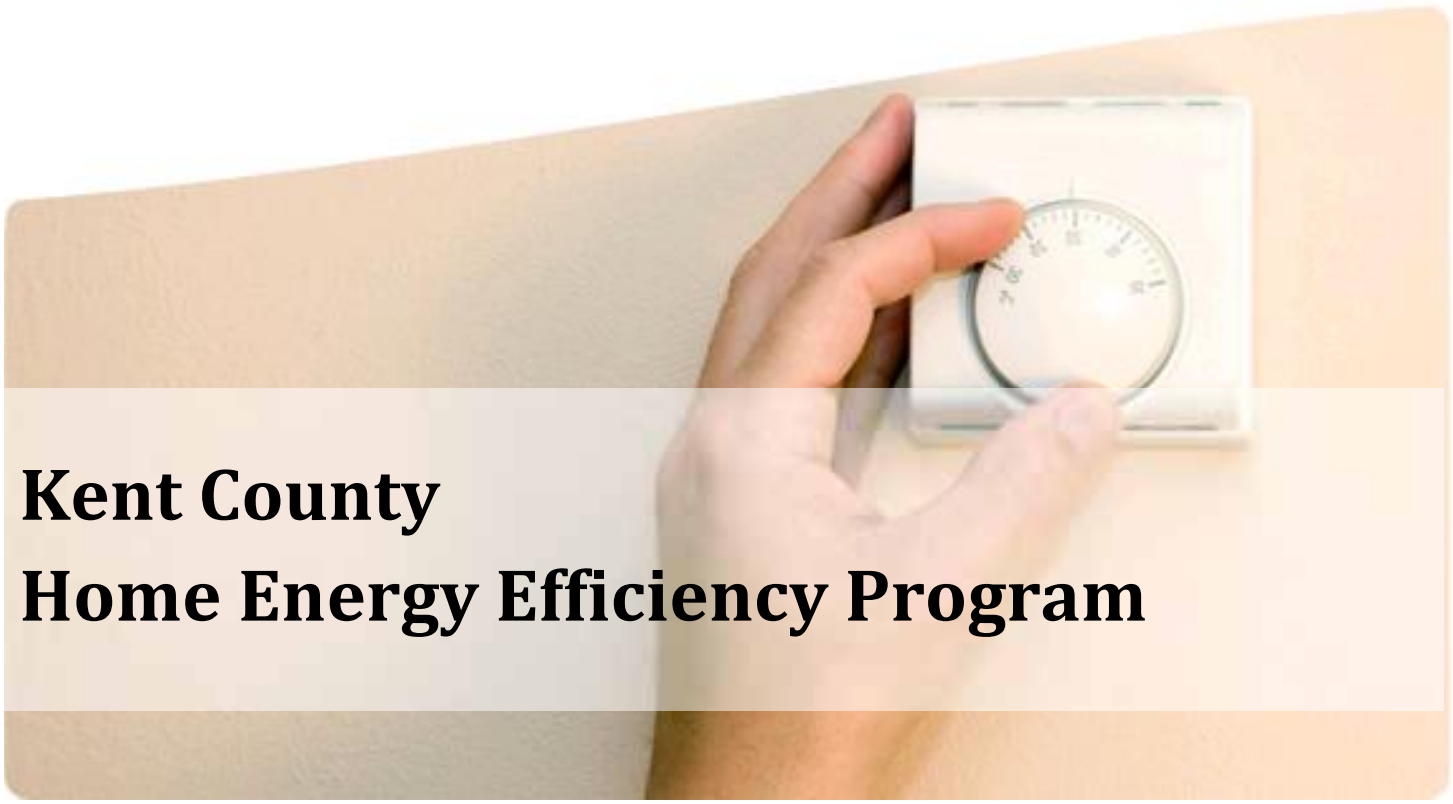

Kent County
Home Energy Efficiency Program

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Executive Summary

Since 1982, the Essential Needs Task Force Energy Efficiency Subcommittee of Kent County, Michigan has been committed to addressing home energy efficiency and utility bill affordability among Kent County's low-income residents. Of the 225,183 households in Kent County, 33% (75,353) spend 30% or more of their annual income on housing costs, which include rent/mortgage payments and utility bill payments. According to the US Department of Housing and Urban Development, these households are considered "housing burdened" meaning they are likely to forgo necessities including food, medical care, and transportation in order to remain in their homes.

Improving the energy efficiency of a home is a long term solution to reducing the amount of energy necessary for electricity, climate control, etc and therefore, reducing a household's utility bill expense. The Energy Efficiency Subcommittee currently seeks to further develop their countywide home energy efficiency program in order to provide weatherization services to a greater number of clients while promoting an energy-conscious culture throughout the county.

In November 2009 the Energy Efficiency Subcommittee sent out their Energy Efficiency Survey to approximately 100 organizations thought likely to provide home energy efficiency services in the county. The purpose of this survey was to identify existing resources as well as gaps. In order to collect additional responses, conduct research, and provide ideas for building their program further, Michigan State University Urban and Regional Planning Practicum students were hired by Kent County's Community Action Agency better known as Area Community Services Employment and Training Council (ACSET) in January 2010. As an Energy Efficiency Subcommittee member and the local weatherization service provider, ACSET, with the help of Kent County MSU Extension, outlined the following scope of services for the MSU practicum team to complete:

1. Create a catalog of existing organizations and their services/resources in Kent County related to weatherization and energy efficiency.
2. Research energy efficiency efforts in other communities in order to identify common practices and recommend a model for an energy efficient community that Kent County can adopt.
3. Develop implementation suggestions and a weatherization procedure tool kit for a Senior Citizen Winter Preparation Program, designed to assist in the weatherization of senior citizen households through a volunteer day.

Findings

After collecting additional surveys, analyzing responses, and conducting research on countywide home energy efficiency program structures and senior weatherization programs, the following was found:

1. A lack of education and knowledge about home energy efficiency exists among both organizations and residents alike within Kent County.

2. Existing Kent County businesses/organizations that would like to offer home energy efficiency related services are prevented from doing so due to a lack of human capital, funding, and other resources.

3. Among the three countywide home energy efficiency program structures researched, all three funded their programs with the help of US Department of Energy dollars, all three had a lead organization responsible for connecting community leaders with existing resources in the county, and all three had local utility companies play a strong role in providing home energy efficiency education to the community. Two of the three counties utilized the Home Performance with Energy Star program. The program provides a template for third-party organizations to follow in the supervision and regulation of organizations and businesses that provide home energy efficiency improvements.

4. Of the five agencies featuring weatherization programs targeting seniors, three utilized professional contractors and two organized volunteer workdays with varying frequency. All volunteer efforts were prefaced by trainings on weatherization procedures. The most comprehensive program, featured by the Community Energy Project, addressed proper protocol when entering the households of low-income senior citizens.

5. All five agencies serving senior citizens conducted an energy audit before providing home energy efficiency services. The most frequently conducted services included storm window/door installation, weatherstripping, CFL replacement, window/door caulking, insulation installation, and furnace repair. Four of the five agencies provided home energy efficiency education.

Introduction

Urban Planning Practicum

This report was written by a team of Michigan State University Urban and Regional Planning students in order to fulfill the requirements of their senior planning practicum course, required for graduation. Urban and Regional Planning is a major offered by the School of Planning, Design and Construction. In order to complete this report, the students worked with the Area Community Services Employment and Training Council (ACSET), Kent County Michigan State University Extension (MSUE), as well as various members of the Energy Efficiency Subcommittee of the Kent County Essential Needs Task Force (ENTF).

Client Profile

Area Community Services Employment and Training Council (ACSET)

The Area Community Services Employment and Training Council (ACSET) is one of the 1,100 community action agency members of the Community Action Partnership, a national non-profit 501 (c) (3) membership organization that serves over 17 million low-income residents in the United States (Community Action Partnership, 2010). As a member for over 35 years, ACSET assists low-income individuals living in Kent County in the areas of family support, food and nutrition assistance, housing, services for older Americans, youth services, and economic security. ACSET carries out these programs by actively seeking funding for program delivery, community involvement, providing direct services to people, and delegating activities to organizations that are committed to carrying out ACSET's goals (ACSET, 2010).

With regards to energy efficiency, ACSET currently provides residential weatherization services to low-income households in an effort to conserve energy and reduce heating costs. ACSET also provides "Energy Efficiency Workshops" in conjunction with both the US Department of Energy Weatherization Assistance Program and various utility assistance programs. ACSET works with local resource providers such as Home Repair Services, rehabilitation programs of local municipalities, and the energy efficiency programs offered by local utility companies. The number of homes ACSET is able to weatherize is contingent upon funding. ACSET funding sources include the US Department of Energy, the United States Low-Income Home Energy Assistance Program, the Michigan Public Service Commission Low-Income and Energy Efficiency Fund, the Kent County Senior Millage, the Kent County Community Development Block Grant, and MCAAA/Utility Company Energy Optimization Funds (K. Tolan, personal communication, 2010).

Kent County Essential Needs Task Force (ENTF)

The Kent County Essential Needs Task Force (ENTF) has been working since 1982 to help Kent County's most vulnerable citizens become self-sufficient in fulfilling their basic needs. With the help of hundreds of non-profits, governmental agencies, faith-based organizations, funders, and concerned volunteers, ENTF has developed and supported the management of basic service systems including food, shelter, utilities, and transportation (County of Kent, 2010).

In order to address utility bill affordability with regards to low-income residents, the Utility/Conservation Subcommittee of the Kent County Essential Needs Task Force (ENTF), now called the Energy Efficiency Subcommittee, was established. The ENTF Energy Efficiency Subcommittee advocates for necessary resources and policies to improve home energy efficiency in Kent County and provides information to the public. The subcommittee has helped establish a system for utility service providers to resolve shutoff crises. They have also gathered data that enables the planning of coordinated responses to residents' utility service needs (ENTF Energy Efficiency Subcommittee 2009 Strategic Plan, 2009).

ENTF Energy Efficiency Subcommittee Mission

The ENTF Energy Efficiency Subcommittee members and their organizations, including ACSET, seek to become a national county model for collaboration, facilitation, and organization of existing home energy efficiency resources. Within Kent County they hope to provide greater economic stability to residents by helping them reduce money spent on energy through an overall reduction in energy consumption and by increasing energy efficiency. The mission of the subcommittee is "*Assuring access to affordable utility resources for Kent County's most vulnerable residents while promoting a culture of energy efficiency for all".* A complete list of their members can be found in Appendix A (ENTF Energy Efficiency Subcommittee 2009 Strategic Plan, 2009).

Project Site Profile

Project Site Overview: Kent County, Michigan

Kent County is the fourth largest county in Michigan, covering 864 square miles with a population of 605,213 in 2008, according to US Census Bureau estimates. Located in Western Michigan, Kent County is composed of 21 townships, 5 villages, and 9 cities (County of Kent, 2010).

The City of Grand Rapids, the county seat, has a population of 187,000 people. Located 150 miles west of Detroit, 180 miles northeast of Chicago, and 30 miles from Lake Michigan, Grand Rapids and its surrounding metropolitan area make up the urban center of Kent County (County of Kent, 2010).

History

Kent County was officially organized as a county on March 24, 1836 by territorial legislature. It was initially called home by the Hopewell Native Americans, whose burial mounds can still be spotted along the west bank of the Grand River, the largest river in Michigan that runs through the county. During the 1800s, the Grand River stimulated and grew the local economy. The river valley functioned as an important center for the fur trade during the early 1800s. By the end of the century Kent County had become an important economic center for agriculture, logging, and manufacturing furniture thanks its presence in the fur trade and the construction of several sawmills along the Grand River (County of Kent, 2010).

Government and County Services

Kent County is governed by a Board of Commissioners consisting of 19 members. Commissioners are elected from districts nearly equal in population size, each serving a 2-year term. The county provides a multitude of services to its residents, both mandated and discretionary. Mandated services include law enforcement, a correctional facility, a county court system, public health, drain maintenance, general government, elections administration, equalization, Friend of the Court, and solid waste management. Discretionary services include parks, a zoo, an airport, economic development, property description and mapping, and extension services (County of Kent, 2010).

Local Economy

Kent County's major industries include agriculture, manufacturing and the service sector. The local economy consists of manufacturers of office equipment and furniture, heating controls, and automotive parts; financial institutions; health care; retail food and merchandise; and insurance companies. Major employers in Kent County include Steelcase Incorporated, General Motors Corporation, Amway Corporation, and Bissell Incorporated (County of Kent, 2010).

Demographics

Between 2000 and 2008, Kent County grew in population by 5.4%, from 574,339 to 605,213, according to estimates by the US Census Bureau. Of this population, the median age of individuals living in Kent County is 34.5 years of age (US Census Bureau, American Community Survey 2006-2008). Another 26.8%, or approximately 162,197 residents consist of children under the age of 18 years and 10.5%, or approximately 63,547 residents are senior citizens age 65+ (US Census Bureau: State and County Quick Facts, 2010). Table 1.1 provides population figures for children under the age of 18 and senior citizens ages 65 and older.

Table 1.1: Age Distribution: Children and Senior Citizens

Age Distribution: Children and Senior Citizens		
Median Age of Population		34.5 years
	Percentage of Total Population (%)	Number of Total Population
Persons Under Age 18	26.8%	162,197
Persons Age 65+	10.5%	63,547

(US Census Bureau: State and County Quick Facts, 2010)

According to a study by the Community Research Institute at Grand Valley State University, the proportion of Kent County residents considered to be older adults (65+) and soon-to-be-seniors (45-65 years old) continues to increase. US Census Bureau data from 2000 indicated that between 1990 and 2000 the number of older adults living in Kent County increased by 10% and the number of adults 85+ living in Kent County increased by 28% during the same period of time (US Census, 2000). As of 2000, one in every five Kent County residents was a soon-to-be senior. The study also noted that there are 67% more women age 65+ than men and that as adults increase in age, the gender gap widens (Community Research Institute, 2002).

With regards to race, 2008 US Census Bureau estimates indicated that of the total population residing in Kent County, 86.2% of citizens were Caucasian; 9.3% were African American; 2.1% were Asian; and 2.4% were of another racial background. Within the population, 9.5% were persons of Hispanic or Latino origin.

The median household income in Kent County for 2008 was $50,746 (US Census Bureau: State and County Quick Facts, 2010). According to the county, 12.9% of the population is below the poverty level. Out of the total number of people living in poverty, 36.2% are under the age of 18 (approximately 28,262 children) and 6.80% are 65 or older (approximately 5,308 seniors 65+). Table 1.2 provides data on the distribution of income according to households in Kent County.

Table 1.2: Number of Households per Income Bracket in Kent County

Household Income and Benefits in Kent County (In 2008 Inflation-Adjusted Dollars)				
Total # of Households			225,183	
Earned Annual Income per Household	Estimated # of Households	Margin of Error	Estimated % of Households	Margin of Error
Less than $10,000	14,724	+/-1,185	6.5%	+/-0.5%
$10,000 - $14,999	11,914	+/-960	5.3%	+/-0.4%
$15,000 - $24,999	24,079	+/-1,301	10.7%	+/-0.6%
$25,000 - $34,999	26,270	+/-1,496	11.7%	+/-0.6%
$35,000 - $49,999	33,617	+/-1,477	14.9%	+/-0.7%
$50,000 - $74,999	44,596	+/-1,536	19.8%	+/-0.6%
$75,000 - $99,999	29,768	+/-1,227	13.2%	+/-0.5%
$100,000 - $149,999	26,404	+/-1,245	11.7%	+/-0.6%
$150,000 - $199,999	6,669	+/-621	3.0%	+/-0.3%
$200,000+	7,142	+/-578	3.2%	+/-0.3%

(US Census Bureau: State and County Quick Facts, 2010)

Existing Housing Stock

The US Census Bureau American Community Survey Report 2006-2008 estimates that within Kent County exist 243,260 total housing units. Of the 243,260 housing units, 65.5% (159,433) are detached single-family units. Of the 243,260 existing units, 92.6% (225,183) are occupied while 7.4% (18,077) are vacant. Of the total existing housing units in Kent County, 66.7% (162,464) are owner-occupied and 25.7% (62,719) are renter-occupied (US Census Bureau American Community Survey Report: Kent County, Michigan, 2006-2008).

Table 1.3 provides a breakdown of the housing stock in Kent County defined by the number of housing units, otherwise considered single-family residences, located within a housing structure.

Table 1.3: Number of Units in Structure

Number of Units in Structure				
Total # of Housing Units			243,260	
Total # of Units per Housing Structure	Estimated # of Units	Margin of Error	Estimated % of Units	Margin of Error
1-unit, detached	159,433	+/-1,686	65.5%	+/-0.7
1-unit, attached	16,255	+/-1,078	6.7%	+/-0.4
2 units	11,598	+/-1,177	4.8%	+/-0.5
3 or 4 units	8,722	+/-892	3.6%	+/-0.4
5 to 9 units	8,619	+/-777	3.5%	+/-0.3
10 to 19 units	15,220	+/-975	6.3%	+/-0.4
20 or more units	13,526	+/-1,013	5.6%	+/-0.4
Mobile Home	9,887	+/-743	4.1%	+/-0.3
Other	0	+/-138	0.0%	+/-0.1

(US Census Bureau American Community Survey Report: Kent County, Michigan, 2006-2008)

The average age of the existing housing stock in Kent County is approximately 45 years. The largest percentage of housing stock, or 18.9%, was built before 1939 (US Census Bureau American Community Survey, 2006-2008). On average, 12.92% of the existing housing stock was constructed each decade after 1939, excluding 1940-1949 and 2005-present. Table 1.4 provides a breakdown of the total number of existing housing units in Kent County by the year they were built.

Table 1.4: Number of Existing Housing Units Built By Year

Year Housing Stock Built				
Total # of Housing Units			243,260	
Year Housing Unit was Built	Estimated # of Units	Margin of Error	Estimated % of Units	Margin of Error
2005 or later	4,651	+/-499	1.9%	+/-0.2
2000-2004	20,626	+/-1,012	8.5%	+/-0.4
1990-1999	37,323	+/-1,352	15.3%	+/-0.5
1980-1989	29,583	+/-1,352	12.2%	+/-0.6
1970-1979	33,443	+/-1,563	13.7%	+/-0.6
1960-1969	26,833	+/-1,375	11.0%	+/-0.6
1950-1959	30,255	+/-1,474	12.4%	+/-0.6
1940-1949	14,521	+/-1,055	6.0%	+/-0.4
1939 or earlier	46,025	+/-1,283	18.9%	+/-0.5

(US Census Bureau American Community Survey Report: Kent County, Michigan, 2006-2008)

Average Household Utility Bill

According to Kathy McCarthy of Consumers Energy Company, Kent County households spend on an average $77.00/month on their electric bill. Serving the majority of residents in Kent County, Consumers Energy provides electricity necessary for powering household climate control systems and appliances (K. McCarthy, personal communication, 2010).

Servicing only the City of Lowell and several surrounding municipalities, Lowell Light & Power provides over 2,190 residential customers with electricity. These customers use on average 680 kilowatt hours/month equating to an average utility bill of $63.00/month. These residential customers pay a usage fee along with taxes and other service account charges (J. Mullins, personal communication, 2010).

The major residential gas provider in Kent County is DTE Energy. The average gas utility bill for a household in Kent County is between $80-90.00/month (DTE Employee, personal communication, 2010). Consumers Energy also provides five rural townships located in the southeastern portion of Kent County with natural gas. The residents living within those five townships have an average monthly bill of $94.00. The majority of these customers use natural gas for home climate control, cooking, water heating and drying clothes (K. McCarthy, personal communication, 2010). With these average monthly payments in mind, the average household located within Kent County pays between $157-167.00/month for household gas and electricity utility bills.

Housing and Utility Bill Affordability

The single largest monthly expense that most Kent County households have is related to housing according to a report entitled *Greater Grand Rapids Community Survey Briefing: Adequate Housing*. Published in 2006, the data provided in this briefing was taken from *2005/2006 Greater Grand Rapids Community Survey Results*, a report summarizing the 2006 Grand Rapids Community Survey. Sponsored annually by Grand Valley State University's Community Research Institute (CRI), the Grand Rapids Community Survey ask random samples of Kent County residents age 18+ questions related to education, employment, housing, and health (Grand Valley State University: Community Research Institute, 2006).

During the 2006 Grand Rapids Community Survey, 1,351 surveys were collected between May 2006 and June 2006. Precision Research staff (Phoenix, AZ) were responsible for conducting the surveys via telephone using random digit dialing. Each survey was completed within 16 minutes on average. Calls to households were staggered between weekdays and weekends and made at different times of the day, to increase representation in the sample. Each household was called six times before moving on to the next sample record. Minority

populations were oversampled in order to increase the survey's ability to generalize survey results about Kent County's population (Grand Valley State University: Community Research Institute, 2006).

The US Department of Housing and Urban Development (HUD) considers households spending 30% or more of their income on housing costs to be "burdened", leaving them more likely to have difficulty paying for other basic needs including food, transportation, and medical care. Housing costs refer to a household's rent or mortgage payment and utility bill payments (US Department of Housing and Urban Development, 2005). With regards to Kent County, HUD calculated that the average rent for a two-bedroom apartment in 2006 was $629/month. In order to avoid facing housing burden, an individual would need to earn at least $2,263/month or earn roughly $13.06/hour at their place of employment. CRI reported that 19% of 2006 Grand Rapids Community Survey respondents reported earning less than $2,263/month (Grand Valley State University: Community Research Institute, 2006).

Upon translating the survey data collected into housing indicators documenting housing needs in Kent County, CRI determined approximately 8% (47,700) of Kent County residents did not have enough money to cover housing expenses and 13% (77,600) of residents did not have enough money to cover the cost of their utility bills. Six percent of those that could not cover their housing expenses were evicted from their homes between the years 2005-2006 and 16% of those that couldn't cover their utility bills had one or more utilities shut off (Grand Valley State University: Community Research Institute, 2006).

The data collected by CRI revealed low-income populations were experiencing the greatest amount of housing burden in Kent County. With regards to race, 5% of Caucasian households lacked the funds to pay for housing expenses while 27% of African American families and 25% of Hispanic families reported having the same difficulty (Grand Valley State University: Community Research Institute, 2006).

CRI also reported that besides racial identifiers, residents that were younger, less educated, or living in rental housing were more likely to experience housing burden compared to older, better educated, or home-owning residents (Grand Valley State University: Community Research Institute, 2006).

The 2006-2008 American Community Survey by the US Census Bureau indicated that of the 162,464 owner-occupied units in Kent County, 32.6% (38,435) of the 118,021 households with a mortgage spend 30% or more of their household income on housing costs. Of the 43,991 owner-occupied housing units without a mortgage, 16.5% (7,250) of households spend 30% or more of their income on housing costs. Fifty percent of households that rent (29,668 rental

units out of the total 59,405 rental units) spend 30% or more of their household income on housing costs. Table 1.5 provides the numbers of households per ownership classification that spend 30% or more of their annual income on housing costs.

Table 1.5: Kent County Households Spending 30% or More of Annual Income on Housing Costs

Households Spending 30%+ of Annual Income on Housing Costs			
Type	Total # of Units	Number of Households Paying 30%+	Percentage of Households Paying 30%+
Owner-occupied w/ Mortgage	118,021	38,435	32.6%
Owner-occupied w/o Mortgage	43,991	7,250	16.5%
Renter-occupied	59,405	29,668	50%

(The US Census Bureau American Community Survey was unable to include 3,314 of the total housing units in this calculation.)

(US Census Bureau American Community Survey: Kent County, Michigan, 2006-2008)

Project Scope

In order to assist ACSET and the Kent County ENTF Energy Efficiency Subcommittee in furthering their progress towards making Kent County a national county model for collaboration and organization of energy efficiency resources, the following project scope was given to the MSU Practicum Team to carry out:

1. Create a catalog of existing organizations and their services/resources in Kent County related to weatherization and energy efficiency.
2. Research energy efficiency efforts in other communities in order to identify common practices and recommend a model for an energy efficient community that Kent County can adopt.
3. Develop implementation suggestions and a weatherization procedure tool kit for a Senior Citizen Winter Preparation Program, designed to assist in the weatherization of senior citizen households through a volunteer day.

Key Home Energy Efficiency Concepts

The following key concepts will be used throughout the document to assist in describing and defining the process of making residential units more energy efficient, and reducing the total amount of energy consumption necessary for a home to provide adequate climate control, water, and electricity.

Reasons for taking measures to increase the energy efficiency of a home include lowering the cost of utility bills, making housing more affordable, and/or reducing a household's impact on the environment, among others.

With regards to this report, the common practices embodied within each concept will be explored with the help of case studies and organization profiles in order to determine both common and unique components of existing county-wide home energy efficiency programs and weatherization programs targeting senior citizens. Both unique and common elements will be considered along with the analysis of existing Kent County Home Energy Efficiency resources in order to identify opportunities and determine suggestions for Kent County that can improve upon their existing Home Energy Efficiency Program structure.

Energy Audit

A home energy audit is the first step in establishing a baseline for the amount of energy a residential unit consumes and evaluating what measures can be taken to make the unit more energy efficient. An audit identifies problems that, when corrected, may save significant amounts of money over time (US Department of Energy: Weatherization Assistance Program, 2008).

An audit pinpoints where a home is losing energy. Audits also determine the efficiency of a home's heating and cooling systems. Energy audits not only target heating and cooling systems; they also target infrastructure/appliances related to hot water and electricity. The typical homeowner can perform simple energy audits or a professional energy auditor may be hired to carry out a more thorough audit (US Department of Energy: Weatherization Assistance Program, 2008).

Professional energy auditors utilize a variety of techniques and equipment in order to determine the energy efficiency of a structure. Thorough audits often use equipment such as blower doors, which measure the extent of leaks in the building envelope, as well as infrared cameras, which reveal hard-to-detect areas of air infiltration and missing insulation (US Department of Energy: Weatherization Assistance Program, 2008).

Energy audits may also include health and safety checks on a dwelling including the testing of heating units and appliances for combustion safety, carbon monoxide and other gas leaks; assessing moisture damage; checking electrical system safety; replacing unsafe heating and cooling systems; and checking and installing smoke and carbon monoxide detectors (US Department of Energy: Weatherization Assistance Program, 2008).

Weatherization

Weatherization is one process of reducing the amount of energy consumption in a residential dwelling in order to reduce utility costs while providing adequate climate control, electricity, and water. A range of weatherization procedures, both large and small, can be performed to improve the energy efficiency of a home. In order to determine the most cost-effective measures appropriate for each home, an energy audit should be conducted to pinpoint areas of the home prone to air leaks. Typical measures taken to weatherize a home include:

- Insulating the attic, walls, floors, water heater, and exposed pipes
- Tuning, repairing, and if necessary, replacing older furnaces and/or air conditioners
- Installing ventilation fans including electric, attic, ceiling, or whole-house fans to increase air circulation
- Eliminating air infiltration by weatherstripping and caulking around doors and windows and replacing broken glass panes

Although some of these procedures may sound technical in their application, there are a variety of weatherization measures that a novice can carry out in their own home, which can reduce utility bills and provide better comfort and safety. A tool kit with a range of weatherization procedures ranked from easy to difficult has been provided in this document (US Department of Energy: Weatherization Assistance Program, 2008).

Whole-House Energy Efficiency Planning

Also known as a “whole-house systems approach”, whole-house energy efficiency planning is the act of viewing one’s home as an energy system with interdependent parts. A whole-house systems approach considers the interaction/relationship between members of a household, the site of the structure, local climate, and the following components of a home:

- Appliances and home electronics
- Insulation and air sealing
- Lighting and daylighting
- Space heating and cooling

- Water heating
- Windows, doors, and skylights

Builders, designers, and households who use this approach recognize that the features of one component in the house can greatly affect other components, which ultimately influences the overall energy efficiency of the house. One should note that energy efficiency planning may also include the implementation of weatherization procedures (US Department of Energy, 2009).

Benefits of Home Energy Efficiency

Utility Savings Benefits

The weatherization procedures carried out using US Department of Energy Weatherization Assistance Program (WAP) funding (approximately $3,000 per house as of 2008) save the average household 21% on their energy bill, which amounts to $413/year on average in savings per household. WAP home weatherization procedures have also been estimated to provide a 32% reduction in the average household's annual gas heating consumption.

According to 2005 data collected by WAP, advancing homes toward achieving greater energy efficiency avoids nearly $1.9 billion in energy costs during winter months for all houses served (US Department of Energy: Weatherization Assistance Program, 2008).

Weatherization also makes energy more affordable for utility companies, who are faced with fewer unpaid utility bills to cover, because the homeowner is faced with lower energy costs. These savings are passed down to all of a utility's customers through lower rates. Fewer shut offs, along with less burden placed on call-centers and technicians to repair poorly functioning heating systems, on average produces approximately $331/year in benefits to all ratepayers (US Department of Energy: Weatherization Assistance Program, 2008).

Benefits for Low-Income Households: Increased Housing Affordability

According to the US Department of Energy, while the average household may spend 4% of their total annual income on energy, low-income households currently spend 17% of their total annual income on average. Weatherizing a low-income family's home alleviates their heavy energy burden for the long-term and assists them in becoming economically self-sufficient (US Department of Energy: Weatherization Assistance Program, 2008).

According to the DOE, low-income households are forced to move frequently because utility bills are unaffordable and consequently, service is shut off (US Department of Energy: Weatherization Assistance Program, 2008). Making housing affordable through weatherization not only saves the household money on utility bills, it also prevents the household from spending the money necessary for relocation. Perhaps more importantly it lends the household the ability to be a stable, contributing member of a community. By reducing the percentage of annual income spent on utility bills, households can us the income on other necessities like food or medication (US Department of Energy: Weatherization Assistance Program, 2008).

Natural Environment

With regards to the natural environment, reducing the amount of energy consumption overall means reducing the burning of propane, home heating oil, natural gas, and other carbon fuels, lowering emissions of sulfur dioxide, nitrogen oxides, carbon, and other harmful pollutants into the atmosphere. Furthermore, reducing fossil fuel energy consumption reduces our dependence on foreign nations to help support our energy needs (US Department of Energy: Weatherization Assistance Program, 2008).

Part One: Existing Energy Efficiency Resources in Kent County

ACSET: A History of Weatherization

ACSET has been weatherizing homes in Kent County since 1974, before funding was being offered by the US Department of Energy (DOE) through the Weatherization Assistance Program. The Community Action Agency (CAA), the predecessor to ACSET, met with a group of Jaycees from Lowell who were interested in working on a project in their community. Much of the housing stock consisted of older farmhouses occupied by senior citizens. In response, a small project was developed with the help of the CAA who identified the households in need. The Jaycee's partnered with them, providing volunteers and some basic materials (in 1974 the materials included plastic, rolled insulation and some weather-stripping). The materials were provided through a small grant the Jaycee's obtained. Approximately five homes were weatherized as a result. In 1976 DOE funding became available with the establishment of the Weatherization Assistance Program (WAP) and weatherizing a home was seen as a must for the low-income household (K. Tolan, personal communication, 2010).

ACSET has continued to improve the energy efficiency of homes since their first project. According to data provided by ACSET, between 1998 and 2008 approximately 1,800 units in Kent County were weatherized, resulting in approximately $5,040,000 of leveraged funding from WAP. The funding has supported the Kent County community economically through job creation (contractors and material suppliers), provision of materials used during weatherization procedures, preservation of housing stock (due to some measures installed on homes), and reduced energy use. Of the $5,040,000 spent, it is unknown how much of this money was saved in energy costs. However it has been calculated that an average of $380 in household energy costs is saved annually per household weatherized during a span of 3-10 years. Of the 1,800 units weatherized, approximately 30% of the units belonged to senior citizens. The majority of clients (70-75%) have been homeowners while approximately 25-30% of the clients consist of renters (K. Tolan, personal communication, 2010).

ENTF Energy Efficiency Subcommittee Survey

In November of 2009, a survey of approximately 100 organizations and businesses in Kent County was conducted in order to detail the affiliation and/or involvement with home energy efficiency in the county of each organization surveyed. The ENTF Energy Efficiency Subcommittee selected organizations and businesses to complete the survey based on their affiliation with energy/utilities, housing, and home repair services. The survey prompted directors to describe their organization/business, the programs and services they offered, eligibility for services, funding sources, and their perspective on the current resources and gaps with regards to home energy efficiency assistance, among others. A list of the questions that composed the survey can be reviewed in Appendix B. Of the approximate 100 organizations and businesses that received the survey, 32 organizations responded. Twenty six of the 32 respondents indicated that they would not mind being featured in a resource catalog documenting their available home energy efficiency services. A resource catalog of these 26 organizations was compiled by the MSU Practicum Team and can be reviewed in Appendix C.

Inventory of Home Energy Efficiency Services in Kent County

An analysis of the survey responses was completed and the results were organized into a matrix. Entitled "Inventory of Energy Efficiency Services in Kent County" (Inventory of Services), the matrix serves as a visual organization of dialogue where survey responses were divided into columns through the interpretation of coded key words and statements found within the responses to survey questions. The columns were then classified into representative categories including:

- Funding
- Eligibility
- Services Provided
- Partners
- Home Energy Education
- Gaps in Existing Countywide Home Energy Efficiency Program According to Responses

Table 2.1 provides a breakdown of the descriptive categories, their associated columns of criterion and services, and the key words/statements coded to each column.

In order to increase the readability of the inventory, survey respondents were organized according to their organization type. The organization types identified included government, utility company, non-profit, commercial/business, and educational institutions.

Table 2.1: Inventory of Services Coding System

Inventory of Services Coding System		
Category	Columns by Category	Common Code Words by Column
Funding	Federal	federal
	State	state
	County	county
	Local	local, city, municipal
	Donations	donation, philanthropy
	Grants	grant, foundation
	Revenue/Fee	revenue, fee, surcharge
Eligibility	Income	income
	Age	age
	Location	location
	Customer	customer, rate payer
Services Provided	Compact Florescent Light (CFL)	CFL, light bulb
	Energy Audit	energy audit
	Housing Rehabilitation	repairs, replacement, weatherization, energy efficiency
	Financial Assistance	financial assistance, funds
Education	Classes/Training	classes, training, workshop
	Advertising	pamphlets, printed materials, advertising, advertisement
	Literature	literature, written information
	None	none
	Expansion of Ed.	“looking to expand”
Gaps	Education/Knowledge	education, knowledge, information, teaching
	Funding	financial assistance, true costs
	Lack of Materials/Resources	materials, resources
	Human Capital	limited people and/or staff
	No Response	

ENTF Energy Efficiency Survey Results by Question

In order to provide feedback related to each individual question featured on the Energy Efficiency Survey distributed in November of 2009 by the ENTF Energy Efficiency Subcommittee, the results have been organized according to the survey question layout where feasible. The following statistical analysis was conducted with the use of the Inventory of Services.

Please describe your programs/activities related to energy, including numbers served.

When asked to describe their programs and any activities they sponsor related to energy, of the 32 survey respondents, 15 organizations (47%) said they offered housing rehabilitation services, and 7 organizations (22%) offered energy audits for commercial, residential and/or industrial buildings. Five respondents (16%) said they provide financial assistance, 3 respondents (9%) offered rebates on appliances and windows, and 2 respondents (6%) cited having a program that includes Compact Florescent Light bulb (CFL) replacement.

Is there a charge/fee for your services?

As for charges/fees associated with their services, 13 organizations/businesses (41%) had a charge or service fee included with the program.

Who is eligible for your services/products?

Seventeen organizations of the 32 that responded to the survey (53%) have a low-income eligibility requirement; 10 organizations (31%) have age requirements; 15 organizations (47%) have location requirements; and 9 organizations (28%) require that individuals are paying customers in order to receive their services.

If a pilot program were developed next year that would help senior citizens prepare their homes for winter, would your organization be interesting in participating?

When told a pilot senior winter preparation program focused on weatherization was on the horizon, over half of the respondents, 18 (56%) said that they would be interested in participating.

How is your program funded? (Please list sources and amounts if possible.)

Upon being asked how their program was funded, of the 32 organizations and businesses that replied, 10 respondents (31%) received federal government funding; 12 respondents (38%) received state government funding; 3 respondents (9%) received county funding; 9 respondents (28%) received local funding; 9 respondents (28%) received donations; 5 respondents (16%) leveraged various grants; and 10 respondents (31%) received funding through revenues and fees.

Do you partner with other organizations on energy related programs?

Identifying existing and potential partnerships is one goal of ACSET and the ENTF Energy Efficiency Subcommittee for use in creating a comprehensive network of community members participating in the advancement of home energy efficiency. Of the 32 organizations and businesses surveyed, 17 (53%) are currently working with other partners.

Or, would you be interested in partnering with others?

Seventeen respondents (53%) indicated that they would be interested in partnering with other organizations or businesses in the future on home energy efficiency projects.

How much education are you able to provide the participants in your programs on energy related activities, including education on energy efficiency?

Seventeen (53%) of the 32 organizations/businesses that answered said that they provide classes, training, and/or consulting and 11 respondents (34%) said that they pass out literature on energy efficiency. Nine (28%) organizations answered that they do not provide education, training, and/or classes. Five (16%) organizations advertised their program through pamphlets, radio, and television ads.

Does your organization have the interest/capacity in expanding its role in energy related activities, including education on energy efficiency?

Fifteen (47%) respondents said that they are interested in expanding their role in educating individuals in Kent County about home energy efficiency.

From your perspective, what gaps exist in providing our community with good energy assistance and conservation services?

When asked to identify existing gaps inhibiting the provision of home energy efficiency assistance and conservation services to Kent County residents, 17 organizations (53%) said that a lack of education and knowledge was the biggest gap. Nine respondents (28%) indicated that funding for programs and services in home energy efficiency was the most impressive obstacle preventing the provision of services. Five organizations (15%) indicated that a lack of materials/resources was the largest gap and 11 organizations (34%) said that a lack of human capital was the largest gap. There were three organizations (9%) that did not respond to the question.

Inventory of Home Energy Efficiency Services in Kent County Matrix

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Funding						
Survey Correspondence Question	Q 10: How is your program funded?						
	Federal	State	County	Local	Donations	Grants	Revenue/Fee
Government							
City of Grand Rapids	X	X	X	X			X
Kent County Dept. of Human Services	X	X	X				
City of Grand Rapids Community Development Department	X	X			X		
Kent County Housing and Community Development	X						
County of Kent							
City of Wyoming Utilities Department			X	X			
Grand Rapids Housing Commission	X						
City of Kentwood	X						
Utility							
Consumers Energy		X		X	X		
DTE Energy							
Lowell Light and Power							X

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Funding						
Survey Correspondence Question	Q 10: How is your program funded?						
	Federal	State	County	Local	Donations	Grants	Revenue/Fee
Non-Profit							
Alliance for Environmental Sustainibilty					X	X	X
Area Agency on Aging of Western Michigan				X			
ASCET	X	X		X		X	X
New Development Organization		X		X	X		
Sierra Club					X	X	X
Oakdale Neighbors		X					
West Michigan Environmental Action Council		X					X
Salvation Army Booth Family Services					X		
Michigan Green		X					
Neighborhood Ventures						X	
Home Repair Services of Kent County, Inc						X	
DwellingPlace	X	X		X	X		
Rental Property Owners' Association							X
Healthy Homes Coalition	X				X		
Steepletown Neighborhood Services					X		

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Funding						
Survey Correspondence Question	Q 10: How is your program funded?						
	Federal	State	County	Local	Donations	Grants	Revenue/Fee
Commercial							
G-Energy LLC							X
Sustainable Research Group							X
Lighthouse Communities	X	X		X			
Home Energy Ed				X			
Lott3Metz Architecture, LLC							X
Educational Institution							
Kent/MSU Extension		X					
Total	10	12	3	9	9	5	10
Percentage	31.25%	37.50%	9.38%	28.13%	28.13%	15.63%	31.25%

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Eligibility					Partners	
Survey Correspondence Question	Q 10: Who is eligible?					Q 11: Do you partner?	
	Income	Age	Location	Customer		Yes	Interested?
Government							
City of Grand Rapids			X				
Kent County Dept. of Human Services	X						
City of Grand Rapids Community Development Department	X		X			X	
Kent County Housing and Community Development	X		X				X
County of Kent							
City of Wyoming Utilities Department			X			X	X
Grand Rapids Housing Commission	X						X
City of Kentwood	X						
Utility							
Consumers Energy						X	
DTE Energy				X			
Lowell Light and Power		X	X	X		X	

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Eligibility					Partners	
Survey Correspondence Question	Q 10: Who is eligible?					Q 11: Do you partner?	
	Income	Age	Location	Customer		Yes	Interested?
Non-Profit							
Alliance for Environmental Sustainibilty	X	X	X			X	X
Area Agency on Aging of Western Michigan		X	X				X
ASCET	X					X	X
New Development Organization	X					X	
Sierra Club	X	X	X			X	
Oakdale Neighbors			X				X
West Michigan Environmental Action Council			X				X
Salvation Army Booth Family Services	X					X	
Michigan Green				X		X	
Neighborhood Ventures			X				X
Home Repair Services of Kent County, Inc	X	X	X			X	X
DwellingPlace	X	X					X
Rental Property Owners' Association				X-m			X
Healthy Homes Coalition	X	X				X	X
Steepletown Neighborhood Services		X	X				

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Eligibility					Partners	
Survey Correspondence Question	Q 10: Who is eligible?					Q 11: Do you partner?	
	Income	Age	Location	Customer		Yes	Interested?
Commercial							
G-Energy LLC				X		X	
Sustainable Research Group	X	X	X	X		X	X
Lighthouse Communties	X					X	
Home Energy Ed	X			X			X
Lott3Metz Architecture, LLC	X	X	X	X		X	X
Educational Institution							
Kent/MSU Extension						X	X
Total	17	10	15	9		17	17
Percentage	53.13%	31.25%	46.88%	28.13%		53.13%	53.13%

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Services						
Survey Correspondence Question	Q.7: Describe your home energy programs/activities.					Question 9	Question 19
	Rebates	CFL	Energy Audit	Housing Rehab	Financial Assistance	Charge?	Interested in Senior Prep.
Government							
City of Grand Rapids							
Kent County Dept. of Human Services							X
City of Grand Rapids Community Development Department			X	X			X
Kent County Housing and Community Development			X	X	X		X
County of Kent							
City of Wyoming Utilities Department						X, depends	
Grand Rapids Housing Commission				X	X		
City of Kentwood				X		X, fees	X
Utility							
Consumers Energy	X					X	
DTE Energy	X		X	X			
Lowell Light and Power	X	X					

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Services						
Survey Correspondence Question	Q7: Describe your home energy programs/activities.					Question 9	Question 19
	Rebates	CFL	Energy Audit	Housing Rehab	Financial Assistance	Charge?	Interested in Senior Prep.
Non-Profit							
Alliance for Environmental Sustainibilty				X		X	X
Area Agency on Aging of Western Michigan					X		X
ASCET				X		X	X
New Development Organization				X			X
Sierra Club							
Oakdale Neighbors				X-tp?			X
West Michigan Environmental Action Council		X	X				X
Salvation Army Booth Family Services					X		x-maybe
Michigan Green			X				
Neighborhood Ventures							
Home Repair Services of Kent County, Inc				X		X	X
DwellingPlace				X		X	
Rental Property Owners' Association						X	X
Healthy Homes Coalition				X			X
Steepletown Neighborhood Services					X		

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Services						
Survey Correspondence Question	Q7: Describe your home energy programs/activities.					Question 9	Question 19
	Rebates	CFL	Energy Audit	Housing Rehab	Financial Assistance	Charge?	Interested in Senior Prep.
Commercial							
G-Energy LLC			X			X	
Sustainable Research Group			X			X	X
Lighthouse Communities				X		X	X
Home Energy Ed						X	X
Lott3Metz Architecture, LLC				X		X	
Educational Institution							
Kent/MSU Extension							X
Total	3	2	7	15	5	13	18
Percentage	9.38%	6.25%	21.88%	46.88%	15.63%	40.63%	56.25%

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Education				
Survey Correspondence Question	Q13: Provide energy education?				Question 14
	Classes/Training/ Consulting	Advertising	Literature	None	Expantion of Energy Ed?
Government					
City of Grand Rapids				X	X
Kent County Dept. of Human Services				X	
City of Grand Rapids Community Development Department			X		X
Kent County Housing and Community Development				X	
County of Kent					
City of Wyoming Utilities Department	X		X		X
Grand Rapids Housing Commission				X	
City of Kentwood				X	X
Utility					
Consumers Energy		X	X		
DTE Energy				X	
Lowell Light and Power		X	X		

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Education				
Survey Correspondence Question	Q13: Provide energy education?				Question 14
	Classes/Training/ Consulting	Advertising	Literature	None	Expantion of Energy Ed?
Non-Profit					
Alliance for Environmental Sustainibilty	X				X
Area Agency on Aging of Western Michigan				X	
ASCET	X				X
New Development Organization	X				
Sierra Club			X		X
Oakdale Neighbors				X	X
West Michigan Environmental Action Council	X		X		X
Salvation Army Booth Family Services	X=referral				
Michigan Green	X	X	X		X
Neighborhood Ventures				X	X
Home Repair Services of Kent County, Inc	X				X
DwellingPlace	X				X
Rental Property Owners' Association	X				X
Healthy Homes Coalition	X		X		X
Steepletown Neighborhood Services					

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Education				
Survey Correspondence Question	Q13: Provide energy education?				Question 14
	Classes/Training/ Consulting	Advertising	Literature	None	Expantion of Energy Ed?
Commercial					
G-Energy LLC	X	X	X		
Sustainable Research Group	X				
Lighthouse Communties	X				
Home Energy Ed	X	X	X		
Lott3Metz Architecture, LLC	X				
Educational Institution					
Kent/MSU Extension	X		X		
Total	**17**	**5**	**11**	**9**	**15**
Percentage	**53.13%**	**15.63%**	**34.38%**	**28.13%**	**46.88%**

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Gaps				
Survey Correspondence Question	Q15: Existing Home Energy Gaps in Kent?				
	Education/Knowledge	Funding	Lack of Material/Resources	Human Capital	No Response
Government					
City of Grand Rapids	X	X			
Kent County Dept. of Human Services					X
City of Grand Rapids Community Development Department		X			
Kent County Housing and Community Development	X				
County of Kent					
City of Wyoming Utilities Department	X				
Grand Rapids Housing Commission	X				
City of Kentwood		X		X	
Utility					
Consumers Energy	X	X	X	X	
DTE Energy	X			X	
Lowell Light and Power	X		X		

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Gaps				
Survey Correspondence Question	Q15: Existing Home Energy Gaps in Kent?				
	Education/Knowledge	Funding	Lack of Material/Resources	Human Capital	No Response
Non-Profit					
Alliance for Environmental Sustainibilty	X	X			
Area Agency on Aging of Western Michigan	X				
ASCET					
New Development Organization	X				
Sierra Club	X				
Oakdale Neighbors					X
West Michigan Environmental Action Council				X	
Salvation Army Booth Family Services	X	X		X	
Michigan Green		X			
Neighborhood Ventures					X
Home Repair Services of Kent County, Inc	X			X	
DwellingPlace			X		
Rental Property Owners' Association	X			X	
Healthy Homes Coalition			X	X	
Steepletown Neighborhood Services					

Inventory of Home Energy Efficiency Services in Kent County, Michigan

Agency/Organization	Gaps				
Survey Correspondence Question	Q15: Existing Home Energy Gaps in Kent?				
	Education/Knowledge	Funding	Lack of Material/Resources	Human Capital	No Response
Commercial					
G-Energy LLC		X			
Sustainable Research Group	X			X	
Lighthouse Communties		X			
Home Energy Ed	X			X	
Lott3Metz Architecture, LLC			X	X	
Educational Institution					
Kent/MSU Extension	X				
Total	**17**	**9**	**5**	**11**	**3**
Percentage	**53.13%**	**28.13%**	**15.63%**	**34.38%**	**9.38%**

Energy Efficiency Survey Gap Analysis

Emailed to approximately 100 organizations/businesses potentially offering home energy efficiency services and administered through SurveyMonkey.com in November 2009, the Energy Efficiency Survey developed by the ENTF Energy Efficiency Subcommittee asked a number of questions with regards to services provided by the organization/business, funding, and eligibility.

Included on the survey was the following question, "From your perspective, what gaps exist in providing our community with good energy assistance and conservation services?" The answers to this question were analyzed in order to identify the gaps and overlaps in home energy services provided to residents of Kent County as identified by the organizations themselves. Additionally, the practicum team analyzed responses to other survey questions to discover any further gaps not self-identified by the organizations.

Seventeen (53%) of the 32 organizations surveyed identified a lack of education and knowledge about home energy efficiency as the largest gap in services for residents in Kent County. Eleven organizations (34%) viewed a lack of human capital, such as adequate staffing to accomplish home improvement projects and education initiatives to get the movement off the ground as a gap in services to residents. Nine organizations (28%) identified a lack of funding as the largest gap in services to residents. Lastly, three organizations (9%) answered that a lack of material and resources constituted the largest gap. Three organizations (9%) did not respond to the question.

These responses, taken as a whole, suggest that there are two general gaps in existence when providing services: education/information and the resources necessary to actually provide the services. While the largest category of responses indicated a lack of education as the largest gap, the responses identified by the other categories suggest that, even if education were provided, it may be difficult to accomplish changes and to implement programs due to restrictions and limitations in staffing, funds, and material resources.

In order to examine gaps that may not have been self-identified by the organizations, we analyzed the other survey responses (see Inventory of Services above). Of the 32 organizations surveyed, 10 (31%) received federal funding, 12 (38%) received state funding, three (9%) received county funding, and nine (3%) received funding from the City of Grand Rapids. However, thirteen responses (41%) reported no governmental funding. Perhaps this is why approximately a third of the organizations surveyed reported lack of funding and resources as the biggest inhibitor of home energy efficiency education/services across Kent County. This suggests there is a critical need for leveraging government/private funds and allocating in-kind

resources for use in the development of home energy efficiency programs countywide if more residents are to be accessed and served. Additionally, given the current economic climate in the state, the 12 organizations which receive state funding is a cause for concern as well, as declining state budgets may result in this funding being reduced or eliminated.

Turning to the reported services offered by these organizations, the most common form of services offered was housing rehabilitation and financial assistance on utility bills, followed by energy audits. Three organizations (9%) offered rebates for energy efficient changes and two (6%) offered compact fluorescent light bulb (CFL) assistance.

This suggests that while Kent County organizations are providing assistance in the form of rehabilitating homes for energy efficiency and in some cases offering utility assistance where possible, there may be room for improvement in areas such as rebates and CFL upgrades. These last two services encourage residents to become more energy conscious on their own, which is a long-term solution to reducing energy costs, relative to more organization-driven initiatives. Again, remembering the fiscal climate and the fact that many residents are on fixed incomes, these types of initiatives may be important for increasing energy efficiency in the long term.

One limitation of this survey, however, is the response rate of 32%. Although this is an accepted response rate, there should still be concern regarding the generalization of the findings. One must ask if it is safe to assume that these conclusions apply to all organizations included in the original sample. Moreover, there may be unidentified gaps, or some gaps may be filled by organizations who did not respond to the survey.

Part Two: Countywide Home Energy Efficiency Program Structure

Introduction

In order to locate common and unique components of existing countywide home energy efficiency programs for Kent County to adopt, a number of different case studies and program descriptions were composed and analyzed.

Upon request of the client, the practicum team narrowed their search regionally. The United States Department of Energy and the Environmental Protection Agency sort the country into regions according to geographical location. In many cases, similarity in location leads to similarities in climate and topography, which are important factors when considering issues such as home energy efficiency and weatherization. The State of Michigan is classified in Region 5, along with Illinois, Indiana, Minnesota and Wisconsin. From these states the practicum team selected three counties, conducted Internet research, and compiled comprehensive case studies. These counties include:

- Milwaukee County, Wisconsin
- Macomb County, Michigan
- Ramsey County, Minnesota

Next, an attempt was made to locate programs that hold a presence nationwide that might provide a general model of a home energy efficiency structure for the county and its residents alike. Focus was put on two nationwide programs sponsored by the US Department of Energy. The first being Home Performance with Energy Star and the second, the Weatherization Assistance Program, specifically their “how to” guide for beginning a weatherization information campaign the entitled *Starting a Public Information Campaign*.

County Case Study Briefs

The following summaries provide a brief overview of the home energy efficiency program structures of each county selected for research. In order to review a case study in its entirety, complete with an overview, data on climate, county history, the local economy, demographics, existing housing stock, and a full description of its countywide home energy efficiency program structure, please refer to the Appendices.

Milwaukee County, Wisconsin

The State of Wisconsin received over $130 million in Federal Low Income Home Energy Assistance Program (LIHEAP) funding in 2009 (liheap.ncat.org, 2010). A portion of this money was distributed to Milwaukee County to provide relief for low-income families in need of help with heating and electric bills.

LIHEAP funding in Wisconsin is administered to municipal community action agencies through the Wisconsin Home Energy Assistance Program (WHEAP). In Milwaukee County the distributing agency is the Milwaukee County Energy Assistance Program (MCEAP). MCEAP provides relief for low-income families in need of help with heating and electric bills. Milwaukee County also utilizes the Focus on Energy initiative, which provides self-help, tool-kits and access to qualified contractors through the Home Performance with Energy Star program. Energy efficiency education is primarily provided by the utility company WE Energies. For a full case study of Milwaukee County, Wisconsin, please refer to Appendix D.

Macomb County, Michigan

The State of Michigan was allocated nearly $233 million in LIHEAP funding from the United States Department of Energy (DOE) in 2009 (liheap.ncat.org, 2010). In Macomb County, the share of LIHEAP money that goes to the county is directed to the Macomb County Community Services Agency (MCCSA). For the year 2009 that share was $369,000 according to the September 8, 2009 Macomb Community Action Advisory Board Executive Committee Meeting (Macomb County Website, 2010).

MCCSA serves as Macomb County's primary resource for weatherization and home energy efficiency services. MCCSA's Home Preservation and Energy division acts as the central provider of home energy services to the community. The utility company DTE provides home energy efficiency education to the public in Macomb County. For a full case study of Macomb County, Michigan, please refer to Appendix E.

Ramsey County, Minnesota

The State of Minnesota received $144 million in LIHEAP funding in 2009. A portion of this money was distributed to Ramsey County (liheap.ncat.org, 2010). The Community Action Partnership of Ramsey and Washington Counties receives a portion of this LIHEAP funding to assist eligible low-income families with weatherization.

Ramsey County offers several loan programs that can be utilized by income-qualified homeowners residing in the county for the purchase of services and household appliances that can boost a home's energy efficiency. These loan programs, as well as home energy efficiency education and contract services, are administered through local non-profits featuring programs that focus on home energy efficiency. Qualified home improvement contractors are organized and monitored using the Home Performance with Energy Star program, which is sponsored by Xcel Energy, a major utility company. A unique education initiative being undertaken by the Center for Energy and Environment in Minnesota is called the MN Energy Challenge. For a full case study of Ramsey County, Minnesota please refer to Appendix F.

County Case Study Findings

An analysis of Macomb, Milwaukee, and Ramsey Counties revealed that each of the counties is engaged in education outreach and connecting residents with available resources. Countywide connections involve organizations/businesses engaged in home energy efficiency services, organizations providing low-income energy assistance and loans for energy efficient improvements, organizations providing education, and utility company's customer benefits such as energy audits, energy saving tips, and rebates.

Funding

The most common funding source used to pay for the services of a countywide residential energy efficiency program is the United States Department of Energy's Low Income Home Energy Assistance Program (LIHEAP). Ramsey County receives its LIHEAP funding through the State of Minnesota. Milwaukee receives support through LIHEAP funding once it has been apportioned to Milwaukee County (County of Milwaukee, 2010). LIHEAP grants are awarded to all fifty states, the District of Columbia, five territories, and nearly 140 Tribes and Tribal organizations each year (US Department of Health and Human Services).

Role of Utility Companies

In each one of the studies it appeared that local utility companies played the largest role in providing educational outreach with regards to home energy efficiency and its importance. Utility companies reached out to their communities in a variety of ways including through energy pamphlet inserts in the mail, conducting demonstration days in local schools, and providing promotional events and programs such as LED light bulb exchanges and appliance upgrades. Milwaukee's utility company (We Energies) utilizes their website as an educational medium for customers to learn about new forms of renewable energy; provide immediate energy-saving fact sheets; and list a variety of classes offered throughout the area, including K-12 outreach. The website also provides user-friendly tools such as carbon calculators, video tutorials, among other energy related applications. Ramsey County residents have access to the same wealth of information on the Xcel Energy website, which is the largest utility provider in the State of Minnesota.

Collaboration and Implementation

All of the case studies examined had a leading organization within their structure responsible for connecting resources. In Macomb County, the Community Energy Initiative Group assists in effectively connecting programs and resources by bringing together community leaders involved with energy efficiency. The Group's members include representatives from utility

companies, local television/radio news channels, and human services groups. One of their tasks included compiling a comprehensive list of agencies and services in the area. Similarly, the Community Action Partnership of Ramsey and Washington Counties connects residents with resources such as loan programs and home improvement contractors. Both Macomb and Milwaukee counties offer education and training for home energy efficiency. This helps residents gain knowledge to improve their own homes while spreading this knowledge to others. Ramsey County connects residents to other financing and loan options to individuals to improve the energy efficiency of their homes. All three of the counties in this analysis had home energy efficiency installation assistance. Generally, assistance with weatherization or home energy efficiency is completed through non-profit organizations or businesses in the counties. In Milwaukee and Ramsey Counties these organizations are supervised and regulated through the Home Performance with Energy Star program. Both Macomb and Ramsey Counties offer energy audits, which can help households identify how energy efficient their homes are. Lastly, all three counties require income eligibility to receive financial incentives.

State and County Supported National Home Energy Efficiency Program Briefs

As ACSET and the ENTF Energy Efficiency Subcommittee continue to enhance and expand their Countywide Home Energy Efficiency Program, endorsing a standard structure and planning protocol may assist in monitoring the effectiveness of programs/funding used for increasing home energy efficiency in Kent County. Providing definition to the program structure may enhance ACSET and the ENTF's ability to succeed in a more localized, comprehensive approach to energy efficiency.

Sponsored and funded by the US Department of Energy, the following programs offer program templates and strategies meant to assist organizations working at the local level in effectively defining, planning, and implementing programs that increase the number of homes that are energy efficient through weatherization procedures and whole-house energy efficiency planning.

Home Performance with Energy Star Program

Home Performance with Energy Star[1] is a program that was developed by the US Department of Energy (DOE) and the US Environmental Protection Agency (EPA). The Home Performance with Energy Star program provides a program structure template for designing, implementing, and monitoring a home energy efficiency program. This program template may be adopted by utility companies, state energy agencies, municipalities, and/or non-profit organizations (HPwES Sponsor Guide, 9).

Statewide sponsors of this program include the utility company Xcel Energy in Minnesota and Wisconsin's Focus on Energy. Although Michigan does not sponsor this program at the state level, Home Performance with Energy Star can be sponsored by any third-party willing to initiate responsibility. The program utilizes a whole-house energy efficiency planning approach to assist in lowering household energy consumption.

As ACSET and the ENTF look to further define and grow their Home Energy Efficiency Program in Kent County, Home Performance with Energy Star may provide an effective model for further

[1] DISCLAIMER: Although Home Performance with Energy Star is a highly used program, the US Government Accountability Office (GOA) recently released information citing specific instances when Energy Star awarded faulty products their seal during a recent Federal investigation. For more information, an article can be found at the following link: http://abcnews.go.com/WN/government-investigation-faults-energy-star-rating/story?id=10213726.

defining their program structure, monitoring the work of local organizations, and connecting agencies across throughout the county. A program overview and in-depth description of protocol can be found in Appendix G of this report.

Weatherization Assistance Program: Starting a Weatherization Information Campaign

The US Department of Energy's Weatherization Assistance Program authored a manual entitled *Starting a Public Information Campaign* that focuses entirely on weatherization. The manual provides a comprehensive strategy for local agencies and their partners to use in order to effectively disseminate information about home energy efficiency and organize localized, grassroots movements. Simply written, the manual leads organizations through a thorough step-by-step planning process, including the following steps:

- Planning the Campaign: Organizing objectives, assessing program needs and resources, and setting goals.
- Focusing the Campaign: Identifying the target audience and developing an effective message.
- Getting the Word Out: Planning activities to communicate the message.
- Evaluating the Results: Tracking the response of one's target audience.

ACSET and the ENTF have already defined their Home Energy Efficiency Program's campaign objectives. However, results from the November 2009 ENTF Energy Efficiency Survey indicated that a lack of education and information regarding home energy efficiency was the most inhibiting factor in establishing an effective countywide program. With this in mind, the DOE Weatherization Assistance Program's manual might lend helpful ideas to the ENTF for better targeting specific audiences that they desire to have involved with their task force. Furthermore, it may provide the ENTF planning guidelines to dispense to local organizations that may aide them in creating energy efficiency programs of their own, bringing the movement to a more localized level and meeting specialized needs. A summarized version of the DOE manual as well as tips from the United Kingdom's Energy Saving Trust can be found in Appendix H.

Part Three: Designing a Senior Citizen Winter Preparation Program

Background

Drawing from 2001 data provided by the US Department of Health and Human Services, older adults most often live alone as they age and usually face independence difficulties due to some form of disability (Grand Valley State University: Community Research Institute, 2002). Perhaps this is one of the reasons that senior citizens are included as one of the target populations sought after by the US Department of Energy (DOE) Weatherization Assistance Program to receive home weatherization assistance (US Department of Energy: Weatherization Assistance Program, 2008).

As of 2000, 79% of the senior households within Kent County consisted of homeowners while 21% of senior households were renters (Grand Valley State University: Community Research Institute, 2002). According to Grand Valley State University's Community Research Institute (CRI), as of 2005 one in five of Kent County's older adults were spending over 30% of their income on housing expenses, designating them as "housing burdened" by the US Department of Housing and Urban Development (HUD) standards. Although CRI could not calculate housing spending for nearly half of those surveyed, they concluded that based on their results, approximately 37% of the older adults surveyed whose housing expenses could be calculated were housing burdened. Older adults with one or more ADL limitations were twice as likely to report housing burden (Grand Valley State University: Community Research Institute, 2005).

CRI also found that in 2005 three out of four housing burdened seniors in Kent County acknowledged not having enough money to purchase basic necessities including food, transportation, and medical care. One in eight housing burdened seniors reported they had been unable to fill a prescription or purchase eye glasses upon prioritizing housing payments and 4% percent reported having skipped meals (Grand Valley State University: Community Research Institute, 2005).

Interest in Kent County

Based on interviews with community members interested in the home energy efficiency movement in Kent County, two principle reasons reign in developing a Senior Citizen Winter Preparation Program. These reasons include:

1. Raising community awareness of poverty and the importance of energy efficiency (D. Jacobs, personal communication, 2010).
2. Implementing weatherization and whole-house energy efficiency planning measures that improve the energy efficiency of a home in order to reduce utility bills and reduce a household's carbon footprint (E. Morgan, personal communication, 2010).

According to the DOE Weatherization Assistance Program's manual *Starting a Public Information Campaign*, the decision to implement a program based on either one or both of these principle reasons should be decided upon by community members familiar with what is most important to residents specific to an area.

Agency Briefs

Research was conducted on five agencies and their programs in order to determine common practices and unique ideas for the initial planning and implementation of a senior citizen winter preparation program in Kent County and the cultivation of its structure over time.

Agencies were chosen for research because they featured a program that fulfilled at least one of three criteria. The featured programs either had to 1) conduct and/or facilitate weatherization and whole-house energy efficiency procedures on residential dwellings; 2) include senior citizens as their target audience; 3) and/or facilitate a volunteer day where procedures benefiting home energy efficiency were implemented.

The five programs chosen are supported by a variety of entities. They include three non-profit organizations, one of which is an Area Agency on Aging; one utility company; and one county department focused on fulfilling the needs of senior citizens in its jurisdiction. These agencies and their programs include:

- Community Energy Project, In-Home Weatherization Program
- Riverside Public Utilities, WE CARE
- CCOA-Aging, Weatherization & Human Services, Weatherization Program
- Westchester County, New York Department of Senior Programs and Services, Weatherization Referral and Packaging (WRAP) program
- Home Energy Efficiency Team

Research on each agency and program was completed by conducting Internet searches and phone interviews with agency directors and staff.

Community Energy Project

Community Energy Project (CEP) is a non-profit organization that has been in the Portland, Oregon region for over 30 years. Their In-Home Services Department includes an In-Home Weatherization Program and an In-Home Safety Repair Program, both of which organize volunteer events targeting senior citizens and the disabled. The In-Home Weatherization Program offers weatherization services while the In-Home Safety Repair Program assists with home environmental safety repairs. CEP's In-Home Services Department also provides home energy efficiency educational outreach in the form of workshops/trainings for those seeking to initiate their own home energy efficiency movement. For a full agency profile please refer to Appendix I.

Riverside Public Utilities

Riverside Public Utilities, a utility company based out of Riverside, California hires private contractors to perform weatherization procedures on the homes of income-qualified senior citizens and disabled persons through their WE CARE program. For a full agency profile please refer to Appendix J.

CCOA – Aging, Weatherization & Human Services

CCOA – Aging, Weatherization & Human Services (CCOA) is a non-profit Area Agency on Aging based out of Idaho with a complete focus on assisting seniors in a dignified manner across multiple counties. Their Weatherization Program professional crew performs a variety of weatherization procedures on the residences of income-qualified senior citizens, among others, using federal funding. For a full agency profile please refer to Appendix K.

Westchester County, New York Department of Senior Programs and Services

The Westchester County, New York Department of Senior Programs and Services (DSPS) serves as a liaison between various home energy efficiency programs and senior citizen clients. Aside from publishing a directory for senior citizens directing them toward home repair services, including those related to weatherization and whole-house energy efficiency, DSPS connects income-qualified senior clients to home energy efficiency programs through the State of New York's Weatherization Referral and Packaging program (WRAP). For a full agency profile please refer to Appendix L.

HEET: Home Energy Efficiency Team

The Home Energy Efficiency Team (HEET) is a non-profit organization that approaches home energy efficiency outreach at the neighborhood level. Based out of Cambridge, Massachusetts, their program consists of a team of neighbors that seek out homes of others in their community to perform weatherization and whole-house energy efficiency planning procedures upon through volunteer-driven events referred to as "barn-raisings". For a full agency profile please refer to Appendix M.

Senior Citizen Weatherization Program Characteristics

The matrix located on page 59 arranges the home energy efficiency programs researched and the structural components of these programs. In doing so, it provides an organized table where common elements between programs can be visually identified. The matrix was used in an analysis of the researched organizations, assisting in the formation of the Summary of Findings located below.

Summary of Findings

Eligibility and Funding

All five home energy efficiency programs that were researched identified income-qualified senior citizens as one of their main target audiences. Income-qualified disabled persons were listed by four agencies as a target audience, the second highest-listed audience. Only one agency listed general income-qualified households (because of their status as a DOE Weatherization Assistance Program partner) and only one agency did not have a specific target audience.

Of the programs researched, federal, state, county, city, grants, contributions, and fees were all utilized by at least one agency. The greatest source of funding came from the US Federal Government (two agencies) and fees for services (two agencies). It is worth noting that of all the agencies, the Community Energy Project cited funding from every source listed, suggesting this agency's expertise in leveraging funding. Of the agencies researched, CEP also offered the greatest number of services related to general home energy efficiency.

Agency Type and Program Structure

Of the five agencies researched, three were non-profit organizations, one was a public utility company, and one was a county department catering to senior citizens within its boundaries. Each agency instigated the completion of a variety of procedures that increase the energy efficiency of a home. However, this function was satisfied by the researched agencies in a variety of ways.

Four of the five agencies facilitated a program focused on increasing home energy efficiency through a variety of weatherization and whole-house energy planning procedures. Only one organization didn't provide weatherization services, but rather acted solely as a liaison connecting clients to resources. Regardless of home energy efficiency services provided, all five agencies offered their services throughout the calendar year, with varying frequency. The number of clients served per year ranged from 15-750 households.

Three of the five agencies utilized professionals for implementing weatherization procedures, and one acted as liaison between clients and local agencies that provide professional home weatherization services. Of the three that utilized professionals, two cited having a professional crew to carry out home energy efficiency procedures in-house. The practicum team was unable to determine whether or not the third organization hired private contractors or had in-house staff because they were unavailable for comment.

Volunteers

Two of the five agencies, both registered as non-profit organizations, utilized volunteers for carrying out home weatherization procedures. Of these two, one also had an in-house professional crew to lead volunteers during weatherization workdays. Of the agencies with a volunteer-driven program, both provided training on weatherization procedures prior to a workday event and one agency discussed proper protocol.

Accessing Clients

All five organizations allowed eligible households to register on their own for home energy efficiency services. All four organizations that also sought out clients cited asking various senior service agencies to direct their caseworkers to encourage clients in need of home energy efficiency services to register for their programs.

Senior Citizen Home Energy Efficiency Program Matrix

Senior Citizen Home Energy Efficiency Program Characteristics by Agency

Agency			Community Energy Project	Riverside Public Utilities	CCOA	Westchester County, NY DSPS	HEET: Home Energy Efficiency Team
Organization Type	Non-Profit		x		x		x
	Utility Company			x			
	Local Government					x	
Program Exclusive to Seniors						x	
Eligibility	Senior Citizens	Low-Income	x	x	x	x	
		All					x
	Disabled Persons	Low-Income	x	x	x		
		All					x
	General Public	Low-Income			x		
		All					x
Home Energy Efficiency Method of Completion	Completed by Contractors		x	x	x		
	In-House Professional Crew		x		x		
	Volunteer Driven		x				x
	Liaison		x			x	
Volunteers	Volunteers Trained		x				x
	Volunteers Untrained						
	Training Provided by Org.		x				x
	Types of Volunteers	Businesses	x				x
		Schools	x				x
		Faith-Based	x				x
		Local Residents	x				x
		Non-Profits	x				x
Program Frequency	Daily		x				
	Weekly						
	Monthly						x
	Once a Year						
	Throughout Calendar/Contract Year			x	x	x	
Scope	Neighborhood						x
	City						x
	County		x			x	
	Customers			x			
	Other				x		

Senior Citizen Home Energy Efficiency Program Characteristics by Agency

Home Weatherization/ Energy Efficiency Procedures	Energy Audit	x	x	x	x	x
	Storm Window/Door Installation	x			x	x
	Door Weatherstripping	x	x	x	x	x
	Door Sweeps		x			x
	Window/Door Caulking	x	x		x	x
	CFL	x			x	x
	Water-Saving Shower Head/Water Fixture Replacement		x			x
	Insulation Installation			x	x	x
	Furnace Repair			x	x	x
	Furnace Replacement				x	
	Duct Maintenance			x	x	
	Door/Window Replacement				x	
	Water Tank Replacement				x	
	Water Tank Insulation	x				x
	Roof Repair				x	
	Pipe Insulation	x				x
	Programmable Thermostat Installation					x
	Chimney					x
	Water Conservation					x
	Home Energy Education	x	x		x	x
Home Safety Repair	Yes	x			x	
	No		x			x
Home Safety Repair Procedures	Grab Safety Bars	x				
	Bathtub Transfer Benches	x				
	Minor Carpentry	x				
	Carbon Monoxide	x				
	Smoke Detectors	x				
Provide Energy Education/Training to Other	Yes	x				x
	No		x	x	x	
Funding	Federal	x		x	x	
	State	x				
	County	x				
	City	x				
	Grants	x				
	Contributions	x				x
	Paid Services/Fees	x	x			

Home Energy Efficiency Tool Kit

The purpose behind providing a tool kit of weatherization procedures and whole-house energy efficiency planning methods is to identify common practices and where possible, their net amount of help to the household when implemented. The following tool kit identifies practices in ranking order to delineate those manageable to the beginner, intermediate, and/or professional skill levels. An energy audit should be performed before carrying out procedures in order to determine those most cost-effective for each individual house, as each house may differ in problem areas.

Beginner

Making a home more energy efficient doesn't have to be expensive or highly technical. A household can reduce the cost of utility bills by implementing simple changes in their daily routine. Listed below are ten easy, whole-house energy efficiency planning tactics that one can embrace to in order to begin reducing home energy consumption and save money.

1. ### Turn the Heat Down During the Winter

   According to HEET, in the Northeast a 3% reduction in a household's heating bill results for every degree the thermostat is turned down during the winter. If a home changes their climate control setting from 70 to 65° F during the winter, that household will save 15% over the course of the season (HEET, 2010).

2. ### Wash Laundry in Cold Water

   Washing clothing in cold water is one of the best ways to save money when doing laundry. Ninety percent of the washing machine's energy consumption is derived from heating the water alone (SaveEnergy.About.com). Most major laundry detergent companies now make specially formulated cold-water detergents that make washing in cold water just as effective as washing clothing in warmer water. Implementing this tactic reduces energy use by 50-75%. This equates to a savings of nearly $63/year for most energy-inefficient top-loading washers (EnergyHog.com, 2005).

3. ### Turn Off the Lights

   Turning off the lights is one of the simplest ways one can reduce the cost of an electric utility bill. Traditional incandescent light bulbs should be turned off any time a member is out of the room for more than 5 minutes.

4. Clean Coils On the Back of the Refrigerator

Brushing the dust off the coils located on the back of the refrigerator once a year can increase a refrigerator's energy efficiency by 6%. The coils are responsible for keeping the refrigerator cold. When they get dusty, the refrigerator cannot work as efficiently requiring greater amounts energy to run. It also puts additional strain on the refrigerator's motor because it has to work harder in order to maintain the temperature setting. Cleaning the coils in the back of the refrigerator can be done by simply wiping them off with a rag or using a vacuum with a brush attachment. Doing this will extend the life of your refrigerator and increase its performance.

5. Choose the Dishwasher's "Air-Dry" Setting

Choosing the dishwasher's "air-dry" setting instead of the "heat-dry" setting can save nearly 15% of the dishwasher's energy per cycle (BCHydro.com, 2010). If the dishwasher does not have an "air-dry" setting, turning the dishwasher off and opening the door after the final rinse is just as effective.

6. Close Doors and Vents to Underutilized Rooms

Closing the door and vents to underutilized rooms can assist in saving money on heating/cooling bills and allow air to circulate more efficiently to areas in the home that are more frequently used.

7. Clear Obstacles Blocking Heating Vents

Make sure all vents and radiators are free from obstructions. Not only will this reduce the risk of fire, it will also ensure that all air can circulate freely. If a house uses radiators place heat-resistant reflectors between the radiators and walls. During the winter this will help heat the room rather than the wall (Energy Star, 2010).

8. Unplug 24/7 Gadgets

Most idle electronics (cell phone chargers, computers, televisions, power strips, stereos, electric clocks, fans, DVD and CD players, cordless phones, microwaves, etc) still use electricity when plugged into an electrical socket, despite being turned off. They still use power in order to keep display clocks lit and memory chips and/or remotes working. It is estimated that keeping idle electronics plugged in can account for nearly 5% of a household's monthly energy costs. In the US consumers spend more than $3 billion annually on idle electronics left plugged in (Alliance to Save Energy, 2009). It may not be practical to unplug regularly used appliances; however unplugging items that are rarely used or when one is away from home for extending periods of time can result in utility bill savings.

9. Turn Down Hot Water Heaters

The third largest home energy cost can be attributed to heating water. It typically accounts for 14-20% of a household's energy bill. Most water heaters are set at around 135° F however the recommended setting for maximum efficiency is between 120-115° F. By reducing the temperature of the water heater by 10° F, a household can save between 3-5% in energy costs (SaveEnergy.About.com, 2010).

10. Clean the Lint Trap In the Dryer Before Each Load

Dryers move heated air through wet clothing in order to evaporate and then vent the water vapor outside. If the lint trap is not clean, air cannot freely circulate through the clothes and the water vapor may not be able to evaporate. As a result, the dryer will need to run for longer periods of time in order to achieve dry clothes. Cleaning the lint trap is an easy step that makes a big difference in a household dryer's performance and efficiency. This step may save a household up to $34/year.

Intermediate

There are other relatively inexpensive home weatherization/energy efficiency planning procedures that can be implemented in order to increase the energy efficiency of a home, especially during the winter months. The following procedures may require a small amount of training for one looking to complete the work one's self. After implementing the easy practices, these methods can assist households in taking home energy efficiency to the next level. Not all procedures are appropriate for every home. The following list gives examples of commonly applied home energy efficiency techniques.

1. ### Caulking
   Small holes and cracks around windows and doors allow air to escape from the house. They also cause the furnace and/or air conditioner to work harder in order to keep the home at a preferred temperature. This problem can be remedied by sealing these small holes and cracks with caulk. An energy audit can be performed to detect air leaks by a professional, or one may do it on one's own by lighting an incense stick and passing it over window seams. If the smoke travels horizontally, there is a leak.

2. ### Ceiling Fans
   Ceiling fans use considerably less energy than air conditioners. The moving air tends make the temperature feel approximately 4° F cooler. Ceiling fans can be used alone or in conjunction with air conditioning units to allow for higher thermostat settings in the warmer months.

3. ### Chimney Flue Pillows
   Chimney flue pillows prevent airflow, odor, and debris from flowing through the chimney of the house. They are preferred over metal chimney dampers because chimney flue pillows are less likely to warp or break overtime. When used correctly, they prevent heat or cool air from escaping through the chimney.

4. ### Door Sweeps
   Door sweeps can help stop the drafts of wind that come from under outside doors. They consist of a small brush or pad that attaches to the bottom edge of the door. There are more sophisticated versions of door sweeps but they all serve the same function. Most door sweeps are easily installed and do not require removal of the actual door. When installed properly, they usually allow clearance for entry mats.

5. Furnace Filter Replacement

Dirty furnace filters block air flow through household heating and cooling systems, increasing utility bills and shortening the equipment's life (EnergyHog.com, 2005). A dirty filter can cut a furnace's efficiency in half. Not only does a clean filter allow a system to operate more effectively, it also reduces allergens and pollutants in the air. It is recommended that a household change the filters in a heating and/or cooling system every 90 days.

6. Hot Water Tank Insulation

Insulating a hot water tank and pipes reduces energy consumption by trapping the heat inside the tank. Water tank insulation wraps (or blankets) can be purchased on average for the price of $20. Pre-cut pipe insulation can also be purchased to cover the exposed pipes going into the water heater. According to Energy Hog, if starting with an un-insulated tank, the energy savings should pay for the improvements in just a few months (EnergyHog.com, 2005).

7. Lighting Replacement

One of the most common and inexpensive ways to decrease home energy consumption is to replace incandescent light bulbs with compact fluorescent light bulbs (CFLs). CFLs use up to 75% less energy than standard incandescent bulbs and last up to 10 times longer, according to Home Energy Saver. If each person in the US replaced one incandescent light bulb with one CFL bulb it would prevent releasing a quantity of carbon from the air equivalent to the emissions created by one million cars (SaveEnergy.About.com, 2010). Replacing the five most used light bulbs within a home with CFL bulbs can save $60/year in energy costs (Energy Star, 2010).

8. Low-Flow Shower Heads

Showers and laundry can account for 60-75% of household water bills. An inexpensive way to save on water bills is to install low-flow showerheads. They save money by limiting the amount of water that comes out of the showerhead. Most can be easily installed by simply unscrewing the current showerhead by hand, and replacing it with the new low-flow model.

9. Programmable Thermostat

Programmable thermostats lower heating and cooling costs by allowing the homeowner to pre-program thermostat settings according to the time of day. In colder months a household can elect to set the thermostat to a lower temperature at night while the residents are asleep or during the day if no one is home. The programmable

thermostat can also be set to automatically increase around the time residents usually arrive home. Installing a programmable thermostat is a great way to cut down on energy use while maintaining comfort in the home. As a result of installing a programmable thermostat, a household can save 20-30% on its heating/cooling bill or $150/year.

10. Storm Doors

Storm doors are installed in front of the exterior doors in the home. They usually feature interchangeable glass and screen panels. Storm doors can add draft-stopping ability, insulation, and protection to a home's entry doors. When installed correctly, the glass panel forms a barrier of warm air in front of the exterior door that helps prevent cool air from entering the home. In warmer months, the screen panel allows the home to be ventilated while keeping out insects. Using the glass panels during the cooler months and the screen panels in the warmer months reduces the need for electronic heating and cooling methods. The better the installation and the tighter the fit of a storm door, the more effective it will be (Cohen, 2006).

11. Window Sealing

Window sealing assists in sealing air leaks, stopping drafts, and increasing the comfort of the home. In addition to caulking, windows can be sealed using lightweight plastic. There are several kits on the market for plastic window sealing. Most of these kits contain double-stick tape for application to the trim casing around a window and lightweight plastic sheeting that is pressed onto the tape. Once the plastic is in place, a hair dryer is used to secure the plastic. When blown across the surface of the sheeting, the plastic shrinks, becoming air tight across the window. Plastic window sealing is best used on windows that will not be opened for several months.

Professional

In order to maximize home energy efficiency, some houses may require major repairs or updates. These techniques tend to be more expensive. However, they drastically reduce energy costs, make housing more affordable, improve aesthetics, and increase the resale value of a home. In some cases, the energy savings is so significant that overtime, the repairs essentially pay for themselves. Also, many of these repairs result in tax credits for homeowners. The following procedures are most commonly completed by professionals.

1. ### Heating System Repairs or Replacement
   It is recommended that furnaces over fifteen years old be replaced with newer, more energy-efficient models. Energy Star-qualified models are nearly 15% more effective than conventional furnaces (Energy Star, 2010). If the furnace does not need to be replaced, it is important to keep it clean, lubricated, and properly adjusted. Steady increases in heating and/or cooling bills may indicate that a furnace is in need of repair or replacement.

2. ### Roof Replacement
   Homes lose approximately 25% of their heat through the roof. Replacing an outdated roof is one of the most effective ways to save energy, boost comfort, and increase safety in the home. There are several different types of roofs that can be selected based upon climate conditions in one's area (Sheng, 2010).

3. ### Window Repairs or Replacement
   Replacing old, leaky windows saves energy, improves a house aesthetically, and adds resale value to one's home. Thermal windows are typically two to four times more efficient than older single-pane windows because they are usually double- or triple-paned. This feature improves the home's insulation, preventing heat from escaping during the winter months (Hollies, 2010).

4. ### Outside Door Repair/Replacement
   Sealing or weather-stripping may not be the most effective techniques for insulating older doors. Replacing older doors with energy-efficient exterior door models may be the best option. Most energy efficient exterior doors are made from wood, steel, and fiberglass. Wood itself provides excellent insulation. Steel and fiberglass doors have an insulating foam material inside, also making them energy efficient. What is most important is making sure that exterior doors are properly installed to ensure they are sealed as tightly as possible.

5. Insulation of Attics and Walls

   Energy Star lists insulating attics and walls as one of the most cost-effective ways to save energy in the home. In attics with less than six or seven inches of insulation, it is recommended to add an additional six to ten inches. Other effective places to add insulation include unfinished basement walls and crawlspaces (Energy Star, 2010).

6. Duct Maintenance

   In most homes, nearly 20% of the air traveling through the duct system is lost due to leaks, holes, and poorly connected ducts (Energy Star, 2010). Properly sealed ducts improve indoor air quality by allowing air to circulate more efficiently. Repairing the duct system can be difficult because ducts are usually located in walls, ceiling, attics, and basements.

Summary

The Home Energy Efficiency Tool Kit may find use as a checklist distributed to households and/or agencies interested in hosting a volunteer day/providing home energy efficiency services. The overviews provided for each weatherization and whole-house energy planning procedure, brief discussion of their implementation, and utility bill savings and energy reduction associated will be useful for designing educational literature, grant writing, and providing talking points on the importance of home energy efficiency.

Conclusions

Collaboration, implementation, and education were all some of the key elements of the countywide home energy efficiency programs researched,. Based on our analysis of current Kent County resources and research on other countywide programs and home energy efficiency organizations, the following conclusions have been made.

Countywide Program Structure

The US Department of Energy-sponsored Home Performance with Energy Star Program (HPwES) provides a template for a countywide energy efficiency program, including an implementation strategy and a rubric for measuring the effectiveness of a countywide program. The HPwES is used in counties nationwide, including two that were researched for the report. Kent County could adopt the following protocol for their Home Energy Efficiency Program, as adapted from the Home Performance with Energy Star Sponsor Guide.

Target Audience: Renters

The US Department of Energy's Weatherization Program prioritizes households that include senior citizens and families with children age 18 and under. Of those households, income-qualified homeowners currently receive the most weatherization and whole-house energy efficiency planning assistance in Kent County (K. Tolan, personal communication, 2010). While only 28% of all homeowners are spending 30% or more of their income on housing costs, 50% of all renters in Kent County are experiencing housing burden (US Census Bureau: American Community Survey, 2006-2008). Although there are nearly three times as many homeowners as renters in Kent County (162,464 owner-occupied compared to 62,719 renter-occupied), when determining program goals, strategies should be developed for increasing the number of weatherization and whole-house energy efficiency planning services to low-income rental households. Strategies may include cultivating relationships with property management companies and involving affordable housing agencies focused on the rental community with Kent County's home energy efficiency program.

Formulate Goals/Objectives

As suggested by HPwES, Kent County should set countywide goals for what constitutes home energy efficiency. Goals should state the desired energy savings for each home quantitatively and include deadlines for implementation of the program. This will allow Kent County to more easily measure the progress of their household energy reduction goals and better organize their priorities with regards to home energy efficiency.

Identifying Gaps and Assets

In line with the HPwES template, Kent County will benefit from a more thorough analysis of current home weatherization resources, along with identifying gaps and opportunities facing these programs. Identifying gaps and opportunities in home energy efficiency services will provide Kent County with a baseline for starting a comprehensive program. Based on the results of the November 2009 Energy Efficiency Survey, a gap analysis of the available home energy efficiency services was completed and can be found within this report in Part One. According to this gap analysis, Kent County struggles from a lack of materials/resources and education related to home energy efficiency.

Collaboration

Of the approximately 100 businesses/organizations that received the survey, 32 responded. Although this is an acceptable response rate, an organization that failed to respond may be providing home energy efficiency services including educational outreach and resource provision. It is to Kent County's benefit to consider businesses/organizations who failed to complete the survey, as well others who were not surveyed but are involved with target audiences or housing, in the further development of Kent County's Home Energy Efficiency Program. Kent County can learn from the outreach strategies of countywide programs researched, specifically the Macomb County Community Services Agency. Programs offering home energy efficiency training, contractors who weatherize homes, and non-profit organizations who mobilize volunteer groups already exist in Kent County. Reaching out to asset organizations in order to pool resources together should be the first step toward creating a comprehensive web of organizations working together.

Implementation

Based on HPwES protocol, Kent County should consider further developing their comprehensive program for home energy efficiency by including the following:

- Home Performance Protocols
- Contractor Recruitment Plan
- Contractor Training
- Contractor Participation Requirements
- Marketing Plan
- Incentive Plan
- Quality Assurance Plan

Kent County would also benefit from having an implementation schedule for the program. HPwES provides implementation schedule templates featuring room to create one, two, and

three-year plans. An implementation schedule will give Kent County an outline for determining the timeframe in which work needs to be completed and assessing whether or not goals were reached.

Program evaluation through the HPwES Quality Assurance Plan will help Kent County determine whether energy efficiency has been improved within residential dwellings, resulting in lower utility bills, and provide quantitative data for evaluating the effectiveness of Kent County's Home Energy Efficiency Program. Program evaluation will also help Kent County remove or change unproductive aspects of the program for the future.

Senior Winter Preparation Program

Securing Home Energy Efficiency Partnerships with Aging Agencies

The Inventory of Services, as well as additional interviews, provides evidence that a number of existing organizations in Kent County offer home energy efficiency services similar to those profiled in Appendices H through L. However, several of the senior weatherization case studies presented comprehensive plans that catered more specifically to the senior population than that currently existing in Kent County.

Partners

Agencies involved in connecting senior citizens to resources were not well represented in the Energy Efficiency Survey however they need to be included in the development of Kent County's home energy efficiency strategy. The organizations crucial in reaching out to seniors include local aging agencies like Kent County's Senior Neighbors, Area Agency on Aging of Western Michigan, and the Gerontology Network. Aside from increasing the amount of seniors that can be served with the help of caseworkers directing them toward services, these agencies are in contact with a variety of volunteer groups throughout the county. The senior aging agencies in Kent County can fulfill the roles of seeking out both clients and man-power to carry out weatherization volunteer efforts.

In-Home Weatherization Volunteer and Training Opportunities

A variety of non-profit organizations exist within Kent County, including Home Repair Services, a well-known, well-advertised home repair organization targeting low-income individuals. None of these organizations however provide a list of home energy efficiency related services as comprehensive as Portland, Oregon's Community Energy Project.

Disregarding the issue of funding, within Kent County Home Repair Services (HRS) holds the greatest potential for fulfilling the role of providing weatherization services to senior citizens. HRS currently holds classes on increasing the energy efficiency of one's home and has a history

of successfully organizing and coordinating volunteer efforts in the community. Kent County would benefit from HRS further developing their home energy efficiency workshop series so that training for individuals, faith-based institutions, and non-profit organizations looking to organize localized home energy efficiency volunteer efforts was included.

Although ACSET provides weatherization services to low-income households, with seniors as a target audience, Kent County does not have an organization like CEP sponsoring a weekly home energy efficiency effort for seniors that brings together both trained professionals and interested volunteers. The Home Energy Efficiency Tool Kit located in Part Three of the report provides a comprehensive list of services that a volunteer day might feature, according to CEP and HEET's checklists. This checklist can also be distributed to other volunteer agencies across Kent County interested in adding whole-house energy efficiency planning to their list of services provided. Furthermore, although these organizations did not provide services to the greatest number of clients out of the organizations researched, by involving the public they succeeded in bringing a greater awareness of poverty to the community, a goal of the Kent County Senior Winter Preparation Program.

Evaluation Strategies

Similar to the five programs researched, the Energy Efficiency Subcommittee can evaluate how effective their Senior Winter Preparation Program is by tracking the number of senior households accessed each year. Keeping past clients' records on file, participating agencies responsible for organizing volunteer events should also consider recording the average gas and electricity bill of each client prior to receiving services. A follow-up call and/or visit should be made to each household serviced during the winter season in order to ask for the average gas and electricity bill received during that point in time. Keeping track of this information will help determine total energy savings per household. Recording the weatherization procedures conducted may highlight correlations between savings and procedures.

Community Energy Project gathers testimony from clients and volunteers in order to identify positive experiences and provide evidence of an energy-conscious culture developing. They include a forum on their website for past clients and volunteers to share such experiences through. This may be a useful method for Kent County for gathering feedback while promoting programs and energy consciousness.

Next Steps

The cases researched provide comparison between home energy efficiency programs and a plethora of ideas that the ENTF Energy Efficiency Subcommittee may use for further developing their current countywide home energy efficiency program.

Next steps include cultivating partnerships with organizations they would like to see involved with the home energy efficiency effort while further defining Kent County's Home Energy Efficiency Program using a well-known, and widely used program like Home Performance with Energy Star as a structural template. The inventory of existing home energy efficiency resources in Kent County should assist the subcommittee in identifying service providers they would like to see more involved with their program and its efforts. The subcommittee can use this information for encouraging such organizations to become involved as a third-party for distributing such services, given the training and resources.

Upon establishing a comprehensive energy efficiency program blueprint and attracting county partners that are stakeholders in a variety of issues surrounding home energy efficiency, the Energy Efficiency Subcommittee might begin researching alternative funding sources for achieving various goals for their program aside from Federal dollars. Although all countywide programs researched rely heavily on this type of funding, it may to be to their benefit to model Community Energy Project's strategy of leveraging from city funds and community foundations.

Room exists for Kent County to further define their home energy efficiency structure, creating a more comprehensive and localized effort in the process. However, the ENTF Energy Efficiency Subcommittee has already begun developing the most common element between the cases researched - collaboration. They have established a collaborative network of partner organizations and they have begun to strategize as to how to make their current effort reach a greater number of people. The MSU Practicum Team hopes that this report and its contents will provide the examples necessary for the subcommittee to further build upon their solid foundation, and move their program forward in the future.

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Appendices

Appendix A: List of ENTF Energy Efficiency Subcommittee Members

Emily Alenan-McAlpine

Haris Alibasic
City Grand of Rapids

Connie Bohatch
City of Grand Rapids – Community Development

Mac Brown
Creston Neighborhood Association

Tom Bulten
Oakdale Neighborhood Association

Kim Clark
Disability Advocates of Kent County

Kevin Cook

Terry Cruzan
Salvation Army

Calvin Delano
Alliance for Environmental Sustainability

Deborah Eid
Creston Neighborhood Association

Jon Frazier
DTE Energy

John Gussenbauer
Grand Rapids Urban League

Chris Hall
Habitat for Humanity

Gert Hobson
SE Neighborhood Association

Rachel Hood
West Michigan Environmental Action Council – West Michigan Environmental Development

Dave Jacobs
Home Repair Services of Kent County

Alan Kitson
Kitson Builders

Eileen Kochavar
Steepletown Neighborhood Services

Linda Likely
Kent County

Frank Lynn
Disability Advocates of Kent County

Bob McKown
Heart of West Michigan United Way

Nancy Marshall
Department of Human Services

John Mitchell
Heart of West Michigan United Way

Matt Molnar
Senior Neighbors

Ed Morgan
Energy Education

Tyler Nickerson
Grand Rapids Area Coalition to End Homelessness

Doug Stek
City of Grand Rapids Housing Rehabilitation

Holly Sturges
Grand Rapids Housing Commission

Karen Tolan
ACSET

Carol Townsend
Kent County Michigan State University Extension

Appendix B: ENTF Energy Efficiency Subcommittee Survey

Energy Efficiency Survey

Thank you for taking the time to complete this survey so that we can identify all organizations in Kent County involved in energy conservation efforts. Please return to Energy Survey, Kent/MSU Extension, 775 Ball N.E., Grand Rapids 49503.

1. Organization/Business Name

2. Address

3. Contact Person

4. Phone Number

5. E-Mail Address

6. Web Site Address

7. Please describe your programs/activities related to energy, including numbers served.

8. Who is eligible for your services/products?

9. Is there a charge/fee for your services?

10. How is your program funded? (Please list sources and amounts if possible.)

11. Do you partner with other organizations on energy related programs? Or, would you be interested in partnering with others?

12. Would you be interested in joining the ENTF Energy Efficiency Subcommittee and sending a representative to their regular meetings?

13. How much education are you able to provide the participants in your programs on energy efficiency tips, climate changes, etc.?

14. Does your organization have the interest/capacity in expanding its role in energy related activities, including education on energy efficiency?

15. From your perspective, what gaps exist in providing our community with good energy assistance and conservation services?

16. Do you give the Energy Efficiency Subcommittee permission to include your organization in its energy resource catalogue that will soon be published?

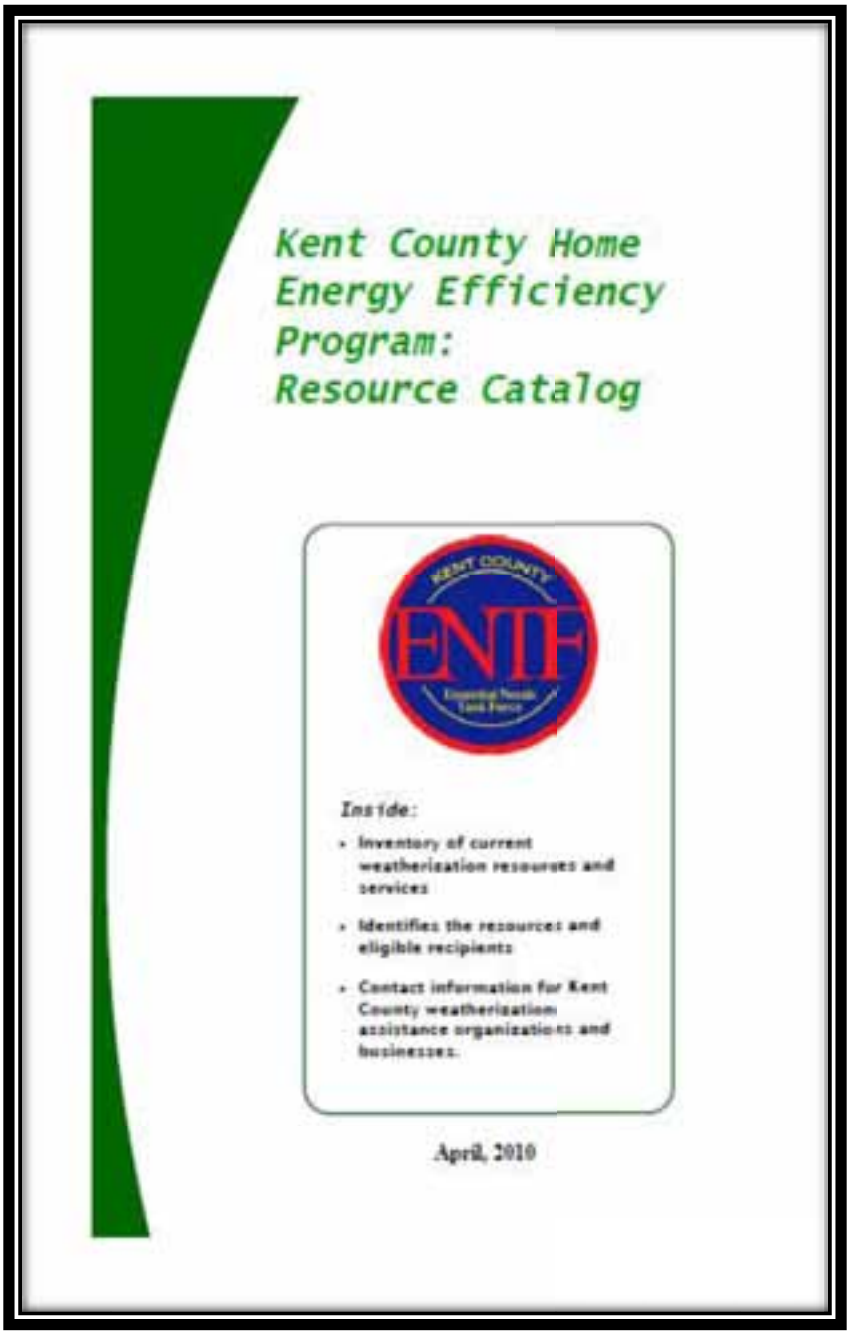
17. Do you want to be included on our e-mail listserve?

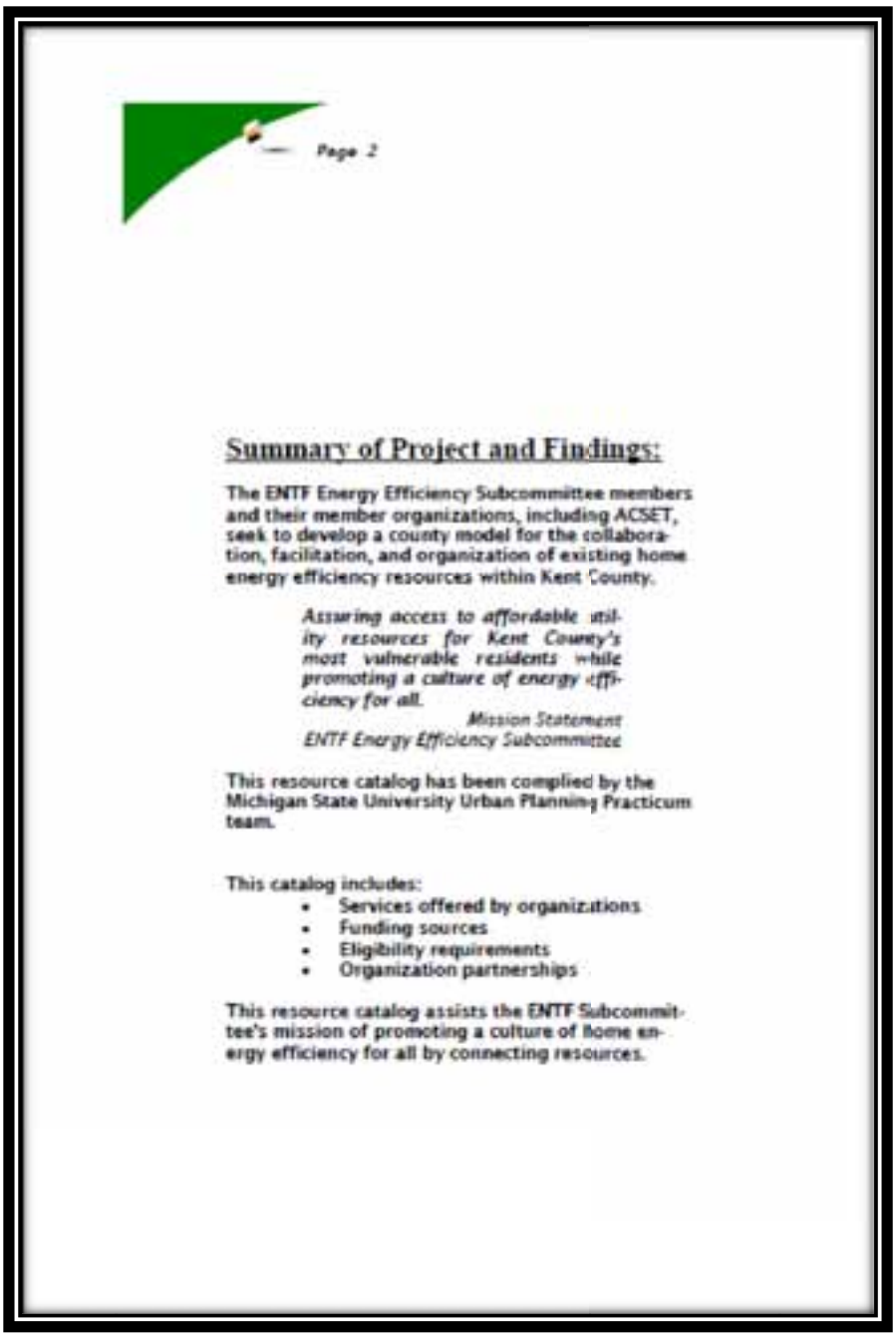
18. Can you think of other organizations we should contact that we might have forgotten or do not know about? Please include contact information.

19. If a pilot program were to be developed next year that would help senior citizens prepare their homes for winter, would your organization be interested in participating?

20. Is there anything else you would like to tell us?

Appendix C: Kent County Home Energy Efficiency Program Resource Catalog





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Summary of Project and Findings:

The ENTF Energy Efficiency Subcommittee members and their member organizations, including ACSET, seek to develop a county model for the collaboration, facilitation, and organization of existing home energy efficiency resources within Kent County.

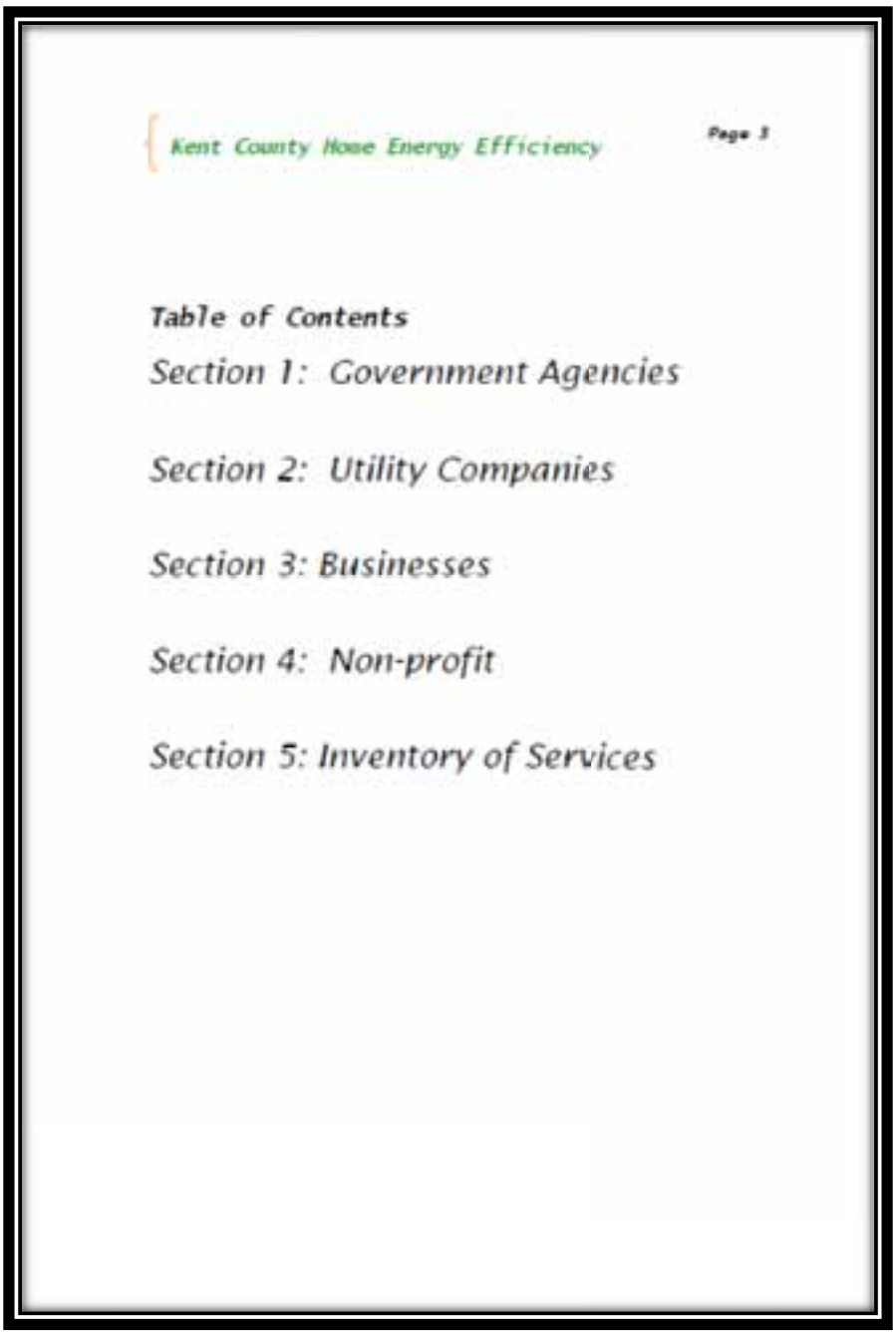
> *Assuring access to affordable utility resources for Kent County's most vulnerable residents while promoting a culture of energy efficiency for all.*
>
> *Mission Statement*
> *ENTF Energy Efficiency Subcommittee*

This resource catalog has been complied by the Michigan State University Urban Planning Practicum team.

This catalog includes:

- Services offered by organizations
- Funding sources
- Eligibility requirements
- Organization partnerships

This resource catalog assists the ENTF Subcommittee's mission of promoting a culture of home energy efficiency for all by connecting resources.



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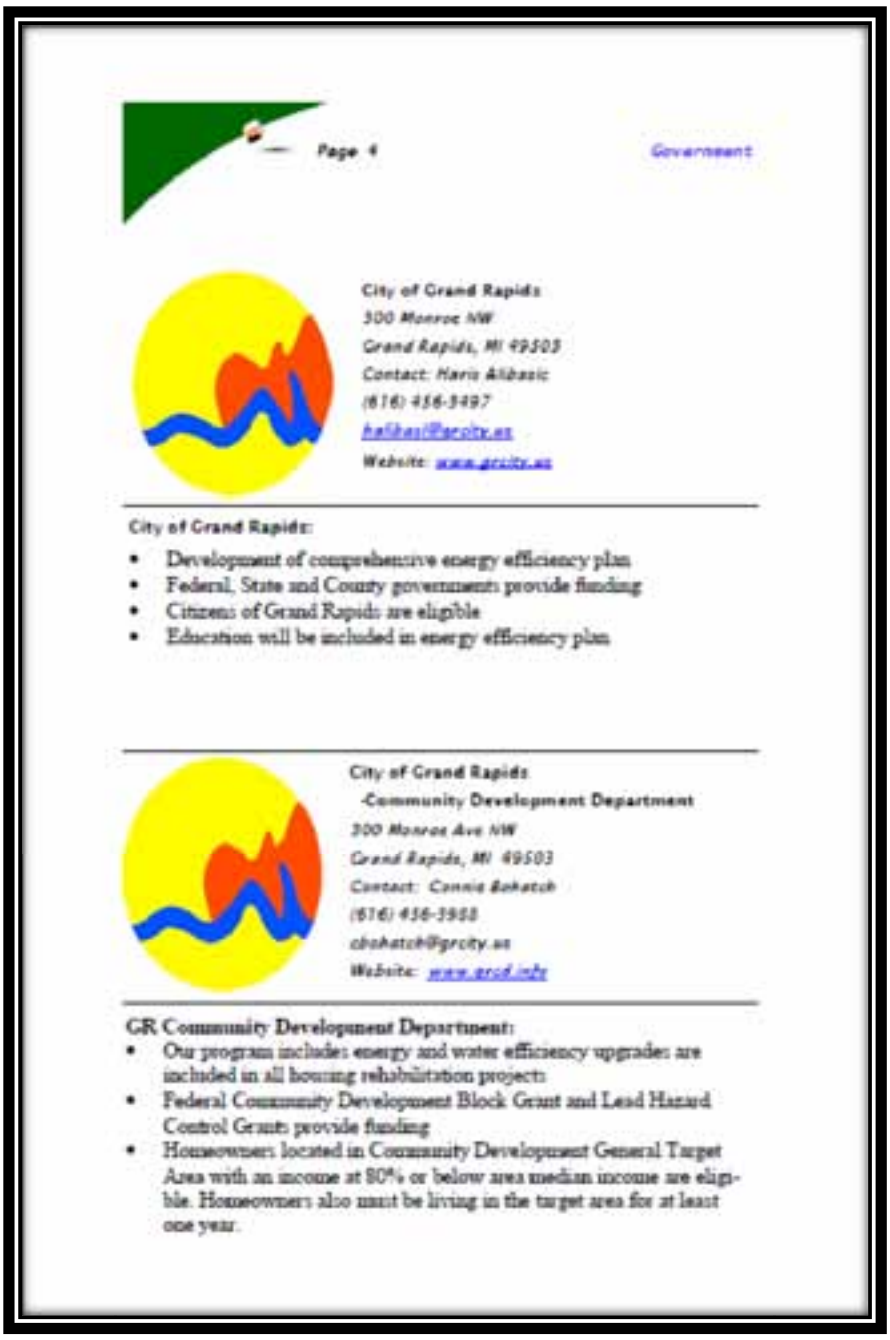


Page 4 Government

City of Grand Rapids
300 Monroe NW
Grand Rapids, MI 49503
Contact: Haris Alibasic
(616) 456-3497
halibasi@grcity.us
Website: www.grcity.us

City of Grand Rapids:

- Development of comprehensive energy efficiency plan
- Federal, State and County government provide funding
- Citizens of Grand Rapids are eligible
- Education will be included in energy efficiency plan

City of Grand Rapids
-Community Development Department
300 Monroe Ave NW
Grand Rapids, MI 49503
Contact: Connie Bohatch
(616) 456-3958
cbohatch@grcity.us
Website: www.grcd.info

GR Community Development Department:

- Our program includes energy and water efficiency upgrades are included in all housing rehabilitation projects
- Federal Community Development Block Grant and Lead Hazard Control Grants provide funding
- Homeowners located in Community Development General Target Area with an income at 80% or below area median income are eligible. Homeowners also must be living in the target area for at least one year.

Kent County Home Energy Efficiency Page 5

Grand Rapids Housing Commission
1420 Fuller Ave. SE
Grand Rapids, MI 49507
Contact: Holly Sturges
(616) 235-2600 ext. 111
hsturges@grhousing.com
Website: www.grhousing.com

Grand Rapids Housing Commission:

- The Federal Government provides us with $26 million from HUD, where the Commission pays $400-$600/mo for rent and utilities
- Low-income families at 50% of area median income are eligible
- The Commission currently has 7 housing sites totaling 1,000 units and including 100 single-family homes. Renovation program includes installation of energy star appliances
- The Commission also serves 3,000 families with Section 8 vouchers.

Kent County Department of Human Services
121 Franklin St. SE
Grand Rapids, MI 49507
Contact: Nancy Marshall
(616) 243-1691
marshalln@michigan.gov
Website: www.michigan.gov/dhs

Kent County Department of Human Services:

- Handles State Emergency Relief Program
- State and federal governments provide funding
- Low-income individuals are eligible
- Emergency Service Funds also received from Kent County under emergency situations

Page 6 Government

Kent County Housing and Community Development Department
82 Ionia Ave. NW, Suite 390
Grand Rapids, MI 49503
Contact: Linda Likely
(616) 632-7400
linda.likely@kentcountymi.gov
Website: www.accesskent.com

Kent County Housing and Community Development Department:

- Program ensures the foreclosed properties rehabbed with Neighborhood Stabilization funds are energy efficient.
- Kent County also works with and funds energy related projects for local units of government throughout Kent County
- Funded by Federal government
- Residents who have low to moderate incomes are eligible for Community Development Block Grant
- We have a strong interest in forming partnerships

City of Kentwood
4900 Breton Ave SE
Kentwood, MI 49508
Contact: Joe Pung
(616) 554-0810
pungj@ci.kentwood.mi.us
Website: www.ci.kentwood.us

City of Kentwood:

- Our program is geared toward energy efficiency, which includes financial assistance for roofing and windows
- HUD provides our funding with revolving loan funds
- Low to moderate income individuals are eligible
- We currently work with the Kent County Community Development Department and the Kent County Housing Commission

Kent County Home Energy Efficiency Page 7

City of Wyoming-Utilities Department
2350 Ivanrest Ave.
Wyoming, MI 49418
Contact: MJ Robinson
(616) 261-3552
robinsonmj@wyomingmi.gov
Website: www.wyomingmi.gov

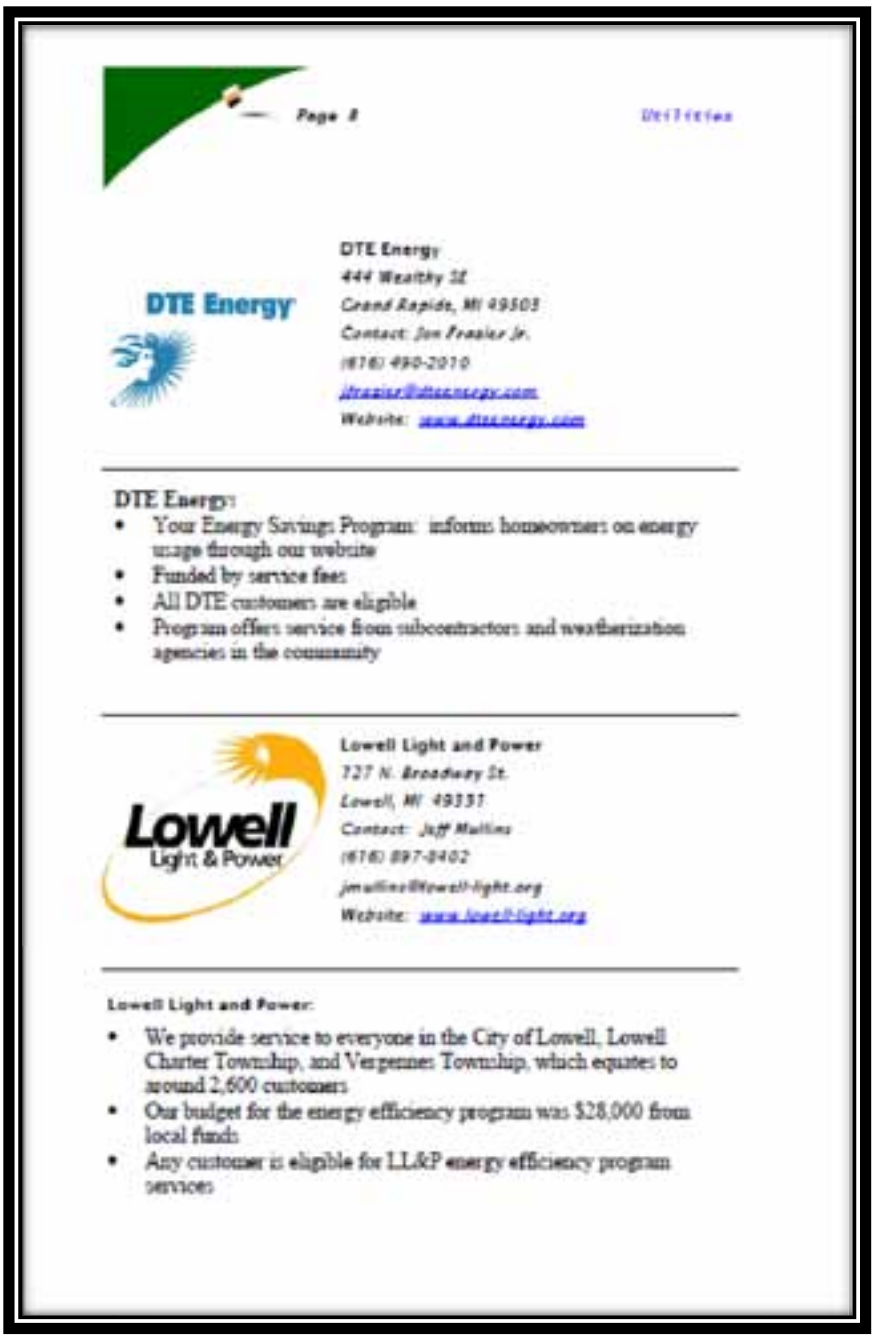
City of Wyoming-Utilities Department:

- We encourage beneficial reuse of biosolids that creates methane for generating electricity, and land application of biosolids conserves fossil fuels creating less of a dependence on imported/processed fertilizer
- Municipal revenue fund provides funding
- Anyone in Kent and Ottawa Counties are eligible
- We work with Kent County and City of Grand Rapids

Consumers Energy
4000 Clay Ave. SW, P.O. Box 201
Grand Rapids, MI 49501-0201
Contact: Karen McCarthy
(616) 530-4333
kamccarthy@cmsenergy.com
Website: www.consumersenergy.com

Consumers Energy:

- Our program has specific targets: lighting, heating & cooling, refrigerators, performing house energy audits
- Funding through surcharge on utility bill which is set aside on a separate account
- All customers: residential, commercial, industrial are eligible
- We work with retailers and specific product lines to get the best energy efficient outcomes for our program



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DTE Energy

DTE Energy
444 Wealthy St
Grand Rapids, MI 49503
Contact: Jon Frazier Jr.
(616) 490-2010
jfrazier@dteenergy.com
Website: www.dteenergy.com

DTE Energy:

- Your Energy Savings Program: informs homeowners on energy usage through our website
- Funded by service fees
- All DTE customers are eligible
- Program offers service from subcontractors and weatherization agencies in the community

Lowell Light and Power

Lowell Light and Power
727 N. Broadway St.
Lowell, MI 49331
Contact: Jeff Mullins
(616) 897-8402
jmullins@lowell-light.org
Website: www.lowell-light.org

Lowell Light and Power:

- We provide service to everyone in the City of Lowell, Lowell Charter Township, and Vergennes Township, which equates to around 2,600 customers
- Our budget for the energy efficiency program was $28,000 from local funds
- Any customer is eligible for LL&P energy efficiency program services

Kent County Home Energy Efficiency Page 9

Michigan Green and G-ENERGY, LLC
P.O. Box 248
Jenison, MI 49429-0048
Contact: Kevin Cook
(616) 457-5601
kcook@michigangreen.org
Website: www.michigangreen.org

Michigan Green and G-ENERGY, LLC:

- We provide energy audits specializing in commercial, school, local government, public and multifamily buildings
- Michigan Green receives funding through MPSC and Michigan DOE. G-Energy is privately owned business
- Commercial, school, local government, public and multifamily buildings are eligible for audits
- We have completed several thousand energy audits over 30 years

Home Energy Ed
3656 Auburn St NE
Grand Rapids, MI 49525
Contact: Ed Morgan
(616) 401-0024
ecmorgan@msn.com
Website: www.homenergyed.com

Home Energy Ed:

- Client education is provided to area agencies on energy efficiency issues
- Funded by Home Repair Services and ASCET
- Low-income individuals have no fee eligibility while all others are eligible with a fee
- Willing to work with others on spreading the energy efficiency message

Lighthouse Communities
1422 Madison Ave SE
Grand Rapids, MI 49507
Contact: Jeremy DeRoo
(616) 437-9140
jeremy@lcgr.net
Website: www.lcgr.net

Lighthouse Communities:

- Home Owner Rehab Program- Energy Efficient remodeling
- Funded by Federal, State and HOME sources
- People who earn 80% of the area median income are eligible
- Grants cover 75% of program, and 10 houses per year are rehabbed

Sustainable Research Group
949 Wealthy St. SE
Grand Rapids, MI 49506
Contact: Bill Stough
(616) 301-1059
bstough@sustainableresearchgroup.com
Website: www.sustainableresearchgroup.com

Sustainable Research Group:

- Provide assessments to commercial, institutional, governmental and manufacturing on energy efficiency along with recommendations on strategic efficiency improvements
- Customer fees provide funding
- Any entity is eligible
- We partner with non-profit and private organizations in expanding opportunities for energy efficiency

Kent County Home Energy Efficiency Page 11

Alliance for Environmental Sustainability
947 Wealthy St. SE
Grand Rapids, MI 49506
Contact: Calvin Delano
(616) 458-6733
cdelano@alliancees.org
Website: www.alliancees.org

Alliance for Environmental Sustainability:

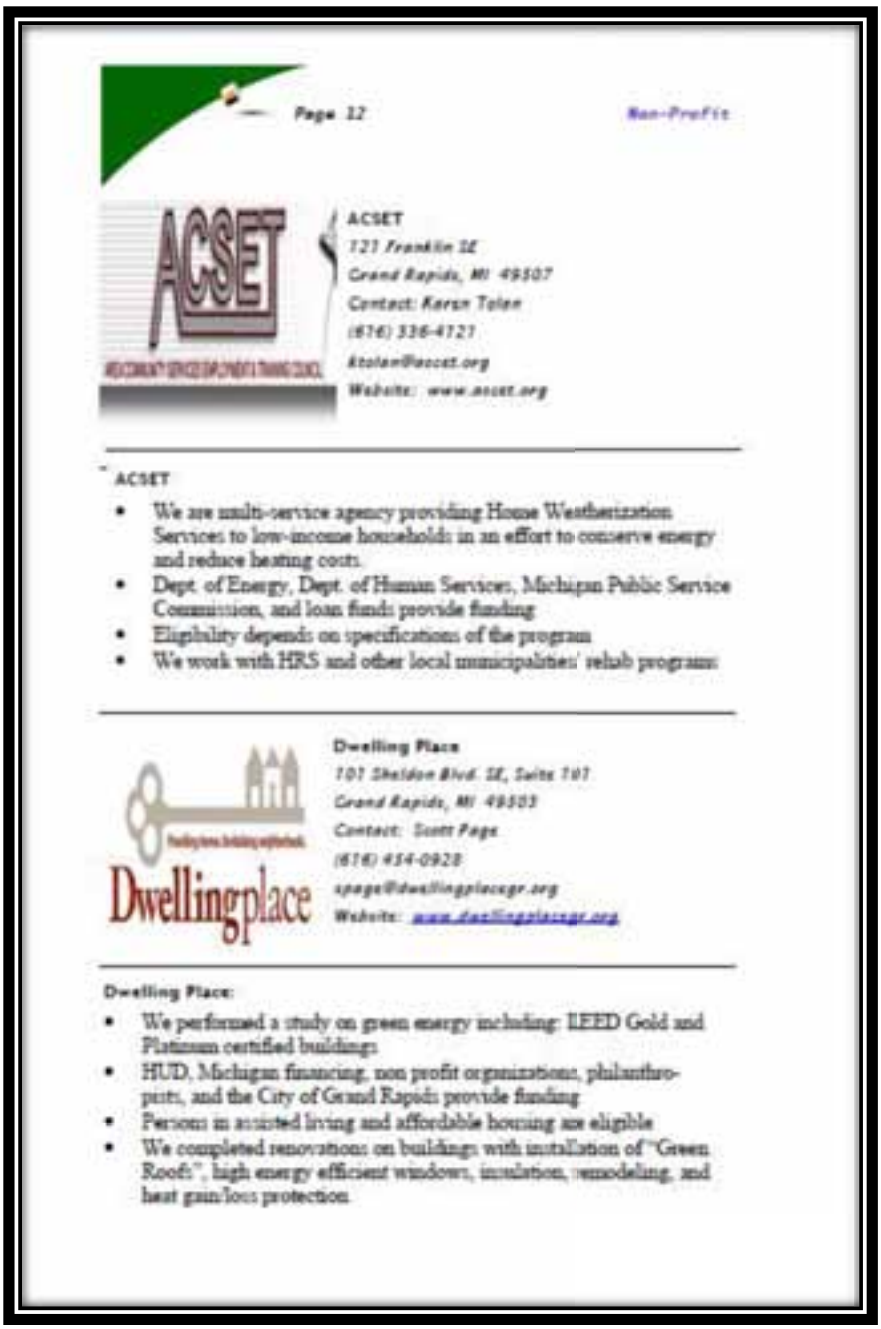
- Engaged in serving the community through education and awareness campaigns along with LEED for homes service
- Grants, donations and fee for service provide funding
- All persons of varying income levels are eligible
- We provide substantial energy education along with being a WaterSense certification provider

Area Agency on Aging of West Michigan
1279 Cedar St. NE
Grand Rapids, MI 49503-1378
Contact: Sandra Chaston-Jones
(616) 222-7012
sandraj@aaawm.org
Website: www.aaawm.org

The Source for Seniors

Area Agency on Aging of West Michigan:

- Administers Kent County Senior Millage Funds that are used to fund ACSET for weatherization and energy assistance
- The Kent County Senior Millage provides approximately $6.6 million in funding
- Kent County residents 60 years or older are eligible
- We work with ASCET, Senior Neighbors and 211 to get the information out



Page 12 Non-Profit

ACSET

121 Franklin SE
Grand Rapids, MI 49507
Contact: Karen Tolen
(616) 336-4121
ktolen@acset.org
Website: www.acset.org

ACSET

- We are multi-service agency providing House Weatherization Services to low-income households in an effort to conserve energy and reduce heating costs.
- Dept. of Energy, Dept. of Human Services, Michigan Public Service Commission, and loan funds provide funding
- Eligibility depends on specifications of the program
- We work with HRS and other local municipalities' rehab programs

Dwelling Place

101 Sheldon Blvd. SE, Suite 101
Grand Rapids, MI 49503
Contact: Scott Page
(616) 454-0928
spage@dwellingplacegr.org
Website: www.dwellingplacegr.org

Dwelling Place:

- We performed a study on green energy including: LEED Gold and Platinum certified buildings
- HUD, Michigan financing, non profit organizations, philanthropists, and the City of Grand Rapids provide funding
- Persons in assisted living and affordable housing are eligible
- We completed renovations on buildings with installation of "Green Roofs", high energy efficient windows, insulation, remodeling, and heat gain/loss protection

Kent County Home Energy Efficiency Page 13

Healthy Homes Coalition
742 Franklin St. SE
Grand Rapids, MI 49507-1307
Contact: Paul Haan
(616) 241-3300
paul@healthyhomescoalition.org
Website: healthyhomescoalition.org

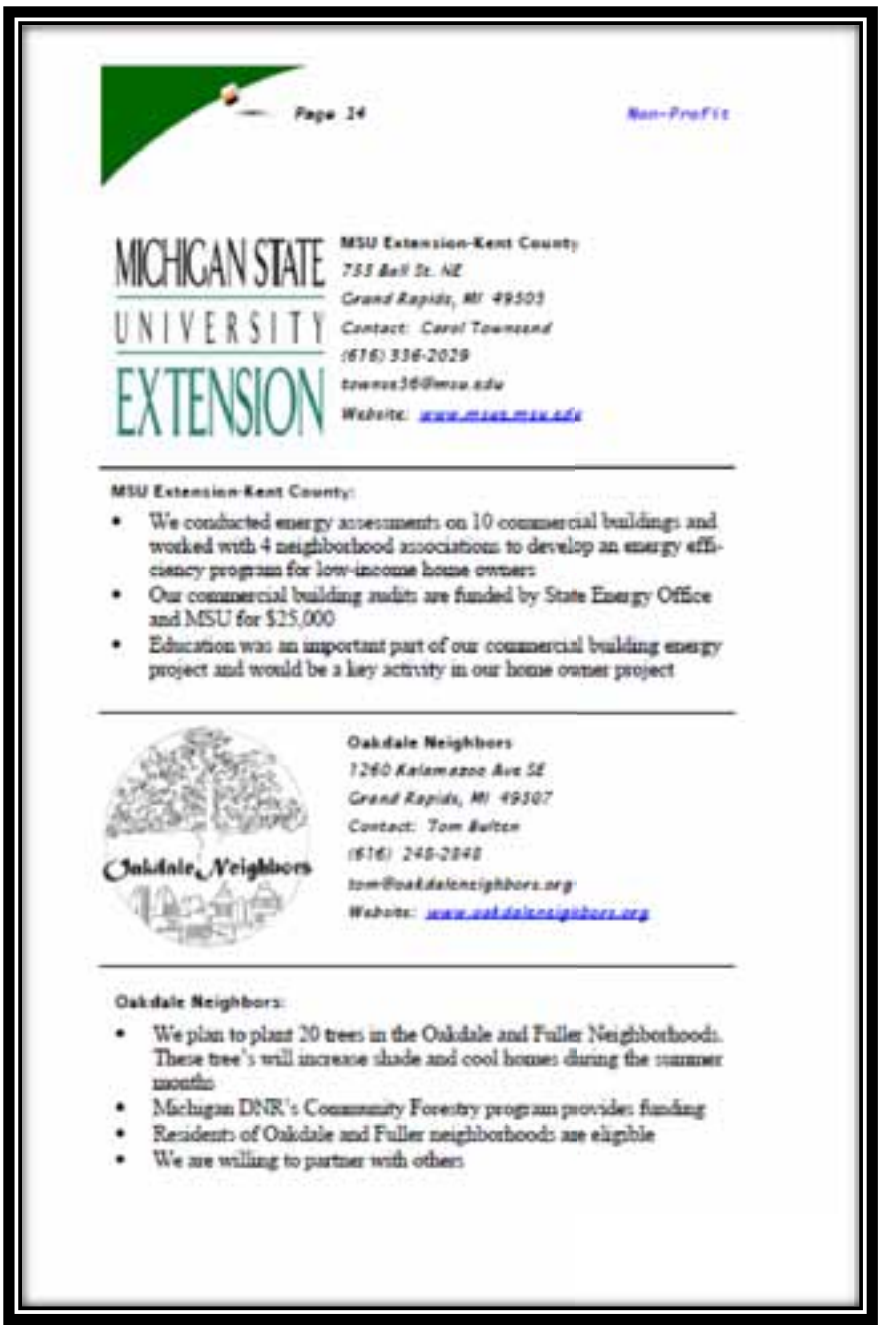
Healthy Homes Coalition:

- Our program is related to environmental health in homes including window replacement and CO testing
- Private sources, philanthropy, federal government provide funding
- Low-income families with children ages 0-5 are eligible
- We partner with Grand Rapids Housing Rehab Office, and LEAD program

Home Repair Services of Kent County, Inc.
1100 South Division St.
Grand Rapids, MI 49507
Contact: David Jacobs
(616) 241-2601 ext. 222
djacobs@homerepairservices.org
Website: www.homerepairservices.org

Home Repair Services of Kent County, Inc.:

- We provide weatherization education for do-it-yourselfers. These classes are only open to low-income individuals.
- "Your Energy Efficient Home" Tuesday night class that is open to anyone.
- Private grants/foundations provide funding, about $80,000/year
- Both our programs are educationally based in which they are assigned a coach to assist in home energy improvements



Page 14 Non-Profit

MICHIGAN STATE UNIVERSITY EXTENSION

MSU Extension-Kent County
755 Bell St. NE
Grand Rapids, MI 49503
Contact: Carol Townsend
(616) 336-2029
townse36@msu.edu
Website: www.msue.msu.edu

MSU Extension-Kent County:

- We conducted energy assessments on 10 commercial buildings and worked with 4 neighborhood associations to develop an energy efficiency program for low-income home owners
- Our commercial building audits are funded by State Energy Office and MSU for $25,000
- Education was an important part of our commercial building energy project and would be a key activity in our home owner project

Oakdale Neighbors

Oakdale Neighbors
1260 Kalamazoo Ave SE
Grand Rapids, MI 49507
Contact: Tom Bulton
(616) 248-2048
tom@oakdaleneighbors.org
Website: www.oakdaleneighbors.org

Oakdale Neighbors:

- We plan to plant 20 trees in the Oakdale and Fuller Neighborhoods. These tree's will increase shade and cool homes during the summer months
- Michigan DNR's Community Forestry program provides funding
- Residents of Oakdale and Fuller neighborhoods are eligible
- We are willing to partner with others

Rental Property Owners' Association (RPOA)
1458 Michigan St. NE
Grand Rapids, MI 49503
Contact: Clay Powell
800-701-7762
clayp@rpoaonline.org
Website: www.rpoaonline.org

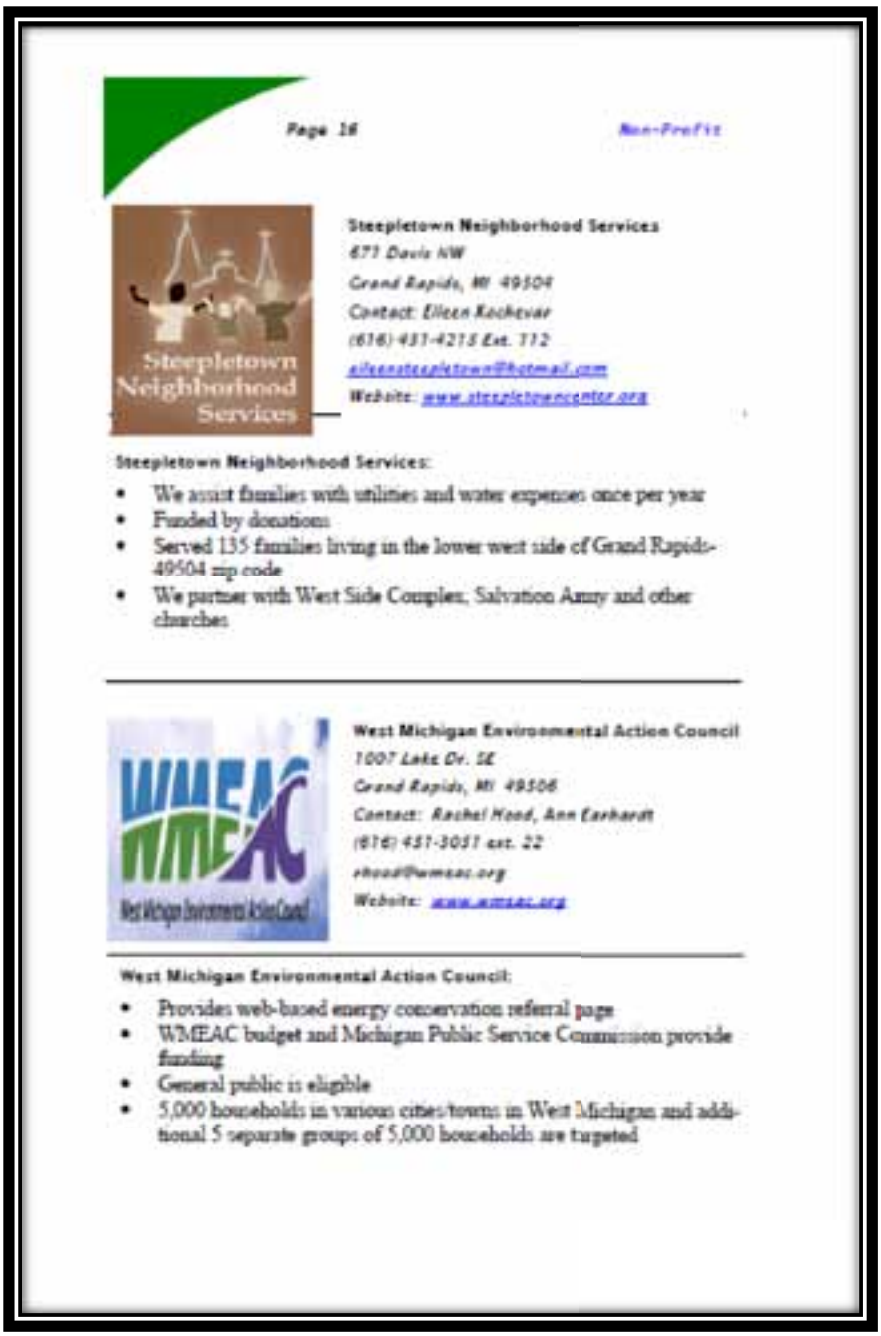
Rental Property Owners' Association (RPOA):

- We promote weatherization programs and include articles on energy efficiency in our magazine and emails sent to RPOA members, numbering near 1,800
- Funding is provided by 50% membership dues, the other 50% is funded by selling credit reports and forms
- Members are eligible to receive magazine
- We also offer a variety of educational classes to our members

The Salvation Army-Booth Family Services
1215 Fulton Ave E
Grand Rapids, MI 49503
Contact: Terry Cruzan
(616) 361-9631
terry_cruzan@usc.salvationarmy.org
Website: www.boothfamilyservices.org

The Salvation Army-Booth Family Services:

- We provide financial assistance for gas, electric and water shut off prevention and restoration
- 7 to 8 public and private sources provide funding
- Low-income households are eligible. Some assistance to higher-income households is also available
- We would like to get the information out to low-income individuals about utility payment programs.



Page 16 Non-Profit

Steepletown Neighborhood Services
671 Davis NW
Grand Rapids, MI 49504
Contact: Eileen Kachevar
(616) 451-4215 Ext. 712
eileensteepletown@hotmail.com
Website: www.steepletowncenter.org

Steepletown Neighborhood Services:

- We assist families with utilities and water expenses once per year
- Funded by donations
- Served 135 families living in the lower west side of Grand Rapids-49504 zip code
- We partner with West Side Complex, Salvation Army and other churches

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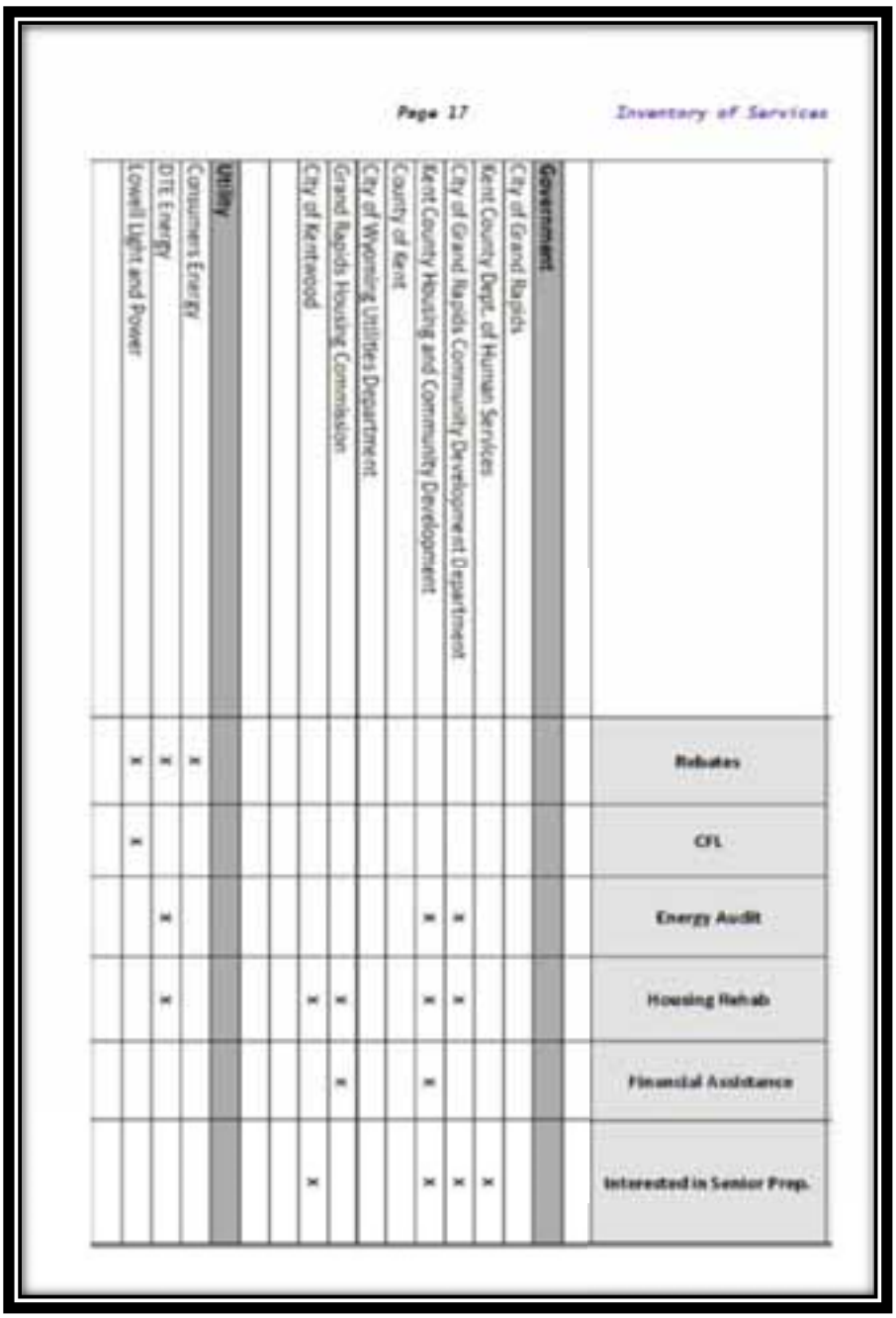
West Michigan Environmental Action Council
1007 Lake Dr. SE
Grand Rapids, MI 49506
Contact: Rachel Hood, Ann Earhardt
(616) 451-3051 ext. 22
rhood@wmeac.org
Website: www.wmeac.org

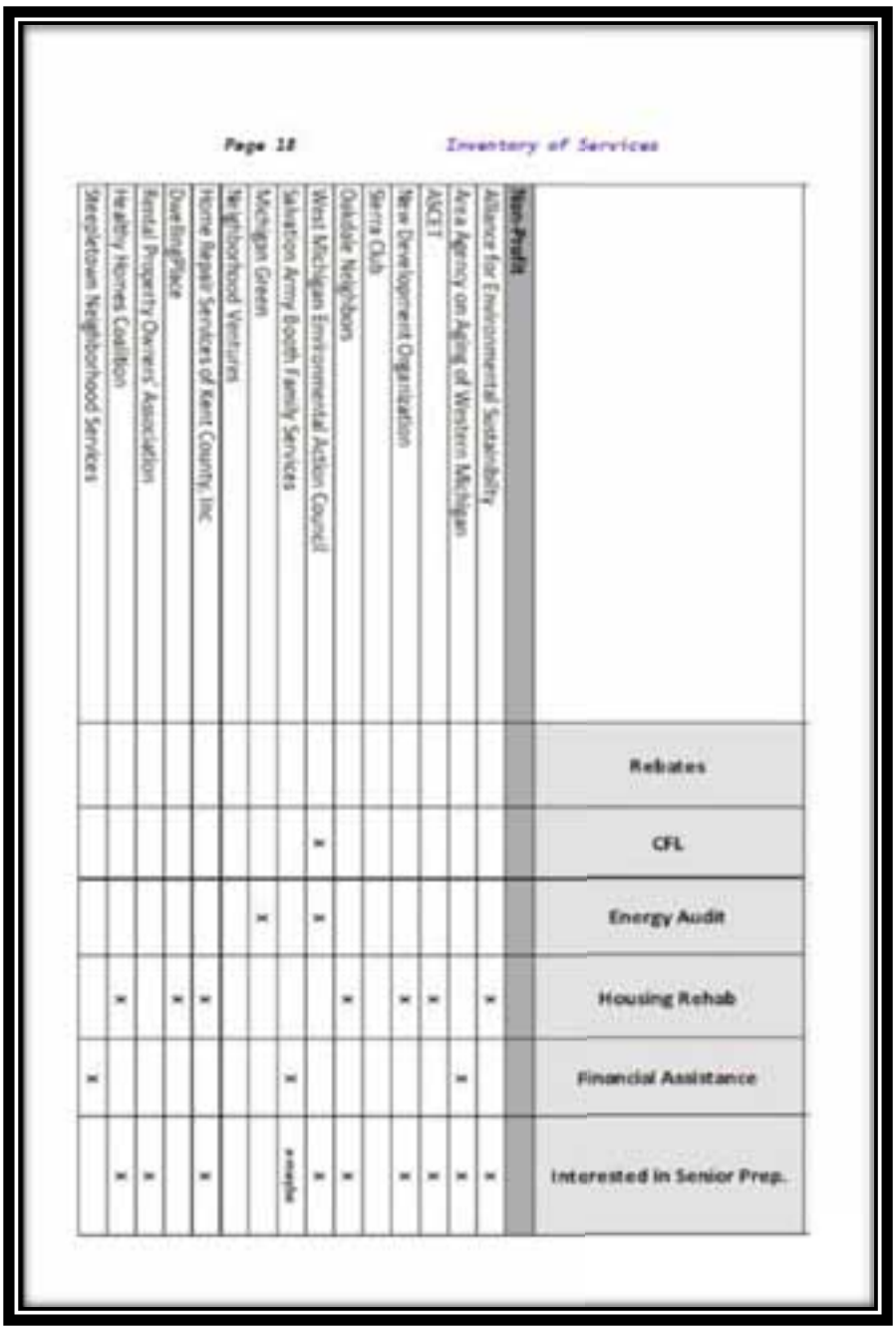
West Michigan Environmental Action Council:

- Provides web-based energy conservation referral page
- WMEAC budget and Michigan Public Service Commission provide funding
- General public is eligible
- 5,000 households in various cities/towns in West Michigan and additional 5 separate groups of 5,000 households are targeted



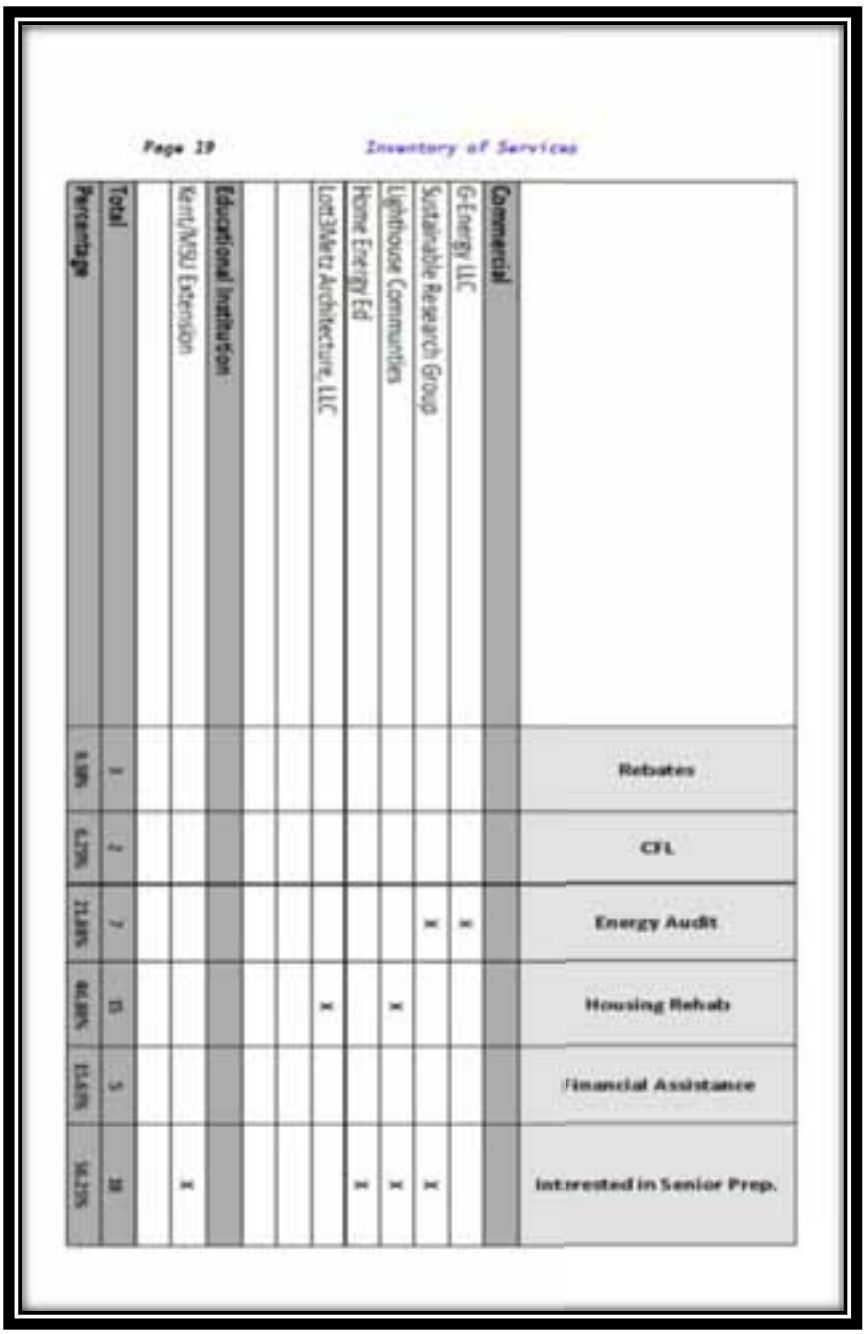
Page 17 Inventory of Services

	Rebates	CFL	Energy Audit	Housing Rehab	Financial Assistance	Interested in Senior Prog.
Government						
City of Grand Rapids						
Kent County Dept. of Human Services						x
City of Grand Rapids Community Development Department			x	x		x
Kent County Housing and Community Development			x	x	x	x
County of Kent						
City of Wyoming Utilities Department						
Grand Rapids Housing Commission				x	x	
City of Kentwood				x		x
Utility						
Consumers Energy	x					
DTE Energy	x		x	x		
Lowell Light and Power	x	x				



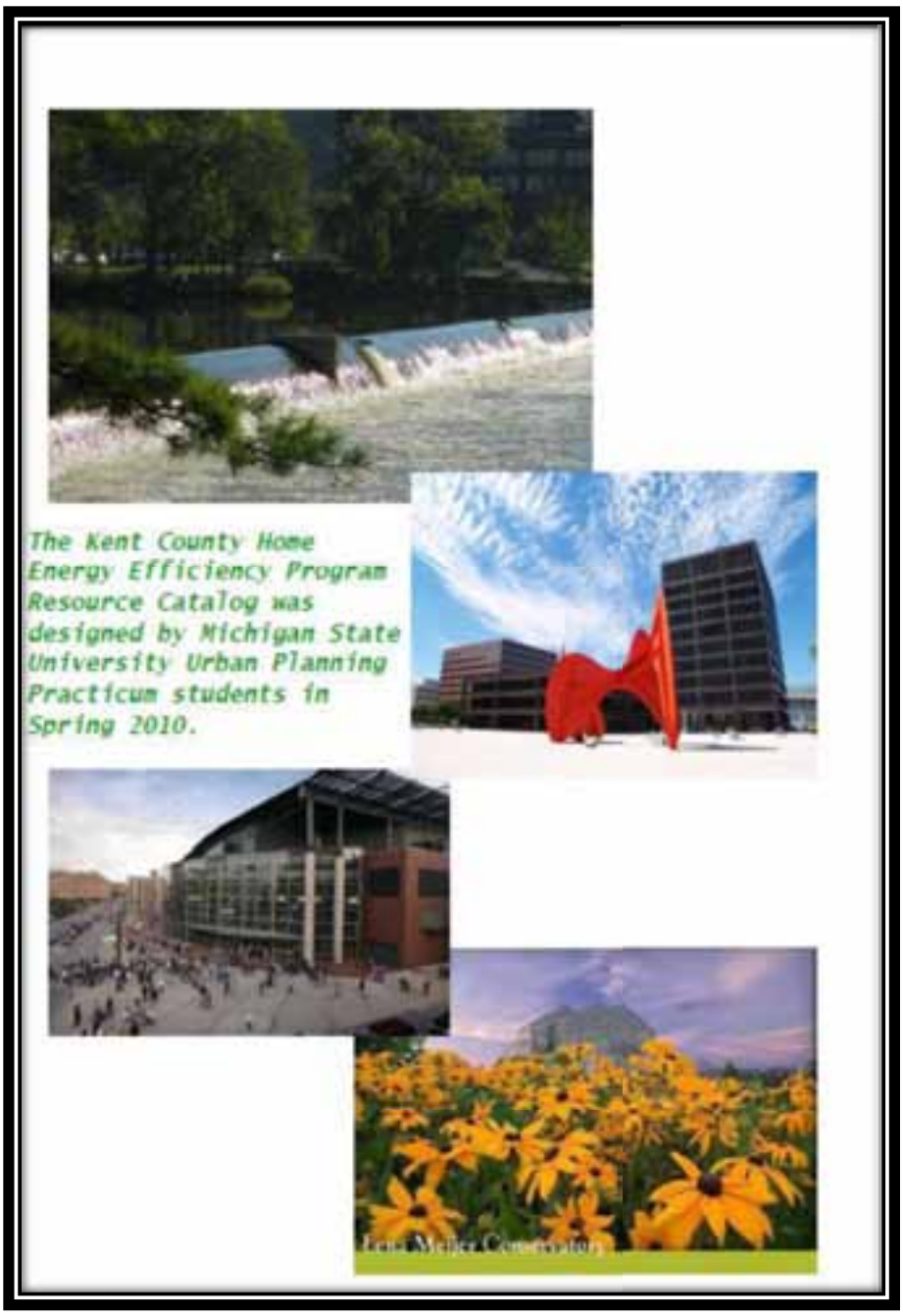
Page 18 Inventory of Services

Non-Profit	Rebates	CFL	Energy Audit	Housing Rehab	Financial Assistance	Interested in Senior Prog.
Alliance for Environmental Sustainability				x		x
Area Agency on Aging of Western Michigan					x	x
ASCET				x		x
New Development Organization				x		x
Sierra Club						
Oakdale Neighbors				x		x
West Michigan Environmental Action Council		x	x			x
Salvation Army Booth Family Services					x	x-maybe
Michigan Green			x			
Neighborhood Ventures						
Home Repair Services of Kent County, Inc				x		x
DwellingPlace				x		
Rental Property Owners' Association						x
Healthy Homes Coalition				x		x
Sterpletown Neighborhood Services					x	



Page 19 Inventory of Services

	Rebates	CFL	Energy Audit	Housing Rehab	Financial Assistance	Interested in Senior Prep.
Commercial						
G-Energy LLC			x			
Sustainable Research Group			x			x
Lighthouse Communities				x		x
Home Energy Ed						x
Lott3Weitz Architecture, LLC				x		
Educational Institution						
Kent/NJSU Extension						x
Total	1	2	7	13	5	10
Percentage	4.8%	9.5%	33.3%	61.9%	23.8%	47.6%


The Kent County Home Energy Efficiency Program Resource Catalog was designed by Michigan State University Urban Planning Practicum students in Spring 2010.

Appendix D: Case Study: Milwaukee County, Wisconsin

Milwaukee County, Wisconsin is located on the western shore of Lake Michigan, about 75 miles north of Chicago. The county consists of the city of Milwaukee and eighteen other towns and villages (Milwaukee County, 2010).

Climate and Topography

According to the U.S. Census Bureau, Milwaukee County has a total area of 1,190 square miles. Of this total area, 948 square miles is water and only 242 square miles are land. Milwaukee County's climate generally varies between warm temperatures in the summer and cold temperatures in the winter. The coolest month is January (average high of 27° F) and the warmest is July (average high of 82° F). However, the summer months can feel cooler, due to the "lake breeze" effect (Weather.com, 2010).

Local Economy

The US Census Bureau American Community Survey shows that in 2008, for the employed population 16 years and older, the leading industries in Milwaukee County were educational services, health care and social assistance, and Manufacturing (2006-2008).

Demographics

According to 2008 US Census estimates, Milwaukee County has a population of 953, 328 people and is the most populous county in Wisconsin. Of the nearly one million people living in the county, 11.6% (110,586 people) are at or above 65 years of age (US Census Bureau, 2008). Table 3.1 provides population figures for children under the age of 18 and senior citizens ages 65 and older living in Milwaukee County.

Table 3.1: Age Distribution: Children and Senior Citizens

Median Age of Population		33.9 years
	Percentage of Total Population (%)	Number of Total Population
Persons Under Age 18	26.2%	249,772
Persons Age 65+	11.6%	110,586

(US Census Bureau State and County Quick Facts, 2008)

The US Census Bureau estimates that the median household income in Milwaukee County is $45,902, which is nearly $7,000 lower than the statewide median household income (2008).

Seventeen percent of Milwaukee County residents (162,058) are living in poverty (US Census Bureau: State and County Quick Facts, 2008).

Existing Housing Stock

According to 2000 US Census Bureau data, nearly 85% of houses in Milwaukee County were built before 1970. Of the occupied housing units, an estimated 85.3% were heated by utility gas according to the 2006-2008 US Census Bureau American Community Survey for Milwaukee County.

Community Philosophy at Local Level

Milwaukee County strongly believes that it is a place where families and businesses alike can flourish in the midst of a supportive community, a safe environment, and community leaders that are in touch with their constituency and willing to make changes to support them (Milwaukee County Online, 2010).

State of Wisconsin Department of Energy Program Structure

The state of Wisconsin has an estimated population of 5.36 million. Of this population, 13.1% are 65 or older. The median age is approximately 36 years old. The state experiences a humid continental climate, resulting in variable weather patterns and a large seasonal temperature variance. The median household income is $52,103, with 10.5% of the population living at or below the poverty line.

For the year 2010, Wisconsin is receiving just over $130 million dollars in Low-Income Home Energy Assistance Program funding from the United States Department of Energy. The Wisconsin Home Energy Assistance Program (WHEAP) is responsible for administering these funds to the residents of Wisconsin. WHEAP provides assistance for heating costs, electric costs, and situations deemed to be an energy crisis. According to the State of Wisconsin, the program assisted over 170,000 households in 2009 alone.

The state has several home energy efficiency education and/or assistance programs worth mentioning. The first is affiliated with the University of Wisconsin Madison called the Center of Wisconsin Strategy. The Center of Wisconsin Strategy (COWS) works to advance a number of ideas in the state including workforce development, career pathway accessibility, economic policy advancement, and clean energy/energy efficiency. The energy efficiency program that COWS inspired is called the Me2 program or Milwaukee Energy Efficiency. Me2 focuses its efforts on directing qualified households to energy efficiency resources and retrofitting the City of Milwaukee's building stock for more efficient energy usage.

Focus on Energy is an additional program that works with eligible Wisconsin residents and businesses to install cost effective energy efficiency and renewable energy projects. The programs aims to assist Wisconsin residents and businesses manage rising energy costs, promote in-state economic development, protect the environment and control the state's growing demand for electricity and natural gas. They also provide concise information on where to locate certified Weatherization Assistance Programs and energy efficiency incentives for those in need of assistance.

Countywide Home Energy Efficiency Program Structure

The Milwaukee County Energy Assistance Program utilizes the Wisconsin LIHEAP dollars administered to all municipalities of Wisconsin through WHEAP in order to provide home energy efficiency resources to residents throughout Milwaukee County (liheap.ncat.org, 2010).

Milwaukee County Energy Assistance Program provides relief for low income families in need of help with heating and electric bills. Eligible individuals can apply either online at the county website, or at any of a number of “energy locations” run by the Social Development Commission. Heating assistance is available from October 1 through May 15 of each calendar year. The assistance is given as a one-time payment to eligible households to pay a percentage of heating bills accumulated through the winter. Many families receiving heating assistance may also be eligible to receive a one-time payment for non-heat electricity costs. In either scenario the payment is sent directly to the utility company.

For information regarding any of the numerous local offices and contacts one should visit: http://www.milwaukeecounty.org/Municipalities

Wisconsin’s Focus on Energy initiative is recommended by Milwaukee County for self-help in improving home energy efficiency. All Wisconsin residents and businesses are eligible to receive the benefits of Focus on Energy, which includes education and tool kits, regardless of their financial situation. Focus on Energy helps Wisconsin residents and business owners install cost-effective, energy efficiency appliances/products and aids in facilitating renewable energy projects.

For further information regarding the Focus on Energy Initiative in Milwaukee County one should visit:
focusonenergy.com.

Perhaps the most critical component of the home energy efficiency movement in Milwaukee County is accessing and providing home energy efficiency education to county homeowners. Milwaukee County is fortunate that their main utility provider, We Energies, runs a broad, wide-reaching education program. We Energies utilizes an impressive website to provide people with the opportunity to learn about new methods of renewable energy, access immediate energy saving fact sheets, a variety of classes offered throughout the area (including K-12 outreach), and user friendly tools such as carbon calculators, video tutorials and so forth.

Additional information on home energy efficiency services provided by We Energies can be found at:
weenergies.com.

Appendix E: Case Study: Macomb County, Michigan

Macomb County, Michigan is located in Southeast Michigan and comprises many of Detroit's northeastern suburbs. Macomb County is bordered by both Oakland County (population of 1,194,156) and Wayne County (population of 2,061,162) where the City of Detroit is located.

Macomb County contains 28 cities, townships, and villages, the largest being the City of Warren, with a population of 134,589 (US Census, 2006). The county operations are headquartered in the town of Mt. Clemens (Macomb County Website, 2010).

Climate and Topography

Macomb County has a land area of 481 square miles and an area of 89 square miles of water (US Census Bureau, 2000). Lake St. Clair, which borders the county's land to the east, is one of the major water bodies attributing to this total area. In accordance with seasonal Midwestern cities, the hottest month is July and the coldest is January (Weather.com, 2010).

Local Economy

According to the US Census Bureau American Community Survey, in 2002 the leading industries in Macomb County for the employed population 16 years and older were manufacturing (25%) and educational, health, and social services (17%).

Demographics

Macomb County is the third largest county in Michigan with a population of 830,663 people, according to 2008 US Census Bureau estimates. Of that population 13.7% are 65 years of age or older (113,800) and 23.2% are children ages 18 and under (192,714). Table 3.2 provides population figures for children under the age of 18 and senior citizens ages 65 and older living in Macomb County.

Table 3.2: Age Distribution: Children and Seniors

Median Age of Population		36.3 years
	Percentage of Total Population (%)	Number of Total Population
Persons Under Age 18	23.2%	192,714
Persons Age 65+	13.7%	113,800

(US Census Bureau State and County Quick Facts, 2008)

The median household income in Macomb County as of 2008 was $55,638, which is nearly $7,000 higher than the statewide median household income. Just below 10% of the population was at the poverty line or below (US Census Bureau: State and County Quick Facts, 2008).

Existing Housing Stock

According to the American Community Survey in 2003, Macomb County had a total of 338,000 housing units, 5.3% of which were vacant. Of the total housing units, 76% were single-unit structures, 19% were multi-unit structures, and 5% were mobile homes. Twenty-one percent of the housing units had been built since 1990. Of the occupied housing units, nearly 93% were heated by utility gas.

Community Philosophy at Local Level

Macomb County's website claims its main priority to its constituency is being accountable and efficient. Macomb County leaders believe the county to be a place where community character can be spread and built through outreach and care for the population.

Countywide Home Energy Efficiency Program Structure

The State of Michigan was allocated nearly $233 million in LIHEAP funding from the United States Department of Energy (DOE) in 2009 (liheap.ncat.org). In Macomb County's case, the share of LIHEAP money that goes to the county is directed to the Macomb County Community Services Agency (MCCSA). In 2009 Macomb County's share was $369,000 according to the September 8, 2009 Macomb Community Action Advisory Board Executive Committee Meeting (Macomb County Website, 2010)

MCCSA plays the role of the community's weatherization and home energy efficiency resource. MCCSA's division of Home Preservation and Energy is the central provider of home energy services to the community. For those who are eligible, the Home/Energy group has an energy audit conducted in order to determine what weatherization/whole-house energy efficiency services will be rendered to the home. Possible services that might be rendered to a home include wall insulation, attic insulation and ventilation, floor/foundation insulation, air leakage reduction, and furnace repair or replacement. Residents can apply for services at three different community action centers located north, south and centrally within the boundaries of Macomb County.

For further information regarding MCCSA's services and eligibility for citizens you can contact:

22550 Hall Road
Clinton Twp., Michigan 48036
Access Center: (586) 948-0222
Crisis Center: (586) 307-9100
Macombcountymi.com

The utility company DTE provides home energy efficiency education to the public in Macomb County. They provide services including appliance recycling, K-12 education, a number of different rebates, and host awareness days. Their website provides a link entitled "Energy Efficiency Assistance" that directs one back to the MCCSA which displays the important connection between community, utility company, and community agency.

Additional information about DTEenergy can be found at:
dteenergy.com

Appendix F: Case Study: Ramsey County, Minnesota

Ramsey County is an approximately 156 square mile county located near the Wisconsin border in eastern Minnesota (US Census Bureau: State and County Quick Facts, 2008). According to US Census Bureau estimates, Ramsey County had a population of 501,428 in 2008. Ramsey County is the second largest county in Minnesota and home to the city of St. Paul, which had a population of 273,535 in 2006 (US Census Bureau: State and County Quick Facts).

Climate

During the months of December, January, and February, Ramsey County has an average temperature of between 10 - 20° F (City-Data.com, 2010). The wind speed during these months averages approximately 10 miles per hour. Ramsey County tends to be warmest in July with an average temperature of 70° F (City-Data.com, 2010).

Local Economy

The US Census Bureau American Community Survey states the main industries in Ramsey County for the civilian employed population age 16+ are manufacturing, retail trade, educational services, and health care/social assistance, each totaling more than 25,000 jobs in 2008.

Demographics

The median age of individuals living in Ramsey County is 33.7 years old (City-Data.com, 2010). Of the total population, 24.3% were 18 years of age or under and 13% was age 65+ in 2008 (US Census Bureau: State and County Quick Facts, 2008). Table 3.3 provides population figures for children under the age of 18 and senior citizens ages 65 and older living in Ramsey County.

Table 3.3: Age Distribution: Children and Senior Citizens

Median Age of Population		33.7 years
	Percentage of Total Population (%)	Number of Total Population
Persons Under Age 18	24.3%	121,847
Persons Age 65+	13%	65,186

(US Census Bureau: State and County Quick Facts, 2008)

The median household income in Ramsey County for 2008 was $52,762 (US Census Bureau: State and County Quick Facts, 2008). According to the US Census Bureau, 13.5% of the population is below the poverty level (67,692 residents).

Ramsey County had 217,890 housing units in 2008 (US Census Bureau: State and County Quick Facts). The homeownership rate in 2000 was 63.5%, and had this rate remained constant the homeownership in 2008 would total 138,360 units (US Census Bureau: State and County Quick Facts).

Existing Housing Stock

According to 2000 US Census Bureau data, 64.4% of houses in Ramsey County were built before 1970 (American FactFinder). Of the occupied housing units, an estimated 83.4% were heated by utility gas according to the 2008 US Census Bureau American Community Survey (American FactFinder).

Community Philosophy at Local Level

On the Ramsey County website, the Association of Minnesota Counties states that there is a "strong belief in Minnesota that services are better determined and delivered as close to the people as possible" (Ramsey County Online, n.d.). Therefore, services are developed and executed by counties to ensure accountability and efficiency. The Association of Minnesota Counties further explains that when necessary initiatives can span multiple counties.

State of Minnesota Department of Energy Program Structure

The State of Minnesota has an estimated population of 5.2 million people, many of them residing in the metropolis of St. Paul/Minneapolis, or the "Twin Cities." Of that population, 12.2% is over the age of 65 while the state has a median age of 37 years old. In 2005 the median household income in the state was $52,024, the 11th highest statewide average in the nation. Minnesota also endures a continental climate with hot summers and cold winters.

In 2010 Minnesota is scheduled to receive $144.53 million from the Department of Energy's Low Income Home Energy Assistance Program. The Minnesota Department of Commerce's Office of Energy Security uses their website to effectively organize all information regarding home energy assistance for low income households (www.state.mn.us). There, one can access information on home bill assistance, weatherization assistance, and also an active list of service providers for the two categories of weatherization assistance and energy assistance providers.

A unique education initiative being undertaken by the Center for Energy and Environment in Minnesota is called the MN Energy Challenge. The organization relies on volunteers and outreach to "make energy efficiency and conservation fun and easy, and help Minnesotans save energy and money in their homes," which comes directly from a mission statement. The energy challenge uses a website to provide in depth guides to energy efficiency and conservation

actions. The program is unique as it is consumer based and aimed at cutting cost immediately for all residents of the state regardless of income or age. With Kent County so far from its main utility service providers, who are usually heavily relied on to address the education issue of energy efficiency, an initiative such as this may be helpful and productive.

Countywide Home Energy Efficiency Program Structure

The State of Minnesota received $144 million in LIHEAP funding in 2009. A portion of this money was distributed to Ramsey County (liheap.ncat.org, 2010). The Community Action Partnership of Ramsey and Washington Counties receives a portion of this LIHEAP funding to assist eligible low-income families with weatherization. They do so by performing energy audits and improvements. For more information contact:

The Community Action Partnership of Ramsey and Washington Counties
459 Syndicate Street N
Saint Paul, MN 55104
Phone: 651-645-6445
Fax: 651-645-2253

Ramsey County offers Suburban Weatherization and Rehabilitation Programs for homeowners. Homeowners participate in these programs through securing loans from organizations in the county. The Energy Conservation Deferred Loan Program offers loans to homeowners of low- and moderate- incomes. Eligibility for loans is determined by an energy audit. Once eligible, homeowners may receive loans for up to $6,000 to be used on measures that reduce home energy costs including high energy efficiency heating systems and attic/wall/foundation insulation (Ramsey County Online, n.d.). The Neighborhood Energy Connection (NEC), a non-profit organization within Ramsey County, administers this loan program, among other home energy efficiency services (Ramsey County Online, n.d.).

Besides facilitating the Energy Conservation Deferred Loan Program, NEC provides energy conservation information, services, and programs to residents, businesses, and entire communities across Minnesota (Neighborhood Energy Connection, n.d.). NEC also works as a private contractor for Xcel Energy, a large utility company in Minnesota who embrace the Home Performance with Energy Star (HPwES) program. NEC performs energy audits for Xcel Energy as part of HPwES.

More information about Neighborhood Energy Connection and its role in facilitating loan programs, providing home energy efficiency education outreach, and its role as private contractor can be found by contacting:

Neighborhood Energy Connection
624 Selby Avenue
Saint Paul, MN 55104
Phone: 651-221-4462

Loans are also made available to homeowners through the Ramsey County Residential Rehabilitation Deferred Loan Program. Low- and moderate-income residents of suburban Ramsey County are eligible for this program. The no-interest and no-monthly payment loans for up to $15,000 may be used by homeowners for basic and necessary improvements such as replacing a deteriorating roof; replacing an old, inefficient furnace; putting in new storm windows and doors; and/or bringing electrical and plumbing systems up to code (Ramsey County Online, n.d.).

The conditions upon which this loan is repaid are different for homeowners of different incomes. For low-income homeowners, the loan is forgiven after 10 years in the home. As for moderate-income homeowners, the loans must be repaid in full when the homeowner refinances, sells, transfers interest, or moves from the property (Ramsey County Online, n.d.).

The Housing Resource Center, a program of the Greater Metropolitan Housing Corporation of the Twin Cities, is responsible for administering this loan program (Ramsey County Online, n.d.). The Housing Resource Center provides comprehensive free housing services including assistance through the purchase, financing, refinancing or construction/renovation process (Greater Minneapolis Housing Resource Center, 2010).

For more information regarding the Ramsey County Residential Rehabilitation Deferred Loan Program and home energy efficiency outreach services offered one should contact:

Housing Resource Center - Saint Paul Office
267 Selby Avenue
Saint Paul, MN 55104
Phone: 651-228-1077
Fax: 651-228-1083

Appendix G: Profile: Home Performance with Energy Star

Program Overview

By partnering with Energy Star as a Program Sponsor of their Home Performance with Energy Star (HPwES) program, the Essential Needs Task Force Energy Efficiency Subcommittee (ENTF) can provide third-party oversight to home improvement contractors thus ensuring efficient execution of regional home weatherization efforts (Intro to HPwES Fact Sheet, 2007, p. 2).

According to the Sponsor Guide, Program Sponsors can be utility companies, state energy agencies, municipalities, or non-profit organizations. The main responsibilities assigned to Program Sponsors include creating a set of program standards, policies, and procedures; recruiting home improvement contractors; advertising the benefits of the program to homeowners; ensuring that all work completed meets program standards; and evaluating the success of the program (Sponsor Guide, 2008, p. 9).

The HPwES program has been implemented in the State of Minnesota by Xcel Energy, a large utility company, and in the State of Wisconsin by the Wisconsin Energy Conservation Corporation. Eligibility differs for each program and is determined through an energy audit performed by a private contractor.

HPwES programs can be funded by federal grants from the U.S. Department of Energy's State Energy Program and the U.S. Department of Housing and Urban Development's (HUD) Community Development Block Grants and HOME Investment Partnership Program (Grant Opportunities, n.d.). The homeowner finances their individual project through the acquisition of loans.

The Home Performance with Energy Star program guidelines ensures effective program design, implementation, measurement, and verification. The five sections in the HPwES Sponsor Guide include Program Planning; Home Performance Assessment (HPA) or what HPwES refers to as "Test-in"; Post-Installation Tests also referred to as "Test-out"; Summary Certificate; and Quality Assurance Protocols. The following is a summary of the HPwES Sponsor Guidelines. The complete set of HPwES guidelines can be found as a PDF on the energystar.gov website by searching for "Sponsor Guide".

Program Planning

The HPwES Sponsor Guide acknowledges that each organization that chooses to adopt the HPwES program will have different goals and therefore, a different program plan, however it establishes certain basic elements every program should consider. Program Sponsors are encouraged to determine what their goals are by assessing the amount of energy savings desired and then setting a deadline for achieving those goals.

An analysis of the current state of the home weatherization market is useful in determining not only the challenges but also the opportunities facing the Program Sponsor. The desired results are then translated into what Energy Star calls program standards, policies, and procedures that are specifically tailored to the market. The HPwES program recommends starting with a pilot program with a goal to improve 50-100 homes (Sponsor Guide, 2008, p. 10).

One tool the HPwES program gives its Sponsors is an Implementation Schedule to assist in determining which activities are priorities and help in successful program planning and implementation. This schedule lists activities and the recommended months of completion for a two-year implementation period as well as activities to be completed in year three and beyond. An example of an Implementation Schedule can be found on page 11 of the HPwES Sponsor Guide. Another recommended step of Program Planning includes estimating a budget in order to set goals that are attainable under the resources available. An example Budget can be found on page 12 of the HPwES Sponsor Guide.

The Program Design steps of Program Planning include seven basic elements. In addition to incorporating all the Partnership Agreement requirements listed in the HPwES Sponsor Guide, Program Design should include:

- Home Performance Protocols
- Contractor Recruitment Plan
- Contractor Training
- Contractor Participation Requirements
- Marketing/Media Plan
- Incentive/Financing Plan
- Quality Assurance Plan

A detailed description of these seven elements and specific implementation recommendations can be found on pages 12- 15 of the HPwES Sponsor Guide.

The last step of Program Planning includes determining how to execute Program Evaluation. For both national and local evaluation purposes, sponsors are required to track three program elements: the number of contractors participating, homes improved, and on-site quality assurance inspections completed (Sponsor Guide, 2008, p. 15). A concise outline of the steps necessary in the Program Planning phase of implementing HPwES can be found the HPwES Sponsor Guide.

Home Performance Assessment (HPA) or "Test-in"

Before any home improvements begin, the contractor evaluates the home's systems by conducting an energy audit. Upon completion, the contractor recommends what improvements will improve the home's overall energy efficiency. It is necessary for the Program Sponsor to set the minimum requirements for contractors' work prior to conducting their energy audit.

Once these minimum requirements are established, the Program Sponsor can then market them to homeowners. The activities Energy Star requires in the HPA include a homeowner interview; building envelope inspection; a heating, ventilation, air conditioning (HVAC) and domestic hot water (DHW) systems visual inspection; instrumented tests on combustion appliances, combustion appliance zone (CAZ) and living space; moisture inspection; and a summary report detailing the findings of the aforementioned tests. Specific requirements and recommendations for each HPA assessment can be found on pages 16-23 of the HPwES Sponsor Guide.

An example of an "HPA Intake Form" is available on pages 24-25 of the HPwES Sponsor Guide. This form acts as a comprehensive guide to assessing a home's energy efficiency performance. Also, on pages 26-27 of the HPwES Sponsor Guide, an example of a Summary Report is provided. The Summary Report summarizes the findings of the energy audit, prioritizes recommended improvements, and helps a household determine the best improvements for their home (Sponsor Guide, 2008, p. 26).

Post-Installation Test or "Test-out"

After the weatherization/whole-house energy efficiency procedures have been completed, the contractor is required to perform a number of specific tests in order to ensure the health and safety of the homeowner and the effectiveness of the home improvements. The minimum requirements for the Post-Installation Test are given in the HPwES Sponsor Guide, yet the Program Sponsor can choose to adopt additional requirements. The Post-Installation Test requires that verification work be performed, utilizing a blower door test; calculating the house

ventilation; conducting combustion appliance tests when applicable; performing an orphaned water heater test; and verifying that any new central air conditioner, heat pump, or furnace meets the ACCA HVAC Quality Installation Specification (Sponsor Guide, 2008, p. 28-29). The homeowner is required to sign the Post-Installation Test form.

More details on the above requirements as well as additional optional requirements can be found on pages 28 through 29 of the HPwES Sponsor Guide. An example Post-Installation Test form can also be found in the HPwES Sponsor Guide on page 30.

Summary Certificate

For homeowners who participate in the HPwES program, a Summary Certificate outlining the improvements made and the contractors who completed the improvements is available. The requirements and recommendations of what should be included on the Summary Certificate can be found on page 31 of the HPwES Sponsor Guide. On the following page of the HPwES Sponsor Guide an example of a Summary Certificate can be found.

Quality Assurance Protocols

A Quality Assurance plan is required to be developed to guarantee the qualifications of contractors and that home improvement standards have been met. The Quality Assurance segment of the HPwES program assesses whether or not the contractors have followed the guidelines set forth by the Program Sponsor. Included in the Quality Assurance Protocols are guidelines for the submittal of a Job Reporting Review, On-Site Inspection, Customer Feedback, and Contractor Feedback and Corrective Actions.

Although it is noted that the findings can be condensed into one report for the Job Reporting Review, the HPwES Sponsor Guide outlines this review in three parts. The Job Reporting Review includes an HPA Summary Report, Scope of Work Review, and Test-out Report Review. The HPA Summary Report provides the initial, pre-improvement findings of the HPA Report. The Scope of Work Review may be necessary before approving financing or incentives for eligible measures (Sponsor Guide, 2008, p. 34). The Test-Out Report is compared with the HPA Summary Report and Scope of Work Review to ensure the improvements made were consistent with the initial recommendations. On-Site Inspection Protocols are executed on specific sites when the reviews indicate that a contractor's reported jobs do not meet program policies and procedures (Sponsor Guide, 2008, p. 34). An example of the Job Report Review Evaluation is provided in the HPwES Sponsor Guide on pages 39 to 40.

On-Site Inspection Protocols consist of five areas, including:

- Job Selection Protocol
- Customer Discussion
- Visual Inspection and Diagnostic Tests
- Contractor Performance Record
- Inspection Documentation

Specific details describing each area of On-Site Inspection Protocol and additional recommendations can be found on pages 35 through 37 of the HPwES Sponsor Guide. Also, on pages 40 through 42 of the HPwES Sponsor Guide is an example of an On-Site Inspection "Scoring Methodology".

The Customer Feedback component of HPwES Quality Assurance Protocol provides a means for customers to provide feedback directly to the Program Sponsor about their satisfaction level and the improvements completed. Additional elements for Customer Feedback can be found on page 37 of the HPwES Sponsor Guide.

By including Contractor Feedback and Corrective Actions in the Quality Assurance Protocol, Program Sponsors are given the means to assess contractor's compliance with program requirements and supply the means for constructive feedback in areas in need of improvement. Additional information on Contractor Feedback and Corrective Actions can be found on pages 38 through 39 of the HPwES Sponsor Guide as well as scenarios representing different levels of performance on pages 42 and 43 of the HPwES Sponsor Guide.

Appendix H: Profile: DOE Weatherization Assistance Program's *Starting a Public Information Campaign*

What is the US Department of Energy's Weatherization Assistance Program?

The United States Department of Energy (DOE) sponsors the Weatherization Assistance Program (WAP) in order to reduce energy costs for low-income households by increasing the energy efficiency of their homes, while also ensuring their health and safety. The program strives to permanently eradicate the vulnerability of low-income families living in substandard housing by going to the root of the problem (e.g., leaky attics and basements, outdated appliances) rather than simply providing a quick fix or providing utility payment assistance(US Department of Energy: Weatherization Assistance Program, 2008).

WAP was created in 1976 in response to low-income household's struggles with rising energy costs due to the 1973 oil crisis. WAP has evolved into the largest residential energy efficiency program in the US that addresses whole-house energy efficiency with a whole-community approach. Giving preference to senior citizens (60+), persons with disabilities, and families with children, WAP has helped assist 6.2 million households weatherize their home (US Department of Energy (US Department of Energy: Weatherization Assistance Program, 2008).

Funding for WAP is allocated by the US Congress to the US Department of Energy. The DOE than distributes funding to all 50 states, who then contract with local Community Action Agencies (including Kent County's ACSET), non-profits, and local governments in order to effectively deliver weatherization services to low-income families (US Department of Energy: Weatherization Assistance Program, 2008).

Starting a Public Information Campaign: A Manual

The US Department of Energy's Weatherization Assistance Program authored a manual entitled *Starting a Public Information Campaign* that provides general guidance for local agencies on effectively identifying and educating target audiences on weatherization and home energy efficiency and getting those audiences involved in a localized, grassroots movement. Tasks explored in the manual and WAP's comprehensive strategy for implementing them are identified and explored below.

Focusing a Home Energy Efficiency Campaign

1. Identify the Target Audience

When focusing one's home energy efficiency campaign, maintaining the target audience as the focus of the entire implementation plan becomes the most important task at hand. Identifying what is important to the target audience regarding home energy efficiency will be crucial in shaping an effective angle to the overall message that sounds with the audience. Knowing who one's audience is will also help in determining the best medium for conveying the campaign message. The most effective message and medium for conveying the message may vary for different neighborhoods (DOE Weatherization Assistance Programs).

2. Developing the Message

The first question one should consider is what does one want the target audience to do? When developing the message, sought after outcomes should be clearly stated. WAP provides the following example: *"We want community organizations to understand the services we deliver and provide our information to their contacts."*

Perhaps an example of an effective message for focusing on an ACSET objective might be: *"We want community organizations throughout the county to organize a volunteer event in their community in order to perform weatherization procedures on the homes of senior citizens, utilizing resources from their local utility companies."*

Identifying what will motivate one's target audience to get involved with an energy efficiency program may vary. The DOE provides the following examples:

- Low-income families may be attracted to dollars saved; new, more efficient appliances; and safer homes.
- Landlords may be enticed by the promise of reduced maintenance costs and increased property values.
- Environmental groups/environmentalists may want to help the cause if information regarding waste reductions and carbon emissions prevented is included.
- Private companies and community foundations may want to partner as a goodwill gesture in the community.
- Community groups may be interested in jobs created, improved housing stock, environmental and community stability benefits, long-lasting results for neighborhood households.

Upon developing the message, the DOE suggests that one can fine-tune it by answering the following question convincingly for the target audience: **"What is in it for me"?**

Getting the Word Out

There are a variety of ways one can get a message out to a targeted audience. The United Kingdom's Energy Saving Trust, who sponsors a program similar to the DOE, recommends the following:

- Putting leaflets and posters in community buildings
- Newsletters
- Holding public meetings
- Giving presentations at meetings of other community groups
- Working with partners to spread your message – community activists, community leaders, local authorities
- Setting up a website or making a film
- Advertising in the local press or other media
- Offering news stories to the local press or other media
- Going door-to-door, telling local people what you're planning
- Talking to local schools
- Holding your own events such as coffee groups to discuss what you are trying to do

The Energy Saving Trust suggests that while getting the word out, one should consider building small project "milestones" into the overall plan. Achieving them gives an organization the opportunity to publicize the achievement and the energy efficiency program to those that might not be aware of the movement and to keep those that are aware enthusiastic. Energy Savings Trust also recommends organizing events and competitions to keep community members energized and having fun.

Appendix I: Profile: Community Energy Project

Organization Overview

The Community Energy Project (CEP) has been serving the Greater Portland community within Multnomah County, Oregon over the past 30 years with the mission of empowering people to maintain healthier, more livable homes, control their utility costs, and conserve natural resources. CEP accomplishes this through education, hands-on training, and distribution of weatherization, water conservation, and lead poisoning prevention materials. They also provide direct weatherization and water conservation services to seniors and people with disabilities. They are able to deliver these services thanks to partnerships with community members and service organizations, utilities, corporations, foundations, and government agencies (Community Energy Project, 2009).

CEP began in 1979 as a project of Responsible Urban Neighborhood Technology (RUNT) in response to the oil crisis of the 1970s. An Americorps VISTA service person ran the first workshops, training individuals in caulking and building temporary storm windows. Over time they added additional workshops in water conservation and lead poisoning protection. CEP runs their programs with the philosophy that people are the experts of their own experience. They feel that in empowering their community with information and tools, and by facilitating connections to resources, they can increase the capacity of their community to address many home environmental health, comfort, and safety issues (Community Energy Project, 2010).

Aside from the continuous expressions of gratitude posted on their website, CEP was the recipient of a City of Portland Bureau of Planning and Sustainability 2009 Vision into Action Award. They were recognized with $15,000 for the purpose of prolonging and enhancing their many programs focused on providing job skills training to people in need, offering money-saving weatherization tools to low-income households, and spreading awareness about energy conservation (City of Portland Bureau of Planning and Sustainability).

CEP's In-Home Weatherization Program

Eligibility and Funding

CEP weatherizes the homes of 200-250 income-qualified senior citizens (age 55+) and people with disabilities living in Portland annually through their In-Home Weatherization Program, an operation of their In-Home Services Department. Table 3.1 provides a breakdown of income-qualified applicants based on household size. Between June 2008 and June 2009, CEP weatherized the homes of 234 senior citizens and the disabled. Of the 234 houses served, funding for 200 of the houses was provided by the City of Portland Bureau of Housing and

Community Development, 25 houses by the State of Oregon Department of Justice Duke/El Paso Settlement Funds, and 9 houses by the Multnomah County for East County residents (Community Energy Project, 2009).

According to the Community Energy Project Annual Report 2008-2009, 20% of CEP's budget was allocated for its In-Home Weatherization Program. CEP receives funding to satisfy its budget from a variety of sources including. Twenty one percent of its budget comes from contributions. The other 79% comes from grants and contracts (Community Energy Project Annual Report 2008-2009, 2009). Although CEP receives government assistance, they also leverage grant dollars from community foundations and provide trainings and associated materials for a fee to communities outside of their target area interested in setting up a home energy efficiency organization/programs similar to CEP (S. Smith, personal communication, 2010).

Program Structure

CEP employs an in-house crew of three weatherization professionals and recruits both individuals and teams of volunteers to carry out weatherization workdays held most weekdays and Saturdays during September to February, or what they deem their "weatherization season" (S. Smith, personal communication, 2010). They work with businesses of all sizes, schools, non-profits, religious institutions, and more to find potential volunteers (Community Energy Project, 2010).

Prerequisites for becoming a CEP volunteer include being over the age of fourteen, a familiarity with basic tools, and a desire for doing each job right. Before volunteers are allowed to join the CEP crew in weatherizing a house, they are put through a one-hour training session. The structure of the training session is contingent upon whether CEP is training a group of volunteers from an organization, school, business, etc that will be joining the crew during a weekend or whether the training is oriented toward individual volunteers interested in assisting the crew on any given day during the week.

During their weatherization season, CEP schedules groups of volunteers primarily once a week during the weekend, averaging 4-5 group volunteer excursions during a month. This is due to the need for a greater amount of homes and/or larger homes in order to have enough work to keep all volunteers busy. The schedule of a training session for groups often includes a half hour discussion on how to respectfully interact with the household being weatherized. During this discussion CEP covers a wide array of topics including:

- Living in Poverty/Living with a Disability: According to a CEP staff member, many volunteers are unfamiliar with the living conditions of those in poverty. They may not consider the difficulty that an elderly or disabled person may have in taking care of everyday household chores. In order to prepare volunteers and prevent the residents of a household from feeling embarrassed by a volunteer's reaction, a CEP staff member provides scenarios that the volunteers may find themselves in. Scenarios covered include how to react if a house is severely unkempt; if a volunteer sees a rat; etc. Overall, this topic is discussed to help volunteers from passing judgment on those they are serving.
- Neglect/Abuse: CEP staff and volunteers are mandated to report signs of client neglect and/or abuse.

The last half hour of the training is spent going over the installation procedures of each service provided. At the end of the day, CEP holds a debriefing with the volunteer group so that they can better process the experience. Many of the volunteers enjoy sharing positive experiences from the day and some like to discuss a situation they weren't quite prepared for with regards to a client's living situation.

Training sessions geared toward individual volunteers desiring to join the CEP work crew on any given weatherization workday are given the same training session. The difference is in the greater depth of information that can be relayed with fewer volunteers to train. One to two individual volunteers join the CEP crew in weatherizing a home on any given day, including weekday and weekends.

Home Energy Efficiency Services Provided

Before the CEP crew weatherizes a home, they visit the client and conduct an energy audit on the house to determine the home energy efficiency services necessary. The services offered to households participating in the In-Home Weatherization Program include the installation of:

- Reusable, internally-mounted vinyl storm window kits that can roll up for the summer
- Door Weatherstripping
- Rope caulking to stop drafts coming from windows and doors
- Insulation for water heaters and pipes
- Compact florescent lights, outlet & light switch gaskets

According to a CEP staff member, an additional function of the visit is to discuss good behavior associated with increasing a home's energy efficiency, including appropriate thermostat temperature settings, appliance settings, etc.

Accessing Senior Clients

Because of high demand for their services, CEP engages in limited public advertising. They access the majority of their clients by reaching out to caretakers, senior residential communities, and organizations that handle senior services. In rural areas, CEP contacts mobile home parks, local school head start programs, and grange halls. First and foremost, successful client access is best achieved by contacting sources that eligible households trust (S. Smith, personal communication, 2010).

Additional CEP Programs that Benefit Senior Citizens

Within their In-Home Services Department, CEP also offers an In-Home Safety Repair Program that utilizes a program structure identical to that used by the In-Home Weatherization Program. The small repairs performed through the In-Home Safety Repair Program include:

- Installation of grab safety bars in bathrooms
- Bathtub transfer benches
- Minor carpentry repairs to small areas of stairs and porches
- Provision and installation carbon monoxide and smoke detectors
- Replacing difficult to reach light bulbs with energy efficient bulbs
- Replacing washers in leaky faucets

CEP also puts on a variety of workshops in order to train individuals interested in beginning a residential weatherization and whole-house energy efficiency movement in their neighborhood. The following includes a list of workshops that CEP puts on with the help of every-day volunteers interested in learning about the topic they will be instructing. According to the CEP's website, volunteer workshop leaders are required to attend a volunteer orientation, observe 3 workshops given by at least 2 different experienced instructors, and conduct 2 observed workshops before becoming a full workshop leader. CEP workshops are free to individuals living in Multnomah County. CEP is willing to visit organizations outside of their target in order to hold workshops for staff as well as provide blue prints of their program models for a fee.

Home Weatherization

Participants find out how to implement simple measures to lower home energy use and learn how to install effective weatherization materials in their homes using only basic tools such as scissors and screwdriver. Each participating income-qualified Portland household receives a free kit of materials worth over $150. Each kit includes reusable vinyl storm windows, door weather-stripping, pipe insulation, a compact fluorescent light and more. Those not qualified can still purchase a kit or elements of the kit as a fundraiser for CEP programs.

Energy Educator Training

CEP describes this training as "Small-Measure Weatherization: Facilitating Community Empowerment, Education, and Involvement". It is training for energy educators based on Community Energy Project's 30 years of success implementing a grassroots energy education program. At this training CEP describes how it provides thousands of low-income households the means to make energy saving behavioral changes and install low-cost, small measure weatherization materials through interactive, do-it-yourself (DIY) workshops. The training also provides tips and lessons learned for recruiting and training hundreds of volunteers to install materials for senior citizens and people with disabilities who experience barriers to utilizing the DIY weatherization kits. All proceeds from this training go to support CEP programs. Participating agencies receive:

- Sample DIY weatherization kit
- Workshop curriculum and PowerPoint slides
- Portable interactive weatherization model with drawings
- Supplemental DVD
- Resource binder
- Opportunity to network with other organizations and share ideas
- Phone/email consultation and support after the training
- Lunch and refreshments

Appendix J: Profile: Riverside Public Utilities: WE CARE Program

Riverside Public Utilities is a utility company based of out Riverside, California that provides customers electric and/or water services. As a private company they have a general residential energy efficiency program dedicated to assisting all of their customers in becoming more energy efficient.

Their segment of the program unique to seniors and the disabled is called WE CARE. It can be described as a public benefit program that assists low income, disabled and senior households by providing a free in-home weatherization service with the intent of saving these homeowners money on their utility bills. WE CARE provides:

- Free weatherization and conservation materials: this includes weather stripping around a maximum of two entry doors and four exterior windows; door sweeps on up to two entry doors; and water-saving shower heads for all existing showers.
- Free installation
- Free conservation tips

Riverside Public Utilities customers are eligible if a full-time resident of the household is a senior citizen or if a full-time resident of the household is disabled.

Appendix K: Profile: CCOA - Aging, Weatherization & Human Services

Organization Overview

CCOA - Aging, Weatherization and Human Services (CCOA) is a member of the National Association of Area Agencies on Aging. It was established in December 1973 with the passing of the US Older Americans Act (National Association of Area Agencies on Aging, 2010). Originally known as Canyon County Organization on Aging (CCOA), in 2000 the agency name was changed to CCOA - Aging, Weatherization and Human Services in order to better reflect the services they offer. CCOA offers a variety of support services for the elderly of southwest Idaho through programs with focus areas including transportation, in-home services (including repairs), adopt-a-senior, Medicare education, a daily call service, prescription assistance, and weatherization. Their assistance services allow income-qualified seniors to remain in their homes, retaining their independence and dignity. Their vision on their website states, "Because we care and value the sacrifices of the senior population of America, we dedicate our efforts today, and for the future, to assure their quality of life, safety, dignity, and independence".

CCOA's Weatherization Program

Eligibility and Funding

CCOA's Weatherization Program serves seven Idaho counties including: Adams, Boise, Canyon, Gem, Payette, Valley and Washington counties. In these seven counties, the proportion of adults 65+ ranges from 10.5% to 20.4% of the total population of each county (US Census Bureau). Although senior citizens are a target audience for weatherization services, income is the determining factor for eligibility. Table 4.1 provides a breakdown of income-qualified applicants based on household size.

Table 4.1: CCOA Weatherization Program Income Eligibility

Number of People in Household	Monthly Income	Three Month Income
1	$1,805.00	$5,415.00
2	$2,428.33	$7,284.99
3	$3,051.67	$9,155.01
4	$3,675.00	$11,025.00
5	$4,298.33	$12,894.99
6	$4,721.66	$14,764.98
7	$5,544.99	$16,634.97
Additional Persons	$623.33	

(CCOA, 2010)

CCOA provides weatherization services to between 300-750 households annually depending on the amount of funding available. The cost of serving each household can range between $2,800 and $6,000 per client (R. Corta, personal communication, 2010). The US Department of Energy Weatherization Assistance Program funds CCOA's Weatherization Program. It is one of six agencies overseen by the Community Action Partnership Association of Idaho (CAPAI) that perform weatherization services in the State of Idaho (Webb and Rawls, 2009).

Program Structure

CCOA implements home energy conservation measures to eligible clients year round. They maintain a crew of weatherization professionals on staff to carry out their weatherization services. According to CCOA's Weatherization Program Director Ron Corta, each crewmember must pass a certification exam issued by the State of Idaho (R. Corta, personal communication, 2010).

Home Energy Efficiency Services Provided

After conducting an energy audit the CCOA Weatherization Crew may carry out the following weatherization and whole-house energy efficiency planning procedures:

- Insulation installation
- Weather stripping
- Heating system repair
- Duct maintenance

Accessing Senior Clients

Besides tabling at various health fairs targeting senior citizens, CCOA relies on individuals in need and/or families of eligible applicants to seek out their weatherization services.

Appendix L: Profile: Westchester County, New York Department of Senior Programs and Services

Organization Overview

Westchester County is located in the State of New York and had an estimated population of 953,943 as of 2008. Out of nearly 1 million people, 14.2% of the population is age 65+ (US Census Bureau: Westchester County Quick Facts, 2008).

The Westchester County Department of Senior Programs and Services (DSPS) is an award-winning department that, aside from featuring a variety of non-energy related programs, serves as a liaison between various home energy efficiency programs and senior citizen clients.

Aside from publishing a directory for senior citizens directing them toward home repair services, including those related to weatherization and whole-house energy efficiency, DSPS connects income-qualified senior clients to home energy efficiency programs through the State of New York's Weatherization Referral and Packaging program (WRAP).

Weatherization Referral and Packaging Program (WRAP)

Eligibility and Funding

The Weatherization Referral and Packaging (WRAP) program is a State of New York weatherization service for senior citizens age 60+ that is administered by the New York State Office for the Aging. WRAP liaisons like Westchester County DSPS and the Area Agencies on Aging in New York facilitate this program for seniors throughout the state (State of New York Office for the Aging, 2010). With the assistance of WRAP, on average 15-25 eligible senior clients are serviced each year. According to the New York State Office for the Aging, New York State legislation mandates that 1.5% of the state's Low-Income Home Energy Assistance Program funding be allocated toward WRAP. This funding is then divided among the 56 Area Agencies on Aging throughout the state (2010). During the contract year April 1, 2009 – March 31, 2009, the amount that could be spent was $5,000/client (J. Pici, personal communication, 2010).

Because a variety of organizations with differing eligibility requirements participate in Westchester County's WRAP program, it is difficult to provide definitive income requirements. However, the low income Home Energy Assistance Program (HEAP), a program involved in WRAP, provides the lowest income eligibility requirements for a model (New York State Office for the Aging, 2010). Table 4.2 provides a breakdown of the eligible monthly incomes by

household size according to the April 1, 2009 – March 31, 2010 contract year. Income-qualified clients can be both homeowners and renters (New York State Office for the Aging, 2010).

Table 4.2: HEAP Eligible Monthly Income by Household Size 2009 - 2010

HEAP Eligible Monthly Income by Household Size 2009 -2010	
Number of People in Household	Gross Monthly Income
1	$2,030
2	$2,654
3	$3,279
4	$3,903
5	$4,528
6	$5,152
7	$5,269
8	$5,386
9	$5,503

(WestchesterCounty.gov, 2008)

Program Structure

The purpose of WRAP is to utilize specialized energy case management to provide safe, affordable, energy efficient housing to the low income, energy vulnerable senior population residing in Westchester County. WRAP coordinates home energy efficiency services during HEAP's April 1st – March 31st contract year for seniors who are unable to locate, identify, and access them on their own. After identifying any unmet housing needs related to home energy efficiency, WRAP makes referrals to appropriate agencies (WestchesterCounty.gov, 2008).

The DSPS Program Director, Jeanne Pici, described WRAP as a program that specializes in leveraging funding from a variety of sources in order to fulfill all needs related to energy efficiency on a senior client's home. Through WRAP, the Westchester County refers eligible seniors to their local community action agency's Weatherization Assistance Program (WAP). However, when services funded through WAP are not enough to satisfy the needs of the client's house, Westchester County calls upon other home energy efficiency service providers with funding available including the Affordable Housing Commission, Access to Home, Last Resort, and Restore, among other local programs, until all needs have been met. By utilizing the aforementioned programs, seniors with high incomes may still qualify for services (J. Pici, personal communication, 2010).

Connecting the resources of various local organizations can mean the difference between keeping senior citizens in their homes and having to provide them with costly subsidized housing or institutional care. The WRAP program encourages independence and allows seniors to live out their lives in their own home with an improved quality of life (WestchesterCounty.gov, 2008).

Home Energy Efficiency Services Provided

WRAP provides comprehensive, weatherization services as well as energy conservation education to senior citizens in need. Through the WRAP program, Westchester County DSPS also arranges energy audits to be conducted the house of each client.

Services through its partner organizations include:

- Weather stripping/caulking around doors and windows
- Replacement and/or repair of outside doors
- Replacement and/or repair of broken storm windows
- Insulating walls, ceilings and/or attics
- Repair/replacement of heating systems
- Repair/replacement of hot-water tanks
- Roof repair
- Energy-related packages that include CFLs, etc.
- Installing duct work for furnaces

(Westchester County Department of Senior Programs and Services, 2008)

Accessing Senior Clients

WRAP liaisons, including Westchester County DSPS, work to identify low-income, energy-vulnerable elderly households through extensive outreach, targeted publicity, and networking among other energy and aging services providers in the community (State of New York Office for the Aging, 2010).

Additional DSPS Programs that Benefit Seniors

Westchester County Department of Senior Programs and Services' Home Repair and Energy Assistance Directory

The DSPS publication *Home Repair and Energy Assistance Directory* can be accessed online or in printed form for easy dissemination. This directory provides residents who are age 60+ with information about money-saving home repair and energy assistance programs that are available throughout the county, to those that qualify. The county also includes this

information, among other topics of interest to seniors, in a bi-monthly newsletter called “Generations”.

Upon glancing through the directory for programs offering weatherization and whole-house energy planning services, the directory lists four programs: two that cater to weatherization services; and one that offers a loan program to replace appliances with energy-star appliances. WRAP is included in the directory, described as a program that offers grants to pay for weatherization services to be completed within the home (2008).

Appendix M: Profile: HEET: Home Energy Efficiency Team

Organization Overview

The Home Energy Efficiency Team (HEET) is a non-profit organization that was formed during the summer of 2008 with the goal of bringing neighbors together in order to weatherize homes in Cambridge, Massachusetts. Using what they call the “barn-raising model”, HEET aims to reduce the carbon footprint of specific houses, teach participants skills to make their own homes more energy efficient, and build a sense of community (HEET, 2009). Since their inception, HEET has drawn tremendous response from the community.

According to HEET, their barn-raisings have inspired climate activists from other communities to explore similar initiatives, and they have been featured in publications including the Boston Globe, Cambridge Chronicle, and the Boston Phoenix. As for recognition, HEET has been recognized by the Mass Climate Action Network as a "Climate Superstar" and in May 2009, HEET received City of Cambridge’s GoGreen award for being the City's outstanding community organization working toward sustainability (HEET, 2009).

Eligibility and Funding

There are no eligibility requirements to become a participating household with HEET because it is assumed that the household will finance the materials necessary for the “barn-raising”. According to HEET, most of the homeowners they have served have been younger households. Although it was not stated as being so, renters may be unintentionally excluded from this program without the right to solicit HEET’s services. When lower-income homeowners are interested in participating, house party fundraisers are planned and additional grants are sought after (HEET, 2009).

HEET weatherizes one or two buildings at their once-a-month event, resulting in approximately twenty buildings per year. The average cost per barn-raising is between $400 and $500: $300-400 is spent on home energy efficiency materials and $100 to feed the volunteers (HEET, personal communication, 2010).

Program Structure

Carried out with the help of volunteers, HEET has drawn between 30 and 90 volunteers per month to help with the “barn-raisings” held monthly since August 2008. Volunteers consist of neighbors, contractors, city councilors, and school committee members. HEET has also had the president of the Cambridge Energy Alliance join their ranks (HEET, 2009). Before they allow volunteers to participate in a barn-raising, HEET introduces the homeowner to the volunteer

team and directs the volunteer team to approach the homeowner whenever in doubt about how to handle something in the house (HEET, personal communication, 2010).

According to HEET, in the "old days" the community came together to help a neighbor build a barn, an event complete with music, food, and getting better acquainted with one's neighbors. In today's community, the need transcends to weatherizing a neighbor's house. The following description provides a description of how HEET organizes single household weatherization volunteer days run by neighbors (HEET, 2009).

Start Your Weatherization Team in 11 Easy Steps:

1. Assemble a core group of three or more people who are willing to spend the time organizing the first few "barn-raisings".
2. Find someone who has a home that needs weatherizing.
3. Find one or two volunteers with weatherization experience.
4. Pick a date for the weatherization party.
5. Find musicians, entertainers, or local celebrities who will entertain the workers.
6. Get the word out about the barn raising, asking for potential volunteers to RSVP.
7. Find team leaders to teach the weatherization skills.
8. Make a list of the tools and materials needed for the weatherization.
9. Send the materials list to the homeowner for them to purchase, giving them at least a week or two.
10. Make sure the homeowners purchase the materials on time.
11. Figure out what food you are going to have.

Preparing for the Event Itself:

- All the tools necessary for each job should be separated and put into the correct work area, before the event begins.
- Have a sign on the front of the building so passersby can learn about the weatherization team.
- Have volunteers assigned to the following roles:
    - Greeter
    - Gopher
    - Organizer
    - Team Leaders
- Have explanatory flyers at the front table with a description of the weatherization team, how to contact it, when the next event will be, and how to sign up to have your own home weatherized.
- Have soda and water available from the start of the event for thirsty workers.

- Announce the schedule of work and who is assigned to each task.
- Ask attendees for feedback on the event.

At the completion of the event, HEET ensures that the site has been cleaned up.

Home Energy Efficiency Services Provided

Typical weatherization and whole-house energy efficiency measures carried out by HEET volunteer groups include:

- Weatherstripping doors
- Caulking exterior holes around piping, storm windows, and wires
- Programmable thermostat installation
- Tightening storm windows
- Insulating the band joist in basements
- Repointing the foundation
- Installation of chimney flue pillows
- CFL installation
- Programmable Thermostat Installation
- Managing appliance/heating system temperatures
- Water heater insulation
- Unplug underutilized appliances
- Door sweep installation
- Insulation installation
- Insulate pipes
- Water-saving shower heads/fixture installation
- Water conservation measures