Unhealthy Consequences: Energy Costs and Child Health

A Child Health Impact Assessment of
Energy Costs and the
Low Income Home Energy Assistance Program

Prepared by the Child Health Impact Working Group
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Table of Contents

Executive Summary

Substantial and compelling medical and public health evidence indicates that non-medical factors, such as home energy costs, profoundly influence child health and well-being. Child Health Impact Assessment offers an evidence- and experience-based method through which to evaluate the implications of policy, regulations, and legislation for children's health and well-being.[i] Our Child Health Impact Assessment of home energy costs reveals that unaffordable home energy has important and preventable adverse consequences for children's health.

High Home Energy Costs and Child Health

The available evidence reveals that unaffordable home energy has preventable, potential consequences on the health and well-being of the more than 400,000 Massachusetts children living in low-income households.[1] Low-income families are caught in the gap between rising energy prices and available energy assistance. Energy assistance falls far short of the need, especially when there is a spike in energy prices, such as following Hurricane Katrina in 2005. In addition to the exceedingly high housing costs in Massachusetts, our climate means low-income families spend more of their income on home energy (energy burden) to keep warm than families in other regions of the U.S.

- **Low-income families facing disproportionately high energy costs are forced to make household budget trade-offs that jeopardize child health**. Families with a high energy burden often spend less money on food and health care. Seasonal food insecurity resulting from high energy costs has a substantial impact on child health. In addition, families may miss rent or mortgage payments to pay energy bills, resulting in housing instability.

- **Families facing high heating costs resort to alternative heat sources that jeopardize child health and safety**. In an effort to reduce home heating costs, families use alternative heat sources, such as kerosene space heaters or fireplaces. Up to 25% of families that lose their primary source of heating use space heaters or ovens and stoves, risking contact burns, carbon monoxide exposure, and especially deadly house fires.

- **High energy costs combined with unaffordable housing create important budget constraints that force low-income families to endure unhealthy housing conditions that threaten child health**. The constraints that high energy costs place on low-income families reduce their ability to afford appropriate housing, increasing the likelihood that they and their children experience unhealthy housing conditions, such as rodent infestation, water leaks, mold, and lead paint.

- **The growing gap between rising energy prices and LIHEAP benefits means more Massachusetts families accumulate substantial unpaid utility bills, leading to arrearages and disconnections that adversely affect child and family well-being**. As the gap between energy prices and LIHEAP benefits increases, Massachusetts families struggle to pay their utility bills. While utility shut-off protections in the Commonwealth are strong, the limited data available suggest

[i] See Appendix I for a more detailed description of the Child Health Impact Assessment concept and methodology.

that arrearages are growing dramatically for low-income families. Families eligible for shut-off protection face substantial debt and disconnections when their protections expire.

- **The negative child health impacts of unaffordable home energy extend well beyond the winter heating season**. Due to overwhelming utility arrearages, families' difficulty in paying their home energy bills becomes a year-round problem. Although families may avoid utility disconnection during the winter, they face it in the spring when the moratorium on shut-offs is lifted. Similarly, families make budget trade-offs even in warmer months, spending less on food, medical care, and housing, so they can pay down arrearages accumulated during the winter.

Recommendations

This report documents the compelling evidence that unaffordable energy costs adversely affect the health of low-income children. The next step is for policy makers, agency officials, local service providers, and other key stakeholders to take action to protect children from these preventable unhealthy consequences. The following recommendations offer strategies to avoid the public health impact of unaffordable energy through expanding outreach and access to energy assistance programs and increasing relevant information available to policy makers and energy program directors.

Funding Recommendations

1. **Given the continued gap between energy costs and LIHEAP funding, the federal government should fully fund LIHEAP at the maximum authorized level of $5 billion to allow an increase in both participation and benefit level.** Because energy benefits play an important role in buffering low-income children from the adverse health effects of high energy costs, we should encourage increased participation in LIHEAP, which will certainly require additional funding. Recognizing that LIHEAP is not an entitlement program, if increased participation is not matched by a corresponding increase in funding, benefit levels would be reduced to an inadequate level.

2. **To increase LIHEAP benefit levels for vulnerable Massachusetts families, the Massachusetts state government should allocate supplementary funds for LIHEAP**. In 2005 and 2006, the Massachusetts legislature wisely decided to supplement federal funding with a state appropriation, allowing benefits to be increased to a more meaningful level. For the benefit of the Commonwealth's children, they should continue to do so.

Programmatic Changes

3. **To highlight the connection between high energy costs and child health, LIHEAP should extend outreach to clinicians and health care settings.** Currently, there is inadequate data to explain why more eligible families do not apply for important LIHEAP benefits. However, it is our clinical experience that many low-income families who face substantial energy burdens are not aware that they are eligible for LIHEAP or other energy assistance. Health care settings would be important sites to identify potentially eligible low-income families with children. As part of a complete social history designed to uncover potential risks to child health, health care providers should screen for home energy insecurity and make appropriate referrals to energy assistance programs. In addition, the programs that administer LIHEAP should enroll families at clinical sites, such as neighborhood health centers, that serve the vulnerable populations specifically targeted by LIHEAP.

4. **LIHEAP administrators should consider an initiative to provide energy and utility assistance, through LIHEAP or other energy assistance programs, to low-income families who are eligible for housing subsidies but spend years on waiting lists before they receive them.** These families are clearly economically vulnerable since they have already met eligibility standards for housing subsidies. Subsidizing their energy costs while they await housing assistance would help buffer their children from the double jeopardy of both unaffordable housing and energy costs that threatens their health and well-being.

Data Collection

5. **The state should enforce the existing requirement that utility commissions collect and report data on arrearages and utility disconnections to the Department of Telecommunications and Energy to address the important gaps in these data that undermine the state's ability to request the release of emergency LIHEAP funds.** The National Energy Assistance Directors Association (NEADA) together with the National Consumer Law Center (NCLC) have highlighted the importance of collecting these data to document the trends in arrearages and disconnections, useful in establishing an emergency situation as defined in the LIHEAP statute. [9] NEADA and NCLC have outlined a template of three tiers of data that could be obtained – some should be immediately available from utilities, whereas others may take additional resources.[ii] Local service providers could use this information to assess the full impact of this problem on low-income families and their children.

6. **Energy assistance programs should explore the utility of a home energy insecurity scale, such as the one proposed by the Division of Energy Assistance, the office within the U.S. Department of Health and Human Services that administers LIHEAP.**[10] Such a scale would allow energy assistance programs to assess initial and subsequent energy self-sufficiency of households before and after receipt of energy benefits, providing a useful evaluation of the impact of these benefits.

[ii] See Appendix III.

Table 1. Pathways of the Impacts of Unaffordable Energy on Low-Income Households

Mechanism	Short-Term Impacts	Medium & Long-Term Impacts
High energy costs force budget trade-offs that jeopardize child health. Families spend less on food, medications, and housing in order to pay high energy costs.[2,3,4]	- *"Heat or eat"* – food insecurity & other nutritional risk due to trade-offs between energy and food expenditures - Seasonal food insecurity	- Poor growth - Malnutrition – infection cycle leading to increased illness - Cognitive, developmental deficits of malnutrition affecting school performance
High energy costs force the use of risky alternative sources of heat. Families use ovens, stoves, space heaters, or fireplaces to replace or augment primary heating systems.[5,6,7]	- Increased risk of contact burns - Increased risk of carbon monoxide poisonings - Increased risk of house fires	- Possible long-term health consequences of burns, carbon monoxide exposure - Economic impact of preventable hospitalizations
High energy costs combined with unaffordable housing force families to endure unhealthy housing conditions. High energy costs contribute to budget constraints limiting families' ability to afford appropriate housing, resulting in exposure to unhealthy housing conditions: - Rodent & cockroach infestation - Water leaks and mold - Peeling paint and lead paint[8]	- Increased incidence & severity of asthma - Increased incidence of lead poisoning - Preventable injuries from fires, burns, falls - Increased rates of infectious diseases, such as diarrhea and respiratory conditions	- Increased health care utilization, including emergency department visits and hospitalizations - Missed school due to illness - Cognitive and developmental deficits due to lead poisoning
High energy costs result in unpaid bills, arrearages and utility disconnection. Families make partial rent or mortgage payments or miss entire payments because of unaffordable energy bills.	- Potential cold exposure - Increased use of alternative heating sources (see above) - Possible loss of utilities required for basic health and safety: light, refrigeration, cooking, water heating - Increased risk of housing instability due to utility disconnection	- Adverse physical health impacts, including lack of primary care, untreated or undertreated medical conditions, growth delay - Adverse mental health impacts, including anxiety, depression, behavioral disorders - Adverse behavioral, developmental and educational impacts, including developmental delay, grade repetition

Introduction

Substantial and compelling medical and public health evidence indicates that non-medical factors, such as energy costs, profoundly influence child health and well-being. Concerned about the health effects of these non-medical factors, a multidisciplinary working group of pediatricians, public health researchers, health economists, and attorneys from several universities, medical schools and hospitals in the Boston area developed a **Child Health Impact Assessment (CHIA)**. The emerging process of Child Health Impact Assessment offers an evidence- and experience-based method through which to evaluate the implications of policy, regulations, and legislation for children's health and well-being.[iii]

The evaluations undertaken through CHIA are particularly focused on policy arenas outside the traditional realms concerned with health -- medicine, public health and health policy. Child health impacts are usually not considered in domains such as housing, energy or transportation, making the effects on children of policy choices in these domains invisible to policy makers. However, policies in these and other areas such as education, employment and income supports all affect child health and well-being.

During the aftermath of Hurricane Katrina in 2005 and the ensuing dramatic increases in fuel prices, this multidisciplinary group became concerned about the potential impact of these increased fuel costs on low-income children. This report is the result of their decision to focus on the influence of high energy costs on child health in order to provide specific information to policy makers. This paper presents the findings of a child health impact assessment of energy costs and the Low Income Home Energy Assistance Program (LIHEAP), the federally funded program designed to help low-income families pay their energy bills. This analysis remains relevant since energy prices have remained high, even one year after Katrina. The report is comprised of 4 sections:

Section 1 summarizes the evidence on the numerous mechanisms through which high home energy costs impact child health.

Section 2 outlines the components of the current LIHEAP program in the context of the broader issue of affordable home energy in Massachusetts.

Section 3 presents an analysis of the likely child health impact of unaffordable energy prices in Massachusetts, based on available data.

Section 4 provides a summary of health impact findings and recommendations that can be used to inform public discussion of LIHEAP and other energy assistance policies.

[iii] See Appendix I for a more detailed description of the Child Health Impact Assessment concept and methodology.

1 The Impact of High Home Energy Costs on Child Health

The high costs of home energy place a substantial burden on many families, especially low-income families and the 400,000 children in Massachusetts who live in these families.[1] There is evidence supporting several important pathways through which this energy burden can have an impact on child health:

- Low-income families facing disproportionately high energy costs are forced to make **household budget trade-offs that jeopardize child health.** Families with a high energy burden spend less money on food and health care, and may miss rent or mortgage payments, resulting in housing instability.

- Families that face high heating costs resort to **alternative heat sources,** such as space heaters, ovens and stoves that jeopardize child health and safety.

- High energy costs, combined with unaffordable housing, means low-income families are forced to endure **substandard housing conditions,** including homelessness, that threaten child health.

- High energy prices means more Massachusetts families accumulate substantial unpaid utility bills, leading to **disconnections and heat shut-offs** that adversely affect child and family well-being.

It is beyond the scope of this report to describe the research literature in detail. Rather, we will summarize the overarching themes of evidence that form the basis for the premise that affordable home energy has a substantial impact on child health.

We will address the impact of the costs of both **home heating** and **total home energy** (including electricity, water heating, and cooking) for low-income families. While many studies focus primarily on home heating, it is can be difficult to uncouple the effects of high home heating costs from those of total home energy costs. For this reason, when we examine home heating, we will do so within the larger context of total home energy.

High energy costs force budget trade-offs that put child health at risk

High energy costs place increased economic demands on low-income households with limited budgets. These demands result in trade-offs between fixed costs, such as housing and heating, and other basic needs. Nationally, low-income families spend approximately 14% of their budget on home energy compared to 3% for more well off families.[3 11]

According to a survey performed by the National Energy Assistance Directors Association (NEADA) in 2005, a significant proportion of LIHEAP participants in the Northeast reported making precisely these kinds of budget trade-offs due to high energy costs:

- 73% reported that they reduced expenditures on household necessities because they did not have enough money to pay their energy bills;
- 20% went without food;
- 28% went without medical or dental care; and
- 23% did not make a full rent or mortgage payment at least once.[5]

These data illustrate that current LIHEAP benefits, targeted to especially vulnerable populations, are clearly helpful but not sufficient in buffering families from the impact of high heating costs. These data also suggest that their situation would be even more precarious without this important assistance.

Food insecurity adversely affects child health

Budget trade-offs between energy costs and food expenditures result in **food insecurity**, the uncertain or limited availability of adequate supplies of nutritious food. There is substantial evidence indicating that food insecurity poses a substantial threat to child health and well-being. Food insecurity is especially harmful for young children because they are in a period of rapid growth and brain development and are sensitive to even brief periods of nutritional deprivation.[12] Among food insecure families with children, half reported that they were sometimes not able to feed their children balanced meals and 25% reported that their children did not have enough to eat because the family could not afford adequate food.[13] A quarter of Eastern Massachusetts families using food banks reported that their children had skipped meals because there was not enough money for food.[14]

A nutritionally inadequate diet makes children susceptible to an **"infection-malnutrition cycle"** by impairing children's immune function, making them more prone to infection and illness.[15] An inadequate food supply prevents children from fully recovering from weight loss or interrupted growth during illness episodes, leading to poor nutritional status that puts them at risk for a subsequent illness, creating a cycle of poor growth and increased risk of illness. In addition to poor growth,[16,17,18,12] food insecure children:

- Are 2-3 times more likely to be in fair or poor health or chronically ill;[15,19,20]
- Are 30% more likely to be hospitalized by age 3 years;[15]
- Score lower on measures of physical and psychosocial functioning;[21] and
- Have deficits in cognitive and behavioral development that affect school performance.[22,23,24,25,26,27,19,28]

A five city (Baltimore, Boston, Little Rock, Minneapolis, and Washington, DC) study of predominantly low-income young children under 3 years of age seen in primary care clinics and emergency departments found significant associations between not receiving LIHEAP and important health and growth indicators:

- Young children not receiving LIHEAP were 30% more likely to be admitted to the hospital.

- Young children not receiving LIHEAP were 20% more likely to be at nutritional risk for growth problems.[2]

High heating costs result in seasonal food insecurity

There is compelling evidence that when faced with higher energy costs in the winter, low-income families are forced to choose between paying energy bills and purchasing food. In 2003, the U.S. Department of Agriculture's (USDA) Economic Research Service investigated this issue using recent data from USDA, the Bureau of Labor Statistics and weather data from the National Oceanic and Atmospheric Administration. These researchers merged data on heating degree-days, reflecting the energy necessary to heat a home based on the outside temperature, with data on household food insecurity, income, employment and other characteristics. They found that "households with incomes below the poverty line were substantially more vulnerable to hunger during the winter and early spring than during the summer."[29] Other reports support the conclusion that children in low-income families are nutritionally at-risk during the winter and early spring, because they take in fewer calories and other micronutrients.[4,3,2]

"Heat or Eat": The stark choices of low-income families affect child growth

Several recent studies document specific seasonal variation in nutritional status of children resulting from budget trade-offs:

- A study of Boston children between 6 months and 2 years of age presenting to Boston Medical Center found that the proportion of children who were underweight increased significantly during winter months. Families without heat, or threatened with utility disconnections, were also twice as likely to have children experiencing hunger or be at-risk for hunger.[30]

- Dropping temperatures and increased winter heating costs resulted in decreased food expenditures and decreased calories consumed by low-income children, compared to increased food expenditures among richer families. These children also had diets of lower quality, with increased rates of anemia and other vitamin deficiencies. The authors state "poor parents are only imperfectly able to protect their children from cold-weather resource shocks."[3]

High energy costs force the use of risky alternative sources of heat

Faced with high energy costs, low-income families resort to using risky alternative sources of supplemental heat to warm their homes, such as portable space heaters (often in bedrooms), kitchen stoves, or fireplaces. This is especially true when these families lose their home heating service because of an inability to pay their energy bills. The Centers for Disease Control states: "High oil and gas prices and power outages during the winter months can contribute to consumer use of improperly vented heating sources."[31] Nationally, in 2001, home heating equipment fires injured 1,120 people and caused 220 fatalities.[32] Prior data indicates that 20% of deaths are of children less than 10 years of age.[33] Those who are poor, living in substandard homes and children younger than 4 years of age are at higher risk.[34,35]

A survey of low-income service providers, including state LIHEAP directors, weatherization assistance program directors, community action administrators, and public utility commissions reported that low-income families respond to unaffordable energy bills by relying on alternative heating sources.[36] The use of these alternative sources of heat is risky because they are associated with house fires, burns and carbon monoxide poisoning. The 2005 survey by the National Energy Assistance Directors Association found that 22% of LIHEAP households in the Northeast used the kitchen stove or oven to heat their homes due to not having enough money for their energy bill in the past year.[5] This is consistent with national data indicating that 14.5% of low-income households used stoves or ovens for heat, compared with 6% of higher income households.[37]

- The U.S. Fire Administration reports that 40% of residential fire injuries and 50% of residential fatalities occur during the winter months, even though these months only comprise one-third of the year. Nationally, these fires cause $3 billion in property loss, 1,900 deaths and almost 8,000 injuries.[38]

- Portable heater fires are the most deadly type of heating fires. While they cause less than 10% of residential heating fires, portable heaters are responsible for 30% of heating fire injuries and 40% of heating fires fatalities.[39]

In addition to the obvious serious health consequences of home fires, the use of these alternative heating sources is also associated with increased risks of burns and carbon monoxide poisoning. Unintentional, non-fire or automobile related carbon monoxide poisoning, which can cause seizures, coma and death, sends 15,000 people to emergency departments and results in 500 deaths annually. Not surprisingly, the incidence of both fatal and non-fatal carbon monoxide poisoning increases during the fall and winter months.[31]

- A recent California study found that the number, extent and severity of heater-related burn injuries increased significantly during a power shortage that resulted in 10-17% utility price increases and rolling black outs. There was no change in mean temperature during this time to explain the increased number of burn injuries.[40] The authors conclude: “The economic stresses of the power shortage had societal costs that extended far beyond the price of electricity.” [40]

- There are well described cases of surges in carbon monoxide poisoning after a major storm resulted in power outages forcing people to use alternative sources of heat.[41] However, low-income families faced with utility disconnections turn to these risky sources of heat even when there is not a major storm.

Winter Fire Danger

Unaffordable utilities are a major risk factor for fires. Every year, there are tragic cases of deadly fires and carbon monoxide poisonings, often killing children, related to use of alternative sources of heat and loss of utility service:

- In 2000, two young boys were killed in a house fire in Mattapan started by a space heater.[42]
- In 2005, a first grader whose family's electricity was disconnected due to outstanding bills was killed in a fire started by candles.[43]

Low-income families facing high energy costs, utility arrearages and the loss of heating service are at particular risk when they resort to alternative heating sources because they:

- May not be able to afford smoke detectors;
- Live in less fire resistant housing and do not have the resources to invest in fire safety; and
- Are less likely to have telephone service to report a fire.[44]

The combination of high energy costs and unaffordable housing forces families to endure unhealthy housing conditions

The constraints that high energy costs place on low-income families reduce their ability to afford appropriate housing, increasing the likelihood that they and their children experience unhealthy housing conditions, such as rodent infestation, water leaks, mold, and lead paint.[45] In a recent study, children in families reporting two or more housing hazards were 2.5 times more likely to be in fair or poor health compared to children in families reporting fewer hazards. Almost half of parents in the study reported that their children had suffered health consequences due to these housing conditions. [45]

It is well documented that unhealthy housing conditions are associated with many common chronic diseases of childhood. The most common of these are **asthma, lead poisoning, unintentional injuries** and **infectious diseases.**

- There is substantial evidence linking childhood **asthma** to conditions such as infestations of cockroaches, rats and mice, poor ventilation, and excess moisture and mold.[46,47,48,49,50] Children exposed to these conditions experience more symptoms, miss more school, and have more frequent emergency room visits and hospital admissions due to asthma.[51,52] If these conditions were eliminated, an estimated 800,000 cases of childhood asthma and an estimated $800 million could be saved in asthma health care costs of children under 16 years of age.[49,48]

- **Lead poisoning** has been associated with cognitive deficits, aggressive behavior, hearing dysfunction, tooth decay, delinquency, attentional problems, and low birth weight.[53] On average, studies show persistent effects of lead exposure, with an estimated 2.5 point drop in IQ for an increase from 10 μg/dl in blood lead to 20 μg/dl in blood lead.[54] This resulted in a loss of an estimated 2.5 million IQ points in children between the ages of 1 and 5 in the United States.[55]

- The leading cause of morbidity and mortality for U.S. children less than 20 years of age is **unintentional injuries**.[56,57] Injuries accounted for 37% of all childhood mortality in 2002 and 4,995 deaths in U.S. children ages 1 to 15 years.[58] The majority of injuries among U.S. children occur in and around the home.[59,60] Leading residential mechanisms of injury in children are falls, injury from fires related to improper wiring or lack of smoke detectors, burns from uncovered radiators, and inappropriately high hot water heater temperatures. [61]

- Homeless and poorly housed children experience significantly higher rates of **infections**, such as upper respiratory infections, diarrhea, ear infections, and skin infestations, such as lice and scabies. [62,63,64,55,51,65]

High energy costs result in unpaid energy bills, arrearages and utility disconnections that can lead to eviction and homelessness

It is well documented that high energy costs can result in unpaid bills, leading to substantial arrearages and subsequent utility disconnections. These high energy costs can lead to eviction and homeless in two major ways. First, families may not be able to pay both their energy bills and their entire rent or mortgage. The 2005 survey by NEADA reported that 25% of the LIHEAP-recipient households surveyed had made a partial rent or mortgage payment or missed an entire payment altogether because of unaffordable energy bills.[5] This situation is even more dire among respondents in the Northeast:

- 42% reported not paying or paying less than their entire home energy bill because of not having enough money; and

- One in four reported receiving a notice of disconnection of electricity or heating fuel in the past year.[5]

Second, families who have unpaid energy bills develop substantial arrearages that can result in utility service disconnection. Once this occurs, a family whose utility service is disconnected may be evicted for failure to maintain the habitability of their home.[66,67] Although many states, including Massachusetts, prohibit winter utility disconnection for households experiencing financial hardship, these shut-off protections usually end in the spring, resulting in disconnections in late spring.[68] During the shut-off moratorium period, families continue to accrue debt for their utility bills.

In addition to imposing general hardship, disconnected utilities make it difficult to manage chronic conditions such as asthma or diabetes, which require electricity to operate medical equipment or to refrigerate medications, such as insulin.

Children experiencing homelessness and housing instability related to unaffordable energy bills suffer specific consequences in their physical health, mental health and development

Housing instability refers to *involuntary* moves that result from inability to pay rent or other circumstances. Homelessness is the extreme end of housing instability, since those in unstable housing situations are never far away from being homeless. The evidence indicates that the children with unstable housing experience substantial adverse outcomes in many domains of health – physical health, mental health and behavioral development, and education.

- Housing instability and homelessness pose well-documented **threats to child physical health.** These children are more likely to: be rated as having poor health;[55,51,63] lack regular primary care, such as immunizations and tuberculosis screening;[51,69,70,63] have untreated or undertreated conditions like asthma;[71,51] be seen in the emergency room and be hospitalized;[63] and have 10 times more dental caries than housed children.[72,63]

- There is substantial evidence that children experiencing housing instability or homelessness suffer substantial **adverse mental health consequences.** These children are more likely to experience anxiety, depression and alcohol dependency.[73,74,72,75,76,77] For example, half of all children in shelters show signs of anxiety and depression.[73]

- The majority of the evidence suggests that homeless children experience adverse **developmental and behavioral effects**.[78] These children are also at risk for adverse **educational consequences** of their frequent moves and household disruptions. They show increased rates of missed school,[62,55,65,74] and poor academic performance.[62,73,63,74,79] They are more likely to need to repeat a grade[73,79,65,80,81,74] and demonstrate an increased need for special education.[73,65,82]

A study from Worcester, Massachusetts compared 293 homeless children with 223 low-income, housed children who had never been homeless. The researchers found the homeless children suffered:[51]

- Double the risk of having two or more emergency room visits in a year;
- Twice as many hospitalizations; and
- Significantly worse overall health status.

Health impacts of high energy costs have significant economic implications

The adverse impacts of unaffordable energy described in this section can have potentially devastating and preventable health consequences for children and their families. These health consequences can also create substantial economic costs for society at large through lost productivity and increased education and health care spending. Although these costs are often difficult to measure, one example is the substantial cost of preventable hospitalizations, borne by low-income families, payers and health care providers. At a time of rapidly rising health care costs, these hospitalizations have significant economic implications. Table 1 gives one set of examples of these costs. As shown, the cost of a pediatric burn hospitalization in Massachusetts is approximately $7,500, and a hospitalization for carbon monoxide poisoning averages almost $11,000. These economic costs are 5 to 8 times the average cost of heating a home in the Northeast, and 7 to 10 times the maximum home heating benefit from the LIHEAP program in 2006.[83,84]

Table 1. Average Pediatric Hospitalization Costs for Burns, Carbon Monoxide Poisoning, and Bronchitis & Asthma

	Massachusetts		Nationwide	
	Average length of stay	Average hospitalization charges	Average length of stay	Average hospitalization charges
General pediatric hospitalization	4.2 days	$9,989	3.6 days	$9,945
Burns	3 days *	$7,505 *	6.6 days	$28,235
Carbon monoxide poisoning	**	**	1.8 days	$10,728
Bronchitis & Asthma	2.4 days	$5,272	2.6 days	$7,386

*Numbers do not include hospitalization for patients less than one year of age.

** No data available.

Source: Healthcare Cost and Utilization Project. Agency for Healthcare Research and Quality, Rockville, MD. Available at http://www.ahrq.gov/HCUPnet/

Summary

The evidence summarized in this section makes a strong case that unaffordable energy has significant consequences for child health and well-being through four primary pathways: household budget trade-offs between energy bills and other necessities, such as food; the use of risky alternative sources of heat, such as stoves or space heaters; enduring unhealthy housing conditions because of budget constraints; and finally, utility arrearages and disconnections that can result in housing instability and homelessness.

With the connection between high energy costs and child health established, the next section focuses on the Low Income Home Energy Assistance Program (LIHEAP) and the status of affordable energy, particularly in Massachusetts.

2 The Low Income Home Energy Assistance Program (LIHEAP) and Affordable Energy in Massachusetts

The importance of affordable energy for child health and well-being outlined in the previous section highlights the need for a consideration of the health effects of policies made outside the medical and public health realms. Because policy makers do not always recognize the impact of such policies on children, they miss the opportunity to protect children's health and well-being. The new approach of a Child Health Impact Assessment provides a framework for such a consideration.

Current volatility in energy prices offers an opportunity to evaluate these child health impacts using this new approach. The Low Income Home Energy Assistance Program (LIHEAP) is the main federal program designed to provide home heating assistance for low-income Americans. There are additional heating assistance programs in Massachusetts, including the Salvation Army Good Neighbor Fund and Citizens Energy Oil, and other programs that address overall energy costs. This analysis focuses on LIHEAP, but the other energy assistance programs will be briefly reviewed to place LIHEAP within the overall context of such programs.

An overview of the Low Income Home Energy Assistance Program (LIHEAP)

In 1981, Congress created the Low Income Home Energy Assistance Program (LIHEAP) by consolidating a number of programs created to address increased energy prices resulting from the 1973 Organization of the Petroleum Exporting Countries (OPEC) oil embargo. Administered by the Division of Energy Assistance within the U.S. Department of Health and Human Services (HHS) Administration for Children and Families, LIHEAP is a block grant program that gives states annual funding to provide home heating, cooling, and weatherization assistance to low-income households.[85]

Eligibility for LIHEAP is based on household income and size. Under federal rules, the maximum eligible income is 200% of the federal poverty level and/or not to exceed 60% of median state income. Each state sets its own income eligibility requirements within these guidelines, and most set limits as a certain percentage of federal poverty level. In states with relatively high incomes and high costs of living, the median state income is much higher than 200% federal poverty level, which does not vary by geographic location (except for Alaska and Hawaii).

LIHEAP is not an entitlement program; there is no legal mandate to provide benefits to all eligible households. Federal funding fluctuates from year to year, resulting in changes in benefit levels and numbers of households served. Nationwide, 13% of income-eligible

households received LIHEAP benefits in fiscal year 2002, the latest year for which HHS has published data.[11] In 2003 the average home heating benefit was $258.[86]

In 1994 LIHEAP legislation, Congress created permanent authorization for the release of up to $600 million in contingency funds in addition to the main annual LIHEAP appropriation, "to meet the additional home energy assistance needs of one or more States arising from a natural disaster or other emergency."[87] Subsequent legislation expanded the definition of "emergency" to include a significant increase in:

- Home energy supply shortages or disruptions,
- The cost of home energy,
- Utility disconnections,
- Participation in a public benefit program such as the Food Stamp Program, or
- Unemployment or layoffs.[88]

In addition, the 1994 legislation amended LIHEAP to specifically target the most vulnerable households, defined as those with at least one member who is either:

- A child under age five,
- An individual with disabilities, or
- An adult over age 65.[89]

Notably, the legislation also required that states "give priority to those households with the highest home energy costs or needs in relation to household income."[90] This means that states can target families with the highest energy burden.

LIHEAP is targeted to families with highest energy burden

Energy burden is defined as the percentage of income a household spends on total energy costs. For example, if a family has an income of $30,000, and spends $3,000 a year on energy costs, the household's energy burden is 10%.

- Low-income families in the U.S. have an average energy burden of 13.6%
- Families that receive LIHEAP have an average energy burden of 18.9% [11]

LIHEAP in Massachusetts

In Massachusetts, the Department of Housing and Community Development (DHCD) oversees LIHEAP, often referred to as Fuel Assistance (see Table 1). DHCD awards sub-grants to 21 local agencies that administer the program at the community level. Most of these grantees are community action agencies – non-profit organizations that provide both referrals and direct services to low-income individuals to help meet their immediate needs and increase their long-term self-sufficiency.[iv]

Massachusetts LIHEAP provides funds for: home heating assistance, year-round energy crisis assistance, and weatherization assistance.

Table 1. An Overview of LIHEAP in Massachusetts

Program Component	Description
Heating Assistance	-Payments made directly to utility vendors, based on household benefit level and program fund availability. -Covers partial cost of oil, electricity, natural gas, propane, kerosene, wood, coal.
Weatherization Assistance (Home Emergency Assistance Retrofit Task Weatherization Assistance Project)	-Grants averaging $1,600 are awarded to households to repair or replace broken or inefficient heating systems. -Priority funding given to households with elderly, disabled, children, or high-energy users. -Designed to serve mainly homeowners.
Crisis Assistance	Fast-track assistance for households experiencing heating emergencies (no heat, imminent loss of heat due to less than 3-day supply of fuel, final notice of utility termination, threatened eviction within 72 hours for renter whose rent includes heat).
Eligibility	-Income must not exceed 200% of federal poverty level. -Renters in non-subsidized housing whose rent includes heat are eligible to receive 30% of monthly rent. -Renters in public housing/subsidized housing who pay directly for heat AND receive heat allowance from their subsidy source are eligible for 50% of benefit level for income range.
Benefit Level Determination	-Baseline benefit determined by income and household size. -High energy benefit determined by household vulnerability to high energy costs. LIHEAP creates expenditure thresholds for each type of fuel based on annual reporting of LIHEAP household energy consumption. Households above the threshold receive an additional high energy benefit.
Application Process	-New applicants must apply in-person at their local administering agency (21 around the state, some with satellite offices). Returning applicants receive re-certification letter in the mail. -Applicants must document previous four weeks of income of all household members over the age of 18. Must also provide latest heating bill.
Program Dates	-The program year runs from October 1st to September 30th. -Applications for heating and crisis assistance are accepted from November 1st through April 30th. -Applications for weatherization assistance are accepted year round.
Sources: Department of Housing and Community Development; LIHEAP Detailed Model Plan, Public Law 97-35, As Amended; Interviews with energy directors at community action agencies, conducted from March to August 2006.	

[iv] See Appendix V for a list of agencies that administer LIHEAP and other energy assistance programs in Massachusetts.

First-time applicants must apply in person at their local community action agency, and prior recipients are automatically mailed re-certification forms in the fall. Eligibility is based on household size and income, which cannot exceed 200% of federal poverty level. While some states issue benefit checks to participants, in Massachusetts the local community action agency administering the program makes payments directly to the recipient's utility or fuel vendor.

Setting the LIHEAP benefit level

The annual process of determining the LIHEAP benefit is characterized by substantial uncertainty, as noted by both energy advocates and utility companies.[91] Each fall, DHCD sets the LIHEAP benefit levels for the coming program year based on the projected federal LIHEAP appropriation (see Table 2). In addition to regular federal funding, the program may receive federal contingency funds or supplemental state funds during the program year. Massachusetts received federal contingency funds in 1994, 1995, 1997, and 2001-2004. In addition, the state added supplementary LIHEAP funds in 2005 and 2006.

Table 2. Massachusetts Final LIHEAP Benefit Levels (by Income) for 2006

Household income (% of federal poverty level)	Household income for family of four	Baseline benefit: Non-subsidized housing tenants	Baseline benefit: Subsidized housing tenants	High energy use benefit	Maximum benefit
At or below 100%	$18,850	$1,049	$625	$75	$1,124
At or below 125%	$23,563	$945	$575	$65	$1,010
At or below 150%	$28,275	$855	$530	$55	$910
At or below 175%	$32,988	$775	$490	$50	$825
Up to 200%	$37,700	$775	$490	$50	$825

Source: FY 2006 Low Income Home Energy Assistance Program Maximum Income and Benefit Levels, Massachusetts Department of Housing and Community Development. Available online at http://www.mass.gov/dhcd/components/cs/1PrgApps/LIHEAP/chart.pdf

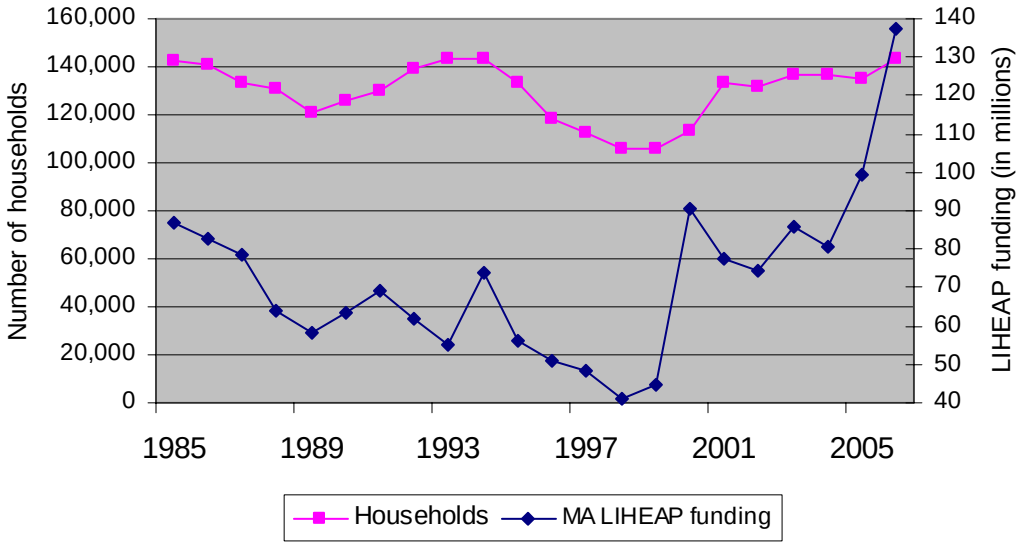
The benefit level often changes throughout the program year because when DHCD initially sets the benefit level, it must do so without knowing the actual federal funding amount, if the state will contribute funds, or if the federal government will release contingency funds. For example, DHCD initially set the maximum benefit level at $684 for fiscal year 2006, based on the projected federal appropriation. When the Massachusetts legislature passed the 2005 Energy Bill, providing an additional $20 million in LIHEAP funding, DHCD was able to increase the maximum benefit to $840. Finally, when the federal government released contingency funds to Massachusetts in March of 2006, the maximum benefit increased to $1,124.[84]

LIHEAP funding and benefit level determine the maximum number of recipients

Because LIHEAP is not an entitlement program, the amount of total program funding combined with the benefit level determines how many people the program can serve. Setting a high benefit level means that the program can serve fewer households, but those who participate will receive more assistance in paying their energy bills. If the benefit level is low, the program can serve more people, but each participating household receives less substantial assistance. DHCD and its LIHEAP advisory group aim to strike a balance between these two objectives–serving a large number of households, and giving households a significant amount of assistance–when they set the LIHEAP benefit level.

Figure 1 shows the trends of LIHEAP participation and combined federal and state funding in Massachusetts. Participation roughly follows program funding, with the exception of a sharp increase in funding in 2004 that was not accompanied by an increase in participation. Clearly, factors in addition to funding levels must contribute to participation rates. However, throughout this period, only a proportion of eligible families have actually sought this benefit.[11]

Figure 1. LIHEAP Funding and Number of Participating Households in Massachusetts, 1985-2006



Note: Funding includes federal funds, both regular and contingency, as well as state funds.
Source: Massachusetts Department of Housing and Community and Development.

Who receives LIHEAP benefits in Massachusetts?

In the 2006 program year, 143,309 Massachusetts households received heating, weatherization, or crisis assistance from LIHEAP (see Table 3). The majority are deemed vulnerable by one or more of the federal program criteria. More than one third have an elderly member, more than 20% have a disabled member, and a significant number have young children. Over two-thirds, or 106,049, are female-headed households.

In Massachusetts there are also many vulnerable families with children who do not receive LIHEAP. There are approximately 189,600 low-income households with children in Massachusetts who are likely LIHEAP eligible. Similarly, there are over 400,000 children in low-income families, 173,099 of whom live below the poverty line, and 56,715 who are five years old and younger.[1]

Table 3. Characteristics of Massachusetts LIHEAP Participants, 2006

Household Characteristics	Number of Households
Total households served	143,309
Household Types	
- Headed by a female	106.049
- With at least one elderly member	49,551
- With at least one disabled member	32,749
- With at least one child 2 or under	16,627 *
- With at least one child 3 to 5	17,996 *
Household Income levels	
- 0 - 100% of federal poverty level	57,302
- 101 - 125% of federal poverty level	26,105
- 126 - 150% of federal poverty level	23,995
- 151 - 200% of federal poverty level	35,907
Household Income	
- Social Security (SS, SSI, EADC)	97.426
- Wages	48,041
- Pension	15,050
- TANF	14,390
- No income	1,057
Housing Type	
- Renters	92,661
- Homeowners	50,648
- Subsidized housing tenants	32,588

* Households that include both children under 2 and between 3 and 5 may be counted in both categories.

Source: Year-to-date numbers from Massachusetts Department of Housing and Community Development, 9/8/06.

Other energy assistance programs in Massachusetts

Massachusetts families seeking home heating assistance who do not meet the income criteria for LIHEAP, or who have exhausted their LIHEAP benefits, have several other energy assistance options. Some, like LIHEAP, address only home heating, while others address total energy needs.

Non-profit home heating assistance

The primary non-profit organizations that provide heating assistance in Massachusetts are the Salvation Army Good Neighbor Fund and Citizens for Energy. Table 4 provides an overview of these programs, both of which provide a one-time benefit per heating season.

Table 4. Private Heating Assistance Programs

Program Component	Salvation Army Massachusetts Good Neighbor Fund	Citizens Energy Oil
Description of Benefit (Winter 2005-2006)	-$275 maximum benefit per winter. -Benefit level fluctuates year to year depending on program funds.	-One delivery of up to 200 gallons of home heating oil at 40% discount per winter. -Customer must pay cash on delivery. -Benefit fluctuates year to year based on negotiated discount with vendors.
Eligibility	Household income between 200-250% federal poverty level.	No strict income limits. Households must be facing financial hardship, and either not be eligible for LIHEAP or have used up all LIHEAP benefits.
Enrollment	Usually via referral from community action agency.	-LIHEAP households that have exhausted their LIHEAP benefit are automatically sent a letter authorizing delivery of discounted oil. -Non-LIHEAP households usually referred via community action agencies.
Number of households served	Disbursed $12.6 million to 62,500 households over last 11 years, or approximately 3,125 households per year (no annual data available).	In 2006, about 8 million gallons available at discount, enough to supply 40,000 families with one 200-gallon delivery.

Sources: http://http://www.magoodneighbor.org, http://www.http://www.citizensenergy.com.

Some community action agencies also disburse small grants from the Federal Emergency Management Agency (FEMA) for home heating assistance. These grants provide one-time payments to households that are facing heat or utility shut-offs and have exhausted all other types of assistance. In addition, community action agencies may have access to other small grants or funds provided by private, municipal, or other local programs.

Utility discounts

Any Massachusetts resident who is eligible for LIHEAP is also eligible for discounted electricity, gas, and telephone rates from investor-owned utilities. (Municipal-owned utilities do not offer low-income discounts.) These discounts vary among the utility companies, but are generally between 20 and 35% of a household's bill. The discount applies to distribution or transition charges, and not to the actual cost of the fuel. Thus, these discounts are eroded by rising energy prices. Usually, those who receive LIHEAP are automatically enrolled in discount programs by the community action agency administering their LIHEAP benefits. Also, some public assistance programs such as Temporary Assistance for Needy Families and Food Stamps allow participants to enroll simultaneously for discounted utility rates.

Weatherization assistance program

There is also a state-run program, the Low Income Weatherization Assistance Program, that provides households with comprehensive energy conservation services. These may include air sealing to reduce infiltration, insulation, and limited energy-related repairs. Families also receive an evaluation of the heating system in their homes, as well as health and safety testing of all combustion appliances. All services are delivered at no cost to participants. Homeowners and renters with their landlord's permission are eligible to participate in the program. Priority is given to those households whose members are elderly, disabled, young (6 years and under), LIHEAP high-energy users, and Native Americans.

Arrearage management programs

Though not a cash benefit, another strategy to assist low-income families is arrearage management. An arrearage is an unpaid utility debt, often accumulated over a series of months or even years.[v] The 2005 Massachusetts Energy Bill required all investor-owned utilities to design and implement arrearage management programs.[92] Energy advocates and many utility companies have worked together to develop these programs, which vary considerably among utility companies. An important feature of each of these plans is arrearage forgiveness, in which a family pays a specified amount of their bill on a regular basis, and eventually part of the debt is forgiven by the utility company.

Energy directors at community action agencies assist families with arrearages in setting up arrearage management plans. Appropriate guidance about what the plans entail and the importance of making regular payments is crucial because if families default on their plan, it is very difficult to obtain one in the future.

Summary

LIHEAP and other energy assistance programs provide valuable home heating and energy assistance to low-income families in Massachusetts. Because LIHEAP funding fluctuates from year to year, so do the benefits available to families. Many Massachusetts families who receive LIHEAP have young children, elderly, or disabled members, and many are female-headed households. The next section describes the growing gap between energy prices and LIHEAP benefits, and the impact of high energy costs on vulnerable, low-income families.

[v] For a detailed discussion of arrearages, see Section 3.

3 The Impact of High Energy Costs on Low-Income Families in Massachusetts

Low-income families face substantial energy burdens

In the northeastern U.S., home heating makes up about 44% of a household's total energy expenditures, which includes space and water heating, space cooling, refrigeration, and other electric appliances.[11]

Table 1 illustrates that the heating expenditures of low-income families are proportionally much higher than those of higher income households. Of note, families in the Northeast have substantially higher energy burdens compared to the rest of the country. Low-income families in the Northeast receiving LIHEAP, who are even more vulnerable than their other low-income peers, spend an average of 11.6% of their income on heating their homes.

Table 1. Total Energy and Home Heating Burden and Expenditures by Income Level, 2003

	NORTHEAST				NATIONWIDE			
	Average total energy burden	Average total energy expenditure	Average home heating burden	Average heating expenditure	Average total energy burden	Average total energy expenditure	Average home heating burden	Average heating expenditure
LIHEAP households	22.9%	$1,816	11.6%	$869	18.9%	$1,515	8.6%	$646
Low-income households	17.2%	$1,543	8.2%	$685	13.6%	$1,304	5.1%	$463
Higher income households	8.1%	$1,999	1.5%	$867	3.0%	$1,631	1.0%	$533

Source: LIHEAP Home Energy Notebook for Fiscal Year 2003.

Making Ends Meet?

Four out of 10 Massachusetts households that receive LIHEAP live below the poverty line, meaning they live on less than $20,000 for a family of four per year. To put these numbers in context, Table 2 shows estimated basic living expenses for a family of four in three

Massachusetts cities.[vi] They show that a Massachusetts family of four with an income of 200% poverty level has between a $345 and $1,326 monthly deficit in meeting basic needs. Using similar methods, the Economic Policy Institute, estimated monthly deficits to be between $1,400 and $2,100 for families living in the same three Massachusetts cities in 2004.[93]

Table 2. Basic Living Expenses vs. Income in Three Massachusetts Cities

	Boston	Worcester	Springfield
2-bedroom apartment (including utility costs)	$1,343	$ 785	$ 674
Food	$ 554	$ 554	$ 554
Child Care	$ 1,226	$ 1058	$ 942
Transportation	$ 114	$ 433	$ 444
Health Care	$ 267	$ 244	$ 248
Other necessities	$ 350	$ 307	$ 286
Taxes	$ 876	$ 692	$ 602
Tax Credits	- $180	- $180	- $180
Monthly total	$ 4,551	$ 3,893	$ 3,570
Monthly income for family of four at 200% of poverty level	$ 3,225	$ 3,225	$ 3,225
Deficit	**- $ 1,326**	**-$ 668**	**- $ 345**

Sources: Pearce, D. and Brooks, J. The Self-Sufficiency Standard Report for Massachusetts. The Women's Educational and Industrial Union, 2003.

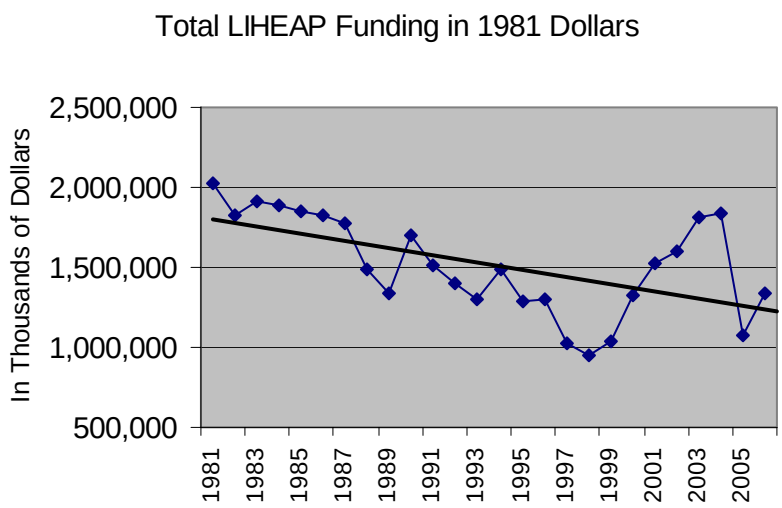
Substantial energy burdens add to the gap between income and basic needs, placing families in the precarious position of having to make budget trade-offs that affect child health.

Low-income families caught in the gap between rising energy prices and lagging LIHEAP benefits

Low-income families in Massachusetts and around the country are in critical need of assistance to pay their continually increasing energy bills. Since LIHEAP began in 1981, energy prices have risen steadily, with more substantial increases from 2002-2006.[83] Yet, when adjusted for inflation, LIHEAP funding has decreased 34% from 1981 to 2006 (Figure 1). While Congress authorized $5.1 billion in federal LIHEAP spending for each fiscal year from 2005-2007, it appropriated only $ 2.2 billion in 2005 and $ 3.2 billion 2006.[94] In Massachusetts, the price of heating oil in June 2006 was twice what it was 3 years ago.[95] Although heating oil prices have decreased somewhat since June, the projected energy costs for low-income families are still substantial. As calculated by the Energy Information Administration within the U.S. Department of Energy, the average projected cost of heating a home with oil in the Northeast for winter 2006-2007 is $1,559, up $105 from the previous winter.[83]

[vi] These figures are based on 2003 Fair Market Rents, USDA guidelines for a low-cost food plan, the National Travel Household Survey (transportation costs), child care costs reported by the 2000 Child Care Market Rate Survey, estimated insurance costs, Medical Expenditure Panel Survey, the Consumer Expenditures Survey (for transportation, and for other necessities like clothing), and tax rates and credits for 2003.[93]

Figure 1. Total Federal LIHEAP Funding in 1981 Dollars, 1981-2005



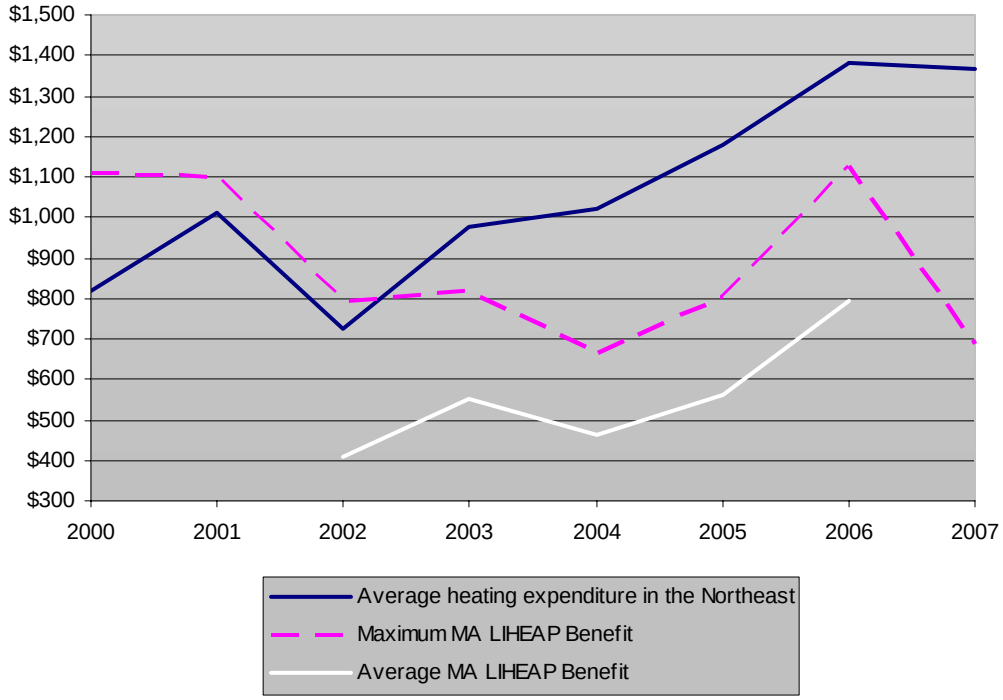
Source: Low-Income Energy Programs Funding History, 1977-2006, available at http://www.liheap.ncat.org/Funding/lhhist.htm

How are LIHEAP benefits holding up against rising energy prices in Massachusetts? Figure 2 shows the average annual home heating expenditure in the Northeast from 2000-2007, as well as the maximum LIHEAP benefit. The average benefit that participants received is also provided for years 2002-2006, the years for which these data are available. After 2002, the maximum LIHEAP benefit dipped below the average heating expenditure in the Northeast. Of note, the average LIHEAP benefit from 2002-2006 was:

- One-third less than the maximum benefit amount, and
- About half of the average heating expenditure in Massachusetts.

Many families who participate in the program receive less than the maximum benefit, and only receive enough money to cover half of the average home heating costs. These families exhaust their LIHEAP benefit well before the end of winter.

Figure 2. Massachusetts LIHEAP Benefit and Average Home Heating Costs in the Northeastern U.S., 2000-2007



Note: Expenditures for 2007 are estimated based on projected fuel prices and weather. Average heating expenditures are weighted by types of heating fuel used in the Northeastern U.S. per the Residential Energy Consumption Survey, 2001.

Sources: Average and maximum LIHEAP benefit: Massachusetts Department of Housing and Community Development. Average home heating expenditures: Short-Term Energy Outlook, October 10, 2006. Energy Information Administration.

The LIHEAP benefit gap widens in 2007?

The maximum benefit level for Program Year 2007 is currently set at $684, a sharp decline from the 2006 maximum of $1,124.

- The 2007 benefit is based on the projected federal appropriation for the program, and it assumes that no additional funds will be provided by Massachusetts or by federal contingency funds.
- Without additional funds, the gap between the average home heating expenditure and the maximum LIHEAP benefit will be $682, the largest it has been since LIHEAP began.

The need for a home energy insecurity scale to measure the complete picture of energy burden

There is a need for a reliable, easy-to-use measure of the impact of energy costs on family well-being. One example of such a measure has been proposed by the Division of Energy Assistance, the office within the U.S. Department of Health and Human Services that administers LIHEAP. Their Home Energy Insecurity Scale would "allow the [energy assistance] program manager to capture all aspects of low-income affordability.[10] This scale would enable energy assistance programs to assess initial and subsequent energy self-sufficiency of households before and after receipt of energy benefits, providing a quantitative evaluation of the impact of these benefits. The proposed scale is comprised of 11 questions that have been adapted from the measures of food insecurity developed by the U.S. Department of Agriculture.[vii] The questions are organized into 5 basic categories that contribute energy insecurity:

- Receipt of outside assistance, including from friends and family, to pay energy bills.
- Constraints on energy usage, such as whether families turn off hot water or heat to certain rooms because of high energy bills.
- Constraints on household necessities, including involuntary disruption of energy service or reduction in expenditures on basic needs like food or medicine.
- Nonpayment of energy bills, including whether a family has received disconnection notices or experienced discontinuation of fuel deliveries.
- Financial strain, including families' worry and concern regarding not being able to pay their bills.[10]

Information obtained in these 5 categories would be combined to assess families along a continuum of home energy self-sufficiency that includes the following 5 statuses - **thriving, capable, stable, vulnerable, in-crisis.** Energy assistance programs can then monitor how families change their status, depending on whether energy benefits were received. This scale may not be the one ultimately utilized by all key stakeholders, but it illustrates the feasibility of such a measure.

The impact of rising energy prices & increasing energy burden on Massachusetts families

The growing gap between energy costs and LIHEAP benefits has a significant negative impact on Massachusetts families and their children. As outlined in Section 1 of this report, the substantial energy burden experienced by many low-income families has impacts on child health in several important ways, even after the winter heating season is over. Table 3 summarizes these effects:

[vii] See Appendix II for a list of individual items that comprise the Home Energy Insecurity Scale.

Table 3: Pathways of the Impacts of Unaffordable Energy on Low-Income Households

Mechanism	Short-Term Impacts	Medium & Long-Term Impacts
High energy costs force budget trade-offs that jeopardize child health. Families spend less on food, medications, and housing in order to pay high energy costs.[2,3,4]	- *"Heat or eat"* - food insecurity & other nutritional risk due to trade-offs between energy and food expenditures - Seasonal food insecurity	- Poor growth - Malnutrition – infection cycle leading to increased illness - Cognitive, developmental deficits of malnutrition affecting school performance
High energy costs force the use of risky alternative sources of heat. Families use ovens, stoves, space heaters, or fireplaces to replace or augment primary heating systems.[5,6,7]	- Increased risk of contact burns - Increased risk of carbon monoxide poisonings - Increased risk of house fires	- Possible long-term health consequences of burns, carbon monoxide exposure - Economic impact of preventable hospitalizations
High energy costs combined with unaffordable housing force families to endure unhealthy housing conditions. High energy costs contribute to budget constraints limiting families' ability to afford appropriate housing, resulting in exposure to unhealthy housing conditions: - Rodent & cockroach infestation - Water leaks and mold - Peeling paint and lead paint[8]	- Increased incidence & severity of asthma - Increased incidence of lead poisoning - Preventable injuries from fires, burns, falls - Increased rates of infectious diseases, such as diarrhea and respiratory conditions	- Increased health care utilization, including emergency department visits and hospitalizations - Missed school due to illness - Cognitive and developmental deficits due to lead poisoning
High energy costs result in unpaid bills, arrearages and utility disconnection. Families make partial rent or mortgage payments or miss an entire payment because of unaffordable energy bills.	- Potential cold exposure - Increased use of alternative heating sources (see above) - Possible loss of utilities required for basic health and safety: light, refrigeration, cooking, water heating - Increased risk of housing instability due to utility disconnection	- Adverse physical health impacts, including lack of primary care, untreated or undertreated medical conditions, growth delay - Adverse mental health impacts, including anxiety, depression, behavioral disorders - Adverse behavioral, developmental and educational impacts, including developmental delay, grade repetition

Decreasing energy affordability means more utility arrearages and disconnections

Low-income families' struggles to pay high energy bills do not end when the warm weather returns. The arrearages low-income families face at the end of the heating season mean that the health impacts of high energy costs will continue throughout the year. With the decreasing buying power of the LIHEAP benefit, even Massachusetts families who receive LIHEAP are facing increasingly large arrearages. Many of the community action agencies that administer LIHEAP report that a growing number of clients are in arrears, and these arrearages are increasing in amount, up to $5000 in some cases.

A Massachusetts family faces growing arrearages

A single mother of four children, Ms. T transitioned from public assistance to a job as a hair-dresser, earning $960 a month. Frequent doctor appointments and emergency room visits for her two children with asthma prevent her from working more than 20 hours a week. Her income, along with food stamps and supplemental security income for one of her sons, is insufficient to cover her rent, child care costs, car insurance, and energy bills. She pays some part of her utility bills every month, even if she cannot pay the entire bill, but has accrued a $6,000 arrearage for her gas service. LIHEAP benefits together with utility shut-off protection, which she must keep current by submitting appropriate documentation every 90 days, prevent her from losing her gas service. LIHEAP benefits are crucial in allowing her to make payments against her arrearages and keep the gas service on for her vulnerable family.

Shut-off protections

As described in Section 1, households that accumulate large arrearages are in danger of having their utilities disconnected. Energy advocates and fuel directors work with their clients to prevent these disconnections, which can have devastating effects on the health and safety of the household. Massachusetts has some of the most comprehensive shut-off protection statutes in the country. These include:

- Protection from disconnection any time of year for households that demonstrate "financial hardship" and have a member who is seriously ill or under 12 months old (provided that service has not been shut-off for non-payment before the birth of the child). A family seeking protection due to illness must obtain documentation from their physician.

- Protection from disconnection from November 15th to March 15th, regardless of payment status. (This shut-off "moratorium" is often extended to April 1st.) This protection also requires proof of financial hardship.

- Protection from disconnection any time of year for households in which all members are over the age of 65, regardless of financial status.[96,97]

Of note, families that are able to secure shut-off protection continue to accrue unpaid bills during the protection period. When the protection period ends, they are left with significant debt and face almost certain utility disconnection.[viii]

Energy directors at the community action agencies that administer LIHEAP describe a vicious cycle of arrearages. Families who experience arrearages and subsequent utility disconnections in the prior winter often use their entire LIHEAP benefit for the current winter to pay down the arrearage in order to have their service restored. This leaves them without assistance for the remainder of the heating season, setting them up to accrue more arrearages. When the shut-off moratorium ends in the spring, their utilities are disconnected again, leaving them without gas for cooking, hot water, or heat.

No shut-off protection for oil heat

The comprehensive shut off protections in Massachusetts do not apply to oil companies and therefore, they are not required to deliver fuel to a household that has unpaid arrearages.

Almost 30% of Massachusetts LIHEAP recipients heat their homes with oil.[98] These families are at risk of going without any heat if their LIHEAP benefits are depleted and they cannot afford more oil.

Lack of data on arrearages and shut-offs prevents tracking their impact

There are no reliable data on the number or size of arrearages experienced by Massachusetts households, making it difficult to assess fully the impact of this growing problem. The Massachusetts Department of Telecommunications and Energy (DTE), which regulates the investor-owned utilities, does not enforce existing requirements for companies to report these data. Some utilities report arrearage and disconnection data, but none report them consistently.

In its report "Tracking the Home Energy Needs of Low-Income Households through Trend Data on Arrearages and Disconnections," the National Energy Assistance Directors Association together with the National Consumer Law Center recommend collecting the following data from each utility company:

- Number of residential customers, and number who are low-income;
- Number of residential customers in arrears, and total dollar amount of arrears;
- Number of low-income customers in arrears, and total dollar amount; and
- Number of residential disconnections and low-income disconnections.[9]

If these data were reported regularly to DTE, then aggregated and made publicly available, public officials would be better able to estimate how many families in Massachusetts are facing potential negative health impacts resulting from unaffordable energy. The state might use these data to lobby for the release of Federal LIHEAP contingency funds,

[viii] This type of energy assistance is unique among benefit programs because it creates a "safety-net debt." Families are left with a substantial unpaid bill after receiving assistance to pay for a basic need—home energy.

designed to address increases in utility shut-offs. Also, service providers, such as community action agencies and doctors, could anticipate better the needs of their clients and patients. For these reasons, it is critical that DTE enforce requirements for reporting of arrearage and shut-off data from the utilities.

Summary

Low-income families face a substantial home energy burden, which puts their children's health and well-being at risk. These families are caught in the gap between sharply rising energy prices that are outstripping LIHEAP benefits. The child health impact of this increasing energy burden occurs through four primary pathways: 1) shifts in family budget from basic needs like food and medicine toward energy costs; 2) the use of risky, alternative heat sources to offset high energy bills; 3) the combined strain of high housing and energy costs limiting choices for acceptable housing conditions, and 4) the accumulation of large unpaid energy bills that result in utility disconnections. A lack of sufficient data on utility arrearages and disconnections makes it difficult to track the risks we know families face. The next section summarizes our findings and offers recommendations for changes in energy assistance that might help protect low-income families and their children.

4 Summary & Recommendations

The available evidence reveals that unaffordable home energy has preventable, potential consequences on the health and well-being of the more than 400,000 Massachusetts children living in low-income households.[1] Low-income families are caught in the gap between rising energy prices and available energy assistance. Energy assistance falls far short of the need, especially when there is a spike in energy prices, such as following Hurricane Katrina in 2005. In addition to the exceedingly high housing costs in Massachusetts, our climate means low-income families spend more of their income on home energy (energy burden) to keep warm than families in other regions of the U.S.

- **Low-income families facing disproportionately high energy costs are forced to make household budget trade-offs that jeopardize child health.** Families with a high energy burden often spend less money on food and health care. Seasonal food insecurity resulting from high energy costs has a substantial impact on child health. In addition, families may miss rent or mortgage payments to pay energy bills, resulting in housing instability.

- **Families facing high heating costs resort to alternative heat sources that jeopardize child health and safety.** In an effort to reduce home heating costs, families use alternative heat sources, such as kerosene space heaters or fireplaces. Up to 25% of families that lose their primary source of heating use space heaters or ovens and stoves, risking contact burns, carbon monoxide exposure, and especially deadly house fires.

- **High energy costs combined with unaffordable housing create important budget constraints that force low-income families to endure unhealthy housing conditions that threaten child health**. The constraints that high energy costs place on low-income families reduce their ability to afford appropriate housing, increasing the likelihood that they and their children experience unhealthy housing conditions, such as rodent infestation, water leaks, mold, and lead paint.

- **The growing gap between rising energy prices and LIHEAP benefits means more Massachusetts families accumulate substantial unpaid utility bills, leading to arrearages and disconnections that adversely affect child and family well-being**. As the gap between energy prices and LIHEAP benefits increases, Massachusetts families struggle to pay their utility bills. While utility shut-off protections in the Commonwealth are strong, the limited data available suggest that arrearages are growing dramatically for low-income families. Families eligible for shut-off protection face substantial debt and disconnections when their protections expire.

- **The negative child health impacts of unaffordable home energy extend well beyond the winter heating season**. Due to overwhelming utility arrearages, families' difficulty in paying their home energy bills becomes a year-round problem. Although families may avoid utility disconnection during the winter, they face it in the spring when the moratorium on shut-offs is lifted. Similarly, families make budget trade-offs even in warmer months, spending less on food, medical care, and housing, so they can pay down arrearages accumulated during the winter.

Recommendations

This report documents the compelling evidence that unaffordable energy costs adversely affect the health of low-income children. The next step is for policy makers, agency officials, local service providers, and other key stakeholders to take action to protect children from these preventable unhealthy consequences. The following recommendations offer strategies to avoid the public health impact of unaffordable energy through expanding outreach and access to energy assistance programs and increasing relevant information available to policy makers and energy program directors.

Funding Recommendations

1. **Given the continued gap between energy costs and LIHEAP funding, the federal government should fully fund LIHEAP at the maximum authorized level of $5 billion to allow an increase in both participation and benefit level.** Because energy benefits play an important role in buffering low-income children from the adverse health effects of high energy costs, we should encourage increased participation in LIHEAP, which will certainly require additional funding. Recognizing that LIHEAP is not an entitlement program, if increased participation is not matched by a corresponding increase in funding, benefit levels would be reduced to an inadequate level.

2. **To increase LIHEAP benefit levels for vulnerable Massachusetts families, the Massachusetts state government should allocate supplementary funds for LIHEAP**. In 2005 and 2006, the Massachusetts legislature wisely decided to supplement federal funding with a state appropriation, allowing benefits to be increased to a more meaningful level. For the benefit of the Commonwealth's children, they should continue to do so.

Programmatic Changes

3. **To highlight the connection between high energy costs and child health, LIHEAP should extend outreach to clinicians and health care settings.** Currently, there is inadequate data to explain why more eligible families do not apply for important LIHEAP benefits. However, it is our clinical experience that many low-income families who face substantial energy burdens are not aware that they are eligible for LIHEAP or other energy assistance. Health care settings would be important sites to identify potentially eligible low-income families with children. As part of a complete social history designed to uncover potential risks to child health, health care providers should screen for home energy insecurity and make appropriate referrals to energy assistance programs. In addition, the programs that administer LIHEAP should enroll families at clinical sites, such as neighborhood health centers, that serve the vulnerable populations specifically targeted by LIHEAP.

4. **LIHEAP administrators should consider an initiative to provide energy and utility assistance, through LIHEAP or other energy assistance programs, to low-income families who are eligible for housing subsidies but spend years on waiting lists before they receive them.** These families are clearly economically vulnerable since they have already met eligibility standards for housing subsidies. Subsidizing their energy costs while they await housing assistance would help buffer their children from the double jeopardy of both unaffordable housing and energy costs which threatens their health and well-being.

Data Collection

5. **The state should enforce the existing requirement that utility commissions collect and report data on arrearages and utility disconnections to the Department of Telecommunications and Energy to address the important gaps in this data that undermine the state's ability to request the release of emergency LIHEAP funds.** The National Energy Assistance Directors Association together with the National Consumer Law Center have highlighted the importance of collecting these data to document trends in arrearages and disconnections, useful in establishing an emergency situation as defined in the LIHEAP statute. [9] NEADA and NCLC have outlined a template of three tiers of data that could be obtained – some should be immediately available from utilities, whereas others may take additional resources.[ix] Local service providers could use this information to assess the full impact of this problem on low-income families and their children.

6. **Energy assistance programs should explore the utility of a home energy insecurity scale, such as the one proposed by the Division of Energy Assistance, the office within the U.S. Department of Health and Human Services that administers LIHEAP**.[10] Such a scale would allow energy assistance programs to assess initial and subsequent energy self-sufficiency of households before and after receipt of energy benefits, providing a useful evaluation of the impact of these benefits.

[ix] See Appendix III.

Appendices

I. Child Health Impact Assessment: Rationale and Methodology

Child health is inherently dependent on the social well-being of the family. Social or non-medical factors influence both the development of childhood disease and the severity of disease once it develops. Public health and health care are crucial vehicles for promoting child health and well-being. However, many of the social determinants of child health are not under the explicit purview of pediatricians or public health officials. Rather, there are many local, state and national agencies and departments that exert regulatory and programmatic control over these social determinants, and thus have a significant impact on child health. It is unclear to what extent these non-health related agencies consider the implications of their policies and regulations for child health and well-being.

In order to make the relationship of public policy to child health, especially socially or economically vulnerable children, more comprehensible to policy makers, and the public, in the fall of 2004, the Department of Pediatrics at Boston Medical Center, Boston University School of Medicine convened an interdisciplinary, inter-institutional working group to develop a Child Health Impact Assessment strategy (CHIA). This working group, which includes representatives from Boston University School of Medicine, Boston University School of Public Health, Brandeis University, Children's Hospital, Boston, Harvard Medical School, Harvard School of Public Health and University of Massachusetts, Boston, discussed the need to provide a formal Child Health Impact Assessment on various policies being proposed in the Commonwealth of Massachusetts. A CHIA is conceptualized as analogous to an environmental impact assessment, which is a required step in any project that might have a direct or indirect impact on the environment. The goal of a CHIA is to provide a mechanism to evaluate the impacts and implications of policy, regulations and laws on children's health and well-being, with a particular focus on policy arenas outside the traditional realm of public health and health policy, including: education, housing and landlord/tenant laws, immigration and naturalization, criminal justice, and employment and income supports.

Drawing on the expertise of a wide range of stakeholders in the university as well as the public and private sectors of the Commonwealth, The CHIA Working Group is committed to carrying out health impact assessments on public policies that impact children's health and exacerbate health inequalities. The CHIA process involves a practical, inexpensive, timely review of research evidence, a policy appraisal with participation of key stakeholders, and a report to the Commonwealth on the findings of the research and analysis, with recommendations. After reviewing many health impact assessment models previously developed in Canada and Europe, the CHIA Working Group decided to modify the European policy Health Impact Assessment for its purpose.[99,100,101] Although the health impact assessment concept has been implemented abroad, it has only been used sporadically in the United States.[102,103]

Child Health Impact Assessment – Pilot Analysis of the Massachusetts Rental Voucher Program

The CHIA Working Group recognized the need to demonstrate the utility and feasibility of the CHIA concept and therefore initiated a pilot analysis process. The criteria for the issue to be analyzed included: potential impact on children, availability of rigorous research and clinical data, saliency for policy makers and relevance to the Commonwealth. After careful review of potential topics, the CHIA Working Group chose as its first topic, affordable housing for the pilot analysis. The Working Group determined that highlighting the connections between affordable housing and child health and well-being would illustrate the function of a child health impact assessment. The CHIA Working Group's report, *Affordable Housing and Child Health: A Child Health Impact Assessment of the Massachusetts Rental Voucher Program*, was released in June 2005.

Child Health Impact Assessment Methods

The goal of CHIA is to provide compelling, quantifiable, objective evidence to policymakers about the potential child health and well-being impacts of a policy, to influence the consideration of child health impacts in general, and to reduce negative impacts on child health in the Commonwealth. The CHIA analysis is based on previously collected data and best available scientific evidence. The type of data collected includes: academic and other research, government databases, advocacy websites, as well as interviews with key stakeholders.

During data collection, the CHIA working group collected evidence on LIHEAP, home energy costs and their effects on a child's basic needs including education, housing, food, access to health care, safety and stability, and the physical environment. A thorough literature search for appropriate evidence was conducted through Medline, PubMed, Web of Science, First Search, and Science Direct. The literature review was followed by extensive key stakeholder interviews to gather evidence from the experience, knowledge, opinions and perceptions of people with expert knowledge in the energy assistance area, including representatives of relevant national, state, and community government and non-profit agencies and advocacy groups. These interviews provided a broader picture of health determinants affected by energy assistance, including how stakeholders and experts think energy assistance impacts children's health outcomes and why. For an overview of themes from stakeholder interviews, see Appendix IV.

II. Home Energy Insecurity Scale

The following questions were developed by the Division of Energy Assistance within the Administration for Children and Families, U.S. Department of Health and Human Services, to gauge energy self-sufficiency.[10] The responses to these questions are used to place families within the scale of energy self-sufficiency: **thriving, capable, stable, vulnerable, in-crisis**. The questions are meant to refer to the prior 12 months and have 3 possible responses: "often true", "sometimes true" and "never true."

1. I/We worried whether my/our home energy bill would become overdue before I/we could get money to pay it.

2. Our home energy bill became due, and I/we didn't have the money to pay it without somebody's help.

3. I/We couldn't afford to heat or cool our home to the temperature we wanted it to be, or to use our water or appliances to the extent we wanted to use them.

4. I/We reduced our energy consumption to uncomfortable or inconvenient levels because I was/we were running out of money to pay our home energy bill.

5. I/We could not use our entire home because we could not afford to heat or cool it.

6. In the last 12 months, did you ever leave your home for all or part of the day because there wasn't enough money for the home energy bill, or, did you ever turn off your hot water because there wasn't enough money for the home energy bill?

   6a. If Yes above – How often did one or the other of these happen – almost every month, some months, but not every month, or only in 1 or 2 months?

7. In the last 12 months, did you ever not pay your home energy supplier because there wasn't enough money for the home energy bill?

   7a. If Yes above, How often did this happen -- almost every month, some months, but not every month, or only in 1 or 2 months?

8. In the last 12 months, did you ever use your kitchen stove or oven to provide heat because there wasn't enough money to pay your home heating bills?

   8a. If Yes above, How often did this happen -- almost every month, some months, but not every month, or only in 1 or 2 months?

9. In the last 12 months, did you ever reduce your expenses for what you consider to be basic household necessities because there was not enough money to pay for these and to pay your home energy bill?

   9a. If Yes above, How often did this happen -- almost every month, some months, but not every month, or only in 1 or 2 months?

10. In the last 12 months, did you have a supplier of your electric or home heating service threaten to disconnect your electricity or home heating fuel service, or discontinue making fuel deliveries because you could not afford to pay a past-due home energy bill?

    10a. If Yes above, How often did this happen -- almost every month, some months, but not every month, or only in 1 or 2 months?

11. In the past 12 months, did you have a supplier of your electricity or home heating fuel disconnect or discontinue your energy supply because you were unable to pay for a past – due home energy bill?

    11a. If Yes above, How often did this happen -- almost every month, some months, but not every month, or only in 1 or 2 months?

For additional information on how to use and score this scale, see the full report, *Measuring the Outcomes of Low-Income Energy Assistance Programs Through a Home Energy Insecurity Scale*.[10]

III. National Energy Assistance Directors Association (NEADA) Template for Arrearage & Disconnection Data Collection

In a 2004 report, *Tracking the Home Energy Needs of Low-Income Households Through Trend Data on Arrearages and Disconnections* NEADA proposed the following 3 tiers of data collection that would allow states to make the case for emergency situations when they arise, enabling the release of additional LIHEAP funds.[9] Each of the higher tiers requires utility commissions commit progressively more resources.

Tier	Availability	Data to be collected
1	Immediate with no additional resources	▪ Total number of residential accounts ▪ Total number of residential accounts in arrears ▪ Total dollar amount of accounts in arrears ▪ Total number of residential disconnections
2	Available, but requires some additional time and resources	▪ Total number of low-income residential accounts ▪ Total number of low-income residential accounts in arrears ▪ Total dollar amount of low-income accounts in arrears ▪ Total number of low-income residential disconnections
3	Helpful, but not essential to arguing for additional LIHEAP funds	▪ Total number of residential accounts written off as uncollectible ▪ Total number of low-income residential accounts written off as uncollectible ▪ Total number of residential accounts having service restored ▪ Total number of low-income residential accounts having service restored ▪ Total number of residential accounts sent notice of disconnection ▪ Total number of low-income residential accounts sent notice of disconnection ▪ Total number of low-income customer deferred payment agreements

Source: Tracking the Home Energy needs of Low-Income Households Through Trend Data on Arrearages and Disconnections, May 2004, NEADA.

IV. Themes from Energy Assistance Stakeholder Interviews

From March to August 2006, the CHIA Energy Assistance Subcommittee interviewed a number of key stakeholders in the energy assistance field, including state and federal LIHEAP program officers, energy assistance program directors at Massachusetts community action agencies, and numerous energy advocates and researchers at the local, state, and federal levels. Below is a summary of central themes from these interviews.

Federal LIHEAP Funding Level

There was general consensus that federal LIHEAP appropriations have not kept pace with rising energy prices. Energy directors at local community action agencies reported that most families receiving LIHEAP use up their benefits by January, two to three months before the winter heating season ends. Similarly, in the past, Massachusetts LIHEAP benefits were sufficient to buy three tanks of oil but now cover only one. To address these problems, some suggested that federal LIHEAP appropriations be tied directly to regional prices for fuel. Others noted that Congress has authorized up to $5.1 billion for LIHEAP, but only appropriated $ 2.2 billion in FY2005 and $ 3.2 billion in FY2006.[94]

Timing of Releasing Program Funds

Many remarked on the challenges posed by the annual fluctuation of program funding, and the delay of federal LIHEAP appropriations until late in the program year. Often the main federal LIHEAP appropriation is not finalized until January or much later, making it difficult for state LIHEAP officers to set benefit levels on October 1, the beginning of program year.

The delay in federal appropriations also poses a challenge to low-income families and the community action agencies that serve them. Staff from community action agencies provide families a number of services with the aim of increasing overall self-sufficiency, including job training and financial counseling. They emphasize the importance of budgeting year round for seasonal expenses, like home heating. Without knowing the LIHEAP benefit level, however, they are unable to provide concrete information to families on how much assistance they will receive, which makes it difficult for already struggling households to budget their expenses.

The release of federal contingency funds later in the program year, while a welcome boost in funding, also poses a challenge for the agencies that administer LIHEAP. Agency staff must be aggressive in spending down these funds, tracking down LIHEAP recipients and vendors to pay down outstanding utility balances. If the state has contributed funds to LIHEAP, these funds are not spent until the federal dollars are expended. So the agencies are under pressure to spend down these contingency funds, which often come late in the program year, to make sure they can utilize state funds to obtain the maximum assistance for their clients.

LIHEAP Eligibility and Certification

Energy directors reported that many families in need of energy assistance do not qualify for LIHEAP because of the income cut-offs for eligibility, which some stakeholders consider to be too low. Because the cost of living in Massachusetts is high relative to the rest of the country, some argue for basing eligibility on 60% of median state income, rather than federal poverty guidelines.

For those families who do qualify, certifying a household's application for LIHEAP can be a lengthy process, taking six weeks on average. The application requires documentation of four week's of income along with a utility bill. First time applicants must apply in-person at a community action agency or one of its designated satellite offices. To simplify this process,

some energy advocates support moving toward categorical eligibility, a system by which households eligible for public assistance programs such as Food Stamps for Temporary Assistance for Needy Families (TANF) would be automatically eligible for LIHEAP.

Utility Arrearages

Many of those interviewed provided compelling evidence that low-income families' arrearages have increased dramatically over the past few years. There was consensus that an unprecedented number of families were facing unpaid utility bills, and that these arrearages were growing unmanageably large. One energy director reported that between 90 and 100% of her clients are in arrears, many owing $1,500 or more. There are a significant number of households who have large unpaid utility bills at the beginning of the heating season and use their entire LIHEAP benefit to pay down their arrearages and have their utility service reinstated. This leaves them with no LIHEAP assistance to pay the coming year's heating bills, ensuring that their arrearages will continue to grow.

While many stakeholders praised the creation of arrearage management programs, they also highlighted the limitations of these programs. Currently, the maximum amount that can be forgiven under an arrearage management program is $599; larger amounts would be considered income for the customer and would require tax documentation. Also, arrearage management requires budgeting and planning, and works best for households with variable incomes and some flexibility in how they spend their earnings. A family with a fixed income well below what they need to meet their basic needs will be unable to make sufficient adjustments in their household budget to meet the terms of the arrearage management plan.

In creating arrearage management programs, stakeholders emphasized that many of the Massachusetts utility companies have become crucial partners in addressing the challenges facing low-income households. The utilities have worked with energy advocates to create arrearage management programs. An additional suggestion for how utility companies can play an important role would be to make sure each utility has a designated, trained contact person who community action agencies and energy advocates can contact on behalf of their clients who are need of arrearage management.

Overcoming Barriers to LIHEAP Participation

According to recent estimates, only 25% of eligible households receive LIHEAP benefits in Massachusetts.[1,98] Many stakeholders we interviewed believe that the actual proportion is higher because the number of eligible households is inflated by including households for whom energy assistance is unnecessary, such as those living in subsidized housing units where utilities are included in the rent, those living in nursing homes and similar institutions, and college students with little or no income.

Many stakeholders we interviewed reported that efforts to study barriers to LIHEAP participation in Massachusetts have been extensive, as have outreach efforts. However, there is still not a complete understanding of what prevents more eligible families from participating in LIHEAP. Some stakeholders cited a lack of awareness of the different types of energy assistance in Massachusetts as a potential barrier. A significant effort to change this is the Energy Bucks program, a collaboration between local utilities and energy and community advocates to raise awareness about energy assistance, utility discounts, and weatherization programs available to low-income Massachusetts families. Likewise, individual community action agencies reported considerable outreach efforts to increase LIHEAP participation, including distributing informational materials at schools, parent-teacher organizations, and local health fairs.

Despite these efforts, some acknowledged there are significant barriers to participation, especially for working families who are not accustomed to receiving assistance and who

may not realize they are eligible for the benefit. For working families with limited work flexibility, such as vacation leave, going to the office to apply may be difficult. Also, they may worry about the stigma of receiving assistance and are reluctant to ask for help.

Some stakeholders acknowledged the potential implications of increasing participation rates in a program that is not an entitlement program, and in which an increased number of participants would likely reduce the overall benefit level that could be offered to each household.

Redefining the Purpose of LIHEAP

Stakeholders agreed that LIHEAP is a very effective program for those who need temporary assistance in paying for home heating due to unemployment or other financial difficulty. However, many noted that that it might be insufficient for those who are truly unable to pay even a portion of their energy bills. It is very difficult for low-income families on fixed incomes to absorb higher costs of home heating, even with the modest assistance provided by LIHEAP. Many stakeholders noted that home energy is a basic need, like food and shelter, and should be subsidized for very needy families. Because home energy is a basic need, many stakeholders also believe that LIHEAP should be an entitlement program, and not one that depends on annual appropriations.

V. Local Agencies that Administer LIHEAP in Massachusetts

Action for Boston Community Development, Inc. (ABCD)
178 Tremont Street, Boston, MA 02111
(617) 357-6012

Action, Inc.
47 Washington Street, Gloucester, MA 01930
(978) 281-3900
1-800-696-9276 - Toll Free

Berkshire Community Action Council, Inc. (BCAC)
1531 East St., Pittsfield, MA 02101
(413) 445-4503 - Pittsfield
(413) 663-3014 - North Adams
(413) 528-1947 - Great Barrington

Citizens for Citizens (CFC)
264 Griffin St., Fall River, MA 02724
(508) 679-0041 - Fall River
(508) 823-6346 - Taunton
(508) 676-7397 Information

City of Cambridge, Department of Human Services
51 Inman St., Cambridge, MA 02139
(617) 349-6252

Community Action, Inc. (CAI)
25 Locust St., Haverhill, MA 01832
(978) 373-1971 - Haverhill
1-800-332-9004 - Toll Free

Community Action Program Intercity, Inc. (CAPIC)
100 Everett St., Unit 14, Chelsea, MA 02150
(617) 884-6130

Community Teamwork, Inc. (CTI)
517 Moody St., Lowell, MA 01854
(978) 459-6161 - Lowell
(781) 643-2358 - Arlington
1-877-451-1082 - Toll Free

Franklin Community Action Corporation (FCAC)
393 Main St., Greenfield, MA 01301
(413) 774-2310
1-800-370-0940 - Toll Free - Hampshire County

Greater Lawrence Community Action Council, Inc. (GLCAC)
350 Essex St., Lawrence, MA 01840
(978) 681-4950 - Lawrence
(781) 942-9061 - Reading
(978) 664-6011 - North Reading

Lynn Economic Opportunity, Inc. (LEO)
156 Broad St., Lynn, MA 01901
(781) 581-7220, ext. 283

New England Farm Workers Council (NEFWC)
435 Main Street, Suite 3040, Fitchburg, MA 01420
(978) 342-4520

North Shore Community Action Programs, Inc. (NSCAP)|
98 Main St., Peabody, MA 01960
(978) 531-8810 Information only
(978) 531-0767, ext. 136

People Action in Community Endeavors Inc. (PACE)
166 Williams St., New Bedford, MA 02740
(508) 999-9920

Quincy Community Action Programs, Inc. (QCAP)
1509 Hancock Street, 3rdFloor, Quincy, MA 02169
(617) 479-8181 x101

Self Help, Inc. (SHI)
Fagan Drive, Avon, MA 02322
(508) 588-5440 - Avon
(508) 584-1414 - Brockton
(508) 226-4192 - Attleboro
1-800-255-0875 - Toll Free

South Middlesex Opportunity Council, Inc. (SMOC)
300 Howard St., Framingham, MA 01701
(508) 620-1230 - Framingham
1-800-286-6776 - Toll Free outside Framingham

So. Shore Community Action Council, Inc. (SSCAC)
265 So. Meadow Road, Plymouth, MA 02360
(508) 747-7575 x210 - Plymouth
(508) 778-0870 - Hyannis (Nov - April)
(508) 746-6707 Information only

Tri-City Community Action Programs, Inc. (TRICAP)
341A Forest Street, Malden, MA 02148
(781) 322-6284

Valley Opportunity Council (VOC)
300 High St., Holyoke, MA 01040
(413) 552-1548

Worcester Community Action Council, Inc. (WCAC)
484 Main St., 2nd Floor, Worcester, MA 01608
(508) 754-1176 x110 - Worcester
1-800-545-4577 - Toll Free

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Reference List

(1) Current Population Survey, Annual Social and Economic Supplement, http://www.census.gov/hhes/www/poverty/poverty.html. U.S. Census Bureau, 2006.

(2) Frank, D., Neault, N., Skalicky, A., Cook, J., Wilson, J., Levenson, S., Meyers, A., Heeren, T., Cutts, D., Casey, P., Black, M., and Berkowitz, C. Heat or Eat: Low Income Home Energy Assistance Program and Nutritional Risk Among Children Under 3 Years Old. Pediatrics, 2006.

(3) Bhattacharya, J., DeLeire, T., Haider, S., and Currie, J. Heat or eat? Cold-weather shocks and nutrition in poor American families. Am.J.Public Health, 93, 7, 1149-1154, 2003.

(4) Heat *and* Eat: Using Federal Nutrition Programs to Cushion the Shock of Skyrocketing Heating Bills, Food and Research Action Center, 2005.

(5) 2005 National Energy Assistance Survey, National Energy Directors Association, 2005.

(6) Sheehan, M., Colton, R., Foster, S., Holmes, G., Laitner, J., and Quinn, A., An Assessment of Low-Income Energy Needs in Washington State, 1995.

(7) Colton, R. and Levinson, R., Energy and Poverty in North Carolina, National Consumer Law Center, Boston, MA, 1991.

(8) Sandel M and Sharfstein J, Not safe at home: How America's housing crisis threatens the health of its children, Boston Medical Center, Boston, MA, 1998.

(9) Howat, J., McKim, J., Harak, C., and Wein, O., Tracking the Home Energy Needs of Low-Income Households Through Trend Data on Arrearages and Disconnections, National Energy Assistance Directors' Association, 2004.

(10) Measuring the Outcomes of Low-Income Energy Assistance Programs through a Home Energy Insecurity Scale, LIHEAP Committee on Managing for Results, U.S. Department of Health and Human Services, 2003.

(11) LIHEAP Home Energy Notebook for Fiscal Year 2003, U.S. Department of Health and Human Services, 2005.

(12) Children's Sentinel Nutrition Assessment Program, The safety net in action: Protecting the health and nutrition of young American children, 2004.

(13) Nord M, Food insecurity in households with children. Food Assistance Research Brief., Washington DC: United States, 2003.

(14) The Greater Boston Food Bank, Hunger in America, 2001.

(15) Cook JT., Frank DA, Berkowitz C, Black MM, Casey PH., Cutts DB, Meyers AF, Zaldivar N, Skalicky A, Levenson S, Heeren T, and Nord M. Food insecurity is associated with adverse health outcomes among human infants and toddlers. Journal of Nutrition, 134, 6, 1432-1438, 2004.

(16) Fierman, A. H., Dreyer, B. P., Quinn, L., Shulman, S., Courtlandt, C. D., and Guzzo, R. Growth delay in homeless children. Pediatrics, 88, 5, 918-925, 1991.

(17) Lewit EM and Kerrebrock N. Child indicators: Population-based growth stunting. Future of Children, 7, 149-156, 1997.

(18) Frank DA and Zeisel SH. Failure to thrive. Pediatric Clinics of North America, 35, 1187-1206, 1988.

(19) Alaimo, K., Olson, C. M., Frongillo, E. A., Jr., and Briefel, R. R. Food insufficiency, family income, and health in US preschool and school-aged children. American Journal of Public Health, 91, 5, 781-786, 2001.

(20) Weinreb, L., Wehler, C., Perloff, J., Scott, R., Hosmer, D., Sagor, L., and Gundersen, C. Hunger: Its impact on children's health and mental health. Pediatrics, 110, 4, 2002.

(21) Casey, Patrick H., Szeto, Kitty L., Robbins, James M., Stuff, Janice E., Connell, Carol, Gossett, Jeffery M., and Simpson, Pippa M. Child health-related quality of life and household food security. Archives of Pediatrics Adolescent Medicine, 159, 1, 51-56, 2005.

(22) Center on Hunger, Poverty and Nutrition Policy, Statement on the link between nutrition and cognitive development in children, Tufts University School of Nutrition, Medford, MA, 1995.

(23) Casey PH, Szeto K, Lensing S, Bogle M, and Weber J. Children in food insufficient low-income families: Prevalence, health, and nutrition status. Archives of Pediatrics & Adolescent Medicine, 155, 508-514, 2001.

(24) Kleinman RE, Murphy JM, LIttle M, Pagano M, Wehler CA, Regal K, and Jellinek MS. Hunger in children in the United States: Potential behavioral and emotional correlates. Pediatrics, 101, e3, 1998.

(25) Murphy JM, Wehler CA, Pagano ME, LIttle M, Kleinman RE, and Jellinek MS. Relationship between hunger and psychosocial functioning in low-income American children. Journal of the American Academy of Child and Adolescent Psychiatry, 37, 163-170, 1998.

(26) Alaimo K, Olson CM, and Frongillo EA. Food insufficiency and American school-aged children's cognitive, academic, and psychosocial development. Pediatrics, 108, 44-53, 2001.

(27) Rose D and Oliveira V. Nutrient intakes of individuals from food-insufficient households in the United States. American Journal of Public Health, 87, 1956-1961, 1997.

(28) Children's Sentinel Nutrition Assessment Program. Protecting Children From Hunger and Food Insecurity in 2005-2006, 2005.

(29) Nord, M. Keeping Warm, Keeping Cool, Keeping Food on the Table: Seasonal Food Insecurity and Costs of Heating and Cooling, 2003.

(30) Frank DA, Roos N, Meyers A, Napoleone M, Peterson K, Cather A, and Cupples LA. Seasonal variation in weight-for-age in a pediatric emergency room. Public Health Reports, 111, 4, 366-371, 1996.

(31) Unintentional Non-Fire-Related Carbon Monoxide Exposures-United States, 2001-2003. Morbidity and Mortality Weekly Report, 54, 02, 36-39, 1-25-2005.

(32) Hall, J.U.S. Home Heating Fire Patterns and Trends. National Fire Protection Association, 2004.

(33) Federal Emergency Management Association and US Fire Administration. Children and Fire in the United States, 1994-1997, 2005.

(34) Shaw, K. N., McCormick, M. C., Kustra, S. L., Ruddy, R. M., and Casey, R. D. Correlates of reported smoke detector usage in an inner-city population: participants in a smoke detector give-away program. American Journal of Public Health, 78, 6, 650-653, 1988.

(35) Istre GR, McCoy MA, Osborn L, Barnard JJ, and Bolton A. Deaths and injuries from house fires. The New England Journal of Medicine, 344, 25, 1911-1916, 2001.

(36) Colton, R. Measuring LIHEAP's Results: Responding to Home Energy Affordability. Fisher, Sheehan and Colton, Public Finance and General Economics, 1999.

(37) Use of Unvented Residential Heating Appliances--United States, 1988-1994. JAMA: The Journal of the American Medical Association, 279, 6, 423-424, 1998.

(38) Winter residential fires. Topical Fire Research Series, 1, 13, 2001.

(39) Portable Heating Fires in Residential Structures. Topical Fire Research Series, 1, 10, 2001.

(40) Palmieri, T. L. and Greenhalgh, D. G. Increased incidence of heater-related burn injury during a power crisis. Arch.Surg., 137, 10, 1106-1108, 2002.

(41) Unintentional carbon monoxide poisoning following a winter storm. MMWR - Morbidity & Mortality Weekly Report, 42, 6, 109-111, 1993.

(42) Klein, R. and Watson, J. Two Boys Killed in Mattapan House Fire; Blaze is Blamed on Space Heater, The Boston Globe, 12-28-2000.

(43) Singer, H. and Fagen, C. Tragic Con Ed Twist for Harlem Candle Girl, New York Post, 12-7-2005.

(44) In Harm's Way: Home Heating, Fire Hazards and Low-Income Households. National Fuel Funds Network, 2001.

(45) Sharfstein J, Sandel M, Kahn R, and Bauchner H. Is child health at risk while families wait for housing vouchers? American Journal of Public Health, 91, 1191-1192, 2001.

(46) Institute of Medicine, Clearing the air: Asthma and indoor air exposures, National Academy Press, Washington DC, 2000.

(47) Rosenstreich, D. L., Eggleston, P., Kattan, M., Baker, D., Slavin, R. G., Gergen, P., Mitchell, H., McNiffMortimer, K., Lynn, H., Ownby, D., and Malveaux, F. The role of cockroach allergy and exposure to cockroach allergen in causing morbidity among inner-city children with asthma. The New England Journal of Medicine, 336, 19, 1356-1363, 1997.

(48) Lanphear, Bruce P., Kahn, Robert S., Berger, Omer, Auinger, Peggy, Bortnick, Steven M., and Nahhas, Ramzi W. Contribution of Residential Exposures to Asthma in US Children and Adolescents. Pediatrics, 107, 6, e98, 2001.

(49) Lanphear, Bruce P., Aligne, C. Andrew, Auinger, Peggy, Weitzman, Michael, and Byrd, Robert S. Residential Exposures Associated With Asthma in US Children. Pediatrics, 107, 3, 505-511, 2001.

(50) Sandel M and O'Connor G. Inner-city asthma. Immunology and Allergy Clinics of North America, 22, 4, 737-752, 2002.

(51) Weinreb, L., Goldberg, R., Bassuk, E., and Perloff, J. Determinants of health and service use patterns in homeless and low-income housed children. Pediatrics, 102(3) Pt 1, 554-62, 1998.

(52) McLean, D. E., Bowen, S., Drezner, K., Rowe, A., Sherman, P., Schroeder, S., Redlener, K., and Redlener, I. Asthma among homeless children - Undercounting and undertreating the underserved. Archives of Pediatrics & Adolescent Medicine, 158, 3, 244-249, 2004.

(53) Baghurst, P. A., McMichael, A. J., Wigg, N. R., Vimpani, G. V., Robertson, E. F., Roberts, R. J., and Tong, S. L. Environmental exposure to lead and children's intelligence at the age of seven years. The Port Pirie Cohort Study. The New England Journal of Medicine, 327, 18, 1279-1284, 1992.

(54) Needleman, H. L., Schell, A., Bellinger, D., Leviton, A., and Allred, E. N. The long-term effects of exposure to low doses of lead in childhood. An 11-year follow-up report. The New England Journal of Medicine, 322, 2, 83-88, 1990.

(55) Sandel, M., Sharfstein, J., Shaw, R., Kaplan, S., Pulaski, M., and King, T., There's No Place Like Home: How America's Housing Crisis Threatens Our Children, Housing America, San Francisco, 1999.

(56) Anderson R, Kochanek K, and Murphy S, Report of Final Mortality Statistics, 1995. Monthly Vital Statistics Report, National Center for Health Statistics, Hyatsville, MD, 1997.

(57) Baker SP, O'Neill B, Ginsburg MJ, and Guohua L. The Injury Fact Book. Oxford University Press: New York, 1991.

(58) Centers for Disease Control and Prevention and National Center for Injury Prevention and Control. 10 Leading Causes of Deaths, United States: All Races, Both Sexes, Ages:1-15. Centers for Disease Control and Prevention, 6-22-0005.

(59) Powell E and Tanz R. Cycling injuries treated in emergency departments: Need for bicycle helmets among preschoolers. Archives of Pediatrics & Adolescent Medicine, 154, 1096-1100, 2000.

(60) Scheidt, P. C., Harel, Y., Trumble, A. C., Jones, D. H., Overpeck, M. D., and Bijur, P. E. The epidemiology of nonfatal injuries among US children and youth. American Journal of Public Health, 85, 7, 932-938, 1995.

(61) Phelan KJ and Lanphear BP, Residential injuries in US children and adolescents, 2002.

(62) Anderson, L. M., St Charles, J., Fullilove, M. T., Scrimshaw, S. C., Fielding, J. E., and Normand, J. Providing affordable family housing and reducing residential segregation by income - A systematic review. American Journal of Preventive Medicine, 24, 3, 47-67, 2003.

(63) Karr, Catherine and Kline, Susan. Homeless Children: What Every Clinician Should Know. Pediatrics in Review, 25, 7, 235-241, 2004.

(64) Meyers A, Frank DA, Roos N, Peterson KE, Casey VA, Cupples LA, and Levenson SM. Housing subsidies and pediatric undernutrition. Archives of Pediatrics & Adolescent Medicine, 149, 10, 1079-1084, 1995.

(65) Wood DL, Valdez RB, Hayashi T, and Shen A. Health of homeless children and housed poor children. Pediatrics, 86, 6, 858-866, 1990.

(66) Code of Massachusetts Regulations. Occupancy Standards and Tenant Participation for State Aided Housing. 760 CMR 6.06 5(a).

(67) Code of Federal Regulations. Housing and Urban Development. 24 CFR 982.404(b)(i).

(68) Howat, J. and Devanthary, J., Public Service Commission Consumer Protection Rules and Regulations, National Energy Assistance Directors Association, 2006.

(69) Alperstein, G., Rappaport, C., and Flanigan, J. M. Health Problems of Homeless Children in New York City. American Journal of Public Health, 78, 9, 1232-1233, 1988.

(70) Orenstein JB, Boenning DA, Engh EP, and Zimmerman SJ. Emergency care of children in shelters. Pediatric Emergency Care, 8, 6, 313-317, 1992.

(71) Takaro TK, Krieger JW., and Song L. Effects of environmental interventions to reduce exposure to asthma triggers in homes of low-income children in Seattle. Journal of Exposure Analysis and Environmental Epidemiology, 14, Suppl 1, S133-S143, 2004.

(72) Cumella, S., Grattan, E., and Vostanis, P. The mental health of children in homeless families and their contact with health, education and social services. Health & Social Care in the Community, 6, 5, 331-342, 1998.

(73) Bassuk, E. L. and Rosenberg, L. Psychosocial characteristics of homeless children and children with homes. Pediatrics, 85, 3, 257-261, 1990.

(74) Rafferty Y and Shinn M. The impact of homelessness on children. American Psychlogist, 46, 11, 1170-1179, 1991.

(75) Dibiase R and Waddell S. Some effects of homelessness on psychological functioning of preschoolers. Journal of Abnormal Child Psychology, 23, 6, 783-793, 1995.

(76) Waldron A, Tobin G, and McQuaid P. Mental health status of homeless children and their families. Irish Journal of Psychological Medicine, 18, 1, 11-15, 2001.

(77) McCaskill PA, Toro PA, and Wolfe SM. Homeless and matched housed adolescents: a comparative study of psychopathology. Journal of Clinical Child Psychology, 27, 306-319, 1998.

(78) Coll, C. G., Buckner, J. C., Brooks, M. G., Weinreb, L. F., and Bassuk, E. L. The developmental status and adaptive behavior of homeless and low-income housed infants and toddlers. American Journal of Public Health, 88, 9, 1371-1374, 1998.

(79) Rafferty, Yvonne, Shinn, Marybeth, and Weitzman, Beth C. Academic achievement among formerly homeless adolescents and their continuously housed peers. Journal of School Psychology, 42, 3, 179-199, 2004.

(80) Wood D, Halfton N, Scarlata D, Newacheck P, and Nessim S. Impact of family relocation on children's growth, development, school function and behavior. JAMA, 270, 11, 1334-1338, 1993.

(81) Rubin, D. H., Erickson, C. J., San Agustin, M., Cleary, S. D., Allen, J. K., and Cohen, P. Cognitive and academic functioning of homeless children compared with housed children. Pediatrics, 97, 3, 289-294, 1996.

(82) Zima BT, Bussing R, Forness S, and Benjamin B. Sheltered homeless children: their eligibility and unmet need for special educaiton evaluation. American Journal of Public Health, 87, 2, 236-240, 1997.

(83) Short Term Energy Outlook, Energy Information Administration, October 2006.

(84) FY 2006 Low Income Home Energy Assistance Program Maximum Income and Benefit Levels. Massachusetts Department of Housing and Community Development, 2006.

(85) Low Income Home Energy Assistance Program Website at http://www.acf.hhs.gov/programs/liheap/, 2006.

(86) Low Income Home Energy Assistance Program Report to Congress for Fiscal Year 2003, U.S. Department of Health and Human Services, 8-9-2005.

(87) The Human Services Amendments of 1994, Public Law 103-252, Public Law 103-252, Sec. 304(a), 1994.

(88) Community Opportunities, Accountability, and Training and Educational Services Act of 1998, Public Law 105-285, Public Law 105-285, Sec. 304(a), 1998.

(89) The Human Services Amendments of 1994, Public Law 103-252, Public Law 103-252, Sec. 304(b), 1994.

(90) The Human Services Amendments of 1994, Public Law 103-252, Public Law 103-252, Sec. 306(a), 1994.

(91) Winter's High Costs, The Boston Globe, 10-21-2006.

(92) An Act Relative to Heating Energy Assistance and Tax Relief, Chapter 140 of the Acts of 2005, Chapter 140 of the Acts of 2005, Sec 17(b), 2005.

(93) Allegretto, S., Basic family budgets: working families' incomes often fail to meet living expenses around the U.S., Economic Policy Institute, Washington, D.C., 9-1-2005.

(94) Perl, L. The Low-Income Home Energy Assistance Program (LIHEAP): Estimated Allocations, 3-21-2007.

(95) Fuel Price Information Available at http://www.mass.gov/doer/. Massachusetts Division of Energy Resources, 2006.

(96) Massachusetts General Law, Chapter 162, Section 124A.

(97) Code of Massachusetts Regulations. Department of Telecommunications and Energy. 220 CMR 25.03.

(98) Massachusetts 2006 LIHEAP Data, to Date. Massachusetts Department of Housing and Community Development, Emailed on 09/08/2006.

(99) International Health Impact Assessment Consortium.European Policy Health Impact Assessment: A Guide. World Health Organization, 2005.

(100) World Health Organization. The HIA Procedure, 2005.

(101) National Health Services. A Short Guide to Health Impact Assessment, 2000.

(102) Program on Health, Equity and Sustainability Technical Research Report, The case for housing impacts assessment: The human health and social impacts of inadequate housing and their consideration in CEQA policy and practice, 2004.

(103) Cole BL, Shimkhada R, Kominski G, and Morgenstern H. Methodologies for realizing the potential of health impact assessment, UCLA School of Public Health, Department of Health Services, 2004.