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**Effects of simplifying outreach materials for energy conservation programs  
that target low-income consumers**

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**ABSTRACT**

Critics have speculated that the limited success of energy conservation programs among low-income consumers may partly be due to recipients having insufficient literacy to understand the outreach materials. Indeed, we found outreach materials for low-income consumers to require relatively high levels of reading comprehension. We therefore improved the Flesch-Kincaid readability statistics for two outreach brochures, by using shorter words and shorter sentences to describe their content. We examined the effect of that simplification on low-income consumers' responses. Participants from low-income communities in the greater Pittsburgh area, who varied in literacy, were randomly assigned to either original communications about energy conservation programs or our simplified versions. Our findings suggest that lowering readability statistics successfully simplified only the more straightforward brochure in our set of two, likely because its content lent itself better to simplification. Findings for this brochure showed that simplification improved understanding of its content among both low-literacy and high-literacy recipients, without adversely affecting their evaluation of the materials, or their intention to enroll in the advertised programs. We discuss strategies for improving communication materials that aim to reach out to low-income populations.

**Keywords:** Readability; Consumer Outreach; Energy Conservation

## RESEARCH HIGHLIGHTS

- Brochures about energy programs for low-income consumers can be too hard to read.
- We made brochures easier to read by using shorter words and shorter sentences.
- Simplifying a straightforward brochure improved the understanding of all recipients.
- However, simplifying a complex brochure had no effect on understanding.
- We suggest strategies for improving outreach to low-income consumers.

## INTRODUCTION

For the 48.5 million Americans living below the poverty level, meeting basic energy needs can be challenging (Bishaw, 2012). While most middle- and upper-income households spend less than 5 percent of their income on energy, low-income households, defined as those earning less than 150% of the local poverty level (U.S. Department of Health & Human Services, 2013), spend between 10 and 22 percent of their income on energy (Powers, 2008). Low-income homes are also disproportionately less energy efficient, especially in urban areas, where the housing stock is older (Hernández, 2008). As a result of their high “energy burden,” low-income households face more utility-related shut-offs and extreme home temperatures, which increase respiratory illness, bronchitis, pneumonia, and even deaths (Hernández, 2008). Low-income households also rely more on antiquated appliances that threaten home safety and increase fire risk (Shai, 2006). Children living in households that experience a high-energy burden are especially at risk for burns from secondary heating sources and carbon monoxide poisoning (Bhattacharya, 2003; Child Health Impact Working Group, 2007; Granade et al., 2009). Because U.S. poverty rates are on the rise (Glennerster, 2002), so-called “energy poverty” (Guruswamy, 2011) is likely to become an even larger problem in the future.

In an attempt to remedy these problems, energy conservation programs such as the federally funded Low-Income Usage Reduction Program (LIURP) offer free energy conservation measures and education to low-income households. Since LIURP's inception, the program has substantially reduced the energy use of participated households and lowered their electricity bills (Shingler, 2009). On average, LIURP participants experience better indoor air quality, safer living conditions, and are more likely to obtain benefits from other low-income assistance programs than similar non-participating homes (Shingler, 2009).

Unfortunately, the neediest low-income households, including those in urban areas, are under-enrolled in energy conservation programs (Southworth, 2011). Echoing findings in public health communications targeting low-income communities (Bendick Jr., 1980; Summer, 2009; Paashe-Orlow et al., 2003; Wells, 1994), evaluations of energy conservation programs have speculated that recipients with low literacy have more difficulty understanding the outreach brochures, potentially reducing their willingness to enroll (Shingler, 2009; Wells, 1994). The majority of low-income adults have reading comprehension skills at the 5th-8th grade level (Kirsh et al., 1993; Young et al., 1990). In Pennsylvania, nearly half of low-income individuals have no high school diploma, with more than 40% reading far below the basic reading level for the highest grade they completed, and literacy skills being worse among minorities and Hispanics (Smith et al., 2008; Southworth, 2011).

$$\text{Grade Level} = 0.39 \left( \frac{\text{total words}}{\text{total sentences}} \right) + 11.8 \left( \frac{\text{total syllables}}{\text{total words}} \right) - 15.59$$

**Equation 1.** Flesch-Kincaid readability grade level formula.

Print materials may fail to meet their communication goals if their content is too difficult for their target audience to read. Readability of print communications can be measured with the Flesch-Kincaid readability grade level statistic. As seen in Equation 1, it takes into account the average number of words per sentence and the average number of syllables per word (Flesch, 1948; Kincaid et al., 1975; Oakland and Lane, 2004). Originally, the Flesch-Kincaid readability statistic was validated on U.S. military samples, and designed to reflect the highest grade or educational attainment required to understand the presented text. Hence, text with a Flesch-Kincaid readability statistic of 6 should be understandable to individuals who have the reading skills expected from a student who has completed the 6th grade of U.S. education (Kincaid et al., 1975). The Flesch-Kincaid readability statistic has been used to evaluate the readability of surveys (Velez and Ashworth, 2007), insurance policies (Dubay, 2004), medical consent forms (Tait et al., 2005), and patient education (Daraz et al., 2011; Finnie et al., 2010). It is reliably correlated with other established measures of readability, such as average word familiarity and passage length, which similarly influence reading comprehension (Golinkoff, 1975-1976; Kesselman et al., 2007; Ley, 1996; Spyridakis and Standal, 1987; Surber, 1992; Tuinman, 1973-1974).

To date, most studies on the readability of written communication materials have been in the fields of public health and medicine (Wells, 1994; Daraz et al., 2011; Davis et al., 2006; Finnie et al., 2010), followed by marketing and economics (Crow, 1988; Gallagher and Patrick-Riley, 1989; Tan et al., 2011). These studies have found that despite relatively low literacy levels in the general population, program outreach materials are often written at the college level (Davis et al., 1996; Friedman et al., 2009), as are medical consent forms and patient education brochures (Paashe-Orlow et al., 2003; Daraz et al., 2011; Finnie et al., 2010; Tarnowski et al.,

1990). Improving the readability of written materials enhances recipients' comprehension (McGaw and Sturme, 1989; Overland et al., 1993), irrespective of whether or not they have prior knowledge (Muresan et al., 2007; Stahl et al., 1991) and whether the mode of delivery is written or oral (Bradshaw et al., 1975). For patient education brochures and consent forms, there is a positive relationship between the readability of the materials and recipients' perceived quality of their content (Coyne et al., 2003), as well as recipients' perceived benefit of implementing the recommended health behaviors (French and Larrabee, 1999). For example, a simplified, easy-to-read educational brochure on polio vaccination that was written at the 6<sup>th</sup> grade reading level enhanced the perceived quality of the materials and the perceived benefit of vaccination, as compared to an equivalent Centers for Disease Control and Prevention (CDC) brochure written at the 10<sup>th</sup> grade reading level (Davis et al., 1996).

However, the benefit of simplifying communications may depend on the complexity of their content. Simplifying reading materials about complex topics may have no effect on recipients' ease of understanding (Jensen, 2011). A study of websites about the complex topic of fibromyalgia found that those that were easier to read were actually less comprehensive (Daraz et al., 2011). A review of cancer education print and website materials noted that effectively communicating complex specialized information may require the use of specific, often harder-to-read, language (Finnie et al., 2010). Hence, designers of communication materials about complex topics may face a trade-off between readability and specificity.

The benefit of simplifying materials may also depend on the reading skills of the intended audience. Low-literacy populations in particular stand to benefit from simplified communication materials (Pignone et al., 2005), because communications that are easier to read enhance the comprehension of low-literacy recipients (Davis et al., 1996; Davis et al. 1998; Eaton and

Holloway, 1980) thus increasing the likelihood of affecting their personal health decisions (Howard-Pitney et al., 1997). For example, low-literacy patients who received a simplified handout about the Pneumococcal vaccination were more likely to discuss the vaccine with their doctors and to actually get vaccinated when compared to a low-literacy control group that received the original harder-to-read handout (Jaconson et al., 1999). However, the impact of simplifying the content of communications on high-literacy audiences is somewhat mixed. Some studies report that both low- and high-literacy individuals understand simplified materials better (Eaton and Holloway, 1980; Michielutte et al., 1992) and prefer them more (Davis et al., 2006; Smith et al., 2008). However, others have found no difference in how much high-literacy individuals understood simplified materials or their original, hard-to-read versions (Davis et al., 2006; Pignone et al., 2005). Still others have found that simplified materials decreased comprehension among some high literate adults (Liu et al., 2009) due to the simplification having potentially introduced ambiguity and reduced the quality of the content.

To the best of our knowledge, no research has investigated the potential benefits of improving the readability of communications about energy conservation programs for low-income consumers. We simplified the outreach materials of existing energy conservation programs that aimed to target low-income consumers, by expressing their content in shorter words and shorter sentences. We recruited participants from low-income communities in the greater Pittsburgh area. They were randomly assigned to one of two conditions, receiving either the original communication materials or the simplified communication materials. We measured recipients' understanding, as well as their perception of the quality of the materials, and their willingness to enroll in the energy program, while taking into account their ability to read (Nurse et al., 2011).

## METHOD

### **Original vs. simplified print materials**

We chose two publicly available brochures describing two different home energy reduction programs targeting low-income communities in the Pittsburgh area, which varied in the complexity of their content (See Appendix 1A and 2A). The “Watt Choices” program is a refrigerator and freezer recycling program, where the utility offers to pay qualifying low-income customers \$35 to recycle their old “energy-wasting” appliance and haul it away at no charge. It also included relatively complex details about program terms and conditions, which contributed to its Flesch-Kincaid readability statistic of grade level 10. The “Smart Comfort” program is a home energy audit program, where the utility offers free energy conservation education and measures to qualifying low-income customers. It had a relatively lower readability score of grade level 8, possibly because the details of the program were less complicated.

We simplified each brochure as much as possible without changing the overall format or message content (See Appendix 1B and 2B), aiming for the recommended Flesch-Kincaid readability statistic of grade 5-6 or below (Paashe-Orlow, 2003; Root, 1990; Wells, 1994). Following standard procedures for simplifying text (DuBay, 2004), we developed a simplified version of each brochure by replacing polysyllabic words with shorter synonyms and reducing sentence length. For each brochure, we then calculated the Flesch-Kincaid Readability Grade Level statistic (Equation 1), which is similar to other well-known readability formulas (McLaughlin, 1969). Our simplification procedure reduced Flesch-Kincaid readability statistics from grade level 10 to 4 for the “Watt Choices” brochure and from 8 to 1 for the “Smart Comfort” brochure. Although both simplified versions were below the targeted grade 5-6 reading

level, the Flesch-Kincaid readability statistic showed that the simplified version of the “Watt Choices” brochure was slightly harder to read than the simplified version of the “Smart Comfort” brochure, because its content was harder to express in simplified terms.

We sought input from community leaders whose organizations provide social services to low-income communities in the Pittsburgh area. These experts reviewed our materials, and confirmed that the brochures were appropriate for our low-income target population. We also sought input from members of the target population to examine whether our iterative revisions of the simplified version stayed true to the message conveyed and maintained text cohesion in the original version.

## **Participants**

We recruited a diverse convenience sample of 201 adults through organizations that served low-income communities in the Greater Pittsburgh Metropolitan Area, such as food banks and family social services. Median income was in the \$16k-\$30k category, which is lower than the median income for Pennsylvania (\$52k) or the U.S. (\$53k) (U.S. Census Bureau, 2013) Self-reports of educational attainment revealed that 10.5% had no high school diploma and an additional 57.2% had no college degree. The average age was 45.00 (SD=14.35), with 69.9% being female, 63.2% being African American.

## **Procedure and measures**

Literacy assessment. All participants received 10 minutes to take the Nelson-Denny Reading Comprehension subtest, a widely used literacy assessment tool that has been designed for group administration with high school students, college students, and adults (Brown et al.,

1993). Following previous research, we shortened the test period from 20 minutes to 10 minutes, so as to reduce the length of our overall study session as well as the burden on participants (Creaser et al. 1970). However, such time restrictions may reduce the reliability of reading scores for individuals with learning disabilities (Gregg & Nelson, 2010). We refrained from providing more time to individuals with learning disabilities because such accommodations may not actually resolve their underperformance – although we recognize that such arrangements may need to be considered when reading scores inform important decisions about individuals’ careers and education paths (Gregg & Nelson, 2010). The Nelson-Denny Reading Comprehension subtest consists of seven passages from high school and college textbooks, and 38 questions that test for factual and inferential understanding. The raw performance score reflects the total number of the 38 items answered correctly within the assigned test period.

Responses to the communication. Participants received the brochures, after being randomly assigned to either the simplified or their original, harder-to-read versions. They received their assigned version of the Watt Choices brochure first, followed by 10 true-or-false questions to assess their understanding of its content. The wording of these true-false statements matched the wording of the brochure version participants received, so as to make it easier for them to look up the answers. For example, the simplified Watt Choices brochure questions had the same Flesch-Kincaid readability statistic as the simplified, easy-to-read brochure itself. Consider the original, hard-to-read version of the true-or-false question “This recycling program is part of the Duquesne Light Watt Choices program”, which was revised to “This program is part of Duquesne Light Watt Choices” for the simplified, easy-to-read version. Next, participants were asked to rate their agreement with 7 statements to evaluate the brochure’s quality and 1 statement reflecting intentions about enrollment into the programs advertised by

the brochures, with response scales ranging from “not at all” (=1) to “very much” (=7).

Participants were then asked to follow the same procedure for their assigned version of the Smart Comfort brochure. Finally, the participants completed demographic questions.

## **RESULTS**

### **Analysis plan**

For each of three dependent variables, we conducted a separate Analyses of Variance (ANOVA) to examine the effect of participants’ literacy (low vs. high), brochure version (original vs. simplified), and brochure topic (Watt Choices vs. Smart Comfort). The dependent variables were understanding, evaluations of the brochures, and reported intentions to enroll in the programs advertised by the brochures. Where significant interactions with brochure topic emerged, we examined main effects for each brochure topic in an ANOVA that used participants’ literacy (low vs. high) and brochure version (original vs. simplified) as independent variables. Auxiliary analyses are presented for each dependent variable. The literacy variable in each ANOVA was based on participants’ Nelson-Denny scores, which are described below.

### **Literacy assessment**

In our low-income sample, the mean raw performance score on the Nelson-Denny Reading Comprehension subtest was 7.66 correct items out of 38 in a 10-minute session (Mdn=7.00). Participants showed considerable variation in their reading comprehension, with the standard deviation (SD) being 5.03 and the inter-quartile range (IQR) being between 4.00 and 7.00. Our literacy assessment is in line with a 2007 study on another low-income Pittsburgh sample that used the same 10-minute Nelson-Denny Reading Comprehension subtest procedure (M=7.73,

Mdn=7.00; SD=4.66; IQR=4.00-10.00) (Bruine de Bruin et al., 2007). In that same study, a higher-income Pittsburgh sample performed much better (M=12.78, Mdn=13.00; SD=5.38; IQR=9.00-17.00) (Bruine de Bruin et al., 2007), highlighting that low-income and higher-income groups may face different challenges when reading brochures and other materials. As in our study, the literacy assessment was given at the beginning. While our study assessed the role of reading ability in people's responses to brochures about energy conservation, that previous study focused on associations between reading ability, other cognitive abilities, and the tendency to commit decision biases (Bruine de Bruin et al., 2007).

Because the distribution of raw performance scores showed a skewness statistic of 1.35 (SE=.17) and kurtosis statistic of 3.06 (SE=.34), we used a median split to divide our sample into high- and low-literacy. The high-literacy participants' mean score was 11.33 (SD=4.44), and the low-literacy participants was 3.87 (SD=1.68).

## **Understanding**

We computed a summary score reflecting the percentage of correct responses across the ten true-false statements that measured participants' understanding. Indeed, responses to understanding questions could be aggregated because they showed internal consistency. That is, their Cronbach's alpha was .76, and therefore sufficient for computing summary scores.

Next, the ANOVA found a significant main effect for literacy group,  $F(1, 394)=57.57$ ,  $p<.001$ , which suggested that high-literacy participants (M=86.32, SD=15.97) understood the brochures better than did low-literacy participants (M=72.63, SD=20.90). A significant main effect for brochure topic,  $F(1, 394)=30.18$ ,  $p<.001$ , suggested that, across the original and simplified versions, the Watt Choices brochure (M=74.63, SD=19.24) was harder to understand

than the Smart Comfort brochure ( $M=84.53$ ,  $SD=19.08$ ). Hence, following previous findings that health communications about complex topics are hard to simplify (Daraz et al., 2011; Finnie et al., 2010), the topic of the Watt Choices brochure may have been too complex to successfully achieve simplification by using shorter words and shorter sentences.

Indeed, this idea is supported by a significant interaction between the brochure topic and brochure version on recipients' understanding of the content,  $F(1, 394)=4.32$ ,  $p=.038$ . Specifically, for the less complex Smart Comfort brochure, participants who had received the simplified version ( $M=87.72$ ,  $SD=16.12$ ) answered more understanding questions correctly than did those who had received the original version ( $M=81.30$ ,  $SD=21.26$ ),  $F(1, 199)=5.84$ ,  $p=.017$ . By contrast, the more complex Watt Choices brochure showed no significant difference between those who were given the simplified version ( $M=74.30$ ,  $SD=19.14$ ) and its original ( $M=74.95$ ,  $SD=19.42$ ),  $F(1, 199)=.057$ ,  $p=.81$ . We found no additional main effects or interactions ( $p>.05$ ).

## **Evaluations**

Participants' overall evaluations of the brochures were reflected in a summary score that averaged responses across the set of 7 questions. Indeed, responses to evaluation questions could be summarized because they showed good internal consistency (Cronbach's  $\alpha=.96$ ).

Overall, the quality of all materials was perceived to be relatively good, with the mean rating across brochure topics, versions, and participants' literacy groups being significantly above the scale midpoint of 4.00 ( $M=5.95$ ,  $SD=1.14$ ), as seen in a one-sample t-test,  $t(399)=34.34$ ,  $p<.001$ . As suggested by previous research on health education (Smith et al., 2008; Davis et al., 2006), recipients' evaluations of the brochures was associated with their

comprehension of the content ( $r=.17$ ,  $p<.01$ ). Yet, our ANOVA found no significant effect of the simplification, other main effects or interactions on evaluations ( $p>.05$ ).

### **Intentions about enrollment**

Overall, participants seemed relatively willing to enroll, with the mean rating across brochure topics, versions, and participants' literacy groups being significantly above the scale midpoint of 4.00 ( $M=5.96$ ,  $SD=1.47$ ), as seen in a one-sample t-test,  $t(392)=26.42$ ,  $p<.001$ . As suggested by previous research on health education (Howard-Pitney et al., 1997; Jacobson et al., 1999), recipients' intention to participate in the program described in the brochures was associated with their comprehension of the content ( $r=.12$ ,  $p=.02$ ). Our ANOVA found no significant main effect of the simplification, other main effects, or interactions ( $p>.05$ ) on intentions to enroll in the advertised programs.

## **DISCUSSION**

The most vulnerable low-income groups are underrepresented in energy conservation programs. Evaluations of these programs speculated that low-literacy is associated with under-enrollment (Bendick Jr., 1980; Shingler, 2009; Summer, 2009; Wells, 1994). Outreach and program communications materials often require reading comprehension skills that are much higher than the 5<sup>th</sup> to 8<sup>th</sup> grade reading comprehension level of most low-income household members. Written communication materials can be simplified by using shorter words and shorter sentences (Flesch, 1948; Kincaid, 1975), which may improve recipients' understanding as long as the content remains of equivalent quality (DuBay, 2004; Oakland and Lane, 2004). For some health communications, recipients' improved understanding (Davis et al., 1996; Davis et al.,

1998; Eaton and Holloway, 1980) is associated with better evaluations (Davis et al., 2006; Smith et al., 2008) of the materials' quality and with implementing the recommended behavior (Howard-Pitney et al., 1997; Jaconson et al., 1999).

Before simplified communications are disseminated, however, it is important to systematically investigate how simplifying these materials affects the responses of both low- and high-literacy individuals. Indeed, it has been argued that simplifying materials about complex topics will reduce how informative they are, due to introducing ambiguity (Finnie et al., 2010; Daraz et al., 2011; Jensen, 2011). Hence, in this study we tested low-literacy and high-literacy low-income participants' responses to questions about understanding, overall evaluation of, and intention to enroll in two home energy reduction programs, each of which are either the original version or a simplified one.

Our findings show that one of the two brochures became more understandable after simplifying its wording, possibly because its more straightforward topic lent itself better for simplification. Although we followed recommendations to simplify communications to Flesch-Kincaid readability statistics of grade level 5-6 or below (Paashe-Orlow, 2003; Wells, 1994), we found that participants who had received the simplified Smart Comfort brochure answered more understanding questions correctly than did those who had received the original version, while there was no significant difference in understanding between those who were given the simplified Watt Choices brochure or its original version. Following previous findings that health communications about complex topics are more difficult to effectively simplify (Finnie et al., 2010; Daraz et al., 2011), this finding suggests that the topic of the Watt Choices brochure was more complex than the topic Smart Comfort brochure.

Additionally, we found that high-literacy individuals understood all materials better than those with lower levels of literacy (Nurse et al., 2011). However, like the low-literacy participants, they understood the simplified Smart Comfort brochure better than the original version, while their understanding was unchanged between the simplified Watt Choices brochure and its original. This finding suggests that simplifying the wording of those brochures that have relatively straightforward content could potentially help lower literacy participants to understand their message, without causing adverse effects on high-literacy participants (Bates et al., 2007).

Like every research study, ours had limitations. One limitation of our study is that we did not simplify both brochures to the same extent, although they did reach a Flesch-Kincaid readability statistic below the recommended target of grade 6 (Paashe-Orlow, 2003; Root, 1990; Wells, 1994). As health research had previously noted, complex topics may not lend themselves to the same level of simplification as less complex topics (Finnie et al., 2010; Daraz et al., 2011). If so, the complex content of the Watt Choices brochure is by its nature more difficult to express in simple terms than the more straightforward content of the Smart Comfort brochure. A second limitation is that we did not measure how familiar participants were with the topics of the brochures. Research suggests that topic familiarity may play a role in people's ability to retain information contained in communications materials (Ackerman, 1996; Baldwin et al., 1985; Tobias, 1994). A third limitation of the study is that we did not vary the order of the brochures. However, the finding that simplifying the more complex Watt Choices brochure had no effect on recipients' understanding could not have been due to fatigue-related order effects, as it preceded the less complex Smart Comfort brochure for all participants.

Overall, our findings suggest that simplifying communication materials that cover relatively straightforward topics may increase the amount of information that low-literacy

individuals understand without adversely impacting how high-literacy individuals respond to the materials. The readability of outreach materials can be simplified by using shorter words and shorter sentences, as measured by, for example, the Flesch-Kincaid Readability Formula. To ensure that simplification procedures are indeed successful, we recommend that utilities and other groups interested in improving enrollment in their programs test the effectiveness of their communication materials before disseminating them to a wider audience (Bruine de Bruin & Bostrom, in press; Fischhoff et al., 2011).

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## APPENDIX 1A:

### ORIGINAL VERSION OF COMPLEX “WATT CHOICES” BROCHURE

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#### Duquesne Light Watt Choices

##### Refrigerator/Freezer Recycling Program

Do you have an old refrigerator cooling a few items in your basement or garage? Did you know it may be using up to four times the electricity of a new model? With all that leftover energy, you could save up to \$150 a year on your electric bill.

Duquesne Light's Watt Choices program will pay you \$35 to recycle that old, energy-wasting refrigerator or freezer and will haul it away at no charge.

##### Doubly green: recycling and cash

You'll receive your rebate check within six weeks of pickup. Our program partner, JACO Environmental, will break down your old refrigerator and 95 percent of the components will be recycled.

Reducing your energy use also reduces the need for more power plants as well as the environmental impact of energy generation.

##### To schedule a pick-up date and time...

Call 1-877-270-3521 between 8 a.m. and 9 p.m., Monday through Friday, and between 10 a.m. and 6:30 p.m. on Saturdays.

In addition to your \$35 recycling incentive, if you have purchased a new refrigerator or freezer after 11/30/2009, you can obtain an appliance rebate application for your new purchase.

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##### Benefits

- Have it hauled away for free!!
- Duquesne Light will pay you \$35 per refrigerator or freezer.
- The old appliance will be disposed of responsibly. It will be dismantled and more than 90% of each unit will be recycled in an environmentally responsible manner.

Reduce your energy needs thus reducing the need for more power plants and reducing the environmental impacts of energy generation.

## Eligibility

- This program is available to Duquesne Light residential customers on a first-come, first-served basis until funding is expended.
- Refrigerators and freezers must be in working condition and must be a minimum of 10 cubic feet in size.
- You are required to have the functioning refrigerator at your Duquesne Light billing address at the time of the removal.
- You must own the appliance being recycled.
- Limit of two units per residential address.
- The appliance must be accessible, with a clear path for removal by JACO.
- A check will be mailed to the customer within 4-6 weeks after the appliance collection.
- Some restrictions apply.

## How To Participate?

Enroll online or call to schedule a pick-up date and time.

- Call JACO at 1-877-270-3521 between 8 a.m. and 9 p.m. M-F or 10 a.m. to 6:30 p.m. Saturday (closed Sunday) to schedule an appointment. If calling after hours, leave a message and receive a callback within one business day.
- Schedule online

## Program Details

JACO will call you 48 hours in advance to give you a 4 hour time frame as to when the driver will arrive.

You will need to have the unit plugged in, emptied out, and running. The driver will inspect it to verify that it is the right size, between 10 and 30 cubic feet, and working. **Please note, if the unit is too small or large or not working, the crew will not be able to pick it up.**

Once the pick-up team inspects and verifies these requirements, they will complete a form with you. The form has your name and address as well as the options and cubic foot size of the unit. Once the driver fills out the form they will sign it and then ask you to read it over, approve and sign it as well. Please verify that your name and address are correct on the form.

Once you have read and signed the form, the driver will give you a copy for your records.

Within approximately 4-6 weeks after the pick-up, you will receive your rebate check in the mail.

## Questions

For questions about your appointment or rebate call JACO at 1-877-270-3521.

**Additional Information / Terms and Conditions**

Why is Duquesne Light offering the program? The program helps customers save money by eliminating older, energy-wasting units. In turn, it reduces Duquesne Light's overall energy needs thus reducing the need for more power plants and avoiding the environmental impacts of energy generation. In addition, units are recycled in an environmentally responsible manner and are not being returned to the used appliance market.

How much of the refrigerator is recycled and how does it benefit the environment? More than 90 percent of each unit is recycled by JACO Environmental at a LOCATION TBD recycling facility, following guidelines from the U.S. Environmental Protection Agency. JACO safely disposes of toxins and ozone-destroying chlorofluorocarbon (CFC-11) gases from foam insulation. After capturing toxins (oils, mercury, PCBs) and ozone-depleting substances (CFC 11 and other foam insulation blowing agents and CFC 12 and other refrigerants) the program recycles all the plastic, metals and glass in the refrigerator, thus limiting landfill waste.

Whom do I contact if JACO does not arrive at the scheduled date and time? Contact JACO at 1-877-270-3521

Whom do I contact if I need to reschedule or cancel my appointment? JACO at 1-877-270-3521.

**APPENDIX 1B:****SIMPLIFIED VERSION OF COMPLEX “WATT CHOICES” BROCHURE**

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**Duquesne Light Watt Choices****Fridge and Freezer Recycling Program**

Do you have an old fridge? It could be using 4 times more energy than a new one. A new fridge could cut your electricity bill by \$150 a year.

Duquesne Light will pay you \$35 for your old wasteful fridge or freezer. We will pick it up for free.

**Doubly green: recycling and cash**

You will get a check within 6 weeks after pickup. We will recycle 95% of your fridge.

Using less energy means fewer power plants and less pollution.

**To set up your pick-up ...**

Call 1-877-270-3521 between 8 a.m. and 9 p.m., Monday through Friday, and between 10 a.m. and 6:30 p.m. on Saturdays.

You will get \$35 for your old fridge or freezer. If you buy a new one after 11/30/2009, you can get more money from us through a rebate.

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**Benefits**

- We will pick up your old fridge or freezer for free!!
- We will pay \$35.
- We will recycle your old fridge or freezer.
- Using less energy means fewer power plants and less pollution.

## Eligibility

- We will pay for old fridges and freezers until our money runs out.
- Fridges and freezers must be working. They should be 10 cubic feet or larger.
- We will pick up from the address that is on your bill.
- You must own the fridge or freezer.
- We will pick up at most two from each home.
- You must make room to move out your fridge or freezer.
- A check will be mailed to you within 4-6 weeks after pickup.
- Some limits apply.

## How to Sign up?

Sign up online or call to choose a pick-up time.

- Call 1-877-270-3521 between 8 a.m. and 9 p.m. Monday through Friday or between 10 a.m. and 6:30 p.m. Saturday (not Sunday). If no one answers, leave a message. We will call back the next day.
- Sign up online.

## Program Details

Our partner, JACO, will call you 2 days before the pick up. They will tell you when they will be there. They will give a 4 hour time frame.

Your old fridge or freezer must be empty. It must be plugged in and working. It must be between 10 and 30 cubic feet. **If it not the right size or not working, they will not take it.**

The driver will give you a form. It will have your name and address. It will describe the fridge or freezer. They will sign it. You will be asked to read and sign it. Please check that your name and address are right.

They will give you a copy.

Within 4-6 weeks, we will mail you a check.

## Questions

To ask about your pick-up or your check, call 1-877-270-3521.

## More Information

Why is Duquesne Light doing this?

We will help you save money by getting rid of old, energy-wasting units. It means fewer power plants and less pollution. We will recycle your fridge or freezer.

How much of the fridge is recycled? How does it help the environment?

JACO will recycle for us. They will follow rules from the U.S. Environmental Protection Agency. JACO will safely get rid of all toxic parts. They will recycle all plastic, metal and glass parts.

If JACO does not show up, call 1-877-270-3521

To change your pick up time, call 1-877-270-3521

## APPENDIX 2A:

### ORIGINAL VERSION OF STRAIGHTFORWARD “SMART COMFORT” BROCHURE

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#### Smart Comfort

#### Usage Reduction Program

##### Goal of Smart Comfort

The goal of Duquesne Light’s Smart Comfort Program is to help you reduce your electric bill.

##### Program Benefits

- Conservation measures at no charge to you.
- Energy education.
- Services and measures to reduce your electric use and lower your monthly bill.
- Energy audit.
- Toll-free number for questions and information.
- Referrals to other community resources.

##### Weatherization Measures

An energy manager will visit you in your home and provide energy education and usage reduction measures through an energy audit.

##### The Home Energy Audit Will:

- Investigate potential savings areas.
- Measure usage of targeted electrical equipment.
- Provide energy education.
- Apply energy reduction measures, where needed.
- The name on your account must be an adult (18 years of age or older) living in the household.
- Meet at least one of the following three criteria:
  - own your home.
  - be an electric heating customer.
  - have continuous electric service at your current residence for the previous six months.
- You have not had a Smart Comfort visit in the last seven years.
- Your monthly and/or household yearly income must fall within federal income guidelines.
- Your monthly average usage must be greater than 500 kilowatt-hours (kWh).

##### How to Apply for Smart Comfort

- Call Smart Comfort at 1-866-282-3147
- When you call, please have the following information available:

- Your 13-digit Duquesne Light account number (upper right on bill).
- Monthly and/or yearly income of all household members.
- The phone number(s) at which you can be reached.
- Provide proof of income
- You may be required to provide proof of your monthly and/or yearly household income to the energy manager during the home visit.

**Your Responsibilities**

- Participate in energy audit and energy education with an Energy Manager.
- Accept any weatherization or conservation measures.
- Conserve energy.

**APPENDIX 2B:****SIMPLIFIED VERSION OF STRAGITHFORWARD “SMART COMFORT”****BROCHURE**

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**Smart Comfort****Energy Savings Plan****Goal of Smart Comfort**

We will help you to save on your electric bill.

**Gains**

- We will fix up your home. It will help you save energy. We will do it for free.
- We will teach you how you to use less energy.
- We will come to your home.
- You can call us for free.
- We will find others who can help you get more help for your home.

**Protect for Weather**

We will come to your home. We will fix it up to save energy. We will teach you how you can use less.

**We Will:**

- Find out how you can save energy.
- Find out how much electricity is used by your stuff.
- Teach you how to save energy.
- Fix up your home to save energy.

**Who Can Get It**

- You are at least 18 years old. You live in the home we fix up.
- You:
  - own your home.
  - have electric heat.
  - have had electricity for 6 months.
- We have not fixed up your house yet.
- The money you make is within federal income rules.
- Your electric bill is high. It is above 500 kilowatt-hours (kWh) per month.

**How To Sign Up**

1. Call 1-866-282-3147  
When you call, tell us:

- Your Duquesne Light account number. You can find it on the top right of your bill. It has 13 digits.
  - How much you make, per month and per year. How much others in your home make, per month and per year.
  - Your phone number.
2. Have proof of income  
We may ask for proof of how much money you make. We may ask for it when we come to your home.

**What We Want You To Do**

- Let us look at your home. Let us teach you.
- Let us fix up your home to save energy.
- Use less energy.