale for not seeking to recover the costs of operation of the Bureau's basic infrastructure and general public services is based on the inherently public good nature of most meteorological data, products and services and the overall benefits to Australia (in both efficiency and effectiveness terms) of the free and unrestricted international exchange of meteorological data and products which enables all countries, and especially Australia, to benefit to the maximum from the total body of global meteorological information at minimum total cost. This arrangement is based on both economic and technological considerations and policy judgments on the level of overall benefit to Australia from international cooperation and free exchange. It is estimated that, under any realistically conceivable market framework for international trade of basic meteorological data, the cost to Australia of maintaining its current level (quality and quantity) of meteorological service provision would rise by a factor of two to ten or more.

5. In economic terms, the rationale for the provision of basic public information, forecast and warning services free to the community at large through the mass media rests on the fact that, because of their public good nature, the total national economic benefit from these services is the sum of their value to every individual decision maker; and the total economic benefit is therefore the greater the more widely they are made available and consumed.

6. The Bureau's rationale for charging individual users the full costs of access to the freely available public services is that once it has fulfilled its general public safety and welfare obligations to the community at large by ensuring that all who need to receive the basic service information are reasonably able to do so through the mass media (or the internet), any additional costs that are incurred by the Bureau to make the information available to suit the convenience of individual users should be met by those users and not by the government.

7. The Bureau's rationale for charging the incremental service production costs of statutorily or regulatorily required services for, say, civil aviation and defence is that:

- there are strong public interest reasons for ensuring that the meteorological information used for such purposes is professionally sound, internally consistent and, most importantly, consistent with the information that the same user community would receive through the mass media;
- it is in both the user and the broader community interest that the costs to these major user sectors be kept as low as possible and the services provided as efficiently as possible by drawing on economies of scope and scale with the public good services to the community at large;
- such an arrangement is most supportive of the stability of the global regime for the provision of services to international civil aviation under the auspices of the Chicago Convention.

8. The Bureau's rationale for charging at commercial rates for specialised private-good meteorological services provided in competition or potential competition with the private sector is a combination of the requirement for competitive neutrality and a long-standing commitment to the progressive development of a professionally competent and flourishing private sector meteorological service industry in Australia. The Bureau believes that the overall national interest will be best served if the wide range of specialist professional meteorological expertise resident in the Bureau (which is essential to fulfillment of its public interest obligations) can also be drawn on to meet the many special weather and climate related needs of individuals, businesses and agencies in a way which has the potential to open up new Australian and overseas markets in specialised meteorological service provision - especially by developing a cadre of Bureau staff with both meteorological and business competence who may themselves subsequently move out into the private sector. It considers that, provided the Bureau's commercial activities are carried out on a generally level playing field - with a slight bias towards arrangements which will favour gradual migration of business from the Bureau to the private sector over time - the needs of the customers of specialized meteorological services and the larger national interest will be best served.

Economic Effects

9. The economic effects of the Bureau's overall charging regime are believed to be broadly consistent with its objectives and rationale recognising, however, that there often need to be tradeoffs between the overall public interest and the individual interests of a particular economic sector or an individual business. This situation arises, for example, where the Bureau, for reasons of overall community safety and efficiency provides a freely available and internally consistent state of the art service even though, in its absence, limited market opportunities might develop for particular components of the service and for particular individual commercial service providers.

10. Taken as a whole, the Bureau considers that its charging/cost recovery regime contributes optimally to a situation in which:

- the economic efficiency of both public good and private good meteorological service provision in Australia is maximised;
- the combination of quality and accessibility of economically useful meteorological information means that the economic benefits to individual consumers and the economy as a whole is maximised;
- any government agency, business or individual consumer can access the best meteorological information that can be provided in Australia, as and when needed, for the minimum technologically feasible individual access cost and at no added cost to the taxpayer.

Costing Issues

11. Given the Bureau's overall costing and charging policy and model, significant practical issues arise in the costing of individual Bureau services, deriving, primarily, from the inherent subjectivity in locating the boundary, in any particular case, within the grey area between purely public good services, on the one hand, and purely private good services on the other. The task is further complicated by the need for consistency, or at least compatibility, with a range of marginally different approaches to activity/output/service costing by overseas National Meteorological Services with whom the Bureau must coordinate closely in the exchange and (on occasions) costing of meteorological data and products.

12. While, in principle, the Bureau's costing model for the individual elements of what is a necessarily highly integrated operation and set of services is fairly straight forward, there has been some historical policy arbitrariness in applying it as a charging model to recover the incremental cost of mixed public-private good services to civil aviation and defence. Thus, before the recent Service-wide transition from program budgeting to output budgeting, the Bureau applied a costing model in which slightly more of its administrative overheads were costed to individual services than would follow from strict pro rata allocation by output if the core data collection and processing operations of the Bureau were treated, as they are now, as a purely public good output in their own right.

Public Administration

13. The administrative aspects of application of the Bureau's cost recovery policies have become increasingly complex over the past decade and the overall transaction costs have increased significantly as a result of the requirement for transparency in compliance with a wide range of sometimes competing policy objectives including, of course, those of competitive neutrality.

14. The need to progressively replace sensible, practical judgement and mutually acceptable quid pro quos with detailed decision rules in dealing with inherently fuzzy costing interfaces has added to the administrative complexity of planning, management and service provision in meteorology. The recent introduction of the concept of a 'basic product set' of free information as a restricted subset of the more broadly defined 'basic service' of its 1980s charging principles has further added to the administrative complexity of meteorological service provision.

Technology

15. While a new Financial Management System presently being installed in the Bureau should enable some reduction in the individual transaction costs associated with administration of the Bureau's charging/cost recovery regime, the current trends in meteorological information technology in the digital age suggest that there may be net benefits to the community from progressively expanding the range of public good meteorological data and products that are made available on a completely free and unrestricted basis. The technology is becoming available to make a wide range of additional services available at zero or near-zero incremental cost (eg detailed location-specific weather forecasts from numerical prediction models) which, under current technology and charging policies, would be seen as mixed goods appropriate for at least incremental cost recovery.

16. The Bureau believes, in particular, that provided the associated legal, public policy and safety issues associated with such an approach can be satisfactorily resolved, the overall benefit to the community and the economy will be maximised through a philosophy of seeking to maximise free public access to all its publicly funded infrastructure, data and products with a developing private sector making use of the freely available information as the basis for preparation of specialised value-added services to individual customers.

International Issues

17 The Bureau's cost recovery policies are intimately linked with a complex set of international scientific, technological and policy considerations which flow from its overriding objective of maximising the benefits to Australia from international cooperation under the auspices of the World Meteorological Organization (WMO) which operates as one of the specialised agencies of the United Nations.

18 While there is currently some tension and latent instability in the WMO framework for international cooperation in meteorology resulting from the imposition of charging models in some countries that are not robust to the WMO principle of free and unrestricted data exchange, and an international meteorological data war was only just averted in 1995, the Bureau is meticulous in ensuring that its own policies and practices are compatible with, and work to enhance, the robustness of the international system. In this context, the Bureau has been particularly concerned about the implications of international moves towards a WIPO (World Intellectual Property Organization) data base treaty and, in collaboration with other government science agencies through the Coordination Committee on Science and Technology (CCST) has sought to strengthen the Australian commitment to the free and open exchange of basic scientific data including, in particular, meteorological and related environmental data.

19 While strongly supportive of the general thrust of the policy principles recently advocated (Stiglitz et al, 2000)[2], in the US context, for definition of the role of government in a digital age, the Bureau sees short-term pragmatic as well as strong long-term public interest considerations favouring stronger emphasis on the 'single official voice' concept of forecast and warning service provision than applies in the US. Given that the costs of operating a National Meteorological Service to a particular standard of performance are much more closely related to the area covered than to the size of the population served, Australia is at a major funding disadvantage relative to (say) the US in harnessing the level of tax-payer and political support needed to fund the provision of state of the art public meteorological services. The Bureau thus considers that, relative to most other advanced countries, the Australian circumstances of large area, small population and high weather vulnerability impose a special requirement for the government funded meteorological infrastructure and public services to be clearly seen by the taxpayer as such, whether by branding, attribution or legislated monopoly provider status in certain areas.

20 The Bureau believes there are significant risks to the long term public interest in having the basic public good infrastructure partly funded from revenue from its commercial services which could, at a later date pass to the private sector in circumstances where the international free exchange provision would prevent it (the Bureau) from obtaining offsetting revenue generation from data sale. It thus considers that the long term continuity and integrity of the national climate record require a strict funding separation of the public good national meteorological infrastructure and public services from those activities which are carried out on a user-pays basis.

[2] Stiglitz, J. E. , Orszag, P. R. and Orszag, J. M. (2000). The Role of Government in a Digital Age. Commissioned by the Computer and Communications Industry Association, October 2000.

PRODUCTIVITY COMMISSION INQUIRY INTO COST RECOVERY ARRANGEMENTS BY COMMONWEALTH GOVERNMENT REGULATORY, ADMINISTRATION AND INFORMATION AGENCIES

INTRODUCTION

This submission has been prepared by the Bureau of Meteorology in response to an invitation from the Productivity Commission Inquiry into Cost Recovery Arrangements by Commonwealth Government Regulatory, Administrative and Information Agencies. In this context, the Bureau of Meteorology is primarily an "information" agency. Access to reliable information on past, present and future weather and climate and the receipt of accurate and timely warning of dangerous meteorological events are widely seen as a basic community necessity and right, and the provision of essential meteorological services has long been accepted as a fundamental responsibility of government of all countries. However the public funding of meteorological services has come under increasing pressure in recent decades as a result of more and more claims on limited taxation revenue and a greater emphasis on application of the user-pays principle for government services. In collaboration with its counterpart National Meteorological Services (NMSs) in other countries, the Bureau of Meteorology has thus become deeply involved in examination of the meteorological dimensions of the issues being considered in the Cost Recovery Inquiry. The purpose of this Submission is to explain the cost recovery framework developed for meteorological service provision in Australia and its implications within the larger framework of international intergovernmental cooperation in meteorology.

BACKGROUND

2. The Bureau of Meteorology is a statutory body established by the *Meteorology Act 1955* to provide a wide range of meteorological and related services in the public interest generally and for the specific benefit of a number of major community and industry sectors identified in the Act. A copy of the Meteorology Act is at Attachment A. The overall mission of the Bureau is to observe and understand Australian weather and climate and provide meteorological, hydrological and oceanographic services in support of Australia's national needs and international obligations. A copy of the Bureau's Charter is provided at Attachment B.

3. The Sections of the Meteorology Act which are of particular relevance to the issues being considered in Productivity Commission Cost Recovery Inquiry are as follows:

Section 6 (2) The Bureau shall perform its functions under this Act (defined in the Act) in the public interest generally and in particular-

(a) for the purposes of the Defence Force;

(b) for the purposes of navigation and shipping and of civil aviation; and

(c) for the purpose of assisting persons and authorities engaged in primary production, industry, trade and commerce.

Section 8 The Director may, subject to any directions of the Minister, make charges for forecasts, information, advice, publications and other matter supplied in pursuance of this Act.

4. The Bureau currently operates both as a statutory body reporting to the Parliamentary Secretary to the Minister for the Environment and Heritage and as an agency within the Department of the Environment and Heritage responsible for the achievement of the Portfolio Outcome No 2 of the Department of the Environment and Heritage - Australia benefits from meteorological and related sciences and services.

5. The Bureau's original charging policy dates from a comprehensive 1976 independent Committee of Inquiry into the Bureau of Meteorology (CIBM) and a subsequent internally developed policy document, endorsed by governments, on the relative roles of the Bureau and the private sector in the provision of meteorological services in Australia. This was further elaborated and formalised following the recommendations of the 1986 report of the House of Representatives Standing Committee on Expenditure (HRSCE) Inquiry into Meteorological Services. In 1988, the then Meteorology Policy Committee endorsed a set of Charging Principles and a new approach to provision of commercial specialised services by the Bureau. The Bureau's charging policy was elaborated in a *Charging Manual* that set down the policy, described the history and rationale behind it, and specified how charges were to be set. Underpinning this policy were the twelve principles (Attachment C) which reflected:

- the primarily public interest role of the Bureau (as prescribed in the Act);
- the public good characteristics of most Bureau activities and services;
- the recommendations of various inquiries relating to charging for services; and
- the implications of Australia's commitment to various international Conventions and Agreements related to meteorological data exchange and service provision.

In accord with the *Charging Manual*, standard rates were reviewed and adjusted every six months and an internal Charging Policy Review Committee met about four times a year to review operational procedures.

6. The issues associated with funding of the public good components of the Bureau's operations and the role and scope for provision of a range of user-specific cost-recoverable and commercial services were again canvassed by a 1995-96 Review of the Operation of the Bureau of Meteorology (known as the Slatyer I Report – Attachment D) and a 1996-97 study of the scope to enhance revenue generation in the Bureau of Meteorology (entitled Capturing Opportunities in the Provision of Meteorological Services and known as the Slatyer II Report – Attachment E). Government decisions on the recommendations of the reports have resulted in the development of four broad categories of charging for the Bureau's services, namely:

(a) a basic product set (provided free through the mass media and the Internet);
(b) services at cost of access (services which are themselves provided free of charge but for which the user is required to meet the costs involved in accessing them either by phone, fax or the Internet);
(c) incremental cost recovery (more specialised services which are developed for a special sector or user group such as aviation and defence and for which the incremental costs that the Bureau must incur in producing them are recovered from those for whom they are provided); and
(d) commercial services (for example, special investigations or tailored forecasts for individual customers) undertaken in open competition with the private sector by the Bureau's Special Services Unit.

A copy of the final (1999) Government response to the Slatyer II recommendations is at Attachment F and the table of contents of the Bureau's (draft) Charging Manual revised in line with these

decisions, and including a revised set of Charging Principles, is at Attachment G.

Nature and Extent of Cost Recovery

7. Figure 1 is a schematic representation of the approximate relationships amongst the various components of meteorological service provision with a distinction made between information for national and international use and categorisation by type of economic good highlighting the distinction between public good, mixed public and private good and private good. The free exchange of essential information across international borders under the Convention of the World Meteorological Organization (WMO) was recently reasserted through Resolution 40 of the 1995 Twelfth World Meteorological Congress following a period of international difficulty and the threat of breakdown of international cooperation in meteorology on which all nations, and especially Australia, are highly dependent. A copy of the WMO Policy and Practice for Exchanging Meteorological Data is at Attachment H. The overall economic framework for provision of meteorological services at both the international and national levels has recently been summarised in papers by Zillman (The National Meteorological Service – Attachment I) and Freebairn and Zillman (Attachments J and K).

<table>
<tr><th>ECONOMIC CLASSIFICATION</th><th>INTERNATIONAL EXCHANGE</th><th>SERVICE CATEGORY</th><th>CHARGING REGIME</th></tr>
<tr><td>PRIVATE GOODS</td><td rowspan="2">RESOLUTION 40 ADDITIONAL DATA AND PRODUCTS</td><td rowspan="2">SPECIAL SERVICES</td><td>COMMERCIAL</td></tr>
<tr><td>MIXED GOODS</td><td>COST – RECOVERABLE</td></tr>
<tr><td rowspan="2">PUBLIC GOODS</td><td rowspan="2">RESOLUTION 40 ESSENTIAL DATA AND PRODUCTS</td><td rowspan="2">BASIC SERVICES</td><td>ACCESS CHARGES</td></tr>
<tr><td>FREE THROUGH MASS MEDIA</td></tr>
<tr><td colspan="4">BASIC INFRASTRUCTURE,
DATA AND PRODUCTS
(BASIC SYSTEMS – PUBLIC GOODS)</td></tr>
</table>

Figure 1
Schematic representation of the classification of meteorological data, products and services (it should be noted that the horizontal alignment of boundaries (broken lines) is approximate only, and may vary from case to case and time to time).

8. Within the broad philosophical framework represented by Figure 1, the Bureau of Meteorology provides a wide range of services to the community at large through (and in a close partnership arrangement with) the mass media. The Bureau does not attempt to charge the public for the universally available public services and it neither charges the mass media for the information it provides nor pays the media for delivery of the service in fulfilment of its obligations under the Meteorology Act.

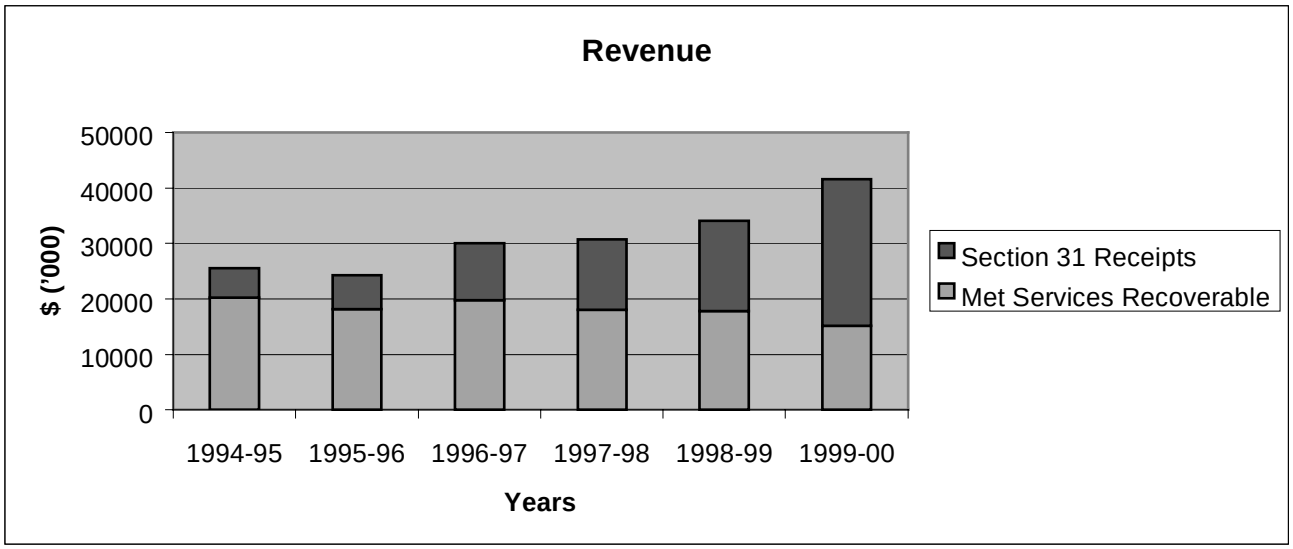
9. The Bureau of Meteorology recovers costs for those services that are deemed to be in the public interest, but for which it is not appropriate for the taxpayer to meet the full cost of provision. Charging therefore occurs under the following categories:

(a) services at cost of access (services which are themselves provided free of charge but for which the user is required to meet the cost involved in accessing them either by phone, fax or the Internet). Examples include:
- high resolution radar and satellite imagery;
- numerical model output which is primarily produced by the Bureau as internal guidance for its forecasters in the preparation of the forecasts and warnings in the basic product set (this includes wind, waves and swell model output);
- 1900 recorded message Telephone Weather Services;
- Weather-by-Fax;

(b) incremental cost recovery services (more specialised services which are developed for a special sector or user group such as aviation and defence and for which the incremental costs that the Bureau must incur in producing them are recovered from those for whom they are provided), examples include:
- Aviation Weather Services;
- Defence Weather Services;
- Other specialised services, such as services to the Sydney to Hobart Yacht Race;
- Publications, design rainfall information, climate services and products; and

(c) commercial services provided by the Bureau's Special Services Unit (SSU) in competition with the private sector subject to competitive neutrality requirements with the profit returned to Consolidated Revenue.

10. Table 1 lists the revenue the Bureau has received, by Bureau program, from all sources (except Government appropriation) over the past six years. The move to accrual accounting during 1999-2000 means that the method of reporting on all financial matters has now changed and some figures presented are indicative only. Figure 2 shows information from Table 1 in graphical form.



11. Table 1 also shows the total revenue as a percentage of total Bureau Expenditure. Thus in a total cost of operation of $202.9 million, the costs recovered for the provision of services from sources other than directly from government appropriations are $30.4 million or 15% of the cost of operation of the Bureau.

Table 1 Total Receipts ($'000)

Output/Program	Year					
	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00
Monitoring and Prediction	0	2	4	2	1	1
Scientific Development	0	0	0	0	0	109
Weather Services	9475	9497	10207	9112	8807	10014
Climate Services	268	320	328	232	242	187
Consultative Services	11	1	8	2	142	0
Hydrological Services	104	74	109	20	47	23
International Activities	0	0	0	0	0	0
Corporate Activities	10344	8278	9149	8701	8539	4817
Total Met Services Recoverable	20202	18172	19805	18069	17778	15153
Monitoring and Prediction	1370	1171	3463	2509	6896	5026
Scientific Development	331	718	675	177	170	3673
Weather Services	1679	2304	2588	3783	3815	7460
Climate Services	77	88	211	328	514	522
Consultative Services *	455	1305	2637	3622	2783	6207
Hydrological Services	99	57	44	5	129	664
International Activities	0	0	68	0	200	0
Corporate Activities	1276	476	568	2250	1788	2883
Total Section 31 Receipts	5287	6119	10254	12674	16295	26435
Miscellaneous	6	12	9	45	15	3

RATIONALE FOR COST RECOVERY

12. The Bureau of Meteorology is primarily a provider of public goods which:

- have a large social and economic value to the community;
- have a very high public visibility;
- depend on a large upfront investment in basic infrastructure and expertise;
- are heavily based on a substantial body of rigorous science, but also involve a significant risk of failure associated with the inherent limits of predictability of the atmosphere;
- are often most important to the community (eg in the form of advance warning of extreme and life-threatening events) in circumstances where they are most difficult to provide;
- must be provided with a high level of continuity and reliability, twenty four hours a day, three hundred and sixty five days a year;
- the community expect to be provided at the level of the international state of the art; and
- are required to meet the needs of future as well as of present generations.

13. The scientific basis of the forecasting process, its heavy dependence on international cooperation in the establishment and operation of essential data collection and processing systems and the predominantly public good characteristics (ie non-rivalry of use and high costs of exclusion) of most meteorological infrastructure, data and services mean that market mechanisms are largely incapable of supporting meteorological service provision and that most meteorological services in most countries are fully or largely funded through taxation.

14. A comprehensive national system for meteorological service provision must involve at least two fundamental components: an upstream provider of basic infrastructure and essential weather and climate information with public good characteristics and a value-adding downstream producer of specialised services with mixed public-private or private good characteristics.

15. Because it would be inefficient and impractical to duplicate the basic infrastructure and because its output of data and products displays the essential futures of public goods, the basic infrastructure and basic public services, if they are to be funded adequately, must be funded by taxation. The downstream provision of specialised services tailored to the needs of particular users or user groups, where there is actual or potential rivalry of consumption and costs of exclusion are relatively low, is, on the other hand, appropriately funded through user charges. The public good basic infrastructure and basic services will normally be provided by the National Meteorological Service. The value-adding private good specialised services may be provided either by the private sector making use of public good output from the basic infrastructure or by a part of the National Meteorological Service, desirably a financially decoupled part, having access to the output from the basic infrastructure on the same terms as the private sector.

16. While other funding models have been explored from time to time in some countries, involving for example, user contribution to the funding of the basic infrastructure, these appear to be unsustainable on an ongoing basis so long as nations maintain their commitment to the free and unrestricted international exchange of essential data and products.

17. In general, it has been the Bureau's experience that the above model works efficiently and effectively in identifying the charging regime for products and services. Where issues have arisen is more in the ability of the organisation to clearly define the "incremental" cost of provision of a particular product or service, and thus provide for cost recovery in a transparent and robust manner.

In the past, the primary reason for this situation has been that the accounting systems the Bureau has in place have not been sufficiently flexible to allow for the required level and detail of information to be collected and the resultant cost allocations to be determined. With the move to accrual accounting and the current project to implement a new financial management system in the Bureau, this situation should be significantly improved. There will however, by their very nature, always be some "grey" areas in the application of the cost recovery principles.

ECONOMIC EFFECTS

18. The overall economic framework for provision of meteorological services at both the international and national levels has recently been summarised in papers by Zillman (The National Meteorological Service – Attachment I) and Freebairn and Zillman (Attachments J and K).

19. The Bureau agrees with and supports the principle of commercial charging for meteorological services which have private good properties of rival use and excludability.

20. Furthermore, in the case of some mixed public and private goods, such as for example aviation, the international requirements for meteorological advice to be provided from an approved and/or accredited source may result in a perceived monopoly situation. Under the international Convention on International Civil Aviation, the Bureau is the designated Meteorological Authority for aviation and in this position acts as the sole provider of official aviation meteorological services in Australia.

COSTING ISSUES

21. Given the Bureau's overall costing and charging policy and model, significant practical issues arise in the costing of individual Bureau services, deriving, primarily, from the inherent subjectivity in locating the boundary, in any particular case, within the grey area between purely public good services, on the one hand, and purely private good services on the other (refer Figure 1). The task is further complicated by the need for consistency, or at least compatibility, with a range of marginally different approaches to activity/output/service costing by overseas National Meteorological Services with whom the Bureau must coordinate closely in the exchange and (on occasions) costing of meteorological data and products.

22. In determining the cost of a product or service in a cost recovery environment, one area that requires closer inspection is that of how an overhead is determined and applied, especially when the service has been seen as being incremental to a basic service. The recent service-wide transition from program budgeting to output budgeting has resulted in the Bureau significantly reducing the overhead costs included in the cost recovery charges. This is particularly the case for the provision of aviation weather services.

23. The inclusion of capital costs in the cost recovery environment is difficult under the current accrual accounting working arrangements. Historically, the Bureau has included the "up front" cost of the purchase of the asset in the charge for the service. It is understood that from now on capital acquisition by a third party will not be included in the capital assets of the organisation and thus no capital depreciation funds will be provided. Thus, the replacement of the asset will need to be accounted for in the longer term charging framework. Another approach would be to charge the user of the product or service only for the depreciation costs for the capital item. A further possible option is to lease the capital equipment and recover the lease costs.

PUBLIC ADMINISTRATION ISSUES

24. The administrative aspects of application of the Bureau's cost recovery policies have become increasingly complex over the past decade and the overall transaction costs have increased significantly as a result of the requirement for transparency in compliance with a wide range of sometimes competing policy objectives including, of course, those of competitive neutrality.

25. The need to progressively replace sensible, practical judgment and mutually acceptable quid pro quos with detailed decision rules in dealing with inherently fuzzy costing interfaces has added to the administrative complexity of planning, management and service provision in meteorology. The recent introduction of the concept of a 'basic product set' of free information as a restricted subset of the more broadly defined 'basic service' of its 1980s charging principles has further added to the administrative complexity of meteorological service provision.

LEGAL AND CONSTITUTIONAL ISSUES

26. As indicated above, the Bureau's legal authority for the application of charges lies in Section 8 of the Meteorology Act of 1955:

> "8. The Director may, subject to any directions of the Minister, make charges for forecasts, information, advice, publications and other matter supplied under this Act."

27. The Meteorology Act itself is based on the provision of 51(viii) of the Constitution which empowers the Commonwealth to make laws in respect of "……..meteorological observations".

TECHNICAL ISSUES

28. From a meteorological services perspective, new technology can result in more (increased quantity) and better (improved quality) products and services. The Bureau believes, in particular, that provided the associated legal, public policy and safety issues can be satisfactorily resolved, it should proceed on the basis of an overall philosophy of implementing technological advances with a view to maximising free public access to all its publicly funded infrastructure, data and products.

29. The Bureau is using the Internet and other electronic information transfer mechanisms as components of its key delivery mechanisms for both free services and cost recovery services. The Bureau has implemented the Australian Meteorological Data and Information Services System (AMDISS), aimed specifically at improving access to Bureau products and services. AMDISS is expected to provide a uniform access system for users seeking meteorological, hydrological and oceanographic data and products. The available data and products will be both real-time and non-real-time. It is planned that data and products will be supplied by AMDISS under the existing charging regimes and it will be linked to the Bureau's financial and information management systems. Sales will be recorded in the Sales Ledger as well as in a variety of subsidiary files. Both cash and credit transactions will be supported. Management information will enable performance monitoring and market research to be conducted.

30. Two of the major outstanding issues associated with the implementation of AMDISS are:

- Identification of a suitable charging model that allows for distinct differences between the

number of accesses required by users to get information and the total volume of information that is obtained. That is, should the person who makes a number of regular accesses to obtain simple temperature information pay the same amount for each access as a user who downloads large volumes of numerical model output. The same systems are required for both types of access.

- The implementation of e-commerce is proving a challenge for the Bureau. The overhead associated with such a system may have an impact on the charge for the products and services that is not consistent with the cost of the product or service itself.

INTERNATIONAL ISSUES

31. Meteorological monitoring, research and service provision is one of the most inherently international of all fields of scientific human endeavour. By virtue of its need to draw on the contribution of all countries and its capacity to make use of the total contribution to enhance the safety and welfare of the citizens of all countries, it requires, and is based on, a high level of mutual support and cooperation between nations.

32. There are several factors that make this high level of cooperation and coordination essential.

- Because of the globally interactive nature of atmospheric processes, scientifically-based prediction of atmospheric behaviour (and hence of weather and climate) for any individual country for periods beyond a day or two ahead requires immediate access to large amounts of data from the whole globe;
- Since it would be impossibly expensive and politically impractical for each individual country to establish its own networks over the entire globe, it is in the interests of all countries to maintain a situation in which, in exchange for their own data (which in most cases will represent no more than a few percent of the global total coverage), they will receive all the data they need from the rest of the world;
- Because to be useful for both historical climate change analysis and modelling for prediction purposes, the global data set must be homogeneous, timely and continuous, a high level of standardisation, coordination, technology transfer and mutual assistance between nations is essential.

33. The inherently international and cooperative nature of meteorology, evident already more than a century ago, led to its becoming one of the first fields of systematic global cooperation through a special international framework and, since 1950, the only individual field of science through a discipline-specific specialised agency of the United Nations – the World Meteorological Organization (WMO).

34. The WMO provides a unique international framework through which its 185 Member States and Territories coordinate the collection and exchange of information on the state of the global atmosphere, ocean and inland waters and support the provision of essential meteorological and related services in all individual countries and for international shipping and aviation. Although premised on cooperation and avoidance of coercion or competition between countries, the WMO Convention and Regulations and the associated Resolutions of its governing bodies provide a detailed intergovernmental framework for the integrated operation of the total global meteorological service system.

35. The above international arrangements result in the Bureau having access to meteorological data and information generated overseas, including satellite data, meteorological observations and

forecast guidance material. It is estimated that, introduction of any realistically conceivable market framework for international trade of basic meteorological data would result in a rise in cost to Australia of maintaining its current level (quality and quantity) of meteorological service provision by a factor of two to ten or more. The international exchange of this information is provided on a free of charge basis. Any review of the charging policy framework under which the Bureau works, must take into account these important and critical international arrangements.

CONCLUSION

36. The Bureau regards the issues of cost recovery for government services being examined by the Commission to be extremely important to the continuing efficiency and effectiveness of its own operations. The Bureau considers that the cost recovery framework for meteorological service provision in Australia is near optimal although its application is in need of considerable streamlining and simplification. It is essential that any revision of overall cost recovery arrangements be robust to the international exchange of meteorological data and products on which Australia's meteorological services are highly dependent.