

CONSUMERS AND GREEN ELECTRICITY: PROFILING POTENTIAL PURCHASERS



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Globally, consumers are beginning to be able to choose their electricity supplier. Increasing concerns about the environment are prompting some of them to consider 'green' electricity – that is, electricity that has been generated by more environmentally sustainable means (for example, solar power or wind power). This article profiles the potential purchaser of green electricity. Drawing upon the literature on green product purchasers more generally, three sets of hypotheses are presented – more specifically, it is proposed that those who would pay increasingly higher premiums for green electricity are more likely to possess particular demographic characteristics, attitudinal characteristics and socialization characteristics. Responses from a survey distributed in a major Canadian metropolitan area are then examined. Attitudinal characteristics – specifically ecological

concern, liberalism and altruism – best identify the potential purchasers of green electricity. Suggestions for managers and marketers are made following these findings. Directions for future research are also presented. Copyright © 2003 John Wiley & Sons, Ltd and ERP Environment.

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INTRODUCTION

Since the late 1990s, many parts of the US\$650 billion a year global electricity market have been opened up to competition. For many residential electricity customers, it is no longer only a question of 'how much electricity do I want to use?' but also 'what kind of electricity do I want to use?'. Unlike other consumer products, however, it is not the characteristic of the deliverable itself – in this case, the electron – that differentiates companies' offerings in the marketplace. Instead, it is the method by which these electrons have been generated. While electricity has traditionally been 'created' by

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means of large, centralized nuclear, hydro-electric or fossil-fuel power plants, growing environmental concerns have served to spur greater interest in alternative, more environmentally sustainable means of generating electricity (for example, solar power or wind power). Indeed, it is on the basis of this characteristic – the relative ‘greenness’ of its generation – that many marketers are promoting their electricity products.

Little, however, is known about the potential purchaser of green electricity¹. While several studies have been undertaken to try to ascertain how much of a premium for green (or ‘greener’) electricity people would be willing to pay² (e.g. Farhar, 1999; Roe *et al.*, 2001), limited attention has been paid to the extent to which this subset of the general population is ‘different’ – that is, characterized by unique attributes. Moreover, those few studies that do investigate the traits of potential green electricity purchasers (e.g. Ferguson, 1999; Batley *et al.*, 2001) largely restrict their analysis to demographic variables, such as age and income. (One notable exception is the examination by Farhar and Coburn (2000) of the potential market for grid-tied photovoltaic systems.) This is probably not especially surprising, particularly given the recent comment by Laroche and colleagues about premium-priced green goods more generally: ‘... as far as we know, no study ever investigated factors that influence consumers’ willingness to pay a higher price for environmentally friendly products’ (Laroche *et al.*, 2001, p. 507).

A more sophisticated understanding of the potential green electricity purchaser would, however, clearly be valuable. As mentioned

above, electricity markets in countries around the world are being opened to competition. If more environmentally friendly sources of electricity continue to make gains in these markets (compare with Hirsh and Serchuk, 1999; Dunn, 2000), then those who are able to most quickly and accurately identify ‘early adopters’ of green electricity will be in a strong position to capture a significant share of this new market (compare with Shrum *et al.*, 1995, p. 72). Hence, this article aims to begin to fill this knowledge gap by presenting a case-study of research undertaken in a major Canadian metropolitan area. More specifically, the article has two main purposes:

- to profile consumers who state that they are willing to pay progressively higher premiums for ‘green’ (or ‘environmentally friendlier’) electricity and
- to elaborate business strategies that follow from this improved understanding of the potential green electricity market.

The article proceeds in six parts. After this brief introduction, the context is set in the next section of the article. The case-study location is identified and the survey that was utilized is briefly introduced. The literature on green product purchasers is then reviewed in the third section to help to generate a series of hypotheses. These hypotheses serve to propose which kinds of person are potential green electricity purchasers. Survey results are then presented in the fourth section and analyzed in the fifth, in order to test the aforementioned hypotheses. Finally, the findings are discussed, limitations outlined and the key implications for businesspeople noted and elaborated in the sixth section of this article. Directions for future research are also identified in this final section.

CONTEXT

Study Location

Waterloo Region is a community of approximately 450 000 people in southwestern Ontario

¹This study focuses upon potential residential customers for green electricity. For a recent investigation of potential commercial, industrial and institutional customers, see an article by Wisner *et al.* (2001).

²It is generally accepted that whenever green electricity becomes available in a jurisdiction, it does so at a premium price. Indeed, green electricity that is currently available for purchase in jurisdictions that have undergone restructuring (for example, England and Wales, and individual US states) generally costs more than the conventional electricity against which it competes (see Rowlands *et al.*, 2000, p. 103).



(Canada), located 100 kilometers west of Toronto – Canada's largest city. By the terms of the Canadian Constitution, electricity supply primarily comes under provincial jurisdiction. Consequently, the delivery of electricity to the people of Waterloo Region has traditionally been the responsibility of a series of provincial and local electricity monopolies: Ontario Hydro would generate the electricity (largely using nuclear, water and coal resources) and transmit it to the region, and then local electric utilities would distribute it throughout this community (Freeman, 1996).

In the mid-1990s, however, these 'traditional' means of electricity provision began to change. New legislation has already brought about the unbundling of Ontario Hydro, 'corporatization' of many of its key parts and the planned 'privatization' of others. Full competition between many of Ontario Hydro's successor companies (for example, Ontario Power Generation and Hydro One) and private sector players will soon be forthcoming – the Ontario Government announced that it planned to open the marketplace on 1 May 2002. At that time, it is anticipated that all customers in Ontario will be able to select their own electricity provider, some of which are anticipated to be offering premium-priced green electricity packages. (For an overview, see MEST, 2001.)

Survey

Against this background, a 158-item survey instrument was prepared in order to solicit public opinion about a range of energy and environment issues. It was initially developed in accordance with the design principles outlined by Dillman (1978) and subsequently revised after a limited pre-test ($n = 37$). Individuals participating in a home energy evaluation, through the Waterloo Region 'Residential energy efficiency project' (REEP; for more information see Parker *et al.*, 2000), were asked to complete the survey. Of the 1390 questionnaires distributed throughout Waterloo Region between September 2000 and

September 2001 (that is, to each household that had a home energy evaluation completed), 596 were returned, for a response rate of 43%. Not all respondents, however, answered every question that was used in the analysis for this article. Selecting only those surveys that provided complete responses, our investigation used 466 surveys (34% of all surveys distributed).

Although a large number of responses were received, we recognize that our results are not necessarily representative of other communities around the world, or even the one in which the survey was conducted. Compared to Waterloo Region as a whole (from which our sample was taken), our respondents were older (average age of 50 years in our sample, 34 years in Waterloo Region), better educated (in 54% of our respondents' households, someone had completed university; while only 17% of all adults in Waterloo Region have completed university), wealthier (median household income of approximately C\$70 000 versus C\$60 000) and had a relatively higher share of male participants (61% versus 49%). Moreover, respondents had already demonstrated their willingness to pay at least C\$25 for a home energy evaluation, which suggests a special interest in energy issues. Additionally, results may have been influenced by the fact that participating residents were often engaged in a discussion about energy issues by the evaluator and his/her student intern during the home energy evaluation – respondents may have therefore wanted to display 'socially accepted behaviour' (Scott, 1999, p. 276). However, given that our analysis involves comparisons of answers received from various respondents, it may be the case that there was an equal degree of 'overstatement' by all respondents. Regardless, we are confident that the results provide an interesting snapshot of the opinions of Waterloo Region respondents.

Finally, we recognize the limitations arising from the fact that we are investigating 'intentions' rather than 'actions'. It is certainly not always the case that a particular kind of



environmental 'intention' (in this case, a stated willingness to pay a premium for green electricity) will necessarily be followed by an associated environmental 'action' (in this case, the actual purchase of green electricity when the market opens). A study by Simmons Market Research Bureau (1991), 'believed to be the first to link buying behavior with consumer attitudes on the environment, found that people in the U.S. do not actually buy the products they claim to prefer. High concern over the environment was found, but behaviors consistent with such concern were lacking' (cited by Roberts, 1996, p. 218; see also Kalafatis *et al.*, 1999, p. 443; Roberts and Bacon, 1997). Scott (1999, p. 271) confirms this: 'Reviews of the volume of work dedicated to assessing linkages between (general) environmental attitudes and proenvironmental behaviors have generally concluded that such relationships are rather tenuous'. Indeed, work on green electricity lends support, for 'only a small share of those who say they will pay more actually do so when given the opportunity' (Rowlands *et al.*, 2000, p. 108). Ideally, we would have investigated actual consumer behavior. However, given the only recent introduction of green electricity, few opportunities exist to study this phenomenon. We, therefore, proceed with what we believe to be a reasonable alternative.

RESEARCH HYPOTHESES

Given that there has been relatively little study of the characteristics of green electricity purchasers, we turn to the literature that has investigated the broader category of the green product purchaser to generate our research hypotheses. We review this literature in order to identify the kinds of characteristic that analysts argue are useful in identifying consumers who have purchased – or who have indicated that they intend to purchase – green products. Our investigation suggests that it is useful to divide this literature into three

parts. In this section, we review each part and generate a series of research hypotheses regarding possible characteristics of potential purchasers of green electricity.

So-called 'demographic characteristics' are often used in efforts to characterize or profile potential purchasers of green products. This is because such characteristics are easy to assess and therefore have the potential to be extremely valuable in market segmentation (Balderjahn, 1988, p. 53). Generally, much of the literature has led 'marketers [to adopt] an upscale profile of the ecologically conscious consumer: high income, more education, and prestigious occupation' (Roberts, 1996, p. 219). Notwithstanding the criticisms of the conclusions behind these observations – Roberts (1996, p. 218), for example, argues that there have been 'inconsistent results' with such studies – it is widely accepted that demographic characteristics still merit investigation (e.g., Laroche *et al.*, 2001, p. 505).

Justification for this conventional profile of the green product purchaser comes from many quarters. Straughan and Roberts (1999, p. 560), for example, cite a number of different studies that explore the expectation that 'individuals can, at higher income levels, bear the marginal increase in costs associated with supporting green causes and favoring green product offerings'. Similarly, Granzin and Olsen note that 'Educational levels have been linked to greater concern for the environment and greater likelihood of participation in environmental protection activities' (1991, p. 2).

Other demographic characteristics usually investigated in the study of green product purchasers include age and gender. With respect to the former, the 'general belief is that younger individuals are likely to be more sensitive to environmental issues. There are a number of theories offered in support of this belief, but the most common argument is that those who have grown up in a time period in which environmental concerns have been a salient issue at some level, are more likely to be sensitive to these issues' (Straughan



and Roberts, 1999, p. 559). With respect to the latter, meanwhile, women, 'as a result of social development and sex role differences, more carefully consider the impact of their actions on others' (Straughan and Roberts, 1999, p. 560). Race and the urban/rural divide are among some of the other demographic variables that have been studied (e.g. Murphy *et al.*, 1978; Zimmer *et al.*, 1994). These demographic characteristics led us to examine a number of hypotheses in this study.

- (i) *Hypotheses related to demographic characteristics*. The level of stated willingness to pay a premium for green electricity is hypothesized to increase for respondents who
- live in a household with a larger income (H₁)
 - live in a household in which someone has more formal education (H₂)
 - are younger (H₃)
 - are female (H₄)
 - have greater knowledge about energy issues in their community (H₅).

Complementing analyses of demographic characteristics have been investigations of a range of other characteristics. Although not necessarily identical, alternative terms that have been used to describe some of these characteristics include 'sociopsychological variables' (Anderson and Cunningham, 1972), 'personality variables' (Kinnear *et al.*, 1974, p. 21), 'psychographic variables' (Granzin and Olsen, 1991, p. 2; Shrum *et al.*, 1995, p. 72), 'attitudinal variables' (Roberts, 1996) and 'life-style profiles' (Wagner, 1997, p. 23). Examples of these kinds of non-demographic characteristic investigated that are often mentioned as particularly valuable include

- perceived consumer effectiveness (that is, 'a measure of the extent to which a respondent believes that an individual consumer can be effective in pollution abatement' (Kinnear *et al.*, 1974, p. 21; see also Ellen *et al.*, 1991; Laroche *et al.*, 2001, pp. 506–507)),

- liberalism ('Democrats and liberals are more concerned about environmental quality than are their Republican and conservative counterparts' (Roberts, 1996, p. 219, citing Van Liere and Dunlap, 1980; see also Dunlap, 1975; Samdahl and Robertson, 1989)),
- altruism ('... an individual is aware of harmful consequences... to others from a state of the environment and when that person ascribes responsibility... to herself or himself for changing the offending environmental condition' (Stern *et al.*, 1993, p. 324, identifying it as 'Schwartz's theory of altruism'; see also the discussion by Laroche *et al.* of 'collectivism' (2001, p. 506))) and
- ecological concern ('... general environmental attitude and [individual's] perception of the necessity for societal change commensurate with the concept of sustainable development' (Scott, 1999, p. 279, following Blaikie, 1992)).

These characteristics led us to examine a number of hypotheses in this study.

- (ii) *Hypotheses related to attitudinal characteristics*. The level of stated willingness to pay a premium for green electricity is hypothesized to increase for respondents who
- increasingly believe that individual consumers can improve the environment (H₆)
 - hold more 'liberal' attitudes (H₇)
 - are more altruistic (H₈)
 - display greater ecological concern (H₉).

Together, these first two sets of characteristics – namely, demographic characteristics and attitudinal characteristics – have been identified as key elements of the first 'stream of research' in 'research on marketing and the



environment' (Kilbourne and Beckmann, 1998, p. 515). In these cases, the level of analysis was primarily the individual, and, given that 'the intention was to derive consumer characteristics useful in defining an environmentally concerned market segment, . . . it can be argued that the research was predominantly managerialist in perspective' (Kilbourne and Beckmann, 1998, p. 519).

Other approaches have moved beyond a focus upon the individual and have considered the broader social context. For example, Webster developed the so-called social involvement model, which 'suggests that the socially conscious consumer will be more involved in community affairs' (Webster, 1975, p. 191). In a similar vein, Granzin and Olsen note that, in general, 'researchers have linked interpersonal influence to consumption-related behavior. . . . Perceived commitment to environmental protection by one's spouse, family members, friends, and neighbors was linked to one's own commitment to conservation' (Granzin and Olsen, 1991, p. 4, citing others' work). Shrum and colleagues, moreover, have found that 'the green consumer. . . talks with others about products' (1995, p. 80). These socialization characteristics led us to examine a number of hypotheses in this study.

- (iii) *Hypotheses related to socialization characteristics.* The level of stated willingness to pay a premium for green electricity is hypothesized to increase for respondents who
 - are more involved in community affairs (H₁₀)
 - believe more firmly that members of their own social network are trying to improve the environment (H₁₁)
 - more frequently discuss energy and environment issues (H₁₂).

Useful summaries of the literature on purchasers and potential purchasers of green products may be found in the work of Granzin and Olsen (1991, p. 2), Kilbourne and Beckmann, (1998, especially Table 1), Roberts (1996, especially Table 1), Schwegker and Cornwell (1991, especially Table 1) and Straughan and Roberts (1999, pp. 559–562). In the next section of this article, we draw upon our survey results to test these 12 hypotheses.

MEASURES

Dependent Variable

The key discriminating action we had hoped to investigate was the purchase of green electricity. As noted above, however, the purchase of green electricity is not yet possible

Table 1. Results of Spearman's correlation calculation between S-Green and various constructed variables

Hypothesis	Variable	Kind of hypothesis	Spearman's correlation
H ₉	Ecological concern	Attitudinal	0.246**
H ₇	Liberalism	Attitudinal	0.242**
H ₈	Altruism	Attitudinal	0.200**
H ₂	Education	Demographic	0.193**
H ₆	Perceived consumer effectiveness	Attitudinal	0.187**
H ₃	Age	Demographic	-0.163**
H ₁	Income	Demographic	0.136**
H ₁₀	Participation	Socialization	0.133**
H ₁₂	Communication	Socialization	0.101*
H ₆	Knowledge	Demographic	0.084
H ₅	Gender	Demographic	-0.040
H ₁₁	Others	Socialization	-0.036

* *p* < 0.05;
 ** *p* < 0.01.



in Ontario. Therefore, we are obliged to investigate 'potential' purchasers of green electricity. Accordingly, respondents were asked the following question:

How much extra would you be willing to pay on your electricity bill each month to ensure that *all* of the electricity *you use* comes from 'Green' sources? (check *only one*)' [emphasis in original].

Five options were then presented:

- \$0 – don't want green
- \$5/month
- \$10/month
- \$25/month
- \$50/month.

Of the 466 respondents, almost half (45%) selected '\$10/month'. A large share of the remainder was almost equally divided between '\$5/month' and '\$25/month' (21% and 24%, respectively). Finally, 6% answered that they did not want green electricity, while 5% of respondents indicated that they would pay \$50/month. As the dependent variable, we coded responses from 1 (for '\$0–don't want green') through 2, 3, 4 and finally to 5 (for '\$50/month'). We call this variable 'S-Green' (stated willingness to pay a premium for green electricity), and this coding was used in the subsequent analysis.

Potential Independent Variables

To explore the 12 hypotheses presented above, 12 potential independent variables were developed. In this section, we present them.

Following from the five hypotheses related to demographic characteristics (H_1 – H_5 above), the following five variables were constructed.

- H_1 . *Income*—of the household, before taxes, in Canadian dollars:
 1. under \$40 000 (12% of respondents);
 2. \$40 000–\$59,999 (22%);
 3. \$60 000–\$79,999 (25%);

4. \$80 000–\$99,999 (19%);
5. \$100 000 and over (22%).

- H_2 . *Education* – highest level achieved by someone in the household (some grade school; completed high school; college or technical diploma; some university; university (bachelor) degree; second or graduate degree (masters; Ph.D.)). Responses were regrouped into four categories:

1. some grade school; or completed high school (11%);
2. college or technical diploma; or some university (35%);
3. university (Bachelor) degree (32%);
4. second or graduate degree (Masters; Ph.D.) (22%).

- H_3 . *Age* – of survey respondent and reported in years. Responses were subsequently regrouped into six categories:

1. 20–29 years (5%);
2. 30–39 years (21%);
3. 40–49 years (25%);
4. 50–59 years (23%);
5. 60–69 years (18%);
6. 70 years and over (9%)³.

- H_4 . *Gender*—of survey respondent:

1. female (39%);
2. male (61%).

- H_5 . *Knowledge*. Respondents were asked to identify the three largest sources of electricity in Ontario, ranked in terms of 'first', 'second' and 'third' (compare with previous studies of the importance of 'ecoliteracy', e.g., Laroche *et al.*, 2001, p. 505). Nine choices were offered: nuclear, solar, hydro (large and small scale), natural gas, wind, landfill gas, coal, burning municipal garbage and hydrogen. In fact, the province receives more electricity from nuclear power stations (just under 40% of the total electricity generated in Ontario) than any other source – hydroelectric power and coal compete for second and third position (26 and 23%, respectively; derived from OPG, 2001).

³Note that figures do not necessarily add up to 100%, because of rounding.



Consequently, we assigned a mark of '4' to those 15% of respondents who correctly identified nuclear as first, hydroelectric as either second or third and coal as either second or third. We gave a mark of '3' to those who had these three resources in any other order (an additional 25% of respondents), a mark of '2' to those who only had two of these three resources, in any order (52% of respondents) and a mark of '1' to those who only had one of these three resources identified correctly (6% of respondents). All other respondents were given a mark of zero (3% of respondents).

Following from the four hypotheses related to attitudinal characteristics (H₆–H₉ above), the following four variables were constructed.

- H₆. *PCE* – response to the statement 'Even if everyone tried to conserve energy at home, it wouldn't make a big impact on energy use in Canada':
 1. strongly agree (3%);
 2. agree (7%);
 3. unsure (7%);
 4. disagree (47%);
 5. strongly disagree (36%).
- H₇. *Liberalism* – response to the statement 'Government should let industry decide how best to supply energy and conserve energy':
 1. strongly agree (3%);
 2. agree (10%);
 3. unsure (18%);
 4. disagree (40%);
 5. strongly disagree (29%).
- H₈. *Altruism* – response to the statement 'I am very concerned about how climate change will affect future generations of Canadians':
 1. strongly disagree (0%);
 2. disagree (8%);
 3. unsure (14%);
 4. agree (50%);
 5. strongly agree (28%).
- H₉. *Ecological concern* – response to the statement 'The seriousness of environmental

problems is exaggerated by environmentalists' (compare with Scott, 1999, pp. 279–281):

1. strongly agree (3%);
2. agree (7%);
3. unsure (19%);
4. disagree (39%);
5. strongly disagree (32%).

Following from the three hypotheses related to attitudinal characteristics (H₁₀–H₁₂ above), the following three variables were constructed.

- H₁₀. *Community* – involvement in either (or both) a community service group (Cancer Society, Big Sisters, Minor Hockey, Lions Club) or/and an environmental organization (either as a volunteer or through financial support):
 1. involvement in neither (62%);
 2. involvement in one or the other (32%);
 3. involvement in both (6%)⁴.
- H₁₁. *Others* – perceived energy efficiency of another member of their social network⁵:
 1. wasteful of energy (2%);
 2. intermediate Likert-type option (5%);
 3. intermediate Likert-type option (25%);
 4. intermediate Likert-type option (38%);
 5. very energy efficient (30%).
- H₁₂. *Communication* – frequency of discussion about energy conservation with others⁶:

⁴ Unlike all other potential independent variables, our 'participation' variable does not utilize responses on a Likert-type scale. Instead, it reveals membership of a group or not (or, as aggregated, membership of two, one or zero groups). Consequently, it is not directly comparable with the other potential independent variables being investigated in this study. Nevertheless, given the exploratory nature of our investigation, we still thought it useful to include.

⁵ We asked respondents to tell us how energy efficient they thought that their parents, their spouse/partner and their children were. The choices available were 'wasteful of energy' (coded 1), through a Likert-type scale of three other options ('2', '3' and '4'), ending with 'very energy efficient' (coded 5). An option of 'not applicable' was also available for selection. Recognizing that not everyone may have any one (or more) of these relatives, we coded responses by looking at the respondents' single response that was indicative of the most energy efficient relation. For example, if an individual responded '4' (to parents), '2' (to spouse/partner) and '3' (to children), their answer would be taken to be '4'.

⁶ We asked respondents how often they discussed energy conservation with 'friends/family', 'neighbours' and 'co-workers'. The choices available were 'not at all', 'occasionally (every few



1. not at all (11%);
2. occasionally (every few months) (62%);
3. frequently (every month) (22%);
4. very frequently (every week) (5%).

ANALYSIS AND RESULTS

Table 1 presents the Spearman's correlation coefficient for each of the 12 variables (as compared with S-Green – that is, 'stated willingness to pay a premium for green electricity'). Nine of the 12 hypotheses were supported (relationship significant at the 5% level). Indeed, eight relationships appear especially close (significant at the 1% level). To give further substance to these findings, note that among respondents who scored either '4' or '5' on our 'ecological concern' scale (331 respondents), 31% said that they would pay at least a C\$25 a month premium for green electricity (compared with 20% of all other respondents), while only 4% of such respondents said that they would not pay more for green electricity (compared with 13% of all other respondents). Only 'knowledge', 'gender' and 'others' were not significant at either 1 or 5% levels.

IMPLICATIONS AND CONCLUSIONS

Before turning to the managerial and academic implications of our findings, we feel it important to briefly remind the reader of two key limitations to our investigation, and to highlight two additional limitations as well. First, as mentioned earlier, our dependent variable was 'stated willingness to pay' a premium for green electricity, rather than the preferred actually 'paid' a premium for

months), 'frequently (every month)', 'very frequently (every week)' or 'not applicable'. Again, recognizing that not everyone may have 'co-workers', 'family' (or even 'friends') with which to discuss issues of energy conservation, we coded responses by looking at the respondents' single response that was indicative of the most activity. For example, if an individual responded 'occasionally' (to friends/family), 'not at all' (to neighbours) and 'frequently' (to co-workers), their answer would be taken to be 'frequently'.

green electricity. Consequently, we were seeking to explain a (self-reported) 'environmental intention', rather than an (externally verified) 'environmental action'. As markets for green electricity grow, surveys should be undertaken among green electricity customers, to determine whether their attitudes are similar to those found among the 'potential purchasers' of green electricity we examined. Second, the sample, although large, is not necessarily representative of the broader community (Waterloo Region), let alone other communities in North America or around the world. Consequently, additional work focused upon the particular green product examined in this article (that is, green electricity) should be undertaken in other communities to identify similarities and differences.

Third, there may well be differences in respondents' understanding as to what is considered to be 'green electricity'. As noted above, the survey gave no suggestion to the respondent as to what was meant by the term 'green' sources. (Other surveys identify what is implied by 'green' by giving particular examples as part of the question.) Instead, it was left to the respondent to determine that, and then to answer accordingly. Therefore, not all respondents may necessarily have been considering the same 'product' when answering the question about willingness to pay a premium for green electricity. Differences in perception as to what qualifies as 'green' are certainly worthy of investigation. In other work (see Rowlands *et al.*, 2002), we have explored this further.

Fourth, there are different ways in which the various variables could be constructed. Instead of using a Likert-type scale for the dependent variable (S-Green), actual premiums (in dollar terms) could be volunteered by respondents. Similarly, a more elaborate investigation of the potential independent variables could be undertaken. For example, instead of presenting income levels in broad groups (which meant that a household earning C\$60 000 was deemed to be 'identical' to one earning 33% more,



or C\$79 999), specific (or at least more disaggregated) information could be obtained. Moreover, constructs for attitudinal characteristics (liberalism, PCE, altruism and ecological concern) could involve responses to a range of questions/statements instead of just one in each case.

Nevertheless, given that the specific topic that we investigate in this article – namely, the characteristics of consumers who say that they would pay progressively higher premium for green electricity – is quite new, we feel that it is appropriate to identify some implications for business strategies arising from these findings. We recognize, however, that because this investigation is only exploratory, our suggested strategies are only preliminary. We hope to initiate more discussion about, and to encourage further study of, this environmentally influential, and economically significant, sector of our society.

First, there appears to be a continuing message of warning to marketers who think that they should base their segmentation criteria (and hence, their marketing strategy) solely upon demographics. Indeed, the recent conclusions of Straughan and Roberts can be applied to our investigation, virtually verbatim: 'From the results of both past studies and the present work, the use of either a psychographics-only model (incorporating PCE, altruism, and EC [environmental concern]) or a mixed model (incorporating a range of demographics and psychographics) should be preferred to traditional demographic profiling methods' (Straughan and Roberts, 1999, p. 567).

Indeed, as Table 1 suggests, many of the attitudinal characteristics appear to be especially significant. While few may be surprised by the importance of 'ecological concern' (because one's stated willingness to pay progressively higher premiums for green electricity may also be viewed as a declaration of ecological concern), it may indicate that respondents believe that their energy choices have direct

consequences for the condition of the environment (something that should perhaps not be assumed). In any case, what may be more revealing is the importance of 'liberalism'. This finding supports past speculation about the nature of the green electricity purchaser: '...customers may respond better to programs offered by municipal utilities rather than investor-owned [ones]' (Farhar and Houston, 1996, p. 19). Liberalism may also be useful for businesspeople as a profiling variable. Areas that have elected 'liberal' candidates or are known to have residents that hold 'liberal' views might be key targets for marketing campaigns. Others argue that the 'impact of liberalism on [ecologically conscious consumer behavior] would suggest that the use of spokespeople perceived to share similar views would improve perceived argument strength' (Straughan and Roberts, 1999, p. 569). Indeed, a similar kind of case could be made following the high position of 'altruism' in Table 1.

The relatively strong explanatory value of PCE (perceived consumer effectiveness; see Table 1) suggests that marketing campaigns should highlight the positive environmental impact of purchasing green electricity – by, for example, prominently highlighting the tonnes of pollution eliminated as a result of a specific green electricity facility. Indeed, experience has borne this out: 'Several utilities contacted said that programs focusing on a well-defined renewable energy project are apt to be more successful in gaining a higher level of customer cost commitment than those that are aimed at developing renewables in general' (Farhar and Houston, 1996, p. 21). Additionally, as Wisner (1998, p. 116) argues, there may be benefit to tying the purchase of green electricity to health benefits: 'wherever possible, green marketers should make the environmental benefits of their products as personal as possible; for example, appealing to personal health rather than general reductions in air pollution levels'. Wohlgenuth and colleagues (1999, p. 379) support this by calling it 'value': 'In the green



electricity market, value centres on the 'environmental benefits' customers perceive that they are getting from their power purchases. ...One of the most important lessons learned in green electricity marketing in the US is that customers are willing to pay a premium for green electricity, but this willingness to pay for greater ecological value depends a great deal on how well the power companies can document and market the environmental benefits of their green electricity products'.

Although demographic characteristics were not found to be the most useful in our investigation, three of them – namely, education, age and income – still had significance. Accordingly, they could effectively be employed in profiling the potential purchaser of green electricity. The conventional wisdom (among green product developers more generally, that is) that suggests that women should be the target market was not supported. The technological nature of the product may explain why the traditional gender divide does not appear as significant (compare with Farhar and Coburn, 2000).

Finally, although all three socialization characteristics appear in the bottom half of Table 1, we should still recognize that two of them had significance at the 5% level – indeed, 'participation' was significant at the 1% level. The fact that the level of peoples' participation in community groups was a significant indicator of interest in premium-priced green electricity suggests that marketers should establish links with local groups. Indeed, we have already seen that the 'local' element has been flagged as important by analysts of potential green electricity markets: '...local subsidiaries may be more successful at green marketing than multi-state or multi-national corporations seen as having little interest in the community' (Wiser, 1998, p. 113). Our findings lend further support to this observation.

Notwithstanding these suggestions to marketers of green electricity, it is still clear that there is no single factor that completely dominates. The recent comments by Kilbourne

and colleagues appear to have been confirmed: 'No clear consensus regarding environmentally concerned consumers and what they want, what they will do, or how to measure them has emerged' (Kilbourne *et al.*, 2002, p. 194). Our findings suggest close relationships, but not unequivocal ones.

For the researcher, there is much opportunity for additional work in many of the areas mentioned above. Indeed, as investigations into the green product purchaser continue to move beyond simple demographic profiles, attitudinal and socialization characteristics should be further studied. Moreover, given the relative lack of work undertaken on green electricity, it is certainly worth investigating further the extent to which this particular green product 'is different' from other green products – perhaps because of its technological nature or its intangibility. Qualitative work involving open-ended surveys, focus groups and the like could usefully complement the quantitative analysis undertaken in this investigation. Clearly, more work on the business prospects for green electricity is warranted.

This article had two main purposes. First, it aimed to profile consumers who state that they are willing to pay progressively higher premiums for 'green' (or 'environmentally friendlier') electricity. By reviewing the literature on green product purchases more generally, three sets of hypotheses were proposed. Using survey data collected in a major Canadian metropolitan area, these hypotheses were then tested. Although nine of the 12 were confirmed, the strength of the relationship with attitudinal characteristics was found to be the strongest. The second purpose of the article was to elaborate business strategies that follow from an improved understanding of the potential green electricity market. The business implications of the strongest relationships were examined, with strategies for marketers suggested. Additional work into the prospects for green electricity was also encouraged. Indeed, given the environmental impact of electricity use around the world, and the potential size



of the global green electricity market, a better understanding of the green electricity purchaser would appear to be both a societal imperative and a business asset.

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