

## **A. Contact Information**

- **Project Name:** Demonstrating a New Computer Stewardship Model for Rural Communities
- **Project Location:** Ashland Wisconsin
- **Project Period:** April 1, 2004 – March 31, 2005
- **Recipient of Funds:** Inland Sea Society
- **Project Contact:** Mike Gardner or Bruce Lindgren
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- **Cooperative Partners:** Ashland Area Development Corporation, Wisconsin Indianhead Technical College, Wisconsin Department of Corrections, Ashland Public School District
- **Project Topic and Priority Area:** Recycling, waste minimization, building public support for environmental stewardship

## **B. Problem Statement & Project Overview**

### **Problem Statement**

This proposal addresses the problem of managing the massive numbers of unwanted computer equipment entering the waste stream. Technology is developing at such a rapid rate that PCs currently have a two-year life span<sup>1</sup>. By 2004, there will be 325 million obsolete computers in the U.S.<sup>2</sup> When these computers become "obsolete", where do they go? A study by Carnegie Mellon estimates 55 million PCs will landfilled by 2005<sup>3</sup>. Because of the presence of toxins in computers and monitors, such as lead and mercury, it is critical to address this situation.

Most computers that are considered "obsolete" are still in good working order. Obsolescence is determined by whether it is economically sound to upgrade a computer to meet the minimum requirements of current commercial software. Proprietary commercial software continually requires faster processors, more memory, and larger hard drives to operate effectively. This is a prescription for an electronic waste crisis.

Another problem we are addressing is the 'Digital Divide.' In today's information age, access to basic computer technology is becoming a literacy requirement. Statistics consistently show that a low household income directly correlates with poor access to information technology. Households with incomes of \$35K or less have at most a 35.8% chance of owning a computer, while households with incomes of \$75K or more have a 79.9% chance. The average household income in Ashland County, WI, where this project is located, is \$32K. Moreover, the entire Upper Great Lakes region is similarly economically depressed.

We need to carry out this project because it is crucial that this mass of unwanted computers be used to meet community needs instead of becoming a toxic burden on the waste stream.

### **Project Overview**

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<sup>1</sup> <http://www.epa.gov/region09/waste/solid/electronics.html>

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

## *Demonstrating a New Computer Stewardship Model for Rural Communities*

Our objectives are to divert as many computers as possible from entering the waste stream, to determine how best these computers can be used to strengthen our communities, and to evaluate, measure, and document the techniques we use such that our process can be duplicated in other settings.

Our objective is to become the regional drop-off center for unwanted computers, where we will determine which of the machines are capable of rehabilitation and which are not. Those that cannot be reused will be responsibly recycled through our partnership with the Wisconsin Department of Corrections.

The reusable machines will be rehabilitated using the innovative solution of installing Open Source software on them. It is well known that a computer has a fairly short useful life in the world of proprietary commercial software. An alternative to this is Open Source software, which is free, high-quality software, developed by a global community of software engineers. The Linux operating system is at the center of this community. When older computers are used with Linux and Open Source software, they become effective in serving the needs of individuals, organizations, schools and communities. While an older computer is not suitable for all needs, it is suitable for Web browsing, Email, word processing, spreadsheets, and some other basic uses.

Our strategy for accomplishing these objectives is to establish a set of best practices for transforming unwanted computers into useful tools that meet community needs. We will engage the Open Source community to establish a set of procedures for collecting unwanted computers, to maximize reuse, and to deal responsibly with equipment that cannot be reused.

One of the barriers to more widespread usage of Open Source software is arcane documentation. While a lot of information is available, it is usually written for a computer savvy audience. Our aim is to create user-friendly, step-by-step instructions for replicating the transformation of computers from burden to benefit.

### **Benefits**

This project will provide several important benefits to both the environment and the community. Our project will help keep toxic material out of the landfills, and will also provide energy savings by reclaiming more of the resources invested in the computers than material level recycling. The fact that the computers are being reused has additional advantages, in that we will be making affordable computers available to many community members who would otherwise be denied basic access to technology.

An additional positive outcome of this approach is the rich educational experience it offers. The model of building useful computers from unwanted machines and Open Source software represents many opportunities for learning about computer hardware and software. The educational opportunities will range from basic computer usage to sophisticated system administration. We will provide a Web-based knowledge repository on the issues surrounding computers and the environment.

We also see potential for creating employment opportunities. Our volunteers will be exposed to computer skill training, which, in our increasingly technology-dependent society, is a highly marketable job skill.

## **C. Response to Criteria**

### **Threshold Criteria**

#### *Project Priority Area Discussion:*

Our project addresses the critical challenge of energy recovery, recycling, and waste minimization through leveraging the resources invested in the computers. In addition, we will be building support for environmental stewardship by demonstrating principles of reuse.

#### *Entity Eligibility Discussion:*

The Inland Sea Society is a 501(c)3 organization that works toward maintaining a Lake Superior Basin with a naturally diverse and healthy ecosystem, including human communities that demonstrate respect for the lake. LongRun Recycling project falls within our community stewardship initiatives, such as watershed organizing, environmental education, water trail mapping, and responsible land use practices.

### **Evaluation Criteria**

#### **Fosters Innovation**

We will expand on the concept of computer reuse in several innovative ways. The majority of computer reuse initiatives attempt to deal with the software problems either by providing old versions of commercial software or by providing computers with no software installed at all. Neither of these approaches has proven to be satisfactory. The few projects which promote reuse based on Open Source software are more successful; however, they rely on the demographics of a densely populated urban setting, and an extremely computer savvy staff. We will be collaborating with these projects to create a methodology for solving the problem of unwanted computers, focusing on how to adapt it to the sparsely populated upper Great Lakes region. We are also developing innovative methods of incorporating stewardship of computers into a self-sustaining business model that hinges on equipment removal and consulting services.

#### **Provides Evaluation Process**

We will measure and evaluate outputs based on a logic model developed to determine short and long-term outcomes.

**Input:** Grant funds, matching funds, volunteer time, collaboration and in kind support will be utilized to implement the project activities

**Output:** Measures of the pounds of equipment received, number of computers refurbished and placed into community service, number of community members who take advantage of project sponsored learning opportunities will be quantified.

**Outcome:** (Short term / 6 mo.) At the onset, we will develop measures of users' attitudes towards technology and consumer choices as well as a suite of indicators for evaluation.

(Long term / 1 yr.) Upon evaluation of short-term outcomes, we will adopt strategies that result in a self-sustaining operation, which is replicable in other rural communities.

#### **Builds or strengthens partnerships**

This pilot project will continue to foster and strengthen our partnerships with Ashland Area Economic Development, Wisconsin Indianhead Technical College, and the Wisconsin Department of Corrections. Our ISS volunteers, working under the mark "LongRun" have

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collected and processed many tons of unwanted computers from the immediate Ashland area. Our partner organizations have aided the effort considerably by providing free storage of this equipment, volunteer support, and an environmentally sound disposal alternative for unusable computers, respectively. We anticipate that EPA support will help us build on these critical relationships by making ISS a more co-equal partner.

Additionally, we have formed relationships with a number of entities: the City of Ashland, Ashland County, Ashland High School, Wisconsin Alliance for the Environment, the Lake Superior Alliance and the Northwest CEP program. We have attached letters of support.

#### **Potential for application to other regions or programs**

The LongRun Computer Recycling pilot program will be organized as a self-sustaining not for profit venture. Throughout the pilot project, we will fully document the processes and procedures that we use to develop our program. We intend to make these materials thorough, yet generic, so that the project pilot program will be easily adapted or expanded to other regional areas of the U.S., specifically to rural areas. This distinction is critical because it has yet to be proven that a rural area can financially support a stand-alone computer and electronic recycling program, due to lack of volume. The results of this project will demonstrate the feasibility of carrying out similar programs in other parts of the U.S.

#### **Likelihood of producing results in 6 months**

Over the past year, we have been developing this framework with volunteer support. We feel confident that with the added value of staff support, we can meet the timeline presented in section D. Within six months, we expect to be processing many tons of unwanted computer equipment, placing a significant number of rehabilitated PCs in the community, and making progress on a template of best practices for transition to other communities.

### **D. Schedule with Milestones & Reporting**

A project manager from the Inland Sea Society will be responsible for task delineation, assignments, formative evaluations and reporting. Reports will provide details of milestones for each quarter and will enumerate task completion, challenges and anticipated solutions. Personnel hired to perform technical support, consulting, general operations, and outreach will accomplish the tasks identified below:

- 1st Quarter
  - Create in-house inventory system and begin compiling hardware knowledge base.
  - Place pilot thin-client network solutions in a school and non-profit organization.
  - Establish the LongRun Website a primary source of information on computer reuse via Open Source software.
  - Establish relationships with other entities in the Open Source community who are interested in the goals of this project.
  - Survey regional schools, organizations and businesses to determine if they have unwanted computers and to assess their need for IT services.
  - Establish volunteer opportunities for community members and students to participate in our project.
- 2nd Quarter

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- Expand the volume of equipment collected.
- Target 5 new clients for pilot solutions.
- Assess the level of success of the Q1 pilot thin-client networks.
- Recruit other entities who are interested in implementing our methods.
- Establish, moderate, and maintain an efficient feedback loop between the pilot participants and the Open Source engineers.
- 3rd Quarter
  - Continue to expand the volume of equipment collected.
  - Expand the range of pilot programs.
  - Begin to standardize a process that will allow relatively non-technical parties to build usable computers from unwanted hardware and Open Source software.
  - Submit article about computer reuse to trade journal.
- 4th Quarter
  - Write documentation providing explicit instructions in our methodology.
  - Consider creation of a video or interactive media script.
  - Provide workshops and on-site training in these methods to a rural community who has expressed interest in replicating our project.

**E. Budget**

The amount requested from EPA for this project is \$57,690. The 5% required match will be met through in-kind contributions of volunteers. Based our anticipated costs for general labor, we expect that the value of voluntary support will greatly exceed \$3,000.

**Personnel**

	<b>Basis</b>	<b>Amount Requested</b>	<b>Explanation</b>
Project Management	Monthly, \$500	\$6,000	ISS Staff
Technical Support	Hourly, \$12.50	\$27,000	FTE Staff
Volunteer Coordination	Daily, \$50	\$4,800	Two days per week for 48 weeks
General Labor	Hourly, \$8.50	\$6,600	As needed
Outsourced/Consulting	Hourly, \$35.00	\$2,200	Graphic Art, Technical, Marketing
<b>Personnel Total</b>		<b>\$46,600</b>	

**Non-personnel**

Rents	Year	\$2,640	AAEC Building space
Communications support	Year	1,800	Phone, DSL
Disposal fees	Year	550	Unusable parts
Trucking/Transportation	Year	1,200	Rental
Marketing	Year	3,500	Printing, mailing
Office Supplies & Support	Year	900	
Technical literature	Year	500	Books & periodicals
<b>Non-Personnel Total</b>		<b>\$11,090</b>	

