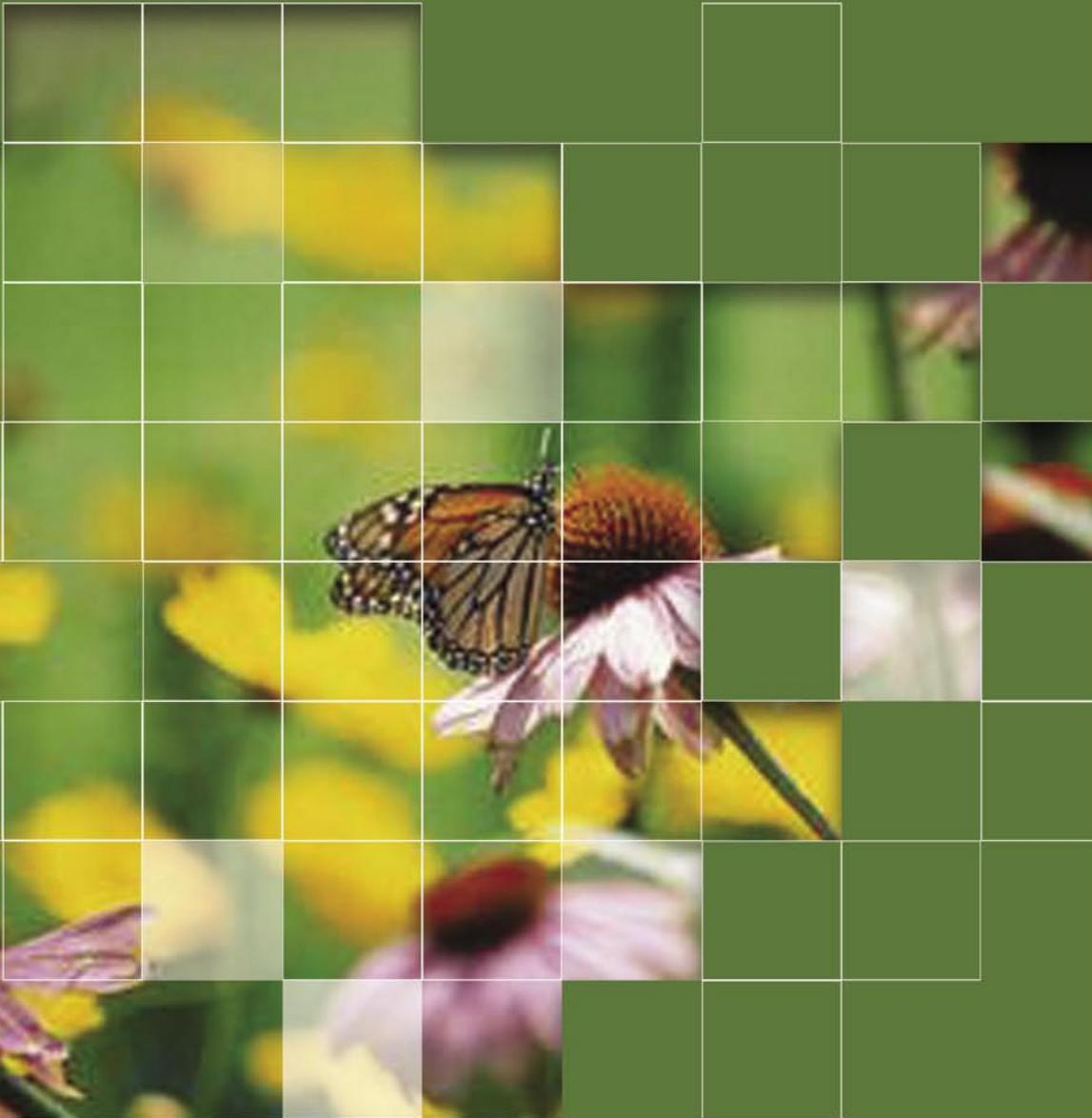


# END-OF-LIFE MANAGEMENT OF ELECTRONICS

## Implementation of an ARF-Financed and Stakeholder-Managed System

Prepared by  
Electronic Manufacturers' Coalition  
for Responsible Recycling



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**MAY**  
2005

# □ □ Introduction

The Manufacturer's Coalition for Responsible Recycling (Coalition) is a group of electronics companies that have come together out of a belief that the Advanced Recovery Fee (ARF) is the best approach to financing management of end-of-life electronics at the state and national levels. Coalition companies include major manufacturers in the consumer electronics sector including the major manufacturers of televisions, as well as personal computer and monitor manufacturers/sellers such as IBM, Sony, Sharp, Panasonic, JVC and Samsung.

The Coalition companies have been active participants in the development of end-of-life management systems in Europe, Japan and elsewhere, each with different conditions and stakeholder interests. The Coalition members are committed to developing the best system for the U.S., and many were active participants in the National Electronic Product Stewardship Initiative (NEPSI) dialogue. Also, many have provided funding for collection events and other pilot initiatives. While Coalition members continue to prefer a national resolution to this issue, the inability to reach agreement on a national system leads us to propose a system for implementation at the state level that will work effectively and can transition to an eventual national system.

***This paper describes an ARF-financed recycling system for electronic products that is managed by a shared responsibility framework and designed for state implementation. This proposal is modeled on the system developed in the NEPSI dialogues.***

**Part 1** describes the proposed system including its benefits and drawbacks.

- 1.1 Background
- 1.2 Summary of the Proposed System
- 1.3 Primary Benefits and Drawbacks
- 1.4 Detailed Description, including Recommended State Implementation Provisions

**Part 2** provides the Coalition's view of producer responsibility.

**Part 3** concludes and summarizes the main arguments.

**Part 4** consists of attachments to provide greater detail on selected issues. They include:

- 4.1 Model state legislation
- 4.2 Responses to Critiques of the ARF Approach
- 4.3 EPEAT – Incentivizing Environmental Design through the Market

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# □ □ Part 1

## **The ARF Financed, Stakeholder Managed System**



### **1.1 Background**

The Manufacturers Coalition believes that an ARF-financed system with active stakeholder management, as broadly outlined in the NEPSI dialogue, provides a sound basis for moving forward, both at the national and state levels, with an efficient and effective system for collection and recycling of electronic products. This paper presents the Manufacturers' Coalition's model for state-level implementation of an electronics recycling system.

State-level action is not the ultimate solution – this is a national challenge that should be addressed at that level. However, states can contribute to a national solution by adopting legislation that includes essential consistent elements and defers to a national solution when implemented.

### **1.2 Summary of the Proposed System**

The underlying principle of the Coalition's proposal is that the stakeholders in the electronics' chain of commerce should manage the end-of-life system, and that stakeholders' responsibilities should be proportionate to their ability to implement and affect the system. This is the principle of shared responsibility.

- » It places manufacturers in a key role as the primary managers of the recycling infrastructure through governance of the management entity.
- » Consumers provide system funding through paying the ARF, and they discard their end-of-life products at appropriate collection stations.
- » Retailers and manufacturers that sell their products directly collect the ARF from the consumer and remit it as directed.
- » Recyclers compete to provide environmentally responsible collection and processing.
- » Government provides leadership by helping assure that all stakeholders perform their duties and the rules are followed.
- » Manufacturers, retailers, recyclers, and municipal governments voluntarily participate in collection of products, and are reimbursed for these activities from the ARF.
- » All stakeholders share responsibility to educate and inform the public.

The model developed in NEPSI<sup>1</sup> proposes **a hybrid financing system** whereby an initial system builds an infrastructure and cleans out historic product, and a future system can be instituted

<sup>1</sup> See section 1.4 for details on the NEPSI model. This is a greatly simplified introductory description.

when these challenges have been surmounted. Financial support for the initial system is provided by an **Advanced Recovery Fee (ARF)** – a visible fee paid by consumers at the point of sale.

The ARF is collected on retail sales of all PCs, monitors, TVs and large peripherals. While the NEPSI product scope includes only products that are sold to the public (residents) and small businesses or organizations, the Coalition sees benefits to including products that are sold to large commercial and institutional customers, that is, all sales.

Note that this is **not a traditional ARF** that is run by government. The ARF in this system simply provides funding, in an efficient and equitable way, while the system is structured so as to assure that management responsibilities are shared by stakeholders. Unlike a traditional ARF, the collected **funds will be managed by a private third-party organization (TPO)**. This organization will have a multi-stakeholder governance structure with majority industry participation. The TPO will use **competitive contracting** to manage end-of-life products. A portion of the funds, the **Collection Incentive Payment**, will pay for local collection so these costs are not left on government's back.

**At the appropriate time in the future the ARF may no longer be needed, or it may be determined that an alternative financing system is more appropriate.** The NEPSI proposal called for an eventual transition to partial cost internalization (PCI) based on government taking responsibility for collection, and manufacturers taking responsibility for recycling. However, the NEPSI stakeholders were never able to fully describe the design of a partial cost internalization system and how it would work in practice. The Coalition proposes a thorough stakeholder re-evaluation of the recycling system at a time-certain, with all options being on the table. This paper will not discuss the options at this time.

The system, based on NEPSI documents, includes several other essential elements:

- » A set of **interim actions** to be taken after an agreement is reached but before legislation puts the ARF-system in place.
- » A definition of **Base Service Level** that assures a consistent set of basic services, while providing local flexibility.
- » **A diverse collection network**, made viable by funds from the ARF, that builds on existing businesses and facilities to provide convenience to the public.
- » **A materials processing system** that is made cost-effective through competition and economies of scale.
- » Numerical **performance measures** for collection and processing.
- » **Standards for environmentally sound recycling** that are enforced through contracting procedures.
- » **A program to develop markets** for recovered products and materials that builds toward long-term self-sustainability.
- » Governing principles that assure a **level playing field** and **uniformity**.

NEPSI achieved consensus agreement on these elements, though detailed work is still needed to complete some documents. But in the NEPSI system there was **a missing piece – an alternative financing mechanism** that would allow, within the ARF structure, certain manufacturers to benefit from their initiatives to design more easily recycled products and to create internal recycling infrastructures by taking individual responsibility for the collection and recycling of their products. This was assigned to industry negotiators to develop.

The Manufacturers' Coalition believes there is a simple solution to this problem. Manufacturers that chose to establish their own collection and recycling systems should be free to do so, and they should be compensated for their actions by the TPO in the same manner as other collectors and recyclers. If their collection and recycling processes are more efficient, the marketplace will reward them.

**1.3 Primary Benefits and Drawbacks of the Coalition Proposal**

A chief advantage of the ARF-based financing approach is that, in having earned consensus support of the NEPSI stakeholders, it is far more implementable than any alternative approach. No other approach has been so thoroughly developed, nor been subjected to the extensive negotiations and mutual compromises by the diverse array of stakeholders represented.

Despite early misgivings about an ARF by many stakeholders, the Coalition supports this approach because it incorporates the contrasting interests of many diverse stakeholders into a well-balanced, functional whole. It has been thoroughly vetted to create a practical, efficient and effective system.

The immediate challenge that we face is to build and finance a collection and processing infrastructure that will manage the substantial backlog of historic product. The ARF offers the simplest, most straightforward, and most cost-effective approach to meet this challenge. It provides a predictable source of funds, pays for all returned products, adheres to principles of environmentally sound management, provides convenient collection opportunities, and does not place a financial burden on local governments.

<b>Benefits of the ARF-Based Approach</b>
» The ARF is a visible to the consumer. That delivers an educational message that consumption implies environmental and economic impacts at end-of-life, and that old products should be returned for reuse and recycling.
» The ARF system will not burden local governments with the costs of collecting and transporting products, since those costs are covered.
» The ARF provides a consistent and adequate source of funds for recycling of historic and orphan <sup>2</sup> products.
» The system will build efficiencies and economies of scale in the infrastructure through competitive contracting.
» The system will maximize local reuse, as described in Section 1.4.4.
» In contrast to internalized costs, which are taxed and marked up (typically 30 percent or more), the ARF cannot be marked-up by retailers nor have sales taxes applied.
» The ARF maintains a level playing field in the market because it is equitable for all products and sellers, and it offers the least opportunities for manufacturers and others to escape their responsibilities.
» The system will directly engage manufacturers in managing the end-of-life system through participation in the TPO.
» When implemented at a state level, the ARF-based system will most readily transfer to a national system when it emerges based on the NEPSI model.

While the Electronic Manufacturers Coalition supports the ARF-based financing approach, we realize that a number of concerns have been raised regarding the system. The Coalition believes

<sup>2</sup> Orphan products are those for which the manufacturer or successor is no longer in business. Some alternative financing systems do not pay for orphans, or they leave them to government, or they have a formula to apportion the costs.

that there are answers and/or fixes to these perceived drawbacks.

#### **Identified Concerns about the ARF System And Methods to Address those Concerns**

1. Enforcement on remote sales – by Internet, catalogue or phone– may be difficult for states.
  - » California has addressed the remote sales problem in their legislation by ensuring that any sellers of electronic products that do not collect and remit the fee will be ineligible for government procurement. This is a powerful incentive for remote manufacturers to collect and remit the fee on direct sales. In fact, major manufacturers who sell via the Internet voluntarily collect the California ARF.
  - » Moreover, enforcement is a concern with virtually all financing approaches. It will be difficult to force a remote manufacturer to develop and implement a collection and recycling system. Overall, the Coalition believes that the ARF will result in the highest level of compliance.
2. It is claimed that a flat fee on all products lacks any direct incentive for improved environmental design.
  - » In the Coalition model manufacturers will participate in managing the end-of-life system, and will work directly with the problems and opportunities in that system. This experience will provide an incentive to reduce costs by improving environmental design.
  - » Additionally, the Coalition proposes requirements for environmental design, such as imposition of the European Union Restriction on Hazardous Substances (RoHS) in states where the ARF model is implemented.
  - » Though the cost internalization approach would appear to provide a strong financial incentive for environmental design, the Coalition believes that this incentive is in reality very limited. See Section 1.4.12.
3. It lacks the simple, ideological appeal of simply making manufacturers responsible for their own products.
  - » Experience has shown that producer responsibility systems are not simple to implement.
  - » What the ARF lacks in ideological aesthetics, it makes up for with practical effectiveness.

#### **1.4 Detailed Description and Recommended State Implementation**

This section describes the elements of the Coalition model. It also includes recommendations that the Coalition makes regarding state implementation.

### 1.4.1 Product Scope

The product scope includes the list of products upon which the ARF would be levied, and also products for which collection and recycling would be paid for by the system.

- » TV/TV Monitors (CRTs and flat panels)
- » Stand alone computer CRT and flat panel monitors greater than 9 inches
- » Laptop/notebook computers
- » CPUs
- » Consumer desktop devices (printers and multifunction devices)

In addition to this list, small peripherals such as keyboards, mice, cables and speakers would be paid for by the financing system, but would not carry an ARF.

As opposed to limiting the ARF to sales to households and small business users, as does the NEPSI system, the Coalition sees benefits to including products that are sold to large commercial and institutional customers, that is, all sales. This has several advantages:

- » It solves the problem for all sectors of consumers and not just the public/small business sector.
- » It avoids confusion about what sales are covered and which are not.
- » It avoids confusion about what returned products are covered, and which are not.
- » It increases economies of scale and helps to minimize the cost per product.

#### **Implications for State Legislation**

- » Legislation must define the categories of Covered Products. This includes both:
  - › A list of products on which a fee will be charged, and
  - › A list of products which are eligible to be paid for by the financing system.
- » This may be the same list; however some products like smaller peripherals (keyboards, mice, etc.) will likely not carry a fee but would be paid for.
- » Legislation should establish which classes of customers will be covered – the public, small businesses/organizations and/or large commercial accounts.

### 1.4.2 Financing Mechanism

State legislation should establish an Advanced Recovery Fee<sup>3</sup> to be charged on all covered products, whether sold locally or via remote sales, such as the Internet, phone or catalogue sales. The fee should be adequate in order to cover the costs of collecting, transporting and processing all products that are returned into the system.

The ARF should be kept at a level that is just adequate to pay for the quality and breadth of services needed to meet the system performance goals and assure environmentally responsible management. It is proposed that the fee have a cap, which is estimated to be approximately \$10. It should have a mechanism to be lowered over time since it is believed that the maturing of the infrastructure will lower system costs.

<sup>3</sup>The ARF is basically an "advanced user fee" since the beginning-of-product-life leads eventually to the end-of-life.

The ARF should be variable by product type, so that any one product type covers its own costs, and some product types do not cross subsidize other product types. Televisions are likely to be more costly to recycle, especially since old console TVs add considerable cost.



#### Implications for State Legislation

- » Legislation should specify that the fee will be collected by the seller (retailer) at the point of retail sale for all sales in the state, whether by local retail establishment or by a remote seller.
- » The fee must be remitted by the seller to a designated authority, such as to a department of revenue, to a dedicated trust fund, or to a designated organization.
- » The seller should be permitted to deduct a specified percentage of the fee for administrative costs, e.g. 3 percent.
- » The fee should be capped. A \$7-8 cap should be adequate, but a higher cap, not to exceed \$10, may be prudent.
- » There should be a mechanism to adjust the fee to cover system financial needs, though not to exceed the cap.
- » The fee on each product category should cover the costs for that product type, depending on the costs to collect and recycle.
- » There should be a safeguard to prevent the monies generated by the ARF from being used for general government purposes.

#### 1.4.3 Fund Management

The management of the ARF money, including paying for collection and recycling services, is one of the more complex aspects of the system. NEPSI stakeholders worked on creative ways to manage the funds to assure maximum efficiency, to protect the fund from being raided for other purposes, and to engage stakeholders in realizing the ongoing success of the system.

**Models for Fund Management** Two very different models have been proposed for fund management, and each has been implemented in different settings.

» **Government-managed system** – Under California SB 20 the fee is passed into a State fund and the CA Waste Management Board provides funding for recycling services.

› Pros

- It is relatively simple to establish and there are many precedents.

› Cons

- Funds are not protected from diversion for general government uses.
- Governmental contracting has constraints on how funds are spent, which can significantly increase system costs.
- Government overhead costs can be relatively high.
- Government lacks strong incentives to constrain system costs.

» **Private TPO-managed system** – Under the NEPSI model and the Coalition's proposal, a private third-party organization (TPO)<sup>4</sup> is formed, under multi-stakeholder governance, but with significant representation of manufacturers. The TPO is a non-profit business entity that contracts for recycling services, assures environmentally sound recycling, manages data on system performance, is responsible for meeting performance goals, and handles other management functions. See also the Part 4 attachment for more detail.

› Pros

- This system will protect the fund from being diverted for other purposes.
- It engages the stakeholders, especially manufacturers, in managing the end-of-life system, incentivizing improvement in environmental design.
- Stakeholders share an incentive to constrain system and administrative costs because they have an incentive to keep the ARF as low as possible.
- A private TPO, operating under public oversight, can use more efficient and effective business practices in contracting and performance monitoring.

› Cons

- It can be more difficult to establish.
- There are few precedents for such a system in the U.S., although many exist in Canada and Europe.

The privately-managed system was preferred by NEPSI stakeholders over a government-managed system for several reasons.

- » It would greatly reduce the burden on government. New governmental programs should not have to be created if private enterprises can deliver the desired services.
- » It engages manufacturers directly in the management of the system.
- » It helps bridge the present disconnect between product design and end-of-life management by providing information to manufacturers to improve design for recycling.
- » It helps protect the fund from being raided by government for other purposes.

<sup>4</sup>Other names for equivalent organizations include: "Not-for-Profit Corporation"(NFPC), "Electronic Stewardship Association" (ESA), and "Producer Responsibility Organization" (PRO).

- » The recycling infrastructure is a business system and can be more efficiently managed by businesses than by government.

**Alternative Approaches for Forming a Private TPO** There is much to learn about the best way to organize a private non-profit organization that would use legislatively approved funds to run the end-of-life system. Some pilot projects<sup>5</sup> are currently being initiated to increase our understanding about these questions. See additional information in an attachment to this document.

There are three different ways that such organizations can be formed. The first is a voluntary initiative by industry:

**1. A Voluntarily Initiated Organization** Manufacturers can group together to form a TPO in the absence of any governmental requirements. This model has been implemented in Canada, Europe and Australia. It is often done in anticipation of, and as an attempt to influence legislation.

This model is currently in the early stages of implementation as the National Center for Electronic Recycling (NCER), organized by the MARCEE project of the Polymer Alliance Zone in West Virginia<sup>6</sup>.

The types of services that a voluntary organization could provide are described in Section 1.4.5 on the Interim System. These voluntary initiatives do not include a comprehensive funding method, and so are not seen as the total solution.

The other two ways of forming a private TPO involve legislation. These generally do include a funding method and so a part of a total solution.

**2. A Legislatively Established Organization** The legislation can create a TPO, establishing its membership, structure, duties and funding. This has been done in some Canadian provinces.

**3. A Legislatively Authorized Organization** Legislation can define the standards and authorities for a TPO and provide a mechanism for privately initiated entities to be licensed or contracted. Then funding could be disbursed to a licensed TPO, or more than one TPO, for specified services based on the volume of product handled. Generally it is required that the TPO submit a business plan as to how it intends to deliver services for approval by the environmental agency, as well as annual reports.

Option 2 establishes a single, exclusive TPO, which may be able to most efficiently contract for transportation and processing services, but must, as any monopoly, be carefully monitored to avoid inefficiencies. Option 3 can stimulate multiple TPOs, which would compete to secure product from collection entities and process at the lowest cost. The environmental agency could develop a TPO licensing or contracting process that stimulated efficiencies while assuring convenience of service and environmentally sound management.

<sup>5</sup> One is a TPO Pilot project in the Northwest with partial funding from EPA and currently seeking further funding from manufacturers.

<sup>6</sup> For up to date information contact Jason Linnell, Executive Director, National Center for Electronics Recycling, Parkersburg, WV, 304-374-8144, [jlinnell@electronicsrecycling.org](mailto:jlinnell@electronicsrecycling.org)

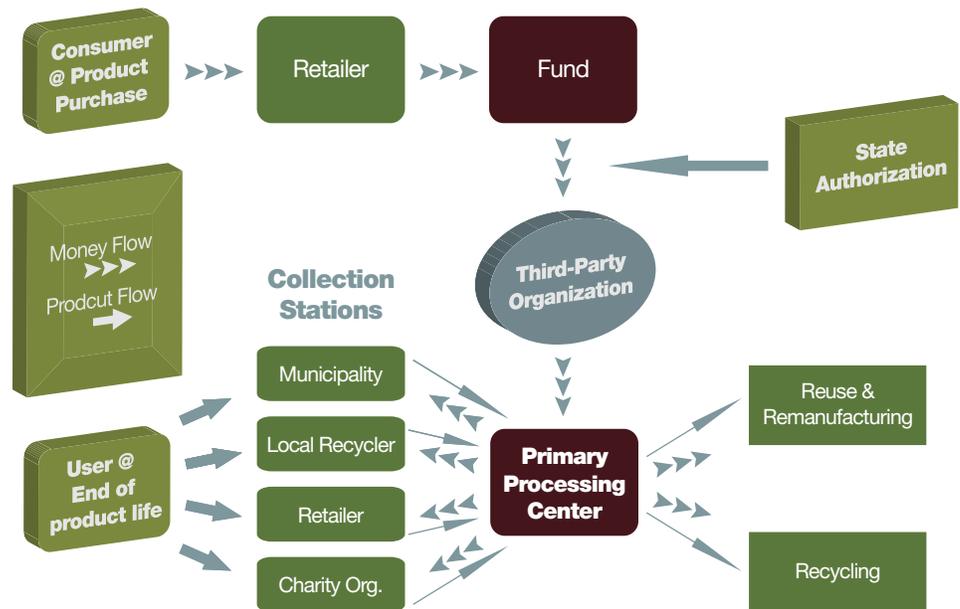
Implications for State Legislation
The Coalition recommends that state legislation form a private TPO for fund management via either direct legislative establishment or legislative authorization.
» The State needs to decide how it wishes to provide fund management, including the options for TPO formation, and develop their legislation accordingly.
» The TPO should be required to develop and submit a management plan for approval to the state environmental agency that describes how they will contract for services and select contractors, qualification standards and environmental requirements for processors, processor monitoring and auditing procedures, a plan for how performance goals will be met, and methods to provide public education.
» Legislation should require an annual report from the TPO, to be reviewed by the state environmental agency, and the agency should periodically provide a report to the legislature that documents the progress and effectiveness of the system.

**1.4.4 Collection, Transportation and Processing Infrastructure**

The NEPSI model includes guidance about the infrastructure in the document “Base Service Level”. The graphic on the following page depicts how the money and product would flow in the system considered by NEPSI. Variations on this model are feasible and NEPSI did not finalize any specific system.

**Flow of Dollars and Product** The following key principles are important in order to effectively and efficiently manage the collection, transportation and processing infrastructure:

- » Services should be provided through competitive contracting.
- » The number of contracts should not be too large, for the purpose of management effectiveness and to keep administrative costs to a minimum.
- » All product management services should adhere to high standards of environmental and worker health and safety protection.



**Role of Primary Processors** Contracts for processing and recycling services should be between the TPO and selected regional or local businesses and entities, which may be called Primary Processors. These entities are contracted to provide specific services:

- » Receipt of product from collection entities and payment of the Collection Incentive Payment, a pass through payment included in the contract
- » Processing the product for shipment downstream
- » Securing downstream product management, assuring adherence to environmental standards and tracking the downstream destination of product
- » Accounting for product and money and periodic reporting to the TPO.

There are several other services that these entities may provide at their own option, including:

- » Triage, sorting and/or processing for reuse – this should be encouraged at either the primary processor or the collection stations
- » Dismantling for recovery of components
- » Dismantling and/or shredding to separate materials into recycling streams
- » Recording of brand information and product serial numbers.

To achieve these principles the ARF-based system should employ competitive contracting, with environmentally sound management standards incorporated into all contracts. Which of these services are provided at a primary processor under contract to the TPO will be a function of the scale, available markets and business model.

**The Collection Network** The network of collection entities should be highly diversified with multiple locations in each community. This enhances convenience to the public. Many different types of entities can provide collection:

- » Retailers
- » Local computer assemblers (white box stores)
- » Electronics manufacturers
- » Charities and non-profit organizations
- » Local multi-material recycling centers
- » Municipal waste collection and recycling facilities
- » Waste haulers

There is no intent to require or mandate any of these entities to provide collection. Rather they should be incentivized to do so by covering their primary costs. Then electronics collections can be incorporated into ongoing business models.

Due to the large number of likely collection entities, it may be impractical for the TPO to contract directly with them. Rather, the contracted Primary Processors will, according to terms of their contract, provide pass-through payments of the Collection Incentive Payment to anyone who collects qualifying products from the public. This would likely be a flat amount per pound, though perhaps adjusted for rural collection sites, that will be calculated to cover the costs of a basic collection program. More costly collection efforts can be undertaken – for example on-call

<sup>1</sup> See section 1.4 for details on the NEPSI model. This is a greatly simplified introductory description.

curbside pick-up – but the additional costs would be the responsibility of the sponsor. Primary Processors would also pay for transportation of efficient volumes of material from collection sites to their door.

This approach should establish a broad and convenient collection network, but covering the basic costs of collection and allowing any entity to incorporate collection services into their business or operations. It would do so at the most reasonable cost by providing an adequate, but not excessive Collection Incentive Payment.

**How Does Reuse Prosper in this System?** Reuse plays an important role in both the NEPSI national system and the Coalition's proposed state approach. Encouraging reuse is important for several reasons:

- » It captures the highest environmental and economic value of still useful equipment.
- » It provides opportunities for local organizations and businesses to incorporate or expand reuse activities, and creates local jobs.
- » It reduces system cost by saving on transportation and processing.
- » It provides low-cost used equipment to local schools, organizations, communities and individuals, and helps to cross the digital divide.

The Coalition expects that most reuse will be initiated locally by charities, non-profit organizations and small businesses. Contractors under the ARF system will either work directly with reuse organizations, or encourage collection entities from which they receive product to work with such organizations to triage equipment for local reuse.

#### **Implications for State Legislation**

- » Legislation should specify qualified costs that will be covered by the ARF, including administration.
- » Principles should be spelled out for competitive contracting of services, the establishment of a diverse and convenient collection network, and programs to maximize reuse.

#### **1.4.5 Performance Goals**

The primary purpose of performance goals is to measure whether a system is meeting expectations and whether intervention is warranted. Goals should measure the two main parts of the product recovery system – collection and processing/recycling.

- » **Collection** There are different approaches to measurement of collection. A numeric goal can measure how effectively product is being recovered from the public in different areas and whether local services to the public should be enhanced. NEPSI recommended that a pounds/capita/year goal should be set for collection based on the achievement of the better-performing, long term collection programs in the US. The goal that NEPSI discussed was 1.75 lbs./person/year. Recent collection programs have exceeded this amount and a higher goal may be considered. In truth, due to the lack of good information about long-term results of collection, any number will be somewhat arbitrary.

Alternatively, in some communities it may be possible to measure the convenience of collection services and the amount of publicity through a more qualitative assessment, which may represent a more direct determination of the quality of the collection effort.

<sup>1</sup> See section 1.4 for details on the NEPSI model. This is a greatly simplified introductory description.



» **Processing/recycling** A numeric goal for processing or recycling measures how effectively recovered product is being managed for reuse or recycling by contractors. NEPSI relied on the goals set by the European program: the rate of component, material and substance reuse and recycling shall be 60 percent by an average weight per product category. This goal will ramp up to 70 percent in 5 years.

#### Implications for State Legislation

» State legislation should define performance goals for collection and processing/recycling, and direct the state environmental agency to establish and periodically revise numerical goals. Legislation may establish initial numerical goals.

#### 1.4.6 Environmentally Sound Management Standards

Environmentally sound management standards (ESM) for recycling are an essential part of any electronic waste recycling system, since the cheapest way to handle e-waste is not always the most responsible. The U.S. EPA has developed a set of ESM standards, with the intention of creating a verification system, which is one of the most difficult challenges in assuring ESM. The Coalition recommends utilizing these guidelines since it has been reviewed by stakeholders and it will include a verification system. These guidelines are available at: <http://www.epa.gov/epaoswer/osw/conservation/plugin/pdf/guide.pdf>

#### Implications for State Legislation

- » State legislation should establish that all recycling paid for under the state program should comply with ESM standards, and delegate the development of such standards to the state environmental agency.
- » The state environmental agency should look at the EPA Guidelines and should accept public input in the development of ESM standards. The ability to verify adherence to the standards, especially by out of state or country processors, is essential.

#### 1.4.7 Market Development Program

The development of markets for recovered equipment, components and materials is essential for the economic sustainability of electronics recycling. As the collection system grows, markets for recycled materials must expand to keep pace. Several activities were identified by NEPSI as important to develop markets:

- » Requiring manufacturers to report on their use of recovered materials in their products
- » Providing research and development grants of new uses of materials.
- » Requiring state purchasing of electronic products to require the incorporation of recovered materials in products and/or to offer refurbished equipment using recovered components.

### **Implications for State Legislation**

- » State legislation should direct the TPO to institute a market development program and to spend a portion of the ARF funds on market development, perhaps up to one percent of the available funds.
- » State legislation should require manufacturers to report annually on their use of recycled materials in their products.

#### **1.4.8 System Re-evaluation**

At an appropriate time in the future the ARF may no longer be needed, or it may be determined that an alternative approach to financing the electronics recycling system is more appropriate going forward. The NEPSI proposal was a “hybrid” financing system that called for an eventual transition from the ARF to a partial cost internalization approach (PCI) based on government taking responsibility for collection, and manufacturers taking responsibility for recycling. However, NEPSI stakeholders were never able to fully describe the exact design of a partial cost internalization system and how it would work in practice.

The Manufacturers’ Coalition shares the commitment to perform a full system evaluation at a definite point in the future, to evaluate if the system is working well, and, if not, to make appropriate changes.

However, the Coalition does not believe that future decision makers can or should have their hands tied by today’s stakeholders. Future stakeholders will have several years of experience and be much wiser. In fact, the future stakeholders may find that the subsidy from the ARF is no longer needed. The system may be self-sustaining:

- » The ARF will have built an effective and cost-efficient infrastructure.
- » The costly-to-recycle stockpile of old products will have been depleted.
- » Value-based markets will have been built for product reuse and material recycling.
- » CRTs will be replaced by flat panel displays, reducing one of the main financial burdens.

Moreover, the Coalition believes that the main argument for producer responsibility – to incentivize the reduction of toxics and increased recyclability – will not be as urgent as it seems today. Better environmental design will become increasingly common practice. And this too will lower end-of-life costs. Several factors are moving in this direction:

- » Implementation of the RoHS Directive continues to affect product design worldwide.
- » The advent of market-based incentives like the EPEAT program will raise the bar for environmental design.
- » The increasing flow of information from recyclers to manufacturers through participation in the TPO will enhance the knowledge and sophistication of product designers.

#### **1.4.9 Design for Environment Incentives and Reporting**

Within the framework of the ARF system there are a number of opportunities to enhance manufacturers’ responsibilities for end-of-life management and to incentivize improvements in environmental design. This section outlines some proposals that the Coalition would like to see developed in state legislation.

**Compliance with the RoHS Directive** The European RoHS Directive (Directive 2002/95/EC) requires companies to reduce and eliminate a variety of hazardous substances in products.

While the Directive's scope is limited to Europe, it is expected that over time, most products sold in the U.S. will comply with the requirements. However, for a period some manufacturing facilities and/or companies may still manufacture products for the North American market that do not comply. For this reason California SB 20 requires compliance with the RoHS directive for products sold in California after July 1, 2007. Other states can do so also. However, an exemption should be provided for substances that are essential to meet U.S. consumer health and safety requirements.

**Manufacturers' Reports on Environmental Design** Manufacturers may be required to provide reports to the state environmental agency that address a number of product design factors. These reporting requirements should be consistent with those in California SB 20, including:

- » Estimated contents of certain hazardous substances that are in RoHS-exempt applications
- » Estimated amounts of recycled materials contained in covered products
- » Efforts to improve products design for recycling.

**Utilization of the EPEAT Rating System** The state should be encouraged to make use of the EPEAT<sup>7</sup> rating system, now under development, in state and local government procurement of electronic equipment. See the Part 4 attachment.

**Provide Data to Recyclers** Manufacturers should be encouraged to provide data and information to recyclers regarding the presence and location of hazardous substances and components contained in electronic products.

**Financial Reward for Environmentally Superior Design** It may be practical, in the future, to develop a method to provide direct financial rewards for environmental design, possibly as a part of the end-of-life financing system. The EPEAT rating system may provide an objective measure of environmental performance. One option may be to provide tax credits for use of recycled materials in products. But these options are difficult to implement fairly and effectively, and they should be addressed after an effective end-of-life system has been put in place.

## □ □ Part 2

### □ □ **The Coalition's View on Producer Responsibility**

The Coalition is opposed to the implementation of programs that are based on pure producer responsibility.

**What is producer responsibility?** The producer responsibility approach assigns responsibility for financing end-of-life management to the manufacturer. It does so through a mandate that generally prohibits sales of products by manufacturers that do not meet certain requirements. Under this approach, each company that originally made an electronic product, which is presently in the marketplace, would be retroactively responsible for funding its collection and recycling whenever it reaches the end of its useful life.

In some "partial producer responsibility" approaches, the financial responsibility for collection of products may be assigned to local governments. Sometimes government is required to pick up costs for orphan products, which can represent a large portion. Under this approach manufacturers implement a system to pick up products from consolidation centers, and recycle them. A few manufacturers may develop their own system, but the great majority, individually representing a small market share, contract for services through collectives. If manufacturers

<sup>7</sup> The Electronic Product Environmental Assessment Tool ([www.epeat.net](http://www.epeat.net)) is being designed for use by government and institutional purchasers.

choose to receive back their own brand, then expensive costs of sorting and separate handling must be paid. Generally producer responsibility is simply a means to allocate the financial obligation to companies for managing a stream of products, not their individual brands.

### **2.1 Producer Responsibility is a Government Regulated Mandate**

The idea of producer responsibility is attractive because it sounds so simple – just make producers responsible for their products. But this approach implies laws, regulations and enforcement that mandate companies to fulfill their obligations. The obligations that must be enforced include that financial obligations are met by all manufacturers, recycling services are environmentally responsible and meet performance targets, and pick-ups from consolidation centers are timely and fairly distributed – the tendency to “cherry pick” shipments from population centers must be controlled

Government must ensure that many small and often foreign manufacturers meet their obligations. Enforcement can be expensive, and a lack of enforcement – one of the Coalition's chief worries – results in an uneven playing field in the marketplace.

### **2.2 Producer Responsibility Skews the Marketplace**

Producer responsibility skews the marketplace by giving advantages to newer market entrants and companies with the largest current market share at the expense of smaller, established manufacturers. It is important to recognize that the vast majority of companies have a very small market share, well down in the single digits, and many are based outside of the U.S.

### **2.3 Producer Responsibility Provides a Weak Design Incentive**

Many advocates for producer responsibility claim that internalization of the costs of end-of-life management will motivate companies to reduce toxics and to improve design for recycling. Unfortunately, this is better in theory than in reality.

First of all, only a few companies will feel the incentive. It is simply not practical for manufacturers to get their own products back from consumers. The vast majority of manufacturers will be forced to work through collective recycling systems, if they participate at all. If product is handled by collectives, it would require expensive brand sorting and separate handling to deliver a direct design incentive.

Moreover, the costs of end-of-life management are simply too small to incentivize much significant design change. The majority of costs are relatively fixed, related to collection, logistics and common processing. Improved environmental design can reduce only a minority of the system costs. And what's more, those savings will be experienced too many years in the future to have much impact on today's design choices.

### **2.4 Producer Responsibility is a Poor System Model**

Producer responsibility has several drawbacks as a model to organize an end-of-life management system. For one, nearly all of the extended producer responsibility approaches – such as the great majority of European programs, including the WEEE directive itself – leave the costs for collection on local governments. This is 1/3 to 1/2 of the system cost.

For another, when individual companies go it alone, they develop proprietary arrangements between themselves and recyclers. These arrangements, versus competitive contracting by a TPO, do not provide a level playing field for recyclers and they can constrain competition in the recycling marketplace, especially for smaller local companies.

The most difficult and costly challenge in an end-of-life system is to build a functioning logistics network that aggregates and transports large quantities of product to recyclers. Individual proprietary arrangements for these services will miss economies of scale and efficiency.

**Relative Costs** There is much debate about which system is more costly. Advocates of each side claim that their system is the cheapest and most efficient. Only one independent study<sup>8</sup> has been done to our knowledge that looked at costs. Following are a couple key points from that study:

- » In fee systems with a TPO, administrative costs seem to be reasonable, ranging from 3.5% to 7.5%, depending on how much auditing and monitoring is done of recyclers.
- » Costs being paid by ARF-based programs for transportation and recycling are reasonable by U.S. standards, between 20 and 37 cents per pound.

### 2.5 Individual Responsibility Should be Encouraged

The Coalition applauds initiatives by companies that have voluntarily established programs for collection and recycling of electronic products. When manufacturers are willing to set up their own return logistics system and contract for recycling, they should be rewarded. The Coalition companies, too, have provided considerable voluntary support to jump-start the end-of-life infrastructure through providing funds for pilot efforts by local governments and others.

The challenge is to build a system that accommodates both the interests of many manufacturers to build a collective infrastructure and the interests of a few who wish to go it alone. Under the ARF system, individual companies can receive compensation for the recycling they provide. In some cases they can establish their own independent TPO. The Coalition believes that the interests of those who wish to operate independently can be accommodated within an ARF system.

## □ □ Part 3

### Conclusion

The members of the Manufacturers' Coalition stand ready to work with any state that wishes to implement an ARF-based financing system to manage end-of-life electronics. The Coalition has developed model legislation and will provide support to address particular issues needed to work within existing state law. Coalition manufacturers will then help establish the private third-party organization that will run the system, entailing the least burden on government and avoiding creation of a new bureaucracy.

The system we propose is based in part on the thorough work of NEPSI. The system uses every means possible to minimize costs to the public – employing competitive contracting for services, working with existing businesses and organizations, incentivizing product design improvements to lower recycling costs, encouraging an extensive collection network to improve economies of scale, etc.

The attempt to reach full agreement nationally is stalemated, but the problem of electronics waste management remains unsolved. Meanwhile, states can take a positive step to address the e-waste challenge by adopting legislation that includes the essential elements in this document, and that defers to a national solution when implemented.



<sup>8</sup>“Study into European WEEE Schemes”, prepared for the UK Department of Trade and Industry by Energy Futures Solutions, November 2003.

## □ □ Part 4

### **Electronics Recycling Act of 2005**

#### **4.1 Model State Legislation**

**Purpose:** To establish a recycling program in [STATE] to encourage and promote the recycling of used electronics and to promote the development of a national and state infrastructure for the recycling of used electronics.

**Whereas:**

- (a) Communities may lack the infrastructure needed to provide for the convenient and affordable collection, refurbishment, processing, and recycling of electronic products.
- (b) Used electronic products should be diverted from disposal and collected for recovery and recycling where practicable.
- (c) It is the intent of the legislature to develop a flexible electronics recycling system ensuring that programs are available to assist cities, counties, and recyclers of electronic products that will safely collect and recycle the materials contained in used electronic devices.
- (d) Recycling of electronics should be a market-based system with sufficient flexibility and incentives to create a sustainable infrastructure where needed and to incorporate the existing solid waste and recycling infrastructure as much as possible
- (e) The U.S. Environmental Protection Agency convened a multi-stakeholder dialogue called the National Electronic Product Stewardship Initiative (NEPSI) and brought nationally recognized experts from various fields together to develop policy recommendations for a national collection and recycling program for certain electronic products.
  - (a) The program should work towards ensuring that economically viable and sustainable markets are developed for recycled materials generated through the recycling processes.
  - (b) The program should include environmentally sound management principles to ensure that
  - (c) The program should include an educational element for consumers so that they can understand the program and make informed decisions.
  - (d) The [STATE] desires to create a state program that anticipates and reflects the national program recommended by the National Electronic Product Stewardship Initiative.

#### **Section 1: Definitions**

For the purposes of this chapter, the following terms have the following meanings:

- (a) "Agency" means the [State Environmental Agency]
- (b) "Cathode ray tube" or "CRT" means a vacuum tube or picture tube used to convert an electronic signal into a visual image.
- (c) "Consumer" means a person who purchases a covered electronic device in a transaction that is a sale.
- (d) "Computer" means an electronic, magnetic, optical, electrochemical, or other high speed data processing device performing logical, arithmetic, or storage function, and may include both a computer central processing unit and a monitor, but such term does not include an automated typewriter or typesetter, a portable hand held calculator or device, or other similar device

- (e) "Covered Electronic Device," for the purposes of this bill, is desktop/personal computers, computer monitors, portable computers, desktop printers, televisions, and video displays.
- (f) "Not-For-Profit Corporation" or "NFPC" means the organization established under Section 7.
- (g) "Manufacturer" means any person who, either as of the effective date of this legislation or thereafter, and irrespective of the selling technique used, including by means of remote sale: 1) manufactures electronic equipment under its own brand; 2) manufactures electronic equipment without affixing a brand, 3) resells equipment produced by other suppliers under its own brand and label; or 4) imports or exports electronic equipment into the United States.
- (h) "Monitor" means a separate visual display component of a computer, whether sold separately or together with a computer central processing unit/computer box, and includes a cathode ray tube, liquid crystal display, gas plasma, digital light processing, or other image projection technology, greater than nine inches when measured diagonally, its case, interior wires and circuitry, cable to the central processing unit, and power cord.
- (i) "Orphan products" are covered electronic devices for which 1) the manufacturer no longer exists and a successor cannot be identified or 2) no manufacturer can be identified
- (j) "Portable Computer" means a computer and video display that can be carried on a person.
- (k) "Product Category" means computer monitors, portable computers and televisions as defined in "covered electronic devices".
- (l) "Purchase" means the taking, by sale, of title or of the right to use, in exchange for consideration.
- (m) "Recycling" means any process by which covered electronic devices that would otherwise become solid waste are collected, separated, and processed to be returned to use in the form of raw materials or products.
- (n) "Retailer" means a person who owns or operates a business that sells new covered electronic devices by any means to an end user
- (o) "Reuse" means any operation by which a covered electronic device changes ownership to be used for the same purpose for which it was originally put on the market without additional processing or remanufacturing.
- (p) "Sell" or "sale" means any transfer for consideration of title or of the right to use to a consumer, by lease, donation, or sales contract, including, but not limited to, transactions conducted through sales outlets, catalogs, or the Internet, or any other, similar electronic means, and excluding wholesale transactions with distributors or dealers.
- (q) "Television" means a stand-alone display system having a viewable area greater than nine inches when measured diagonally and able to adhere to standard consumer video formats such as PAL, SECAM, NTSC and HDTV and has the capability of selecting different broadcast channels and support sound capability.
- (r) "Video Display " means an output surface having a viewable area greater than nine inches when measured diagonally that displays moving graphical images or a visual representation of image sequences or pictures, showing a number of quickly changing images on a screen in fast succession to create the illusion of motion, including, if applicable, a device that is an integral part of the display (and cannot be easily removed from the display by the consumer) that produces the moving image on the screen. Displays typically use a cathode ray tube (CRT), liquid crystal display (LCD), gas plasma, digital light processing, or other image projection technology.

- (s) "Visible fee" means a fee that is added to a new product at the point of purchase and is identified to the consumer separately from the product price.

### **Section 2: Scope of Products**

"Covered Electronic Device," for the purposes of this bill, is desktop/personal computers, computer monitors, portable computers, desktop printers, and televisions with video displays having a viewable area greater than nine inches when measured diagonally.

"Covered electronic device" does not include any of the following:

- (a) A covered electronic device that is a part of a motor vehicle, or any component part of a motor vehicle assembled by, or for, a vehicle manufacturer or franchised dealer, including replacement parts for use in a motor vehicle.
- (b) A covered electronic device that is contained within, or a part of a piece of industrial, commercial, or medical equipment, including monitoring or control equipment
- (c) A covered electronic device that is contained within a clothes washer, clothes dryer, refrigerator, refrigerator and freezer, microwave oven, conventional oven or range, dishwasher, room air conditioner, dehumidifier, or air purifier.

### **Section 3: Fee, Vendor Compensation, Cap, Use of Funds**

On July 1, or 9 months following enactment of this section, a covered electronic device recycling fee is hereby imposed upon every sale in [STATE] of a new covered electronic device. Products will carry a fee of no greater than eight dollars (\$8.00). The maximum allowable fee shall be increased only by the legislature upon recommendation by the NFPC.

- (a) Every retailer that sells a new covered electronic device shall collect at the time of sale the fee imposed under this section for each new covered electronic device sold to an end user in [STATE].
- (b) Each retailer shall transmit all fees collected under this section, minus 3% of total fee revenues which may be retained by the retailer for administrative costs associated with collecting the fee, to the NFPC on or before the last day of the month following each quarter, accompanied by any forms prescribed by the Agency. If a covered electronic device for which the fee has been paid is returned to a retailer under warranty, the fee may be refunded, and the retailer may deduct the amount of returned fee from their remittance to the NFPC.
- (c) Funds collected by the NFPC shall be used solely for the purpose of funding collection, transportation, and recycling of covered electronic devices, including the discretionary use of funds by the NFPC to promote the collection and recycling of covered electronic devices and market development. Collected funds may not be used to pay for activities associated with refurbishment or reuse of covered electronic devices.
- (d) The Agency shall establish separate fees for different categories of products based on the estimated costs of collection, transportation and recycling for similar products. Fees collected on one category of product shall not be used to subsidize the collection, transportation and recycling of different categories of covered electronic devices.
- (e) The fee imposed under this section shall be a visible fee at the point of sale, and imposed post any state, local or federal sales tax.
- (f) The NFPC shall submit a plan to the Agency for approval. The plan shall provide a funding methodology for collectors and recyclers authorized under Section that utilizes competitive bidding to set reimbursement rates. The development of the funding methodology shall be done so in an open process consistent with state agency rule making standards, including at least two public hearings in different geographical regions of the state.

#### **Section 4: NFPC Responsibilities/Enforcement**

1. The NFPC shall do all of the following:
  - (a) Establish procedures for the imposition of the visible fee on covered electronic devices sold in [STATE].
  - (b) Beginning two years after passage of this Section, the NFPC shall report to the legislature on an annual basis. The purpose of the report shall be to update the legislature regarding the progress on the implementation of this chapter, including recommendations for changes to this chapter that will ensure the most effective collection of electronic product recycling fees and whether the cap on the fee imposed under Section 3 should be adjusted.
  - (c) Working with the Agency, publish the schedule of fees for covered electronic products based on product category six months after passage of this section, and every two years thereafter, taking into consideration the following factors: 1) current collection, transportation and recycling costs of covered electronic devices, 2) projected sales of covered electronic devices, 3) projected volume of returns of covered electronic devices to meet the performance measure in Section 13, and 4) actual collection rates during the previous 12 month period plus a yearly growth projection). The NFPC and the Agency may also take into consideration any surplus funds carried forward and reduce the fee when making fee amount determinations. Any changes in fee levels would take effect on January 1st of the following year, provided the Agency publishes the new schedule at least six months in advance. .
  - (d) Organize and coordinate public outreach using existing funds and resources appropriated to the NFPC. The NFPC shall utilize local and/or regional authorities to reach local residents and determine appropriate methods for education.
  - (e) Achieve the Performance Goal as specified in Section 13. The NFPC must establish the first year baseline performance goal as measure of pounds collected per capita, and project the performance goal for subsequent years to meet the goal established in Section 13.

#### **Section 5: Prohibition of EOL Fees**

This Section shall prohibit any party who is receiving funding under this program from charging fees for collecting and/or recycling covered electronic devices, except under specified situations to be addressed by the NFPC in the development of its plan. Such situations may include when funding from the NFPC does not fully cover the net cost of collection and/or recycling of the covered electronic devices. This chapter shall not impact end-of-life fees in effect for products not covered by the chapter.

#### **Section 6: Electronics Recycling Fee Not-for Profit Corporation**

1. [NAME, a Not-For-Profit Corporation or NFPC] is hereby established as a 501(c)(3) organization to administer collected fee proceeds from the retail sale of covered electronic devices pursuant to this chapter. The purpose of the NFPC will be to collect fee proceeds from retailers, distribute fee proceeds, work with the Agency in development and approval of an electronics collection and recycling plan, provide reports on the program to the Agency and the legislature, and make recommendations regarding the improvement of the collection system. The NFPC will submit a budget annually to the Agency and utilize for administrative expenses no more than 5% of the total funds collected under authority of Section 3.

### **Section 7: Not-for-Profit Corporation Responsibilities and Structure**

1. The NFPC is intended to operate as an industry-led, multi-stakeholder, entity for fulfilling the responsibility for management of a collection and recycling system for covered electronic devices 2. The plan submitted should incorporate, to the extent feasible, a geographic scope to serve all consumers who are subject to the fee. The plan shall also rely primarily on existing collection and consolidation infrastructure available for handling covered electronic devices.
2. The NFPC is hereby established to receive funds collected by the retailers, provide a funding methodology for reimbursement of collectors and recyclers, and to create a recycling system that will result in the environmentally sound and cost efficient collection, transportation, and recycling of covered electronic devices.
  - (a) The NFPC shall utilize the funding for the sole purpose of carrying out the duties of this chapter. In the event that expenses from collection, transportation, and recycling activities exceed revenues from the NFPC, the NFPC is authorized to borrow up to 10% of the projected annual net fee funds from outside sources. Borrowed funds must be repaid within 2 years.
  - (b) By July 1 or 12 months after enactment of this section, whichever is later, the NFPC shall submit a plan to the Agency describing the details of the program. The plan shall be re-submitted to the Agency every two years, and presumed approved if the plan includes all of the following:
    - i. An estimate of the weight of covered electronic devices expected to be recycled to meet the Performance Measures
    - ii. Details on the funding methodology to be used to fund the system
    - iii. Details on how the state's existing solid waste and recycling collection infrastructure will be used to maximize product collection activities.
    - iv. A demonstration that the collection system will provide collection opportunities across the state, covering all areas where products are sold.
    - v. Procedures for monitoring the performance of product recyclers, including periodic audits, to meet Section 8, Environmentally Sound Management Requirements. In no case, shall the NFPC activities interfere with or supersede existing roles and responsibilities of applicable state regulatory agencies.
  - (c) Once the NFPC plan has been submitted to and approved by the Agency, the NFPC may begin to disburse the funds and implement the plan. Should the Agency, upon review of the plan, find that it fails to meet any of the requirements, or that the plan cannot reasonably be expected to achieve the performance measures, then the Agency shall have the authority to suspend fee collection until the plan has been modified and the modifications approved by the Agency.
  - (d) Once per calendar year, the NFPC shall file a report with the Agency that describes the implementation of the system during the year. The report shall identify the total weight of covered electronic devices received during the preceding year by product category, together with the total weight of products recycled in each product category. The report shall also include a list of all parties participating in the system.
  - (e) The NFPC shall have a Board of Directors consisting of 11 members appointed by the Agency. The Board members shall be appointed for two-year terms, except that for the initial term, three members shall be appointed to one-year terms and four members shall be appointed to two-year terms. The Agency shall appoint a replacement if any vacancy occurs. The Board shall consist of representatives from

- i. Five Manufacturers of covered electronic devices,
  - ii. Two Retailers of covered electronic devices,
  - iii. One Recyclers of covered electronic devices,
  - iv. One Environmental not for profit organization with experience in the recycling of covered electronic devices, and,
  - v. Two Government representatives, including one from local government.
- (f) The Board shall select the CEO along with the officers of the NFPC. The CEO and officers will run the day-to-day operations of the NFPC and report to the Board at least once a year.
4. The NFPC shall encourage collectors, transporters, and recyclers to coordinate their efforts in order to minimize costs. All contracts issued by the NFPC for recyclers shall be competitively bid and such contracts shall in no manner prohibit or effect any contract, franchise, permit, or other arrangement regarding the collection or recycling of other solid or household hazardous waste.

#### **Section 8: Environmentally Sound Management Requirements**

1. The NFPC may not disburse funds unless the plan demonstrates that the covered electronic devices collected by the applicant will be recycled, refurbished, or disposed in a manner that is in compliance with all applicable federal, state, and local laws, regulations, and ordinances, and that the devices will not be exported for disposal in a manner that poses a significant risk to the public health or the environment.
2. The Agency shall establish performance requirements for recyclers eligible to receive funds from the NFPC. The Agency shall require recycling vendors, at a minimum, to demonstrate compliance with the United States Environmental Protection Agency's Guidance on Environmentally Sound Management of electronic products in addition to any other requirements mandated by state law.
3. The Agency shall keep on file and update a list of recyclers approved to recycle the covered electronic devices. A copy of the list, including all changes to list since the previous year, shall be sent to the NFPC annually for use in fulfilling its requirements under Section 7 of this chapter.
4. The Agency shall immediately remove from the list any recycler, who, as the result of an audit by the NFPC or the Agency, has failed to meet the criteria established under (1.) above, or, who has been convicted of violating any federal, state, or local statute related to the collection, transport, or processing of covered electronic products.
5. The NFPC and its board shall not be held financially liable for any violation of a Federal, state, or local law, by a recycler appearing on the list created and updated by the Agency.

#### **Section 9: Level Playing Field Penalties**

1. Beginning January 1 or 9 months after enactment of this chapter, a manufacturer may not offer for sale in [STATE] a covered electronic device unless a visible, permanent label clearly identifying the brand or manufacturer of that device is affixed to it.
2. By October 1, or 6 months after enactment of this chapter, manufacturers of covered electronic devices must notify retailers or distributors that the covered electronics device is subject to the advance recovery fee.

3. Beginning July 1, or 12 months after the date of enactment of this chapter, whichever is later, it is unlawful for a retailer to sell a covered electronic device in the state unless a visible fee is collected and remitted back to the NFPC.
4. In the event that a company is found in violation of this section, a civil penalty of the amount \$25 per violation will be assessed by the Agency. Penalty amounts and violations will be calculated based on the number of individual units sold.
5. Any fine collected pursuant to this chapter shall be transferred to the Agency. The money collected and distributed shall be used to offset enforcement expenses.
6. Manufacturers and retailers, upon providing 60 day notice to the Attorney General and to a manufacturer or retailer who is not collecting and remitting the fee, shall have the right sue that manufacturer or retailer for failure to collect and/or remit the fee to the NFPC. During the 60-day notice period, if the Attorney General initiates action against the manufacturer or retailer, then the ability of the manufacturers to sue is extinguished. Manufacturers and retailers who successfully challenge a non-compliant manufacturer shall be entitled to receive their litigation costs as well as double the penalties assessed under this chapter.

#### **Section 10: Disposal Ban**

1. The Agency, upon review of the report of 2nd annual report of the NFPC, shall have the authority to ban the disposal of covered electronic products in the state. When making that determination, the Agency must find that the program has sufficient infrastructure in place to handle the collection and processing of all covered electronics products generated annually in the state. The Agency must also take into account market development for uses of the recycled materials, both within and outside the state, and other factors prior to proposing a disposal ban.
2. If the state does institute such a ban, the state shall have the authority to fine anyone who knowingly disposes of a covered product in violation of the ban \$25 per unauthorized unit of product plus the cost of recycling that product.

#### **Section 11: Market Development**

The NFPC shall establish a market development program to enhance existing and/or develop new end markets for remanufactured products and recycled materials. No more than 1% of the funds may be spent on this program.

#### **Section 12: Procurement Requirement**

1. Any state agency or local government that purchases or leases equipment, materials, or supplies shall require each prospective bidder, to certify that it, and its agents, subsidiaries, partners, joint ventures, and subcontractors for the procurement, have complied with Section 3 and any regulations adopted by the Agency. Failure to provide the certification shall render the prospective bidder and its agents, subsidiaries, partners, joint ventures, and subcontractors ineligible to bid on the procurement.
2. Any person awarded a contract by a state agency or local government that is found to be in violation of Section 3 is subject to the following sanctions:
  - (a) The contract shall be voided by the entity to which the equipment, materials, or supplies were provided.
  - (b) The contractor is ineligible to bid on any contract for a period of three years.
  - (c) If the Attorney General establishes that a contractor as a result of violating Section 3

obtained any money, property, or benefit, the court may, in addition to any other remedy, order the disgorgement of the unlawfully obtained money, property, or benefit in the interest of justice.

### **Section 13: Performance Measures**

1. The 5th year collection goal is 1.75 pounds per capita of covered electronic devices. After the 5th year or upon achievement of this collection goal, the Agency, working with the NFPC, will establish the performance goals as measure of pounds collected per capita for future years.
2. In establishing annual performance goals for the first 5 years, the NFPC shall take into consideration the time required for ramping up the required infrastructure for such a system. If at any point following enactment of this chapter the NFPC concludes that the 1.75 pounds per capita goal is not practicable, the NFPC shall report such a finding to the agency and the legislature and recommend that the goal be adjusted.
3. The NFPC will be responsible for achieving the collection goal.

### **Section 14: Manufacturer's Responsibility and Reporting**

Manufacturers shall be responsible for all of the following:

- 1) Collecting and remitting the Advanced Recycling Fee on all direct sales to final customers in the state, including telephone, catalogue, and internet sales.
- 2) Making information available to consumers describing where and how to return, recycle, and dispose of the covered electronic products, through the use of product operation manuals, industry or manufacturer websites, product labels, packaging inserts, or toll-free telephone numbers.
- 3) Providing recyclers with information on the type and location of hazardous substances in the covered products
- 4) Beginning January 1, 2007, or on or after the date Directive 2002/95/EC adopted by the European Parliament on January 27, 2003 and as amended thereafter, takes effect, no manufacturer shall offer for sale in the state any product or electronic device that is prohibited from being sold or offered for sale in the European Union on or after its date of manufacture, to the extent that Directive 2002/95/EC adopted by the European Parliament on January 27, 2003 and as amended thereafter by the Commission of European Communities, prohibits such sale due to the presence of heavy metals. The agency shall exclude from this requirement any product that contains a substance that is used to comply with consumer health, or safety requirements that are required by Underwriters Laboratories, the federal government, or the state. The agency may not adopt any regulations that are in addition to, or more restrictive than the requirements expressly authorized in this section.
- 5) Beginning 18 months following the enactment of this section and annually in subsequent years, manufacturers must submit a report to the state agency on their environmental improvements. As a minimum, the report shall contain
  - (a) The estimated sale of the covered products within the state in the past year,
  - (b) A baseline, or set of baselines that shows the total estimated amounts of lead, mercury, hexavalent chrome, cadmium and PBB's utilized in RoHS exempt applications in products sold within the state in the previous year.
  - (c) A baseline, or set of baselines that shows the total estimated amounts of recyclable materials contained in covered electronic products sold within the state in the previous year, and increases the use of those materials over previous years.
  - (b) A baseline, or set of baselines that describes any efforts to design covered electronic products for recycling and goals or plans for further increasing design for recycling.

- 6) In lieu of an individual report, manufacturers submit the information in a collated report submitted via a trade association provided that information about an individual company can be made available to the state upon written request by the Agency. The agency can only make such a request for auditing purposes and not more than once during a 5-year period. The state shall not make public any confidential business information claimed by the manufacturer in the report.
- 7) A report submitted to another state or to the Federal Government that contains the same information as required in this section shall be accepted by the Agency in lieu of a separate report for the state.

**Section 15: Regulatory Authority**

The Agency may adopt rules and regulations for the purpose of administering this chapter.

**Section 16: Program Review**

On or after January 1, 2014, the Agency shall convene a stakeholder group to evaluate the program and make recommendations to the legislature by January 1, 2015 as to whether to:

- (a) Continue the advanced recycling fee.
- (b) Implement another financing alternative, or
- (c) Determine that no outside financing mechanism is required to ensure that the system is financially solvent.

**Section 17: Federal Preemption**

Upon implementation of a national program to collect and recycle the covered electronic products, all of the requirements of these chapters, to the extent that they are inconsistent with the national program, shall become inoperative.

**Section 18: Effective Date**

Unless otherwise specified, this chapter shall take effect 90 days after the date of enactment.

#### **4.2 Special Topics: Implementation of the California ARF**

One in eight Americans are fully served by locally administered and fully funded collection/recycling systems for electronic waste. California's Electronic Waste Recycling Fee became effective January 1, 2005. Implementation of the SB 20 in 2003 and the revisions of SB 50 in 2004 contain important lessons that deserve consideration.

The rapid growth in state-certified collectors (249 as of early May 2005) and a commensurate growth of in-state recyclers (34 as of early May 2005) provide early evidence of a sustainable system at this formative stage. In the first quarter of 2005, the state collected recycling fees totaling nearly \$15 million, well in line with the State's revenue forecasts.

Unlike mandated producer responsibility, the ARF approach:

- » does meet the needs of the local infrastructure tasked with collection;
- » is the only system that provides a forward looking fair playing field for new market entrants;
- » affords the state with decision making authority over where the waste is sent and how the waste processed; and
- » avoids Commerce-protected flow-control and property "takings" issues.

This paper in no way disparages the many voluntary efforts taken by individual producers, retailers and local government officials. Although it is too early in the process to fully understand the systematic impacts of the ARF model, opponents to the California system have expressed three primary criticisms, and the Coalition offers the following additional information to gain better perspective on the system.

#### **1. Local retailers are unfairly disadvantaged because the ARF is perceived to be unenforceable on Internet retailers – the issue of enforceability, free riders, a level-playing field or equity.**

This criticism is based on the legal opinion of the California Board of Equalization (equivalent to the Department of Revenue in other states) that the fee cannot be applied against retailers lacking a physical presence (a nexus) in the state. Without disputing the legal opinion, the Coalition asks what is the true impact of Internet sales and the likely magnitude of non-compliant Internet retailers.

The Coalition believes the notion that local bricks and mortar sellers will be disadvantaged has been overstated. Current marketplace realities will minimize any tangible impact. Three factors are responsible for the negligible impact:

1. Many of the larger Internet sellers have a physical presence in California and in most states - 94% of Internet sales originate with the top 10 sellers; 8 of who have nexus (Best Buy, Circuit City, CompUSA, Radio Shack, et al.). The Coalition recognizes that some retailers have incorporated their online sales operations as separate legal entities, but hopes these retailers will act responsibly by collecting the fees on their online sales in order to help ensure the longer term viability of the California recycling system.
2. Voluntary compliance by major sellers, e.g., Dell, HP, Gateway, Apple, Sony, and others who have expressed their intent to collect and remit fees in compliance with the law.
3. Compliance by sellers that fear losing business sales to the State of California.

**Marketplace Realities** Putting the marketplace realities into context, is the belief of the Coalition that the Internet offerings generate an overall increase in sales for retailers including brick and mortar establishments. Note that all companies derive a small percentage of total sales from

the Internet: Dell, the leading Internet retailer, for example, generates less than 7 percent of sales via the Internet. You will find similar results looking at top on-line retailers including Amazon, Dell, Office Depot, HP, Staples, Soy, Sears, CDW, Best Buy, Target, and Wal-Mart. Based on the available data, the Coalition believes impact of the Internet sales issue is being misconstrued. MIT's Technology Review, April 2005, showed a brick and mortar 5 fold sales increase based on consumers using the Internet for research. Practically, the problem, if one exists, is in the low single digit percentile, and thus not significant enough to command additional enforcement efforts and resources

Maine's program requires a brand count, followed by a parity calculation, preceded by price-fixing through rule-making process, and no legislated funding for local governments. Based on a recent report from state officials, Maine DEP has received collection plans from 24 or so TV brand owners and 25 computer monitor brand owners. Some manufacturers have multiple brands, so the count could be less than the given number.

**The "Fairness Issue":** When comparing Maine's version of producer responsibility with the California ARF approach, it is important to compare which brands are being returned and those currently still sold in the market.

Today there are approximately 180 new TV brands and 235 new computer display monitor brands sold in the market place. Under Maine law all manufacturers / brand-owners must file a collection plan with the state Department of Environmental Protection in order to sell their products in Maine. As of early April 2005, compliance is 13% for TVs and 10% for computer monitors. That means more than 85% of brand names are not meeting their legal obligations yet are financially benefiting. In essence, these "free riders" are being rewarded in the market place by not paying the mandated regulatory cost of doing business.

The brands populating today's marketplace contrast greatly with the historic waste stream. A recent Hennepin County (Minneapolis, MN) brand sort revealed there are 281 brands of TVs and 458 brands of computer monitors in the current waste stream. On a brand basis, comparing current brands to the historic waste stream, the Maine compliance is at 7% for TVs and less than 5% for computer monitors.

The net result is that market newcomers can evade their financial obligations under the Maine "model" and likely many of today's newcomers will likely represent tomorrow's orphan products. The short-time manufacturers will have been able to sell their products without ever paying for their fair share of the end-of-life system.

Conclusion: Additional compliance analysis; looking at both models is needed in order to determine the most equitable and enforceable approach. The Coalition believes while the ARF enforceability needs to be addressed, in no way will it reduce sales from brick and mortar stores. To the contrary, already in California, at least one computer and electronic retailers is using program to increase customer traffic in their stores.

**2. ARF systems are expensive to administer and create a large bureaucracy.**

There are administration costs to every pilot program conducted and any system already established or to be devised. While few comparative studies exist, a late 2003 report by the UK Department of Trade and Industry concluded that recycling fee systems administered by a third-party organization (TPO) had reasonable cost efficiencies ranging from 3.5 to 7.5%, depending on the level of auditing and monitoring of recyclers.

The study also found that costs paid for transportation and recycling under ARF-based programs were between 20 and 37 cents per pound; reasonable by U.S. standards. Depending on the population density and other organizational efficiencies an ARF system operated by a state government agency may carry greater administrative costs than a system utilizing a TPO

Of course, any analysis of the ARF system costs based on the early California experience must take into account the differences of scale when comparing costs and efficiencies. That is, any program in California will be inherently more costly to operate in an absolute sense because of the state's enormous population—nearly one-eighth of the total U.S. population – but will be more efficient when measured specifically because of economies of scale not seen in more dispersed areas.

Contrary to some unsubstantiated claims made by detractors of the California ARF system, the state's Integrated Waste Management Board, Department of Toxic Substances Control and Board of Equalization (as of May 2005) have assigned a combined 65 employees (many of whom will no longer be needed after the program has been established) to help manage the program. Given the enormity of the task for a state whose GDP exceeds that of France, this does not appear to be excessive.

A more practical question related to the ARF system cost is the true costs of any end of life system. In the US, the only other model nearing implementation is the Maine manufacturer responsibility model. Under this model, all manufacturers are prohibited from selling products in the state until and unless they agree to fund the specific recycling of their historical products, plus a share of all other products for which there is no current manufacturer, so called orphan products.

Compared with a centrally managed ARF system, the Maine manufacturer responsibility system is managed locally, with each collector, consolidator, and recycler sorting the products to identify manufacturer, many of whom will be out of business or otherwise not registered or agreeable to pay the costs. Orphan shares must constantly be recalculated and allocated. No figures are available, but the inherent inefficiencies should push the cost per pound far above the levels cited for an ARF system. Looking to California's initial month's collection weight of approximately 2.275 million pounds, the cost difference per pound in Maine becomes significant

An ARF system or a manufacturer mandate must be administered centrally, whereas the consolidation collection model being implemented in Maine will essentially add another administration layer at each consolidation center. All products coming in to the consolidation centers will be sorted by brand so that costs can be allocated to each brand owner. Orphan shares must constantly be recalculated and allocated by the state. The ARF system avoids this costly and burdensome task, whereas in Maine, this critical aspect will be hidden from the public view. In essence the consolidation center concept trades a more central and visible ARF "bureaucracy" for a thousand mini-bureaucracies.

### **3. Fee setting is a political process and does not reflect actual waste management costs.**

Fees initially introduced based on estimates of the cost to manage materials and on the amount of material returned. It is essential to be able to initially set and then adjust the fee based on real costs. California's SB 20 allows for that process.

SB 20 is very clear about what costs are to be covered by the fee, and that the fee level shall be reviewed every two years and adjusted "to ensure that there are sufficient revenues in the account to fund the ... program". Therefore, over time, the fee level should be fine tuned to accurately fund waste management costs and associated expenses that government will incur.

### **4. Fee systems require government spending that manufacturer responsibility avoids.**

The alternative approach of manufacturer responsibility seems less expensive for government only because many system costs are left unaddressed. A take-back scheme leaves uncovered the costs for promotion, advertising, and administration of the so-called parity, collection, intrastate transportations and storage. Recycling is typically all that is considered under this

approach. By stark contrast, only the ARF guarantees funding for a comprehensive system.

Other uncovered costs under a manufacturer responsibility program includes:

- » Review and approval of manufacturer plans – As in Maine, and other proposed take-back schemes, government must review plans submitted by manufacturers and approve or reject them. This will require adoption of regulations, probable negotiations with individual manufacturers, monitoring and enforcement of the plans over time, and calculating the fair level of responsibility.
- » Enforcement against free riders – Government will be responsible to enforce against manufacturers, many of them foreign-based, who do not comply with the law, by not submitting plans. An unintended consequence of manufacturer takeback gives the no-name or short-term brand a reward of “no compliance cost” in the market place. The long-term sustainable companies, which invest hundreds of millions of dollars designing new products to be compatible with future societal needs, will pay higher compliance cost especially for the former short term and now defunct orphan brands.
- » Collection and transportation services – In most manufacturer responsibility schemes, local government must provide collection and transportation services, or assure those services are provided, from the public to the point where manufacturers assume responsibility for collected product, as well as extensive public education. Depending on what is included, these costs range from 40 to 80% of the total program costs. In other words, manufacturers cover 20 to 60% and government is left to pick up the rest, or charge fees to the public. When the cost of sorting the discarded products is added in (this cost is not present in an ARF system), the municipalities are paying more for less.
- » Administration of the supplier base – In a free market economy, supported by an ARF, the system will flow to the lowest cost, most efficient supplier. In the Maine manufacturer responsibility model, it appears that anyone may enter the market and obtain payment after registering with the State, by-passing the normal power of supply and demand and the efficiency of a free market economy.
- » Oversight to Assure Public Service – Local and state governments will inevitably have the responsibility to oversee and assure that the system is providing convenient and effective service to all residents of the state. Neither single manufacturer nor other agent will have that responsibility, and so all the activities of diverse actors must be overseen from the public's perspective. Government may be left to fill the gaps.

In conclusion, critics of the California plan are trying to discredit an ARF-based system by misrepresenting the reality in California, by rushing to preliminary judgments, or by neglecting comparable implications of the system they advocate. Both the California program, as in the Maine system once developed; need time to mature before we will have a definitive comparison of their impacts on the electronics marketplace or their costs.

The Coalition believes that the ARF-approach has more merit as a sustainable, workable, industry consensus solution. We are pleased that recycling services desired by the public are now being delivered in California. In the long run, the quality of those services, and their reasonable cost, will be the ultimate test of an effective program.



### 4.3 Electronic Product Environment Assessment Tool: Voluntary Environment Performance Criteria for Computers, Laptops and Monitors

EPEAT is an environmental procurement tool designed to help institutional purchasers in the public and private sectors evaluate, compare and select desktop computers, laptops and monitors based on their environmental attributes.

The development of EPEAT was prompted by a growing demand by institutional purchasers for an easy-to-use evaluation tool that allows the comparison and selection of electronic products based on environmental performance. The electronics industry welcomed EPEAT as a tool to provide a clear and consistent set of performance criteria for the design of products, and provides an opportunity to secure market recognition for efforts to reduce the environmental impact of its products.

#### How EPEAT Will Work

EPEAT will evaluate electronic products according to three tiers of environmental performance – Bronze, Silver and Gold. The complete set of performance criteria includes 22 mandatory criteria and 33 optional criteria in 8 categories. To qualify for acceptance as an EPEAT product, it must conform to all the mandatory criteria. Manufacturers may pick and choose among the optional criteria to boost their EPEAT baseline “score” to achieve a higher-ranking level as follows.

**Bronze:** Product meets all mandatory criteria

**Silver:** Product meets all mandatory criteria plus at least 16 optional criteria.

**Gold:** Product meets all mandatory criteria plus at least 25 optional criteria.

The three-tier system provides purchasers with the flexibility to select equipment that meets their minimum performance requirements or to give preference to models with more environmental attributes by specifying a higher EPEAT qualification level. For manufacturers, EPEAT provides flexibility to choose which optional criteria they would like to meet to achieve higher levels of EPEAT qualification.

Before listing their products on EPEAT, manufacturers will sign a formal Memorandum of Understanding (MOU) that commits them to provide accurate product and company information and provides for remedies should inaccuracies be discovered. The assessment tool will be structured to allow manufacturers to self-declare, via a web-based interface, that their specific products meet EPEAT requirements. For each criterion, producers must, on request of the EPEAT organization, provide a specified set of verification data in order to demonstrate EPEAT conformance.

Most criteria refer to environmental performance characteristics of the specific product, and the manufacturer declares to those product criteria for each product of their choice. Some criteria refer to general corporate programs, such as a Corporate Environmental Policy, and the manufacturer declares to those criteria in a report that is provided annually. To ensure that the self-declaration system functions in a transparent and verifiable manner, the EPEAT organization will randomly select a subset of qualified products each year to verify their qualification.

### **EPEAT Performance Categories**

- » Reduction/Elimination of Environmentally Sensitive Materials
- » Material Selection
- » Design for End of Life
- » Product Longevity/ Life Extension
- » Energy Conservation
- » End of Life Management
- » Corporate Performance
- » Packaging

### **How the Performance Criteria Were Developed**

The draft performance criteria and the procedures for validation represent the results of an 18 month-long multi-stakeholder process. The EPEAT Development Team was composed of stakeholders that represented manufacturers, trade associations, institutional purchasers, advocacy organizations, electronics recyclers, academics, and others. The process for developing the draft criteria included use of ANSI essential requirements , such as the need for openness, balance, consideration of all views, and consensus decision-making.

Each criterion was evaluated alongside the others to ensure that EPEAT is a balanced and comprehensive tool that covers multiple environmental attributes throughout the product's life cycle. The criteria are stringent enough to promote better environmental design, manufacture, and end-of-life management, while reflecting existing technologies and technical limitations so that a supply of EPEAT products will be available to purchasers. Specific criteria are drawn heavily from existing U.S. and international requirements and standards such as Energy Star®, the European Union's Restriction on Hazardous Substances Directive, and the IT-Eco Declaration, while creating some new elements that were agreed upon by the team. The EPEAT Development Team chose to build on existing legal and market requirements to reduce overlap and possibly conflicting requirements on product producers.

### **Process for Finalizing the Criteria**

The Development Team has completed its work, and a smaller Implementation Team is now working to implement EPEAT. This work includes identifying an ANSI accredited standards development organization to manage a public comment period and finalize the performance criteria and selecting a host organization to house vendor self declarations and manage spot checking of these claims. In order to be notified regarding the public comment period, please send your contact information to: [epeat\\_comments@epeat.net](mailto:epeat_comments@epeat.net)

For further information on EPEAT see <http://www.epeat.net>



## Summary List of Criteria

**M = Mandatory Criterion; O = Optional Point Criterion**

Annual Report Criteria are designated as such in parentheses.

### 1. Reduction/Elimination of Environmentally Sensitive Materials

- 1.1 Reduction of Use of Hazardous Substances
  - M** 1.1.1 Compliance with provisions of European RoHS directive
  - 1.2 Hexavalent Chromium
    - O** 1.2.1 Elimination of intentional use of Hexavalent Chromium
  - 1.3 Cadmium
    - O** 1.3.1 Elimination of intentional use of Cadmium
  - 1.4 Lead
    - O** 1.4.1 Elimination of intentional use of Lead in certain applications
  - 1.5 Mercury
    - M** 1.5.1 Reporting on amount of Mercury used in light sources
    - O** 1.5.2 Low threshold for amount of Mercury used in light sources
  - 1.6 Flame Retardants and Plasticizers
    - M** 1.6.1 Elimination of intentional use of SCCP flame retardants and plasticizers in certain applications
    - O** 1.6.2 Elimination of intentional use of Deca-BDE
    - O** 1.6.3 Larger plastic parts free of flame retardants
  - 1.7 Batteries
    - O** 1.7.1 Batteries free of Lead, Cadmium and Mercury
  - 1.8 PVC and Chlorinated Plastics
    - O** 1.8.1 Large plastic parts free of PVC

### 2. Materials Selection

- 2.1 Total Recycled Content
  - M** 2.1.1 Declaration of post-consumer recycled content
  - O** 2.1.2 Minimum content of postconsumer recycled material
  - O** 2.1.3 Higher content of postconsumer recycled material
- 2.2 Renewable/Bio-Based Materials
  - M** 2.2.1 Content declaration of renewable/bio-based materials
  - O** 2.2.2 Minimum content of renewable/bio-based material
- 2.3 Dematerialization
  - M** 2.3.1 Declaration of product weight

### 3. Design for End of Life

- 3.1 Design for Recovery through Recycling Systems that Utilize Shredding
  - M** 3.1.1 Identification of materials with special handling needs
  - M** 3.1.2 No incompatible paints or coatings
  - M** 3.1.3 Easy disassembly of housings
  - M** 3.1.4 Marking of plastics
  - M** 3.1.5 Identification and removal of batteries and circuit boards
  - O** 3.1.6 Reduced number of plastic resins
  - O** 3.1.7 Molded/glued in metal eliminated or removable
  - O** 3.1.8 Minimum 65 percent reusable/recyclable
  - O** 3.1.9 Minimum 90 percent reusable/recyclable
- 3.2 Design for Recovery through Disassembly
  - O** 3.2.1 Manual separation of plastics
  - O** 3.2.2 Marking of plastics

### 4. Product Longevity / Life cycle Extension

- 4.1 Manufacturer Warranty/Service Agreement
  - M** 4.1.1 Availability of additional warranty or service agreement
- 4.2 Upgradeability
  - M** 4.2.1 Upgradeable with common tools
  - O** 4.2.2 Modular design
- 4.3 Product Life Extension
  - O** 4.3.1 Availability of replacement parts

### 5. Energy Conservation

- 5.1 Power Management System
  - M** 5.1.1 Energy Star® 3.0
  - O** 5.1.2 Lower power usage
  - O** 5.1.3 Tier 2 Energy Star® 4.0
  - O** 5.1.4 FEMP "Executive Order 13221"
- 5.2 Power Management
  - M** 5.2.1 Documented power management features
- 5.3 Use of Renewable Energy
  - O** 5.3.1 Renewable energy accessory available
  - O** 5.3.2 Renewable energy accessory standard
- 5.4 Efficiency of Power Supplies
  - O** 5.4.1 Efficiency threshold and disclosure of efficiency

## **6. End of Life Management**

- 6.1 Product take-back
- M** 6.1.1 Provision of product take-back service (Annual Report Criterion)
- 6.2 Rechargeable Battery Recycling
- O** 6.2.1 Provision of a rechargeable battery recycling program (Annual Report Criterion)

## **7. Corporate Performance**

- 7.1 Corporate Environmental Policy
- M** 7.1.1 Demonstration of corporate environmental policy consistent with ISO 14001 (Annual Report Criterion)
- 7.2 Environmental Management System
- M** 7.2.1 Self-certified environmental management system for manufacturing facilities (Annual Report Criterion)
- O** 7.2.2 Third-party certified environmental management system for manufacturing facilities (Annual Report Criterion)
- 7.3 Corporate Reporting
- M** 7.3.1 Corporate report consistent with Performance Track (Annual Report Criterion)
- O** 7.3.2 Corporate report based on Global Reporting Initiative (GRI) (Annual Report Criterion)

## **8. Packaging**

- 8.1 Toxics in Packaging
- M** 8.1.1 Reduction/elimination of toxics in packaging
- 8.2 Recyclable packaging materials
- M** 8.2.1 Separable packing materials
- O** 8.2.2 Packaging 90% recyclable and plastics labeled
- 8.3 Recycled Content
- M** 8.3.1 Declaration of recycled content
- O** 8.3.2 Minimum post-consumer content guidelines
- 8.4 Take-Back Option
- O** 8.4.1 Provision of take-back program for packaging
- 8.5 Reuse Option
- O** 8.5.1 Documentation of reusable packaging

