

# Electronic Waste Diversion Strategies at the Vancouver International Airport

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## Executive Summary

### **Research Question: What strategies should the Vancouver International Airport Authority pursue in order to effectively expand its electronic waste diversion program?**

This study assessed the e-waste generation trends at the Vancouver International Airport (YVR). The findings of this research have informed the composition of a set of recommendations for an expanded e-waste diversion program at the airport.

The airport authority currently has programs in place for the replacement and recycling of all end-of-life lighting products, batteries, cellular phones and computers. Opportunities for expanding this program were determined through an online survey, an audit and interviews. It was found that a highly assorted range of e-waste categories are currently produced by the airport authority. Furthermore, it was found that airport tenants have been responsible for generating a large proportion of YVR's e-waste stream.

### **Recommendations:**

1. The Community and Environmental Affairs department in the airport authority harmonize the diversion of all end-of-life electronics at the airport. This can occur through the creation of a designated e-waste drop off location at the airport that is accessible to members of the airport authority as well as airport tenants.
2. The airport should register as a Large Volume Generator with Encorp Pacific or a certified BC recycler to receive no-cost e-waste removal service.
3. In order to ensure this system of e-waste diversion has high participation, effective communication about the program must occur through online channels, bulletin boards and meetings.
4. Guidelines for e-waste management should be developed and disseminated amongst YVR staff and tenants.

## Research Question

*What strategies should the Vancouver International Airport Authority pursue in order to effectively expand its electronic waste diversion program?*

## Vancouver International Airport

As the second busiest airport in Canada,<sup>1</sup> which facilitated the travel of 17.6 million passengers last year, the Vancouver International Airport (YVR) comprises a vast community.<sup>2</sup> Cautious of the potentially detrimental environmental impact of its operations, the YVR airport authority has made an ongoing commitment to sustainability by striving to effectively integrate the economic, social, environmental and governance aspects of its business.<sup>3</sup> A series of initiatives were implemented in order to fulfill this commitment including the recycling of over 18 million kg of waste from the airport's terminals, office areas, and construction sites in 2011.<sup>4</sup> The airport has also taken preliminary action to divert its rapidly growing electronic waste stream from the landfill. There is potential to substantially expand these efforts.

## Electronic Waste Diversion

The rapid technological innovation of recent decades, has been associated with a vast range of external costs, such as the accumulation. of electronic waste. Electronic waste (e-waste) includes all products with a plug, battery or that require electricity which have reached

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<sup>1</sup> (Hale and Smith 2013)

<sup>2</sup> (Vancouver International Airport 2013)

<sup>3</sup> (Vancouver Airport Authority 2008)

<sup>4</sup> (Vancouver International Airport 2013)

their end of life phase.<sup>5</sup> E-waste has emerged as one of the largest waste streams across the globe.<sup>6</sup> The hazardous substances found in e-waste, including lead, mercury, cadmium, and arsenics, have detrimental environmental and health impacts.<sup>7</sup> The transnational flow of electronic waste has resulted in 70% of all e-waste in the world reaching unreported and unknown destinations. In particular, over the last five decades, e-waste has been unsafely disposed of in countries that are not included in the Organisation for Economic Co-operation and Development (OECD).<sup>8</sup> In response to socially and environmentally exploitative e-waste management trends, there has been a nation-wide movement to improve producer accountability for sustainable e-waste diversion in Canada.

## Research Mandate

In this study, I assessed the e-waste generation trends at YVR as well as the institutional support systems in place for recycling e-waste in British Columbia. This assessment informed my recommendations for an expanded e-waste diversion program at the airport that is in accordance with the economic, social, environmental and governance goals identified in YVR's Environmental Management Plan.<sup>9</sup> This study has focused primarily on the waste generation practices of the eight central departments of the Vancouver Airport Authority which

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<sup>5</sup> (Public Works and Government Services Canada 2013)

<sup>6</sup> (United Nations Environment Programme n.d.)

<sup>7</sup> (Recycling Council of British Columbia n.d.)

<sup>8</sup> (United Nations Environment Programme n.d.)

<sup>9</sup> (Vancouver Airport Authority 2008)

cumulatively encompass about 400 employees.<sup>10</sup> The practices of airport tenants, including retailers, food/beverage vendors and airlines have not been assessed in as much detail.

This report will begin with a summary of regional and provincial policies regarding e-waste. It will proceed to detail the e-waste diversion initiatives currently in place at the airport. A summary of the e-waste generation trends identified in this research will follow. I will end with my recommendations for an expanded e-waste diversion program at YVR.

## Policy Summary

British Columbia's approach to regulating stewardship of e-waste has involved the implementation of an extended producer responsibility approach.<sup>11</sup> This approach imposes the responsibility for the management of the environmental impacts of electronics on producers and consumers as opposed to tax payers. In effect, BC's e-waste policy applies the theories of industrial ecology as it seeks to limit externalities by modeling industries after natural ecosystems.<sup>12</sup> In this systems scale analysis, environmental implications of products are considered from their birth to their end-of-life phases.<sup>13</sup> This is also known as the cradle-to-grave approach to environmental management.<sup>14</sup> The provincial policies regarding e-waste

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<sup>10</sup> (Vancouver International Airport 2013)

<sup>11</sup> (British Columbia Ministry of Environment 2011)

<sup>12</sup> (Deutz 2009)

<sup>13</sup> (Deutz 2009)

<sup>14</sup> (Valero and Valero 2012)

have been summarized in Figure 1 below.



**Figure 1** This flow chart summarizes British Columbia's policies for the stewardship of end-of-life electronics. This provincial producer responsibility model is financed by the Electronic Handling Fee (EHF) levied on electronics upon purchase. Some household and industrial appliances on which an EHF is levied are not accepted in the Encorp Pacific program and are instead diverted through the Canadian Electrical Stewardship Association (CESA).

As specified in British Columbia's Environmental Management Act, the producer of electronics and electrical products holds responsibility for establishing a product stewardship plan which must be renewed every five years.<sup>15</sup> Under this act, the producer is defined as an entity responsible for product manufacturing, sales, distribution or use in a commercial enterprise in British Columbia.<sup>16</sup>

Since 2006, the not-for-profit, Electronic Stewardship Association of BC (ESA BC), has administered the British Columbia Stewardship Plan for End-of-Life Electronics. ESA BC contracts, the federally incorporated not-for-profit, Encorp Pacific to operate the program under the "Return-It" label.<sup>17</sup> This program is financed by Electronic Handling Fees (EHFs)

<sup>15</sup> (British Columbia Ministry of Environment 2011)

<sup>16</sup> (British Columbia Ministry of Environment 2011)

<sup>17</sup> (Electronic Product Stewardship Canada 2006)

which are levied upon the purchase of most electronics.<sup>18</sup> The product specific EHF is directed toward funding the recycling procedures for end-of-life electronics including those purchased before the implementation of the fee.<sup>19</sup>

Recently, ESA BC transitioned into the Electronic Products Recycling Association (EPRA). EPRA is a national governance system with a mission to streamline e-waste diversion programs across Canada.<sup>20</sup> This program also ensures that third-party recyclers included in the stewardship plan of a product must be approved by Canada's Recycler Qualification Office (RQO).<sup>21</sup> The RQO audits recyclers to ensure that waste is recycled in an environmentally sound manner, without exportation of e-waste to non-OECD countries.<sup>22</sup>

The Electronic Handling Fee also finances the Canadian Electronic Stewardship Association (CESA). CESA coordinates the diversion of certain end-of-life products with an EHF levy, such as household and industrial appliances, that are not managed by Encorp Pacific.<sup>23</sup>

Under the "Return-It" label, Encorp Pacific has depots across BC that accept e-waste.<sup>24</sup> Since these depots are designed for individual product returns, Encorp Pacific also offers direct, no-cost pick up services for Large Volume Generators of e-waste.<sup>25</sup> If an organization meets the minimum e-waste generator requirements, it can register online as a Large Volume Generator.

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<sup>18</sup> (Electronic Product Stewardship Canada 2006)

<sup>19</sup> (Encorp Pacific 2011)

<sup>20</sup> (Electronic Product Recycling Association 2012)

<sup>21</sup> (Electronic Stewardship Association of BC 2011)

<sup>22</sup> (Recycler Qualification Office 2012)

<sup>23</sup> (Canadian Electronics Stewardship Association n.d.)

<sup>24</sup> (Encorp Pacific 2011)

<sup>25</sup> (Return-It 2012)

The Metro Vancouver landfill bans the entry of any electronics or electrical products included in provincial stewardship legislation. This Greater Vancouver Sewerage and Drainage District Bylaw specifies the disposal regulations for all types of waste. It includes a list of items banned from the Metro Vancouver landfill.<sup>26</sup> These municipal regulations reinforce provincial e-waste recycling legislation.

## **E-Waste Diversion Initiatives at YVR**

As part of YVR's efforts to divert its waste from the landfill, it has established notable basic electronic waste diversion initiatives. YVR currently has a thorough program in place for the replacement and recycling of all end-of-life lights and lighting products in the airport. Furthermore, the airport authority partakes in a battery and cellular phone recycling program. As part of this program, the airport has designated bins for battery and cell phone drop off. The e-waste collected in this program is managed by the organization Call2Recycle. Additionally, the Informational Technology support desk at the airport, currently takes responsibility for computer and peripheral computer equipment that has reached its end-of-life phase. Once a substantial stockpile of these products has been reached, they are directly collected by the downstream recycler Genesis Recycling. On a broader scale, the airport also engaged in a one-time roundup event whereby all departments were asked to deposit their e-waste at a designated location. Following this, a third party waste hauler was contracted to collect and streamline its e-waste to a downstream recycler.

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<sup>26</sup> (Metro Vancouver 2012)

## E-Waste Generation at YVR

### Methods

In this study, a combination of methods was applied in order to determine the predominant categories and scale of e-waste production at YVR. Firstly, an online survey was distributed to members of the Vancouver Airport Authority. The entire survey can be found in Appendix-2. In total, about 23 out of roughly 400 members of the airport authority participated in this survey. The low response rate in part can be attributed to the authority recently experiencing a technological systems transition. Although less than 6% of the targeted demographic took part, the results of this survey, nevertheless, offer insight into the diverse categories of e-waste produced by the Airport Authority. These results have also been important in identifying the particular e-waste disposal practices of specific departments. As shown in Figure 2, the most well-represented departments in this survey included: Operations and Engineering. Notably, there was no representation of two departments. Consequently, the results of this survey have been deficient in assessing overall interdepartmental e-waste generation trends.

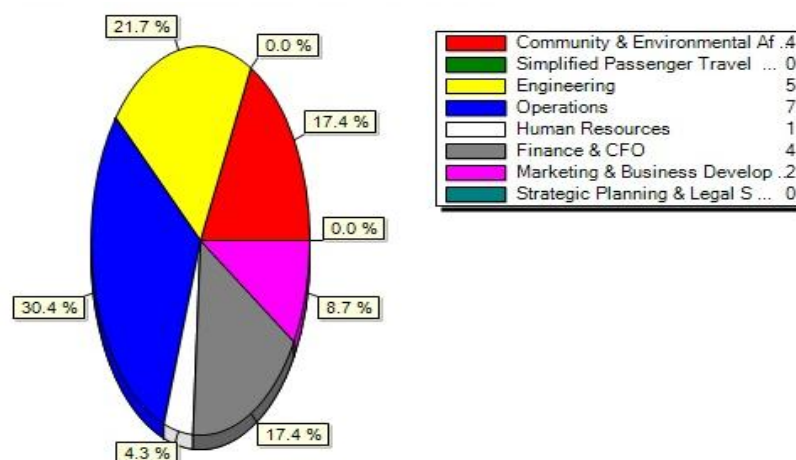


Figure 2 - This chart indicates the number of employees from each of the Airport Authority's eight central departments that participated in the online e-waste generation survey. (YVR-Airport-Authority 2013)

Secondly, an interview was conducted with a staff member responsible for Tennant Relations in order to qualitatively assess e-waste production by airport tenants.

Finally, an audit was conducted of one of the central storage hubs containing end-of-life electronics at the airport in order to more holistically identify the categories and scope of e-waste generation.

## Findings

The online survey aimed to identify the types of e-waste produced by the eight core departments of the airport authority. The results indicated that desktop, laptop and tablet computers, as well as peripheral computer equipment, such as monitors, keyboards and mice, comprise the greatest proportion of reported e-waste produced by the airport authority. However, a number of outdated and obsolete categories of electronic products, such as electronic typewriters, were also reported as departmental e-waste. Another notable reported category was that of power tools and space heaters which, though not managed by Encorp Pacific, can be diverted through CESA's recycling program. The full list of reported e-waste categories can be found in Appendix-1.

In the survey, many airport authority members also indicated that their department needs support in disposing non-electronic components of electrical products such as printer cartridges, cables, cords and CDs/DVDs.

In addition to the e-waste reported in the survey, 140 television monitors, two printers and one hard drive were reported in an audit of an end-of-life electronics disposal hub in the basement of the Vancouver Airport shown in Figure 3. This location is one of multiple in the building where e-waste generated by the authority and by tenants has been accumulating over time.

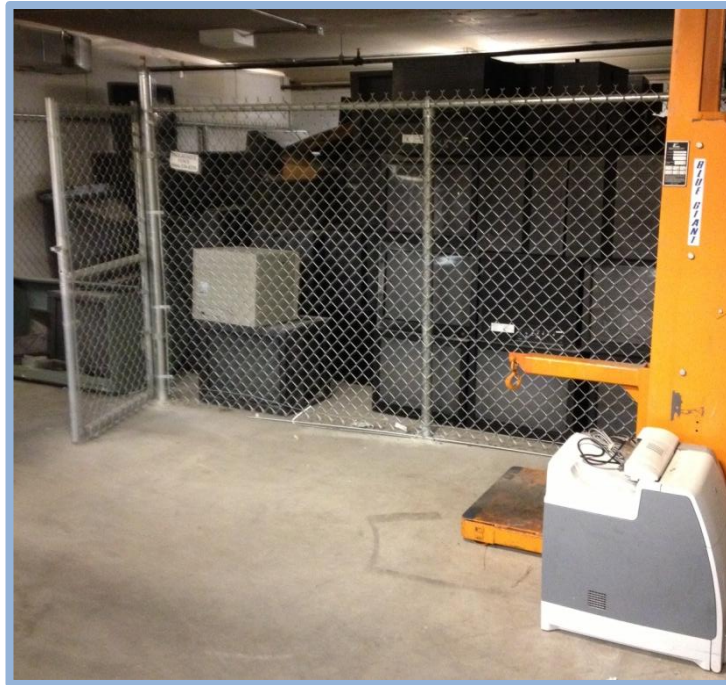


Figure 3 - This image shows the e-waste disposal hub in the basement of the Vancouver Airport.

There was no consensus among airport authority employees regarding the frequency of e-waste generation. Even within departments, individuals reported highly varying degrees of frequency. However, on average a higher frequency of e-waste generation was reported by employees belonging to the department of Engineering. The highest frequency was reported by a member of the Operations department who commented that e-waste is generated "weekly by airport tenants".

In total, 35% of survey respondents reported that airport tenants have asked them about e-waste disposal procedures or that they have encountered e-waste abandoned by tenants. One survey respondent suggested that expectations for e-waste diversion could "be added to Airport Use Licence and Lease agreements" for tenants. Tenant contribution to the e-waste streams in YVR was confirmed by Irma Paxa, the airport's Food and Beverage Tenant Relations Coordinator. Paxa reported that airport tenants frequently circumvent their responsibility to divert their own e-waste streams by abandoning their end-of-life electronics at different locations in the airport.<sup>27</sup> Since the Airport Authority, in the end, must manage this orphaned e-waste, Paxa commented that it would be most economically suitable route for YVR to create a designated space for e-waste drop off and arrange for frequent pick-up.

This sentiment was reinforced by other Airport Authority employees. In the survey, all respondents, except for one, confirmed their support for a designated space for e-waste disposal. One employee commented on the importance of proper maintenance and monitoring of such an area and another suggested the need for multiple sites serving this purpose. On a comparative note, the Chicago Aviation Department has designated airport space for the disposal of e-waste that is accessible to their tenants and employees.

This survey was also used to gauge awareness and participation in the battery recycling program at the airport (detailed results are available in Appendix 3).<sup>28</sup> It was found

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<sup>27</sup> (Paxa 2013)

<sup>28</sup> (YVR-Airport-Authority 2013)

that all except for one respondent indicated that they had knowledge of this program and, 86% verified that they could locate a battery recycling bin close to them.

The final purpose of this survey was to learn about employees' preferred means of communication about e-waste diversion strategies. 70% of survey respondents expressed an interest in learning more about e-waste diversion (refer to Appendix-3). In the survey, over 90% of respondents indicated they would be receptive to receiving more information through the online forum myYVR, while just over 20% showed support for informative bulletin boards. All respondents agreed they would make use of an e-waste management guideline produced by the airport. Irma Paxa voiced support for communicating e-waste diversion details through notice boards as well as monthly meetings.

## Recommendations

As shown in Figure 4 below, the Vancouver International Airport hopes to improve and integrate the economic, social, environmental and governance aspects of its business in order to fulfill its commitment to sustainable practices.<sup>29</sup> My recommendations for an effective and efficient e-waste diversion system for the airport can be categorized within the four broader goals of sustainability set by YVR.

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<sup>29</sup> (Vancouver Airport Authority 2008)

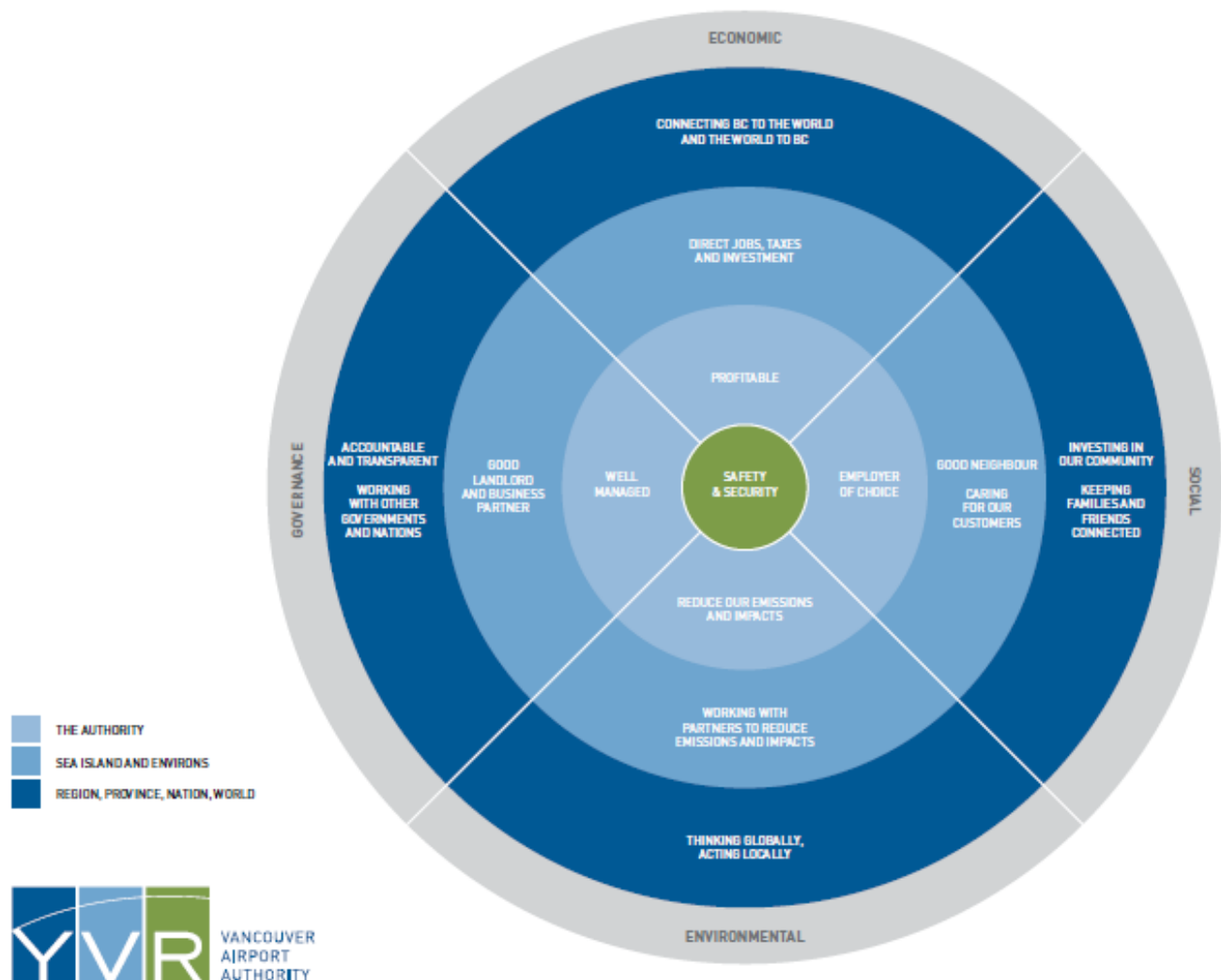


Figure 4 - This diagram illustrates the Vancouver International Airport Authority's sustainability goals (Vancouver Airport Authority 2008).

## Recommendations for Economic Sustainability

The Airport Authority at YVR strives to maintain the airport as a profitable enterprise. As such, the airport should not expend its resources on services provided by third party waste haulers. Considering that the majority of products in the YVR e-waste stream can be managed through the provincial system of electronics stewardship, the Airport Authority should take advantage of the institutions financed by the Electronic Handling Fee. It would be most effective for the airport authority to register as a Large Volume E-Waste Generator with Encorp

Pacific, or with a downstream recycler, and receive complimentary e-waste pickup. Notably, YVR should continue its existing battery and lighting recycling programs. It should also work with CESA to divert items that are not accepted by Encorp Pacific.

Additionally it became evident in this study that e-waste abandonment practices by tenants currently place an economic burden on the airport. Therefore, it is crucial for any diversion initiative to engage airport tenants as well as the Airport Authority.

### **Recommendations for Sustainable Governance**

The Airport Authority has made a commitment to ensuring that it is a well managed institution and a good landlord and business partner. Accordingly, it should harmonize YVR's various disjointed e-waste diversion initiatives into one larger program coordinated by the Department for Community and Environmental Affairs (CEA). CEA should oversee the existing battery collection program as well as a harmonized computers and electrical products diversion initiative.

This standardization would facilitate the airport in effectively communicating information about e-waste diversion. Creating this system of accountability would also prevent the accumulation of obsolete electrical products at the airport.

Based on the support for this idea shown by survey respondents as well as Irma Paxa, the airport should assign a designated space for e-waste disposal. This area must be accessible to members of the Airport Authority and tenants.

## Recommendations for Social Sustainability

Under its social sustainability goals, YVR specifically aims to be an employer of choice, as well as a good neighbor and caring service provider. On a broader level, the airport also seeks to invest in its community.

In meeting these goals, the Airport Authority must remain informed about the needs and concerns of employees and tenants as it develops and maintains an e-waste diversion program. In order to ensure the long term viability of this program, the airport must establish a user feedback system.

Furthermore, the airport must ensure that its e-waste diversion practices are in accordance with the Basel Convention of 1992 which banned the outsourcing of Canadian e-waste to non-OECD countries.<sup>30</sup> It is crucial for YVR to ensure that the downstream recyclers receiving its e-waste retain ownership of all recycled materials. Therefore, e-waste generated by YVR must be directed to one of the four downstream recyclers in British Columbia that have been certified by the Recycler Qualification Office: E-Cycle Solutions, FCM Recycling, Sims Recycling (incorporated Genesis Recycling<sup>31</sup>) and Teck Metals.<sup>32</sup> The airport can either choose to work directly with one of these four downstream recyclers, or indirectly by streamlining its e-waste through Encorp Pacific and CESA.

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<sup>30</sup> (Environment Canada 2010 )

<sup>31</sup> (Gerlat 2012)

<sup>32</sup> (Recycler Qualification Office 2012)

## Recommendations for Environmental Sustainability

The Airport Authority strives to reduce its environmental impacts independently and in conjunction with its partners. A harmonized e-waste diversion program operated by the Community and Environmental Affairs department that engages airport authority members as well as tenants, is a crucial step toward achieving this goal.

The next step must be to ensure that information about the e-waste diversion program reaches and influences behavior change among airport tenants and employees. It has been found that participation in recycling programs emerges from normative behaviors that occur as a result of a demographic having accessibility to and awareness of recycling facilities.<sup>33</sup> Therefore, in order to influence engagement in an e-waste program, CEA must communicate information about it through a diverse range of channels.

The Airport Authority should use its internal communication system, myYVR, as a tool for proliferating information to departments. Bulletin boards can also be used to reinforce an understanding of the e-waste diversion program. Information can also be shared during departmental and tenant meetings. Once a program has been established, a guideline must be developed that offers information about the designated e-waste disposal space and acceptable items in the program. In order to standardize information, this guideline should also include information about the pre-existing battery and light bulb recycling programs at the airport. As well, it should offer more information about the recycling of products such as printer cartridges, CDs, and cords which are frequently associated with e-waste.

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<sup>33</sup> (Barr 2007)

## Opportunities for Future Research

The Vancouver International Airport would benefit from continuing survey airport authority employees and begin surveying tenants, regarding e-waste generation practices. These surveys should include more specific questions about the frequency of e-waste generation in order to determine the frequency of e-waste pickup from YVR.

## Conclusion

There is potential for the Vancouver International Airport to improve upon its waste diversion strategies as a champion of sustainability initiatives. YVR can begin by substantially expand its electronic waste diversion efforts. In order to do this, the Community and Environmental Affairs department at the airport should take responsibility for harmonizing the diversion of all end-of-life electronics at the airport. This can occur through the creation of a designated e-waste drop off location at the airport that is accessible to members of the airport authority as well as airport tenants. By registering as a Large Volume Generator with Encorp Pacific or a Recycler Qualification Office certified recycler, the airport can receive no-cost e-waste removal service. Through a user-feedback system, it can be verified that the program is meeting the needs of employees and tenants. Furthermore, there must be effective communication about the logistics of the program through myYVR, bulletin boards, meetings and a guideline for e-waste management.

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## Appendix

### Appendix-1 E-Waste Generation by the Airport Authority - Categories

Legend
Recyclable through Encorp
Recycled through CESA
Non Electrical Components of Products

Items
Bridges, Modems, Switches & Routers
Business Routers & Switches
Business Video Conferencing Systems
Computer Mice
Computer Monitors
Desktop Computers & Associated Equipment
Desktop Fax Machines
Desktop Label, Barcode, Card Printers
Desktop Printers
Disc Players/Recorders (DVD, Blu-ray, etc.)
Electronic Typewriters
Ethernet Switches
Fax Machine Photocopiers
Floor Standing Fax Machines
Floor Standing Printers & Scanners
Stereo Amplifiers
Keyboards
Laptop/Netbook Computers
Non Cellular Telephones & Answering Machines
Solid State, Zip Drives & External Hard Drives
Tablet Computers
Televisions
Video Cassette Recorders (VCRs)
Cameras
Speakers
Power Tools
Space Heaters
Microwaves
Old Extension/Ethernet Cable/Other Cords
CDs/DVDs
Printer Cartridges

## Appendix-2 YVR E-Waste Generation Survey

### YVR Electronic Waste Survey

Electronic waste (e-waste) is a broad phrase used to refer to electronics and electrical products that are no longer considered functional and have reached their end-of-life phase. Certain components in these products often contain materials that render them hazardous. For instance, Cathode Ray Tubes found within TVs and computer monitors are known to contain toxic metals that could potentially have devastating health and ecological impacts. The Environmental Management Act of British Columbia mandates the stewardship of e-waste and the Metro Vancouver Landfill has placed a ban on the disposal of e-waste with regular garbage. The Vancouver International Airport is currently looking to establish a diversion program for the e-waste produced by departments within the Airport Authority. You have been invited to participate in this survey to help us develop recommendations for an effective e-waste diversion program.

#### 1) Which department within the Airport Authority do you represent?

- ☐ Community & Environmental Affairs
- ☐ Simplified Passenger Travel and Chief Information Officer
- ☐ Engineering
- ☐ Operations
- ☐ Human Resources
- ☐ Finance & CFO
- ☐ Marketing & Business Development
- ☐ Strategic Planning & Legal Services

**2) Recycling programs for the electronics and electrical products listed below is covered by the Electronic Handling Fee (EHF) paid upon purchase. Funds collected by the EHF program finance Encorp Pacific's electronic waste diversion program mandated by British Columbia's Environmental Management Act. Does the waste produced in your department include any of the items listed here? Please select all that apply.**

- ☐ Bridges, Modems, Switches & Routers
- ☐ Business Routers & Switches
- ☐ Business Servers
- ☐ Business Video Conferencing Systems
- ☐ Cable & Satellite Receivers
- ☐ Computer Mice
- ☐ Computer Monitors
- ☐ Desktop Computers & Associated Equipment
- ☐ Desktop Fax Machines
- ☐ Desktop Label, Barcode, Card Printers
- ☐ Desktop Printers
- ☐ Disc Players/Recorders (DVD, Blu-ray, etc.)
- ☐ Electronic Typewriters
- ☐ Ethernet Switches
- ☐ Fax Machine Photocopiers

- ☐ Floor Standing Fax Machines
- ☐ Floor Standing Printers & Scanners
- ☐ Stereo Amplifiers
- ☐ Keyboards
- ☐ Laptop/Netbook Computers
- ☐ Non Cellular Telephones & Answering Machines
- ☐ Point of Sale (POS) Terminals
- ☐ Servers & Data Storage Equipment
- ☐ Cable Setup Boxes (including digital TV)
- ☐ Solid State, Zip Drives & External Hard Drives
- ☐ Tablet Computers
- ☐ Tape Storage Systems
- ☐ Televisions
- ☐ Turntables/record players
- ☐ Video Cassette Recorders (VCRs)
- ☐ Video Conferencing Systems
- ☐ Wireless Access Points & Range Extenders
- ☐ Cameras
- ☐ Speakers
- ☐ None of the Above

**3) Does your department produce any electronic waste that is not managed through the Encorp Pacific program? Please check all that apply.**

- ☐ Power Tools
- ☐ Old Extension Cords
- ☐ Ethernet Cable Cords
- ☐ Other Cords
- ☐ Space Heaters
- ☐ Printer Cartridges
- ☐ Retail Point of Sale Devices
- ☐ Other (please specify)

If you selected other, please specify

**4) How often are each of the items indicated in the above questions generated? (Weekly, Monthly, Annually etc)**

**5) Do you need more information about how to properly dispose of these types of waste?**

- ☐ Yes
- ☐ No

**6) How often does your department replace small appliances (ie microwaves, toaster ovens, clocks)? Do you need support in disposing old small appliances?**

**7) How would you like to receive more information about recycling e-waste and batteries?**

- ☐ myYVR (intranet)
- ☐ Departmental Notice Boards
- ☐ Other (please specify)

If you selected other, please specify

**8) If the airport authority produced an e-waste management guideline, would you use it for your reference?**

- ☐ Yes
- ☐ No

**9) Do you feel there should be a designated location(s) for the drop-off and temporary storage of e-waste?**

- ☐ Yes
- ☐ No
- ☐ Other (please specify)

If you selected other, please specify

**10) Are you ever approached by tenants who need help to dispose of e-waste? If so, please explain.**

**11) Are you aware of the Airport Authority used battery collection program?**

- ☐ Yes, I currently use the battery recycling program
- ☐ Yes, but I do not utilize the battery recycling program
- ☐ No, I did not know there was a program for battery recycling

**12) Do you know the location of the used battery collection bin closest to you?**

- ☐ Yes
- ☐ No

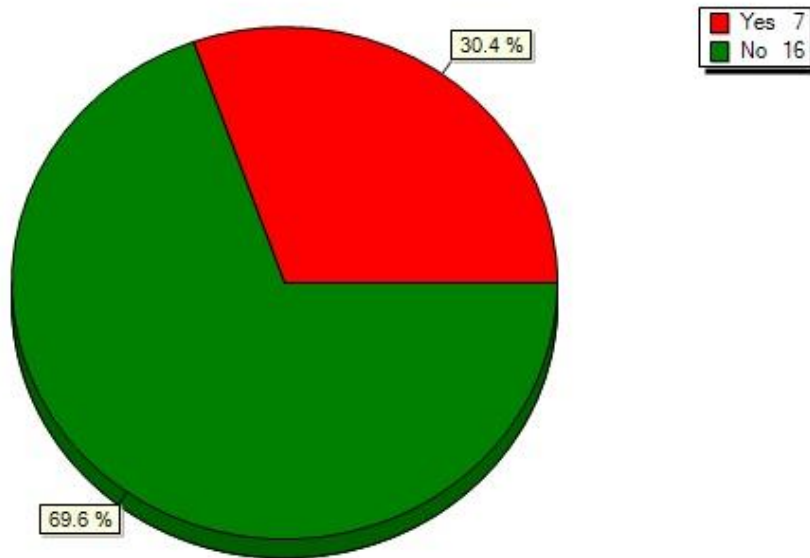
**13) Do you have any suggestions as to how the Airport Authority could best implement an e-waste management program? Other comments?**

*Thank you for your participation in this project!*

## Appendix-3 YVR E-Waste Generation Survey - Results

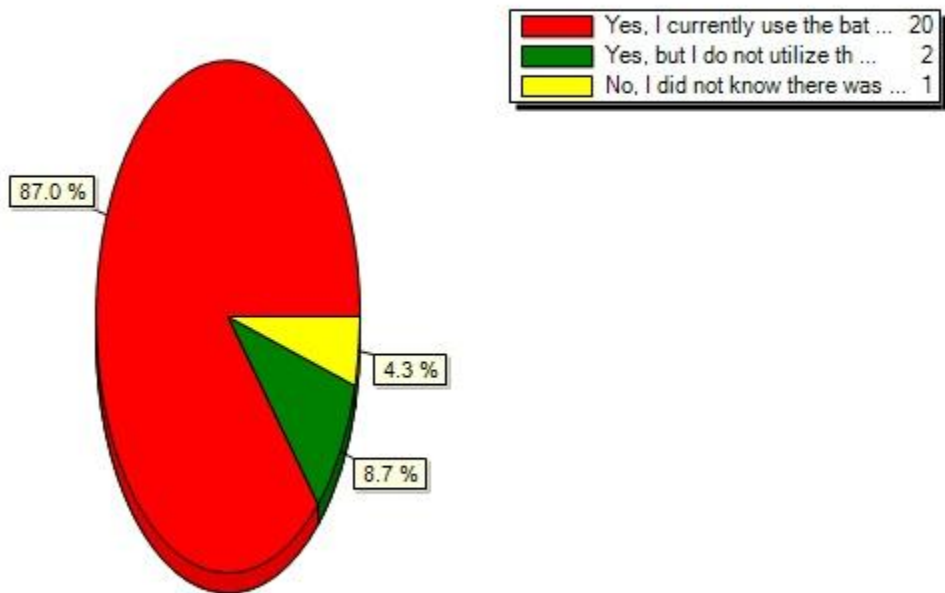
### Question 5 - Responses

Do you need more information about how to properly dispose of these types of waste?



## Question 11 & 12

Are you aware of the Airport Authority used battery collection program?



Do you know the location of the used battery collection bin closest to you?

