CTAC MARKET EFFECT STUDY

VOLUME II: APPENDICES

Final Report

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CTAC Market Effects Study: Appendices

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HVAC Distributors	(N = 10)
HVAC Vendors	(N = 10)

Appendix A
Qualitative Research – Recruitment Script

Screener for SCE/CTAC Qualitative Customer Research

Hello. My name is _____ and I'm calling on behalf of Southern California Edison's Customer
[Note: CTAC is located in Irwindale, CA; it is part of SCE; CTAC sponsors seminars/workshops on a variety of topics, including electrical equipment and energy efficiency issues.]

Verify name and title of respondent.

1. Have you attended a CTAC seminar or workshop in the past year and a half?

☐ Yes ----> **What was the seminar/workshop topic?**

HVAC _____
Lighting _____
Other: _____

2. Did you attend any (Have you attended additional) seminars/workshops in the past 3 years?

☐ Yes ----> **What was (were) the seminar/workshop topic(s)?**

HVAC _____
Lighting _____
Other: _____
[NOTE: At least one of the seminars or workshops should have been related to HVAC and/or lighting topics. If not, ask for referral (below), thank and terminate]

☐ **Has anyone else at your company attended a CTAC seminar/workshop in the past 3 years?**

☐ Yes *[Ask for that person's name, title and phone number.*
☐ No *[Thank and terminate]*

*[NOTE: If more than one person has attended CTAC seminars, and the attendees have different job responsibilities, try to set up **on-site interviews or schedule telephone interviews** with all people who have attended.]*

3. Are you a customer of Southern California Edison?

☐ Yes
☐ No ----> *[NOTE: Check quotas]*

4. What prompted you to attend the CTAC seminar?

☐ Wanted to obtain general information about HVAC/lighting
☐ Wanted specific information about creative uses of lighting
☐ Wanted specific information about decreasing HVAC/lighting costs at my facility
☐ Wanted to obtain information about energy efficiency
☐ Wanted to obtain information about deregulation
☐ Wanted to obtain information about compliance with environmental regulations
☐ Wanted to obtain information about operational performance
☐ Wanted information about safety practices
☐ Wanted to see exhibits or participate in hands-on activities to test materials
☐ Other _____

5. What is the principal [business] activity of your company/organization?

☐ *Educational institution*
☐ *Retail business*
☐ *Industrial/manufacturing business [not lighting manufacturer]*
☐ Lighting manufacturer/product representative
☐ Lighting distributor/wholesale supplier
☐ Lighting vendor/retail supplier
☐ Lighting/electrical contractor
☐ HVAC contractor
☐ Architect
☐ Engineering firm
☐ Other (Specify: _____)

[Note: For this phase of the project, we are looking for facility/plant managers, business managers, financial decision-makers rather than customers who attended CTAC seminars/workshops because their business is lighting &/or HVAC.]

Scheduling Section

1. We are an independent research firm working with Southern California Edison to assess the impacts its CTAC seminars and workshops have had on the market for energy efficiency products and services in the past 3 years or so. Could I schedule an appointment for one of our researchers to come by your office and discuss these issues in person? The interview should take about 30-45 minutes, and as a token of our appreciation of the value of your time, we will pay $100 for your input in the evaluation of this program. *[Note that they can take/donate/refuse money if this is a problem]*

☐ **Yes** -----> Great! We'll be visiting with customers during the first two weeks of October. What day/time would be convenient for you?
[Record on IDI Scheduling Sheet]

[NOTE: you may want to try to set up multiple appointments within a single facility]

IF NO ---> Your opinions and evaluation of the program are very important to us and we would still like to include your opinions in our research study. We'd like to invite you to a meeting [focus group] to discuss your impressions and opinions of CTAC seminars and workshops. Since this discussion is important to SCE and we value your time and opinions -- we will pay you $100 to attend the meeting and we'll provide light refreshments. **Can you attend a meeting on:**

Time 1: 7:00 - 9:00 PM, Tuesday, October 21 [to discuss HVAC issues]

Time 2: 7:00 - 9:00 PM, Wednesday, October 22 [to discuss lighting issues]

7. *[If not recruited for IDI or focus group, recruit for Telephone Survey]* Well, we would still like to include your opinions in our research study. We will be conducting a telephone survey later this month. May we call you back at that time in order to discuss your opinions over the phone?

_____ *Record call-back arrangements. Thank/terminate.*

☐ Refused to participate in any research activity _____
[Record reasons for refusal. Thank/terminate]

Recruited Section

Great! We're looking forward to having you attend this important meeting. Now, so that I can make sure my records are accurate, can you verify (check spelling & verify phone/fax numbers):

Your Name: _____

Your Company's Name: _____

Your Company's Address (where YOU work): _____

_____

Your Phone Number: _____

[FG ONLY] **Your Fax Number (for faxing directions/reminder notice):** _____

FG END: OK. We're all set. We'll fax you directions and a reminder notice 2-3 days before the meeting, and another reminder the day of the meeting. In the meantime, if you have any questions or need to re-schedule/cancel, please contact me at (415) 882-1602. Look forward to having you attend this important meeting!

IDI END: OK. We're all set. We'll call to remind you 2-3 days before the appointment, and then again on the day of the meeting. In the meantime, if you have any questions or need to re-schedule/cancel, please contact me at (415) 882-1602. Look forward to meeting you and to our important discussion!

SURVEY END: OK. We're all set. Within the next month or so, we'll be re-contacting you to conduct a brief survey. Look forward to talking with you then!

Notes:

Recruited for Which Activity:

☐ Focus Group on _____
☐ Focus Group on _____
☐ IDI on _____
☐ Telephone survey, call-back on _____

Date Recruited: _____ Recruiter Initials: _____

Appendix B
Qualitative Research – Discussion Guide

Discussion Guide

CTAC In-depth Interviews and Focus Groups

October 1997

Introduction of participants
- Background
  - Job function, length of time in job,
  - Type of facility, type of information/decisions
- CTAC courses taken

Awareness of industry/need for in-depth information
- Awareness of new products, interests in "cutting edge"
- Need to make argument or case (to internal decision-makers or justify decision, to clients)

Decision process
- Types of decisions/role of respondent in organization
- Type of information needed for decision (level of detail, timing)
- Typical reasons for decision (or triggers to action)

Discussion of CTAC courses
- Motivation/expectations for courses
- Comparison with other courses
- Intent to take more courses/who recommend to take courses
- Were expectations met

Utilization of resources
- Internal resources (e.g., more experienced colleagues)
- External resources
  - Manufacturer's rep
  - Distributors & sales reps
  - Print materials (Newsletters, magazines, local/other professional communications)
  - Seminars/workshops (including CTAC & others)

Importance of workshop factors/Ability of CTAC to meet most important factors
- Credibility of CTAC/instructors/materials/ "connection with industry"
- Central source of information
- Demonstrations of new ("cutting edge") materials
- Convenience (e.g., location, timing)

Evaluation of courses
- Instructor (e.g., knowledge, presentation skills)
- Presentation (e.g., level, match with audience needs)
- Materials (e.g., ease of use, professional quality, appropriate for class/level)
- Workshop content (e.g., mix of theory, history, demonstrations; appropriate hands-on)
- Amenities (e.g., comfort of room, food)

Appendix C
Quantitative Research – Recruitment Script

SOUTHERN CALIFORNIA EDISON'S CUSTOMER TECHNOLOGY APPLICATION CENTER MARKET EFFECTS SURVEY USER'S GUIDE TO THE DATA SET

INTRODUCTION

Southern California Edison's Customer Technology Application Center (CTAC) offers customers current objective information on state-of-the-art, energy-efficient electric technologies and environmentally sensitive solutions to their energy challenges. CTAC is designed to help businesses run their operations more effectively while reducing costs, improving product quality, and meeting air-quality standards. The overall goal of the market effects study was to evaluate how effective CTAC is in achieving these goals and to understand how the information provided in the CTAC seminar or workshop is being used in participants day-to-day operations.

This guide contains the documentation of data collection efforts for SCE's CTAC Market Effects Survey.

SAMPLING

The sample frame for the quantitative survey was a list of participants provided by Southern California Edison CTAC seminars/workshops over the past three years. From this list, a random sample of 560 participants was sampled.

METHODOLOGY AND DATA COLLECTION PROCEDURES

The telephone survey data was collected using CASES, a Computer Assisted Telephone Interviewing (CATI) software package developed and supported by the University of California-Berkeley.

The telephone interviews were conducted between November 10, 1997 and November 24, 1997 with sampled participants. A minimum of seven attempts were made during this time to contact sampled participants. The telephone survey averaged 17 minutes to complete. Completed surveys were obtained from 175 people who recalled attending a CTAC seminar/workshop in the past three years, or of those for whom a working phone number could be located. Table 1 presents the disposition of the telephone survey.

Table 1. Response rate to the 1997 CTAC Market Effects Survey.

	Total
Starting Sample	560
No phone number [a]	203
Ineligible [b]	82
Adjusted sample	275
Refused	18
R away for duration	8
Unable to contact after 7 attempts	74
Completed surveys	175
Response rate [c]	63.6%

[a] No phone number found after calling directory assistance

[b] Ineligibles include respondents who say they did not attend seminar/workshop and independent contractors

[c] Computed as: (number of completed surveys/adjusted sample)

DATA SET

After interviewing was completed, open-ended responses were coded and the data was checked for inconsistencies. A complete description of all variables in the data set and their codes are included in the codebook in this user guide. A '*' on coded responses indicates that the response stem was coded after data collection. All open-ended questions were coded. All variables in the datasets are numeric unless otherwise stated. Provided with this document is three files:

- CTAC.POR. This is an SPSS portable data file that contains survey information. This file contains 175 records (one record per participant).
- CTAC.SD2. This is an SAS data file that contains survey information. This file contains 175 records (one record per participant).
- CB-CTAC.DOC. This is a Word file with a description of all variables in the data set and their codes.

Appendix D
Quantitative Research – Recruitment Script

Customer Survey – Quantitative Customer Research Task

INTRODUCTION

Hello, I'm [fill name] from Hagler Bailly, a consulting firm located in Madison, Wisconsin. May I please speak with [fill respondent name]?

1 CONTINUE
2 CALLBACK

[WHEN RESPONDENT IS ON THE PHONE]

Hello, I'm [fill name] from Hagler Bailly in Madison, Wisconsin. We are an independent market research firm hired by Southern California Edison to help them evaluate their Customer Technology Applications Center. You probably know it as "CTAC". We are interested in the opinions of people like yourself who have attended a seminar or workshop at CTAC. We are not selling workshops but are simply helping CTAC figure out how to improve their workshops and seminars. Your answers are completely confidential and will be used to help them plan future projects that will be useful to customers like yourself. This survey should take no longer than 15 minutes of your time.

1 CONTINUE
2 CALLBACK
3 REFUSED

[IF ASKED WHAT CTAC IS: Southern California Edison's Customer Technology Application Center is located in Irwindale. This center offers customers information on energy-efficient electric technologies and environmentally sensitive solutions to their energy challenges.]

[NOTE: FOR EACH QUESTION ASKED, THE INTERVIEWER WILL HAVE THE OPTION OF RECORDING A "D" FOR DON'T KNOW AND A "R" FOR REFUSED. THESE OPTIONS WILL NOT BE OFFERED TO THE RESPONDENT UNLESS THEY ARE LISTED IN THE INSTRUMENT AS A VALID RESPONSE]

BACKGROUND

First, I'd like to get some background information about your firm and your job responsibilities to help me better understand your responses. I'd like to remind you that all of your answers will be kept confidential.

B1 What is the main business activity of your firm?

1 apartment building, condominium, or other multi-family residential facility
2 commercial office building
3 government/community services facility (includes offices, police/fire stations, prisons, and military bases)
4 retail sales
5 grocery store/convenience store
6 restaurant/deli/tavern
7 health services (hospital, nursing home, health care facility, clinic)
8 hotel/motel
9 manufacturing/industrial facility
10 warehouse
11 school, college or university
12 hotel/motel
13 other [specify]

B2 How long have you been employed by your firm?

_____months and/or _____years

B3 What is your current job title?

1 owner
2 president/vice-president/CEO
3 energy manager
4 facility manager
5 chief engineer
6 plant engineer
7 plant manager
8 property manager
9 store manager
10 other [specify]

B4 How long have you held this position?

_____MONTHS AND/OR _____YEARS

B5 Next I'd like you to think about your various job responsibilities. What percent, if any, of your time is devoted to facility or plant management, and what percent is devoted to facility or plant maintenance? *(IF NONE, RECORD 0)*

a. ____% facility/plant management
b. ____% facility/plant maintenance

B6a (IF QB5a >0) For how many separate buildings or facilities are you responsible for facility/plant management?

_____separate buildings/facilities

B6b (IF QB5b >0) For how many separate buildings or facilities are you responsible for facility/plant maintenance?

_____separate buildings/facilities

NEW PRODUCTS AND SERVICES

NP1 In this next series of questions, I'd like to better understand your role in making and/or implementing decisions about new equipment purchases for this facility. Are you involved in . . . . . ?

1 yes
2 no

a. identifying new equipment needs at this facility? ____
b. evaluating the technical or economic potential of new purchases? ____
c. giving final approval for new purchases? ____
d. selecting a supplier or vendor to install the new equipment? ____
e. performing any of these roles for lighting equipment ____
f. performing any of these roles for HVAC equipment ____
g. performing any of these roles for other equipment [SPECIFY] ____

NP2 What source of information do you or other decision makers at your facility prefer to use to collect information on . . . .?

1 trade journals or other literature
2 manufacturers reps
3 distributors or other sales staff
4 seminars or workshops
5 colleagues within company
6 colleagues outside company/other businesses
7 consultants (engineers, architects)
8 utility company
9 other [specify]

a. new technologies ____
b. energy use at your facility ____
c. energy efficiency ____
d. vendors and contractors ____

NP3 (ASK FOR EACH ITEM IN WHICH SEMINARS OR WORKSHOPS IS MENTIONED IN NP3) When collecting new information on [FILL NP3A-D], what makes seminars or workshops more valuable to you than some other source of information? [PROBE ONLY FOR THOSE WHERE SEMINARS/WORSHOPS ARE THE PREFERRED SOURCE OF INFORMATION]

1 convenience
2 hands on demonstrations
3 unbiased/objective information
4 depth of material
5 ability to interact with instructor/other participants
6 other [specify]

CTAC FACILITY

C1 Next, I want to ask a few questions about your experiences with CTAC. In total, how many seminars or workshops have you taken at CTAC?

_____# of seminars/workshops attended

C2 How did you hear about CTAC and the seminars/workshops they offer? (PROBE: Anywhere else?)

1 from an Edison company representative
2 from information inserted in my utility bill
3 received a brochure in the mail regarding a seminar offered at CTAC
4 saw an article in a trade magazine
5 received information through professional organizations
6 saw display at trade show
7 someone at my company gave me a brochure regarding a seminar or seminars offered at CTAC
8 someone at my company told me about CTAC
9 a colleague outside my company told me about CTAC
10 a consultant or contractor told me about CTAC
11 other [specify]

C3 What would be the best way to inform you or others in your position about future CTAC seminars and workshops?

1 through an Edison company representative
2 from information inserted in my utility bill
3 send a brochure in the mail regarding a seminar offered at CTAC
4 through articles in a trade magazine
5 through information available from professional organizations
6 through a display at trade show
7 through others at my company
8 through a colleagues outside my company
9 through consultants or contractor who work with me or my company
10 other [specify]

C4 What are the main reasons why you took the CTAC course(s)? (PROBE: Why else?)

1 CTAC is a credible information source
2 CTAC provides objective information that I can't get anywhere else
3 CTAC has a good reputation for its seminars/courses
4 CTAC courses are convenient
5 My company was thinking about purchasing some equipment, and I went to CTAC to learn more about a specific technology
6 My company was thinking about purchasing some equipment , and I wanted to learn more about a general topic (i.e., lighting, HVAC, environmental regulations)
7 I wanted to consult with someone at CTAC regarding a specific application or problem for my company
8 I wanted to test/showcase a new product
9 I was curious about what CTAC had to offer
10 Someone in my company asked me to attend
11 To help my company meet energy standards
12 To meet my career goals/get promoted
13 Other [SPECIFY]

(ASK C5a-C7 OF NO MORE THAN 2 CTAC COURSES TAKEN: LAST COURSE ANY OTHER SELECTED COURSE)

C5a According to our records you attended a seminar/workshop called [fill with CTAC course name]. Is this information correct?

1 Yes
2 No [SKIP TO C8]

8 This seminar was the second part of the first seminar [SKIP TO C8]

C5b Using a scale of 1 to 5, where 1 is "poor" and 5 is "excellent", how would you rate each of the following aspects of the [fill with CTAC course name] you took?

1	2	3	4	5	8
POOR				EXCELLENT	NA

a. convenience of the course in terms of location and schedule ____
b. technical level of information provided ____
c. "cutting edge" or "state-of-the-art" information that was provided ____
d. objectivity of the information ____
e. clarity of the information provided ____
f. technical knowledge of the instructor ____
g. teaching skill of the instructor ____
h. the amount of time the course lasted ____
i. usefulness of demonstrations ____

C6 Now I have a few questions on the usefulness of the course. Using the same 1 to 5 scale, where 1 is 'poor' and 5 is 'excellent, how would you rate . . . . ?

1	2	3	4	5	8
POOR				EXCELLENT	NA

a. the usefulness of the information you when I purchased energy-using equipment for your facility ____
b. the usefulness of the information for you in making future purchase decisions regarding energy-using equipment for your business or facility ____
c. the usefulness of the information for you in making future modifications and upgrading existing energy-using equipment for your business or facility ____
d. the usefulness of the information in helping you explain to others in your company the rationale behind certain choices ____

C7 Overall, would you say the [fill with CTAC course name] you took exceeded your expectations, met your expectations, or fell short of your expectations?

1 EXCEEDED EXPECTATIONS
2 MET EXPECTATIONS
3 FELL SHORT OF EXPECTATIONS

C8 How could CTAC help you make decisions more effectively? (PROBE: How else?)

0 NOTHING
1 MORE DETAILED INFORMATION THROUGH HIGHER LEVEL COURSES
2 ON-GOING TECHNICAL SUPPORT
3 SOMEONE READILY AVAILABLE TO ANSWER QUESTIONS
4 UPDATE INFORMATION ABOUT NEW TECHNOLOGIES
5 OTHER [SPECIFY]

The next few questions ask about any effects that your visit to CTAC or the CTAC course(s) you took may have had on decisions to purchase or upgrade energy-using equipment at your facility.

C9 Using a 1 to 5 scale, where 1 means "strongly disagree" and 5 means "strongly agree", please tell me how much you agree or disagree with each statement. As a result of taking the CTAC course(s)……

1	2	3	4	5
STRONGLY DISAGREE				STRONGLY AGREE

a. I am more aware of new technologies or practices ____
b. I am more aware of alternative solutions ____
c. I better understand how to work with existing equipment at my facility ____
d. I better understand payback issues ____
e. I am more interested in long term energy efficiency ____
f. I can "sell" energy efficiency to my own management better ____
g. My company has changed or will change some of its policies ____
j. h. I am more likely to specify "energy efficient" equipment when I have a choice ____
i. I still continue to use or refer to the information I received ____
j. Over time, the information has faded in my memory and I find that I seldom use or refer to what I learned ____

C10 Since your visit to CTAC, has your company purchased or upgraded any . . . .?

1 Yes
2 No

a. lighting equipment ____
b. HVAC equipment ____
c. equipment regulating indoor air quality ____
d. water using equipment ____
e. waste disposal equipment ____

[ASK C11-C13 FOR EACH TYPE OF EQUIPMENT PURCHASED OR UPGRADED IN C10]

C11 Did you receive a rebate from the Edison Company for the purchase of [fill with equipment type purchased/upgraded]?

1 Yes
2 No

C12 Would you have purchased the same type and efficiency level of [fill with equipment type purchased/upgraded] if you had not visited CTAC?

1 Yes
2 No

C13 As a result of CTAC, would you say that you have (or in the future might)...

1 Yes
2 No

a. purchase [fill with equipment type purchased/upgraded] that was more energy-efficient than what we would have purchased ____
b. purchase [fill with equipment type purchased/upgraded] that was less polluting than what we would have purchased ____
c. purchase [fill with equipment type purchased/upgraded] that was different in some other way than what we would have purchased [SPECIFY IN WHAT WAY WAS IT DIFFERENT] ____
d. purchase [fill with equipment type purchased or upgraded] that we had not planned on purchasing ____

C14 Did your visits to CTAC affect how your business uses any of its equipment?

1 Yes
2 No [SKIP TO END]

C15 For what equipment did you change the operations?

1 HVAC equipment
2 Lighting equipment (bulbs, fixtures, ballasts, systems)
3 equipment regulating indoor air quality
4 water using equipment
5 waste disposal equipment
6 other [SPECIFY]

C16 In what way have you changed how you operate this equipment as a result of your visit to CTAC?

_____

Thank and end survey.

Appendix E
Quantitative Research – Recruitment Script

***Indicates that the responses were categorized.**

BACKGROUND

First, I'd like to get some background information about your firm and your job responsibilities to help me better understand your responses. I'd like to remind you that all of your answers will be kept confidential.

B1 What is the main business activity of your firm?

6.4%	Apartment building, condominium, or other multifamily residential facility
8.1%	Commercial office building
10.4%	Government/community services facility (includes offices, police/fire stations, prisons, and military bases)
9.2%	Retail sales
.6%	Grocery store/convenience store
2.3%	Restaurant/deli/tavern
6.9%	Health services (hospital, nursing home, health care facility, clinic)
.6%	Hotel/motel
18.5%	Manufacturing/industrial facility
2.3%	Warehouse
9.8%	School, college or university
4.0%	Church
2.9%	Construction
1.7%	Architect
3.5%	Consulting
.6%	Engineering
3.5%	Lighting
2.3%	Utility
.6%	Wholesaler
5.8%	Other

(N = 174)

*B2 How long have you been employed by your firm?

17.2%	Less than 3 years
18.4%	3-5 years
64.4%	More than 5 years

(N = 174)

*B3 What is your current job title?

38.3%	Manager
19.4%	Engineer
15.4%	Executive
12.0%	Technician
14.9%	Other

(N = 175)

*B4 How long have you held this position?

32.8%	Less than 3 years
31.6%	3-5 years
35.6%	More than 5 years

(N = 174)

*B5 Next I'd like you to think about your various job responsibilities. What percent, if any, of your time is devoted to facility or plant management, and what percent is devoted to facility or plant maintenance? *(IF NONE, RECORD 0)*

	Management	Maintenance
No time	39.1%	35.1%
Some time, but no more than 50%	41.4%	40.2%
More than 50%	19.5%	24.7%
	(N = 174)	(N = 174)

B6a (IF QB5a >0) For how many separate buildings or facilities are you responsible for facility/plant management?

39.4%	None
16.0%	1 building
17.1%	2-5 buildings
27.4%	More than 5 buildings

B6b (IF QB5b >0) For how many separate buildings or facilities are you responsible for facility/plant maintenance?

36.5%	None
14.1%	1 building
18.8%	2-5 buildings
30.6%	More than 5 buildings

NEW PRODUCTS AND SERVICES

NP1 In this next series of questions, I'd like to better understand your role in making and/or implementing decisions about new equipment purchases for this facility. Are you involved in . . . . . ?

	Yes	No
Identifying new equipment needs at this facility?	82.8%	17.2%
Evaluating the technical or economic potential of new purchases?	80.5%	19.5%
Giving final approval for new purchases?	43.7%	56.3%
Selecting a supplier or vendor to install the new equipment?	69.5%	30.5%
Performing any of these roles for lighting equipment?	68.4%	31.6%
Performing any of these roles for HVAC equipment?	58.6%	41.4%
Performing any of these roles for other equipment?	56.9%	43.1%

(N = 174)

NP2 What source of information do you or other decision makers at your facility prefer to use to collect information on . . . .?

	New Technologies	Energy Use at Your Facility	Energy Efficiency	Vendors and Contractors
Trade journals or other literature	51.9%	25.7%	37.4%	16.8%
Manufacturers reps or distributors or other sales staff	9.3%	9.5%	12.3%	6.7%
Seminars or workshops	17.3%	17.6%	20.0%	2.0%
Colleagues or consultants (engineers, architects)	14.2%	16.2%	12.9%	24.8%
Utility company	4.9%	23.6%	16.3%	2.7%
Other	2.5%	7.4%	7.1%	47.0%
	(N = 162)	(N = 148)	(N = 155)	(N = 149)

NP3 (ASK FOR EACH ITEM IN WHICH SEMINARS OR WORKSHOPS IS MENTIONED IN NP3) When collecting new information on [FILL NP3A-D], what makes seminars or workshops more valuable to you than some other source of information? [PROBE ONLY FOR THOSE WHERE SEMINARS/WORSHOPS ARE THE PREFERRED SOURCE OF INFORMATION]

	New Technologies	Energy Use at Your Facility	Energy Efficiency	Vendors and Contractors
Convenience	.0%	3.8%	6.7%	.0%
Hands-on demonstrations	28.6%	19.2%	26.7%	.0%
Unbiased/objective information	3.6%	3.8%	6.7%	3.3%
Depth of material	10.7%	30.8%	23.3%	.0%
Ability to interact with instructor/other participants	46.4%	42.3%	36.7%	66.7%
Other	10.7%	.0%	.0%	.0%
	(N = 28)	(N = 26)	(N = 30)	(N = 3)

CTAC FACILITY

*C1 Next, I want to ask a few questions about your experiences with CTAC. In total, how many seminars or workshops have you taken at CTAC?

39.4%	1 course
60.6%	2 or more courses

C2 How did you hear about CTAC and the seminars/workshops they offer? (PROBE: Anywhere else?) (NOTE: will total more than 100% due to multiple responses.)

29.1%	From an Edison company representative
5.1%	From information inserted in my utility bill
46.9%	Received a brochure in the mail regarding a seminar offered at CTAC
3.4%	Saw an article in a trade magazine
6.9%	Received information through professional organizations
.0%	Saw display at trade show
11.4%	Someone at my company gave me a brochure regarding a seminar or seminars offered at CTAC
15.4%	Someone at my company told me about CTAC
8.0%	A colleague outside my company told me about CTAC
6.3%	A consultant or contractor told me about CTAC
.0%	Other

(N = 175)

C3 What would be the <u>best</u> way to inform you or others in your position about future CTAC seminars and workshops?

2.3%	Through an Edison company representative
4.0%	From information inserted in my utility bill
81.1%	Send a brochure in the mail regarding a seminar offered at CTAC
2.9%	Through articles in a trade magazine
2.9%	Through information available from professional organizations
.6%	Through a display at trade show
.0%	Through others at my company
.6%	Through a colleagues outside my company
1.1%	Through consultants or contractor who work with me or my company
4.6%	Other

(N = 175)

C4 What are the main reasons why you took the CTAC course(s)? (PROBE: Why else?) (NOTE: will total more than 100% due to multiple responses.)

17.7%	CTAC is a credible information source
9.1%	CTAC provides objective information that I can't get anywhere else
4.6%	CTAC has a good reputation for its seminars/courses
5.1%	CTAC courses are convenient
25.7%	My company was thinking about purchasing some equipment, and I went to CTAC to learn more about a specific technology or general topic
5.7%	I wanted to consult with someone at CTAC regarding a specific application or problem for my company
5.1%	I wanted to test/showcase a new product
13.7%	I was curious about what CTAC had to offer
10.9%	Someone in my company asked me to attend
11.4%	To help my company meet energy standards
17.7%	To meet my career goals/get promoted
23.4%	Wanted more information
1.1%	Financial reasons
.6%	Other

(N = 174)

(ASK C5b-C7 OF NO MORE THAN 2 CTAC COURSES TAKEN: LAST COURSE ANY OTHER SELECTED COURSE)

C5b Using a scale of 1 to 5, where 1 is "poor" and 5 is "excellent", how would you rate each of the following aspects of the [fill with CTAC course name] you took?

	Poor 1	2	3	4	Excellent 5	N=
Convenience of the course in terms of location and schedule	2.8%	8.9%	20.6%	24.4%	43.3%	180
Technical level of information provided	.0%	1.7%	12.8%	40.6%	45.0%	180
"Cutting edge" or "state-of-the-art" information that was provided	.6%	2.2%	21.3%	39.3%	36.5%	178
Objectivity of the information	.0%	3.9%	13.4%	42.5%	40.2%	179
Clarity of the information provided	.0%	1.1%	11.7%	36.1%	51.1%	180
Technical knowledge of the instructor	.0%	.0%	7.8%	28.9%	63.3%	180
Teaching skill of the instructor	.0%	1.1%	12.2%	40.6%	46.1%	180
The amount of time the course lasted	.0%	1.1%	21.5%	46.3%	31.1%	177
Usefulness of demonstrations	1.1%	6.2%	13.0%	38.4%	41.2%	177

C6 Now I have a few questions on the usefulness of the course. Using the same 1 to 5 scale, where 1 is 'poor' and 5 is 'excellent, how would you rate . . . . ?

	Poor 1	2	3	4	Excellent 5	N=
The usefulness of the information you when I purchased energy-using equipment for your facility	2.2%	3.6%	23.9%	39.9%	30.4%	138
The usefulness of the information for you in making future purchase decisions regarding energy-using equipment for your business or facility	1.4%	4.2%	19.4%	41.0%	34.0%	144
The usefulness of the information for you in making future modifications and upgrading existing energy-using equipment for your business or facility	1.3%	2.6%	23.7%	38.2%	34.2%	152
The usefulness of the information in helping you explain to others in your company the rationale behind certain choices	1.2%	2.4%	16.7%	47.0%	32.7%	168

C7 Overall, would you say the [fill with CTAC course name] you took exceeded your expectations, met your expectations, or fell short of your expectations?

27.8%	Exceeded expectations
62.8%	Met expectations
9.4%	Fell short of expectations

(N = 180)

C8 How could CTAC help you make decisions more effectively? (PROBE: How else?)

23.4%	More detailed information through higher level courses
12.6%	On-going technical support
10.3%	Someone readily available to answer questions
22.9%	Update information about new technologies
38.3%	Other

(N = 175)

The next few questions ask about any effects that your visit to CTAC or the CTAC course(s) you took may have had on decisions to purchase or upgrade energy-using equipment at your facility.

C9 Using a 1 to 5 scale, where 1 means "strongly disagree" and 5 means "strong please tell me how much you agree or disagree with each statement. As a result of taking the CTAC course(s)……

	Strongly Disagree 1	2	3	4	Strongly Agree 5	N=
I am more aware of new technologies or practices	1.1%	3.4%	24.1%	38.5%	32.8%	174
I am more aware of alternative solutions	2.9%	2.9%	23.6%	39.1%	31.6%	174
I better understand how to work with existing equipment at my facility	3.5%	7.0%	33.3%	28.7%	27.5%	171
I better understand payback issues	4.7%	10.5%	29.2%	33.3%	22.2%	171
I am more interested in long term energy efficiency	4.0%	4.6%	20.2%	28.3%	42.8%	173
I can "sell" energy efficiency to my own management better	7.1%	8.3%	24.4%	36.9%	23.2%	168
My company has changed or will change some of its policies	15.7%	16.3%	25.9%	24.7%	17.5%	166
I am more likely to specify "energy efficient" equipment when I have a choice	3.5%	2.3%	12.2%	29.1%	52.9%	172
I still continue to use or refer to the information I received	3.5%	7.0%	26.2%	30.8%	32.6%	172
Over time, the information has faded in my memory and I find that I seldom use or refer to what I learned	27.1%	33.5%	24.1%	12.4%	2.9%	170

C10 Since your visit to CTAC, has your company purchased or upgraded any . . . .?

	Yes	No	N=
Lighting equipment	51.5%	48.5%	163
HVAC equipment	42.1%	57.9%	164
Equipment regulating indoor air quality	21.6%	78.4%	162
Water using equipment	21.3%	78.7%	164
Waste disposal equipment	10.6%	89.4%	160

[ASK C11-C13 FOR EACH TYPE OF EQUIPMENT PURCHASED OR UPGRADED IN C10]

C11 Did you receive a rebate from the Edison Company for the purchase of [fill with equipment type purchased/upgraded]?

	Lighting Equipment	HVAC Equipment	Equipment Regulating Indoor Air Quality	Water Using Equipment	Waste Disposal Equipment
Yes	36.8%	13.8%	3.6%	10.0%	7.7%
No	63.2%	86.2%	96.4%	90.0%	92.3%
(N=	76	58	28	30	13)

C12 Would you have purchased the same type and efficiency level of [fill with equipment type purchased/upgraded] if you had not visited CTAC?

	Lighting Equipment	HVAC Equipment	Equipment Regulating Indoor Air Quality	Water Using Equipment	Waste Disposal Equipment
Yes	42.5%	71.4%	52.2%	69.6%	61.5%
No	57.5%	28.6%	47.8%	30.4%	38.5%
(N=	80	56	23	23	13)

C13 As a result of CTAC, would you say that you have (or in the future might)...

	Lighting Equipment		HVAC Equipment		Equipment Regulating Indoor Air Quality		Water Using Equipment		Waste Disposal Equipment	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Purchase [fill with equipment type purchased/upgraded] that was more energy-efficient than what we would have purchased	67.1%	32.9%	61.7%	38.3%	57.1%	42.9%	46.4%	53.6%	52.9%	47.1%
Purchase [fill with equipment type purchased/upgraded] that was less polluting than what we would have purchased	58.7%	41.3%	46.6%	53.4%	40.7%	59.3%	40.7%	59.3%	58.8%	41.2%
Purchase [fill with equipment type purchased/upgraded] that was different in some other way than what we would have purchased SPECIFY IN WHAT WAY WAS IT DIFFERENT]	35.4%	64.6%	33.9%	66.1%	21.4%	78.6%	24.1%	75.9%	18.8%	81.3%
Purchase [fill with equipment type purchased or upgraded] that we had not planned on purchasing	34.2%	65.8%	33.3%	66.7%	21.4%	78.6%	28.6%	71.4%	23.5%	76.5%

C14 Did your visits to CTAC affect how your business uses any of its equipment?

40.2%	Yes	
59.8%	No	[SKIP TO END]

(N = 169)

C15 For what equipment did you change the operations? (NOTE: will total more than 100% due to multiple responses.)

32.4%	HVAC equipment
69.1%	Lighting equipment (bulbs, fixtures, ballasts, systems)
1.5%	Equipment regulating indoor air quality
5.9%	Water using equipment
.0%	Waste disposal equipment
11.9%	Other

(N = 68)

Appendix F
Quantitative Research – Recruitment Script

Table 1. Sources of Information

		Current job title					Total	Length of time in			Total	Percent of time			Total	Percent of time			Total	Management and		Total	Number of buildings responsible for				Total	Number of buildings responsible for				Total	Number of		Total	Reasons for		Total
		Mgrs	Engs	Execs	Techs	Other		Less than 3 years	3-5 years	More than 5 years		No time	Some time, but no more than 50% of my time	More than 50%		No time	Some time, but no more than 50% of my time	More than 50%		Responsible for both	Not responsible for both		None	1 building	2-5 buildings	More than 5 buildings		None	1 building	2-5 buildings	More than 5 buildings		1 course	2 or more		Were thinking about a purchase	Other reason	
Preferred source of information for new technologies	Trade journals or other literature	44%	62%	62%	39%	59%	52%	42%	54%	60%	52%	44%	56%	56%	52%	54%	55%	42%	52%	53%	50%	52%	45%	62%	59%	51%	52%	55%	71%	53%	44%	54%	44%	57%	52%	51%	52%	52%
	Manufacturers reps or distributors or other sales staff	8%	9%	12%	17%	5%	9%	12%	6%	11%	9%	8%	10%	9%	9%	7%	6%	18%	9%	9%	9%	9%	8%	19%	14%	2%	9%	7%	10%	10%	8%	8%	11%	8%	9%	5%	11%	9%
	Seminars or workshops	19%	15%	15%	22%	14%	17%	14%	20%	16%	17%	19%	13%	24%	17%	14%	21%	16%	17%	18%	16%	17%	18%	4%	17%	23%	17%	14%	5%	17%	25%	17%	15%	19%	17%	22%	16%	17%
	Collegues or consultants	16%	6%	8%	22%	23%	14%	26%	13%	5%	14%	24%	10%	6%	14%	21%	11%	11%	14%	9%	20%	14%	23%	0%	10%	13%	14%	21%	0%	20%	10%	15%	23%	9%	14%	15%	14%	14%
	Utility company	8%	9%	0%	0%	0%	5%	4%	6%	5%	5%	5%	6%	3%	5%	4%	5%	8%	5%	6%	4%	5%	5%	8%	0%	6%	5%	3%	5%	0%	8%	4%	5%	5%	5%	5%	5%	5%
	Other	5%	0%	4%	0%	0%	2%	2%	2%	4%	2%	0%	4%	3%	2%	0%	3%	5%	2%	5%	0%	2%	0%	8%	0%	4%	2%	0%	10%	0%	4%	3%	3%	2%	2%	2%	2%	2%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-62	-34	-26	-18	-22	-162	-50	-54	-57	-161	-59	-68	-34	-161	-57	-66	-38	-161	-87	-74	-161	-60	-26	-29	-47	-162	-58	-21	-30	-48	-157	-62	-100	-162	-41	-121	-162
Preferred source of information for energy use at your facility	Trade journals or other literature	26%	17%	38%	20%	30%	26%	24%	22%	31%	26%	29%	24%	26%	26%	32%	28%	14%	26%	24%	29%	26%	29%	28%	27%	20%	26%	32%	30%	29%	17%	26%	39%	18%	26%	23%	27%	26%
	Manufacturers reps or distributors or other sales staff	11%	10%	10%	13%	0%	9%	7%	16%	6%	10%	6%	7%	19%	9%	11%	13%	3%	9%	11%	8%	9%	6%	12%	13%	9%	9%	11%	10%	13%	7%	10%	9%	10%	9%	10%	9%	9%
	Seminars or workshops	21%	3%	19%	27%	20%	18%	20%	18%	15%	18%	16%	22%	10%	18%	13%	17%	24%	18%	19%	16%	18%	16%	20%	10%	23%	18%	13%	25%	6%	28%	18%	12%	21%	18%	28%	14%	18%
	Collegues or consultants	13%	27%	0%	20%	25%	16%	24%	14%	10%	16%	16%	18%	13%	16%	19%	14%	16%	16%	15%	17%	16%	16%	8%	23%	16%	16%	19%	10%	16%	13%	15%	19%	14%	16%	15%	17%	16%
	Utility company	23%	37%	24%	7%	20%	24%	16%	22%	33%	24%	22%	21%	32%	24%	17%	23%	32%	24%	27%	19%	24%	22%	24%	20%	27%	24%	17%	20%	26%	28%	23%	14%	30%	24%	18%	26%	24%
	Other	6%	7%	10%	13%	5%	7%	9%	8%	6%	7%	10%	9%	0%	7%	9%	5%	11%	7%	5%	11%	7%	10%	8%	7%	5%	7%	9%	5%	10%	7%	8%	7%	8%	7%	8%	7%	7%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-62	-30	-21	-15	-20	-148	-45	-50	-52	-147	-49	-68	-31	-148	-47	-64	-37	-148	-85	-63	-148	-49	-25	-30	-44	-148	-47	-20	-31	-46	-144	-57	-91	-148	-40	-108	-148
Preferred source of information for energy efficiency	Trade journals or other literature	41%	33%	44%	31%	32%	37%	28%	42%	41%	37%	36%	40%	37%	38%	34%	48%	26%	38%	39%	36%	38%	35%	44%	50%	28%	37%	33%	52%	48%	31%	38%	43%	34%	37%	30%	40%	37%
	Manufacturers reps or distributors or other sales staff	10%	18%	8%	25%	5%	12%	6%	17%	13%	12%	14%	10%	13%	12%	19%	10%	8%	12%	10%	16%	12%	14%	0%	17%	14%	12%	19%	0%	13%	9%	12%	8%	15%	12%	13%	12%	12%
	Seminars or workshops	19%	21%	24%	13%	23%	20%	23%	13%	23%	20%	16%	22%	23%	20%	13%	19%	32%	20%	24%	16%	20%	16%	32%	10%	26%	20%	13%	33%	10%	31%	21%	11%	26%	20%	35%	15%	20%
	Collegues or consultants	14%	9%	8%	25%	14%	13%	28%	10%	4%	13%	21%	9%	7%	13%	23%	6%	11%	13%	8%	19%	13%	21%	4%	3%	14%	13%	22%	10%	3%	9%	13%	21%	7%	13%	10%	14%	13%
	Utility company	12%	12%	8%	0%	14%	10%	4%	10%	16%	10%	7%	13%	10%	10%	6%	10%	18%	10%	13%	7%	10%	7%	12%	17%	9%	10%	6%	5%	19%	11%	10%	8%	12%	10%	8%	11%	10%
	Other	5%	6%	8%	6%	14%	7%	11%	8%	4%	7%	5%	6%	10%	6%	6%	8%	5%	6%	6%	7%	6%	7%	8%	3%	9%	7%	7%	0%	6%	9%	7%	8%	6%	7%	5%	8%	7%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-59	-33	-25	-16	-22	-155	-47	-52	-56	-155	-56	-68	-30	-154	-53	-63	-38	-154	-84	-70	-154	-57	-25	-30	-43	-155	-54	-21	-31	-45	-151	-61	-94	-155	-40	-115	-155
Preferred source of information for vendors and contractors	Trade journals or other literature	14%	9%	13%	33%	30%	17%	13%	20%	17%	17%	20%	15%	13%	16%	21%	13%	16%	16%	13%	20%	16%	22%	16%	18%	11%	17%	23%	14%	17%	11%	17%	15%	18%	17%	17%	17%	17%
	Manufacturers reps or distributors or other sales staff	2%	9%	9%	13%	10%	7%	15%	2%	4%	7%	8%	7%	3%	7%	6%	5%	11%	7%	7%	6%	7%	8%	0%	0%	13%	7%	6%	0%	3%	13%	7%	7%	7%	7%	15%	4%	7%
	Seminars or workshops	3%	3%	0%	0%	0%	2%	0%	2%	4%	2%	2%	1%	3%	2%	2%	3%	0%	2%	2%	2%	2%	2%	0%	0%	4%	2%	2%	0%	0%	4%	2%	0%	3%	2%	2%	2%	2%
	Collegues or consultants	31%	28%	22%	7%	20%	25%	26%	29%	20%	25%	26%	22%	29%	25%	32%	22%	22%	25%	24%	27%	25%	25%	24%	21%	27%	25%	31%	33%	21%	19%	26%	30%	21%	25%	15%	29%	25%
	Utility company	5%	3%	0%	0%	0%	3%	0%	6%	2%	3%	2%	3%	3%	3%	2%	2%	5%	3%	4%	2%	3%	2%	4%	4%	2%	3%	2%	0%	3%	2%	2%	3%	2%	3%	2%	3%	3%
	Other	46%	47%	57%	47%	40%	47%	46%	41%	54%	47%	42%	51%	48%	47%	36%	56%	46%	47%	50%	44%	47%	41%	56%	57%	42%	47%	35%	52%	55%	51%	47%	45%	48%	47%	49%	46%	47%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-59	-32	-23	-15	-20	-149	-46	-49	-54	-149	-50	-67	-31	-148	-47	-64	-37	-148	-84	-64	-148	-51	-25	-28	-45	-149	-48	-21	-29	-47	-145	-60	-89	-149	-41	-108	-149

Table 2. Course Rating

		Current job title					Total	Length of time in			Total	Percent of time			Total	Percent of time			Total	Management and		Total	Number of buildings responsible for				Total	Number of buildings responsible for				Total	Number of		Total	Reasons for		
		Mgrs	Engs	Execs	Techs	Other		Less than 3 years	3-5 years	More than 5 years		No time	Some time, but no more than 50% of my time	More than 50%		No time	Some time, but no more than 50% of my time	More than 50%		Responsible for both	Not responsible for both		None	1 building	2-5 buildings	More than 5 buildings		None	1 building	2-5 buildings	More than 5 buildings		1 course	2 or more		Were thinking about a purchase	Other reason	
Rating of convenience of the course in terms of location and schedule	**Poor**	4%	0%	7%	0%	0%	3%	4%	4%	1%	3%	3%	1%	3%	2%	2%	3%	2%	2%	2%	2%	2%	4%	0%	6%	0%	3%	3%	0%	9%	0%	3%	5%	2%	3%	2%	3%	3%
	2	6%	6%	21%	10%	7%	9%	9%	5%	12%	9%	9%	10%	8%	9%	11%	10%	4%	9%	9%	9%	9%	8%	10%	10%	9%	9%	11%	8%	9%	6%	9%	14%	6%	9%	6%	10%	9%
	3	14%	29%	24%	24%	19%	21%	19%	18%	24%	21%	20%	25%	14%	21%	25%	17%	20%	21%	21%	21%	21%	20%	23%	26%	17%	21%	25%	20%	15%	22%	21%	20%	21%	21%	18%	22%	21%
	4	25%	26%	24%	19%	26%	24%	26%	18%	27%	24%	21%	32%	17%	25%	20%	31%	20%	25%	28%	21%	25%	21%	29%	23%	28%	24%	20%	28%	29%	24%	24%	26%	24%	24%	22%	26%	24%
	Excellent	51%	38%	24%	48%	48%	43%	42%	55%	36%	44%	47%	33%	58%	44%	42%	39%	53%	44%	40%	47%	44%	46%	39%	35%	47%	43%	42%	44%	38%	49%	43%	36%	47%	43%	53%	40%	43%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.1	4	3.4	4	4.1	4	3.9	4.1	3.8	4	4	3.8	4.2	4	3.9	3.9	4.2	4	4	4	4	4	4	3.7	4.1	4	3.9	4.1	3.8	4.2	4	3.8	4.1	4	4.2	3.9	4
		-69	-34	-29	-21	-27	-180	-57	-55	-67	-179	-70	-73	-36	-179	-64	-70	-45	-179	-92	-87	-179	-71	-31	-31	-47	-180	-65	-25	-34	-51	-175	-66	-114	-180	-51	-129	-180
Rating of technical level of information provided	**2**	1%	3%	3%	0%	0%	2%	4%	2%	0%	2%	0%	1%	6%	2%	2%	3%	0%	2%	2%	1%	2%	0%	3%	0%	4%	2%	2%	4%	0%	2%	2%	2%	2%	2%	0%	2%	2%
	3	17%	12%	14%	10%	4%	13%	12%	7%	18%	13%	9%	16%	14%	13%	11%	16%	11%	13%	15%	10%	13%	8%	26%	13%	11%	13%	11%	32%	9%	10%	13%	12%	13%	13%	12%	13%	13%
	4	42%	32%	45%	48%	37%	41%	33%	51%	39%	41%	43%	42%	31%	40%	45%	43%	29%	40%	38%	43%	40%	44%	39%	45%	34%	41%	46%	32%	47%	33%	41%	44%	39%	41%	39%	41%	41%
	Excellent	39%	53%	38%	43%	59%	45%	51%	40%	43%	45%	49%	40%	50%	45%	42%	39%	60%	45%	45%	46%	45%	48%	32%	42%	51%	45%	42%	32%	44%	55%	45%	42%	46%	45%	49%	43%	45%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.2	4.4	4.2	4.3	4.6	4.3	4.3	4.3	4.3	4.3	4.4	4.2	4.3	4.3	4.3	4.2	4.5	4.3	4.3	4.3	4.3	4.4	4	4.3	4.3	4.3	4.3	4.3	3.9	4.4	4.4	4.3	4.3	4.4	4.3	4.3
		-69	-34	-29	-21	-27	-180	-57	-55	-67	-179	-70	-73	-36	-179	-64	-70	-45	-179	-92	-87	-179	-71	-31	-31	-47	-180	-65	-25	-34	-51	-175	-66	-114	-180	-51	-129	-180
Rating of cutting edge" or "state-of-the-art" information that was provided	**Poor**	0%	0%	4%	0%	0%	1%	2%	0%	0%	1%	1%	0%	0%	1%	2%	0%	0%	1%	0%	1%	1%	1%	0%	0%	0%	0%	1%	2%	0%	0%	0%	1%	2%	0%	1%	1%	1%
	2	3%	0%	4%	5%	0%	2%	4%	2%	1%	2%	0%	4%	0%	2%	2%	3%	0%	2%	2%	1%	2%	1%	3%	0%	4%	2%	3%	0%	3%	2%	2%	2%	3%	2%	4%	2%	2%
	3	22%	29%	18%	24%	12%	21%	21%	13%	28%	21%	25%	17%	25%	21%	20%	22%	23%	21%	21%	22%	21%	24%	33%	10%	17%	21%	20%	35%	15%	22%	21%	22%	21%	21%	20%	22%	21%
	4	39%	24%	50%	43%	46%	39%	41%	43%	34%	39%	35%	42%	44%	40%	44%	41%	32%	40%	40%	40%	40%	34%	33%	58%	38%	39%	43%	43%	41%	29%	39%	41%	39%	39%	38%	40%	39%
	Excellent	36%	47%	25%	29%	42%	37%	32%	43%	36%	37%	39%	38%	31%	37%	33%	35%	45%	37%	37%	36%	37%	39%	30%	32%	40%	37%	32%	22%	41%	47%	37%	34%	38%	37%	38%	36%	37%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.1	4.2	3.9	4	4.3	4.1	4	4.3	4	4.1	4.1	4.1	4.1	4.1	4	4.1	4.2	4.1	4.1	4.1	4.1	4.1	3.9	4.2	4.1	4.1	4	3.9	4.2	4.2	4.1	4	4.1	4.1	4.1	4.1	4.1
		-69	-34	-28	-21	-26	-178	-56	-54	-67	-177	-69	-72	-36	-177	-64	-69	-44	-177	-91	-86	-177	-70	-30	-31	-47	-178	-65	-23	-34	-51	-173	-64	-114	-178	-50	-128	-178
Rating of objectivity of the information	**2**	4%	0%	7%	10%	0%	4%	4%	2%	6%	4%	7%	3%	0%	4%	5%	1%	7%	4%	1%	7%	4%	7%	3%	0%	2%	4%	5%	8%	0%	2%	3%	3%	4%	4%	8%	2%	4%
	3	12%	18%	17%	10%	11%	13%	16%	5%	18%	13%	7%	18%	17%	13%	9%	23%	5%	13%	18%	8%	13%	7%	23%	16%	15%	13%	9%	20%	15%	16%	14%	14%	13%	13%	6%	16%	13%
	4	41%	44%	38%	35%	56%	42%	42%	49%	38%	43%	46%	38%	42%	42%	55%	39%	30%	42%	37%	48%	42%	47%	42%	45%	34%	42%	55%	44%	44%	25%	43%	45%	41%	42%	39%	44%	42%
	Excellent	43%	38%	38%	45%	33%	40%	39%	44%	38%	40%	39%	41%	42%	40%	31%	37%	59%	40%	43%	37%	40%	39%	32%	39%	49%	40%	31%	28%	41%	57%	40%	38%	42%	40%	47%	38%	40%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.2	4.2	4.1	4.2	4.2	4.2	4.2	4.3	4.1	4.2	4.2	4.2	4.3	4.2	4.1	4.1	4.4	4.2	4.2	4.2	4.2	4	4.2	4.3	4.2	4.1	3.9	4.3	4.4	4.2	4.2	4.2	4.2	4.3	4.2	4.2
		-69	-34	-29	-20	-27	-179	-57	-55	-66	-178	-69	-73	-36	-178	-64	-70	-44	-178	-92	-86	-178	-70	-31	-31	-47	-179	-65	-25	-34	-51	-175	-66	-113	-179	-51	-128	-179
Rating of clarity of the information provided	**2**	1%	0%	0%	5%	0%	1%	2%	2%	0%	1%	1%	0%	3%	1%	2%	1%	0%	1%	1%	1%	1%	1%	0%	3%	0%	1%	2%	0%	3%	0%	1%	3%	0%	1%	0%	2%	1%
	3	13%	12%	17%	14%	0%	12%	12%	11%	12%	12%	11%	12%	11%	12%	13%	14%	7%	12%	12%	11%	12%	11%	19%	16%	4%	12%	12%	8%	18%	8%	11%	9%	13%	12%	8%	13%	12%
	4	35%	21%	28%	43%	63%	36%	37%	40%	33%	36%	36%	41%	25%	36%	36%	40%	29%	36%	35%	37%	36%	37%	39%	42%	30%	36%	37%	40%	47%	25%	36%	39%	34%	36%	37%	36%	36%
	Excellent	51%	68%	55%	38%	37%	51%	49%	47%	55%	51%	51%	47%	61%	51%	50%	44%	64%	51%	52%	51%	51%	51%	42%	39%	66%	51%	49%	52%	32%	67%	51%	48%	53%	51%	55%	50%	51%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.3	4.6	4.4	4.1	4.4	4.4	4.3	4.3	4.4	4.4	4.4	4.3	4.4	4.4	4.3	4.3	4.6	4.4	4.4	4.4	4.4	4.4	4.2	4.2	4.6	4.4	4.3	4.4	4.1	4.6	4.4	4.3	4.4	4.4	4.5	4.3	4.4
		-69	-34	-29	-21	-27	-180	-57	-55	-67	-179	-70	-73	-36	-179	-64	-70	-45	-179	-92	-87	-179	-71	-31	-31	-47	-180	-65	-25	-34	-51	-175	-66	-114	-180	-51	-129	-180
Rating of technical knowledge of the	**3**	12%	3%	10%	10%	0%	8%	11%	4%	9%	8%	10%	5%	8%	8%	14%	6%	2%	8%	5%	10%	8%	10%	16%	3%	2%	8%	14%	4%	6%	4%	8%	12%	5%	8%	6%	9%	8%
	4	32%	26%	34%	14%	30%	29%	26%	31%	28%	28%	17%	34%	39%	28%	17%	41%	24%	28%	36%	21%	28%	18%	39%	26%	40%	29%	18%	56%	24%	29%	28%	27%	30%	29%	20%	33%	29%
	Excellent	57%	71%	55%	76%	70%	63%	63%	65%	63%	64%	73%	60%	53%	64%	69%	53%	73%	64%	59%	69%	64%	72%	45%	71%	57%	63%	68%	40%	71%	67%	64%	61%	65%	63%	75%	59%	63%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.4	4.7	4.4	4.7	4.7	4.6	4.5	4.6	4.5	4.6	4.6	4.5	4.4	4.6	4.5	4.5	4.7	4.6	4.5	4.6	4.6	4.6	4.3	4.7	4.6	4.6	4.5	4.4	4.6	4.6	4.6	4.5	4.6	4.6	4.7	4.5	4.6
		-69	-34	-29	-21	-27	-180	-57	-55	-67	-179	-70	-73	-36	-179	-64	-70	-45	-179	-92	-87	-179	-71	-31	-31	-47	-180	-65	-25	-34	-51	-175	-66	-114	-180	-51	-129	-180
Rating of teaching skill of the instructor	**2**	0%	3%	3%	0%	0%	1%	0%	2%	1%	1%	0%	3%	0%	1%	0%	3%	0%	1%	2%	0%	1%	0%	3%	0%	2%	1%	0%	4%	0%	2%	1%	0%	2%	1%	0%	2%	1%
	3	16%	0%	10%	19%	15%	12%	23%	0%	13%	12%	13%	15%	6%	12%	17%	16%	0%	12%	12%	13%	12%	13%	23%	10%	6%	12%	17%	16%	12%	6%	13%	14%	11%	12%	12%	12%	12%
	4	42%	44%	48%	29%	33%	41%	32%	44%	46%	41%	31%	40%	58%	40%	36%	44%	40%	40%	43%	37%	40%	32%	48%	48%	43%	41%	37%	48%	44%	37%	40%	35%	44%	41%	37%	42%	41%
	Excellent	42%	53%	38%	52%	52%	46%	46%	55%	39%	46%	56%	42%	36%	46%	47%	37%	60%	46%	42%	51%	46%	55%	26%	42%	49%	46%	46%	32%	44%	55%	46%	52%	43%	46%	51%	44%	46%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.3	4.5	4.2	4.3	4.4	4.3	4.2	4.5	4.2	4.3	4.4	4.2	4.3	4.4	4.3	4.3	4.2	4.3	4.3	4.4	4.3	4.4	4	4.3	4.4	4.3	4.1	4.3	4.5	4.3	4.4	4.3	4.3	4.4	4.3	4.3
		-69	-34	-29	-21	-27	-180	-57	-55	-67	-179	-70	-73	-36	-179	-64	-70	-45	-179	-92	-87	-179	-71	-31	-31	-47	-180	-65	-25	-34	-51	-175	-66	-114	-180	-51	-129	-180
Rating of the amount of time the course lasted	**2**	1%	3%	0%	0%	0%	1%	4%	0%	0%	1%	1%	0%	3%	1%	0%	1%	2%	1%	1%	1%	1%	1%	0%	3%	0%	1%	0%	0%	6%	0%	1%	2%	1%	1%	2%	1%	1%
	3	13%	15%	41%	30%	22%	21%	27%	18%	20%	22%	23%	21%	19%	22%	25%	22%	16%	22%	21%	22%	22%	23%	29%	13%	20%	21%	25%	36%	9%	18%	22%	23%	21%	21%	18%	23%	21%
	4	59%	48%	28%	35%	41%	46%	48%	51%	42%	47%	39%	54%	44%	46%	46%	48%	43%	46%	50%	42%	46%	40%	42%	57%	52%	46%	47%	40%	58%	44%	47%	52%	43%	46%	43%	48%	46%
	Excellent	26%	33%	31%	35%	37%	31%	21%	31%	38%	31%	36%	25%	33%	31%	29%	29%	39%	31%	28%	35%	31%	36%	29%	27%	28%	31%	28%	24%	27%	38%	30%	24%	35%	31%	37%	29%	31%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.1	4.1	3.9	4.1	4.1	4.1	3.9	4.1	4.2	4.1	4.1	4	4.1	4.1	4	4	4.2	4.1	4	4.1	4.1	4.1	4	4.1	4.1	4.1	4	3.9	4.1	4.2	4.1	4	4.1	4.1	4.1	4	4.1
		-68	-33	-29	-20	-27	-177	-56	-55	-65	-176	-69	-71	-36	-176	-63	-69	-44	-176	-90	-86	-176	-70	-31	-30	-46	-177	-64	-25	-33	-50	-172	-66	-111	-177	-49	-128	-177
Rating of usefulness of demonstrations	**Poor**	0%	0%	3%	5%	0%	1%	2%	0%	2%	1%	1%	1%	0%	1%	2%	1%	0%	1%	1%	1%	1%	1%	0%	0%	2%	1%	2%	0%	0%	2%	1%	2%	1%	1%	2%	1%	1%
	2	6%	6%	3%	10%	8%	6%	9%	7%	3%	6%	9%	4%	6%	6%	11%	4%	2%	6%	3%	9%	6%	8%	3%	6%	4%	6%	11%	4%	9%	0%	6%	6%	6%	6%	8%	6%	6%
	3	18%	6%	21%	0%	12%	13%	16%	13%	11%	13%	10%	14%	17%	13%	13%	13%	13%	13%	13%	13%	13%	10%	21%	10%	15%	13%	13%	13%	9%	16%	13%	11%	14%	13%	14%	13%	13%
	4	40%	50%	31%	24%	40%	38%	36%	39%	41%	39%	39%	38%	37%	38%	38%	41%	33%	38%	41%	35%	38%	39%	41%	35%	37%	38%	39%	42%	38%	38%	39%	39%	38%	38%	29%	42%	38%
	Excellent	37%	38%	41%	62%	40%	41%	38%	41%	44%	41%	41%	42%	40%	41%	37%	40%	51%	41%	41%	42%	41%	41%	34%	48%	41%	41%	36%	42%	44%	44%	41%	42%	41%	41%	47%	39%	41%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.1	4.2	4	4.3	4.1	4.1	4	4.1	4.2	4.1	4.1	4.2	4.1	4.1	4	4.1	4.3	4.1	4.2	4.1	4.1	4.1	4.1	4.3	4.1	4.1	4	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
		-68	-34	-29	-21	-25	-177	-56	-54	-66	-176	-70	-71	-35	-176	-63	-68	-45	-176	-90	-86	-176	-71	-29	-31	-46	-177	-64	-24	-34	-50	-172	-64	-113	-177	-51	-126	-177

Table 3. Usefulness of the Course

		Current job title						Length of time in				Percent of time				Percent of time				Management and			Number of buildings responsible for					Number of buildings responsible for					Number of			Reasons for		
		Mgrs	Engs	Execs	Techs	Other	Total	Less than 3 years	3-5 years	More than 5 years	Total	No time	Some time, but no more than 50% of my time	More than 50%	Total	No time	Some time, but no more than 50% of my time	More than 50%	Total	Responsible for both	Not responsible for both	Total	None	1 building	2-5 buildings	More than 5 buildings	Total	None	1 building	2-5 buildings	More than 5 buildings	Total	1 course	2 or more	Total	Were thinking about a purchase	Other reason	Total
Usefulness of the information when purchased energy using equipment	**Poor**	3%	0%	5%	0%	0%	2%	5%	0%	2%	2%	2%	2%	3%	2%	5%	2%	0%	2%	1%	4%	2%	2%	0%	3%	2%	2%	5%	0%	3%	0%	2%	2%	2%	2%	2%	2%	2%
	2	3%	7%	0%	7%	0%	4%	5%	0%	6%	4%	0%	8%	0%	4%	0%	7%	3%	4%	6%	0%	4%	0%	9%	3%	5%	4%	0%	11%	3%	5%	4%	2%	4%	4%	2%	4%	4%
	3	19%	17%	32%	47%	21%	24%	28%	19%	25%	24%	29%	25%	13%	23%	26%	29%	13%	23%	21%	27%	23%	30%	35%	17%	16%	24%	28%	42%	23%	14%	24%	26%	23%	24%	21%	25%	24%
	4	45%	41%	27%	27%	50%	40%	40%	45%	37%	40%	33%	43%	43%	40%	38%	41%	41%	40%	43%	36%	40%	33%	26%	48%	49%	40%	38%	26%	39%	52%	41%	42%	39%	40%	33%	43%	40%
	Excellent	29%	34%	36%	20%	29%	30%	23%	36%	31%	30%	36%	23%	40%	31%	31%	22%	44%	31%	28%	34%	31%	35%	30%	28%	28%	30%	30%	21%	32%	30%	29%	28%	32%	30%	40%	26%	30%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	3.9	4	3.9	3.6	4.1	3.9	3.7	4.2	3.9	3.9	4	3.8	4.2	3.9	3.9	3.7	4.3	3.9	3.9	4	3.9	4	3.8	3.9	4	3.9	3.9	3.6	3.9	4.1	3.9	3.9	3.9	3.9	4.1	3.9	3.9
		-58	-29	-22	-15	-14	-138	-43	-42	-52	-137	-42	-65	-30	-137	-39	-59	-39	-137	-81	-56	-137	-43	-23	-29	-43	-138	-40	-19	-31	-44	-134	-43	-95	-138	-42	-96	-138
Usefulness of the information for you in making future	**Poor**	2%	0%	4%	0%	0%	1%	2%	0%	2%	1%	2%	0%	3%	1%	2%	2%	0%	1%	1%	2%	1%	2%	0%	3%	0%	1%	2%	0%	3%	0%	1%	2%	1%	1%	0%	2%	1%
	2	5%	0%	4%	6%	7%	4%	11%	2%	0%	4%	0%	9%	0%	4%	2%	6%	3%	4%	6%	2%	4%	0%	13%	0%	7%	4%	2%	16%	0%	4%	4%	2%	5%	4%	10%	2%	4%
	3	14%	30%	20%	31%	7%	19%	17%	9%	30%	20%	17%	21%	16%	19%	17%	26%	10%	19%	20%	17%	19%	19%	29%	14%	18%	19%	19%	32%	22%	13%	19%	19%	20%	19%	12%	22%	19%
	4	46%	27%	40%	44%	50%	41%	46%	47%	33%	41%	39%	39%	48%	41%	54%	35%	38%	41%	39%	45%	41%	38%	29%	52%	43%	41%	52%	26%	34%	45%	42%	44%	40%	41%	37%	43%	41%
	Excellent	34%	43%	32%	19%	36%	34%	24%	42%	35%	34%	41%	30%	32%	34%	24%	31%	50%	34%	34%	35%	34%	40%	29%	31%	32%	34%	24%	26%	41%	38%	33%	33%	34%	34%	41%	31%	34%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.1	4.1	3.9	3.8	4.1	4	3.8	4.3	4	4	4.2	3.9	4.1	4	4	3.9	4.4	4	4	4.1	4	4.1	3.8	4.1	4	4	3.9	3.6	4.1	4.2	4	4	4	4.1	4	4
		-59	-30	-25	-16	-14	-144	-46	-43	-54	-143	-46	-66	-31	-143	-41	-62	-40	-143	-83	-60	-143	-47	-24	-29	-44	-144	-42	-19	-32	-47	-140	-48	-96	-144	-41	-103	-144
Usefulness of the information for you in making future modifications	**Poor**	2%	0%	4%	0%	0%	1%	2%	0%	2%	1%	2%	0%	3%	1%	2%	2%	0%	1%	1%	1%	1%	2%	0%	4%	0%	1%	2%	0%	3%	0%	1%	2%	1%	1%	0%	2%	1%
	2	0%	6%	4%	5%	0%	3%	2%	2%	3%	3%	0%	3%	6%	3%	0%	6%	0%	3%	5%	0%	3%	0%	13%	0%	2%	3%	0%	15%	0%	2%	3%	0%	4%	3%	5%	2%	3%
	3	29%	16%	15%	35%	18%	24%	26%	15%	29%	24%	25%	27%	13%	23%	26%	24%	19%	23%	21%	25%	23%	26%	13%	25%	26%	24%	28%	25%	19%	24%	24%	21%	25%	24%	18%	26%	24%
	4	40%	32%	38%	35%	47%	38%	43%	39%	32%	38%	43%	38%	31%	38%	46%	32%	40%	38%	35%	43%	38%	43%	38%	29%	39%	38%	45%	30%	35%	37%	38%	42%	37%	38%	32%	41%	38%
	Excellent	29%	45%	38%	25%	35%	34%	26%	43%	34%	34%	30%	32%	47%	34%	26%	35%	42%	34%	38%	30%	34%	30%	38%	43%	33%	34%	26%	30%	42%	37%	33%	35%	34%	34%	45%	30%	34%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	3.9	4.2	4	3.8	4.2	4	3.9	4.2	3.9	4	4	4	4.1	4	3.9	3.9	4.2	4	4	4	4	4	4	4.1	4	4	3.9	3.8	4.1	4.1	4	4.1	4	4.2	3.9	4
		-58	-31	-26	-20	-17	-152	-46	-46	-59	-151	-53	-66	-32	-151	-46	-62	-43	-151	-84	-67	-151	-54	-24	-28	-46	-152	-47	-20	-31	-49	-147	-48	-104	-152	-44	-108	-152
Usefulness of the information in helping you explain to others in my company	**Poor**	0%	0%	8%	0%	0%	1%	0%	2%	2%	1%	2%	1%	0%	1%	2%	1%	0%	1%	1%	1%	1%	2%	3%	0%	0%	1%	2%	4%	0%	0%	1%	2%	1%	1%	2%	1%	1%
	2	5%	0%	0%	5%	0%	2%	4%	2%	2%	2%	2%	3%	3%	2%	2%	1%	5%	2%	2%	3%	2%	2%	0%	3%	4%	2%	2%	0%	3%	4%	2%	2%	3%	2%	6%	1%	2%
	3	14%	9%	15%	30%	24%	17%	17%	12%	21%	17%	17%	23%	0%	16%	15%	20%	12%	16%	16%	16%	16%	18%	13%	23%	13%	17%	16%	13%	26%	12%	17%	19%	15%	17%	14%	18%	17%
	4	51%	41%	46%	40%	52%	47%	47%	52%	44%	47%	47%	42%	59%	47%	52%	50%	37%	47%	49%	45%	47%	46%	50%	45%	48%	47%	51%	58%	41%	46%	48%	48%	46%	47%	42%	49%	47%
	Excellent	31%	50%	31%	25%	24%	33%	32%	33%	32%	32%	33%	30%	38%	33%	30%	27%	47%	33%	31%	36%	33%	33%	33%	29%	35%	33%	29%	25%	29%	38%	31%	29%	35%	33%	36%	31%	33%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	4.1	4.4	3.9	3.9	4	4.1	4.1	4.1	4	4.1	4.1	4	4.3	4.1	4.1	4	4.3	4.1	4.1	4.1	4.1	4.1	4.1	4	4.1	4.1	4	4	4	4.2	4.1	4	4.1	4	4.1	4.1
		-65	-32	-26	-20	-25	-168	-53	-52	-62	-167	-60	-73	-34	-167	-54	-70	-43	-167	-91	-76	-167	-61	-30	-31	-46	-168	-55	-24	-34	-50	-163	-58	-110	-168	-50	-118	-168

Table 4. Did the Course meet Expectations

		Current job title					Total	Length of time in			Total	Percent of time			Total	Percent of time			Total	Management and		Total	Number of buildings responsible for				Total	Number of buildings responsible for				Total	Number of		Total	Reasons for		Total
		Mgrs	Engs	Execs	Techs	Other		Less than 3 years	3-5 years	More than 5 years		No time	Some time, but no more than 50% of my time	More than 50%		No time	Some time, but no more than 50% of my time	More than 50%		Responsible for both	Not responsible for both		None	1 building	2-5 buildings	More than 5 buildings		None	1 building	2-5 buildings	More than 5 buildings		1 course	2 or more		Were thinking about a purchase	Other reason	
Expectations of the course you took	**Exceeded expectations**	29%	29%	21%	24%	33%	28%	16%	25%	39%	27%	26%	29%	31%	28%	20%	26%	42%	28%	32%	24%	28%	25%	10%	35%	38%	28%	20%	16%	29%	41%	27%	26%	29%	28%	29%	27%	28%
	Met expectations	54%	68%	69%	71%	67%	63%	68%	67%	55%	63%	66%	59%	64%	63%	69%	64%	51%	63%	61%	64%	63%	66%	71%	61%	53%	63%	69%	72%	59%	53%	63%	64%	62%	63%	65%	62%	63%
	Fell short of expectations	17%	3%	10%	5%	0%	9%	16%	7%	6%	9%	9%	12%	6%	9%	11%	10%	7%	9%	8%	11%	9%	8%	19%	3%	9%	9%	11%	12%	12%	6%	10%	11%	9%	9%	6%	11%	9%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	**Mean**	1.9	1.7	1.9	1.8	1.7	1.8	2	1.8	1.7	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.6	1.8	1.8	1.9	1.8	1.8	2.1	1.7	1.7	1.8	1.9	2	1.8	1.6	1.8	1.8	1.8	1.8	1.8	1.8	1.8
		-69	-34	-29	-21	-27	-180	-57	-55	-67	-179	-70	-73	-36	-179	-64	-70	-45	-179	-92	-87	-179	-71	-31	-31	-47	-180	-65	-25	-34	-51	-175	-66	-114	-180	-51	-129	-180

Table 5. Results of the CTAC Course

		Current job title						Length of time in				Percent of time				Percent of time				Management and			Number of buildings responsible for					Number of buildings responsible for					Number of			Reasons for		
		Mgrs	Engs	Execs	Techs	Other	Total	Less than 3 years	3-5 years	More than 5 years	Total	No time	Some time, but no more than 50% of my time	More than 50%	Total	No time	Some time, but no more than 50% of my time	More than 50%	Total	Responsible for both	Not responsible for both	Total	None	1 building	2-5 buildings	More than 5 buildings	Total	None	1 building	2-5 buildings	More than 5 buildings	Total	1 course	2 or more	Total	Were thinking about a purchase	Other reason	Total
I am more aware of new technologies or practices	Strongly disagree	0%	0%	7%	0%	0%	1%	0%	0%	3%	1%	3%	0%	0%	1%	3%	0%	0%	1%	0%	2%	1%	3%	0%	0%	0%	1%	3%	0%	1%	0%	2%	1%				
	2	5%	0%	7%	5%	0%	3%	5%	0%	5%	3%	1%	4%	6%	3%	2%	7%	0%	3%	6%	1%	3%	1%	4%	3%	6%	3%	2%	0%	6%	4%	3%	4%	3%	5%	3%	3%
	3	27%	15%	30%	29%	19%	24%	32%	24%	18%	24%	25%	25%	18%	24%	26%	21%	24%	24%	23%	24%	24%	26%	32%	20%	19%	24%	27%	29%	22%	20%	24%	29%	21%	24%	27%	23%	24%
	4	30%	35%	33%	43%	65%	39%	44%	31%	39%	38%	47%	31%	39%	39%	44%	39%	31%	39%	31%	47%	39%	46%	32%	37%	32%	39%	44%	50%	31%	29%	38%	38%	39%	39%	27%	42%	39%
	Strongly agree	38%	50%	22%	24%	15%	33%	19%	45%	34%	33%	24%	40%	36%	33%	25%	33%	45%	33%	40%	25%	33%	23%	32%	40%	43%	33%	24%	21%	41%	45%	33%	28%	36%	33%	41%	30%	33%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	Mean	4	4.4	3.6	3.9	4	4	3.8	4.2	4	4	3.9	4.1	4.1	4	3.9	4	4.2	4	4.1	3.9	4	3.9	3.9	4.1	4.1	4	3.8	3.9	4.1	4.1	4	3.8	4.1	4	4	4	4
		-66	-34	-27	-21	-26	-174	-57	-55	-61	-173	-68	-72	-33	-173	-61	-70	-42	-173	-90	-83	-173	-69	-28	-30	-47	-174	-62	-24	-32	-51	-169	-69	-105	-174	-44	-130	-174
I am more aware of alternative solutions	Strongly disagree	0%	0%	11%	10%	0%	3%	4%	0%	5%	3%	6%	1%	0%	3%	5%	1%	2%	3%	1%	5%	3%	6%	0%	0%	2%	3%	4%	2%	3%	5%	2%	3%				
	2	3%	0%	7%	5%	0%	3%	2%	0%	7%	3%	3%	3%	3%	3%	3%	4%	0%	3%	3%	2%	3%	3%	0%	3%	4%	3%	3%	0%	3%	4%	3%	3%	3%	3%	2%	3%	3%
	3	24%	18%	26%	19%	31%	24%	35%	13%	23%	24%	24%	26%	18%	24%	25%	24%	21%	24%	23%	24%	24%	23%	39%	17%	19%	24%	24%	38%	19%	18%	23%	29%	20%	24%	20%	25%	24%
	4	35%	38%	37%	43%	50%	39%	39%	47%	31%	39%	43%	35%	39%	39%	43%	41%	29%	39%	36%	42%	39%	43%	29%	47%	34%	39%	44%	38%	47%	29%	39%	38%	40%	39%	30%	42%	39%
	Strongly agree	38%	44%	19%	24%	19%	32%	21%	40%	34%	32%	25%	35%	39%	32%	25%	29%	48%	32%	37%	27%	32%	25%	32%	33%	40%	32%	24%	25%	31%	45%	32%	26%	35%	32%	43%	28%	32%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	Mean	4.1	4.3	3.4	3.7	3.9	3.9	3.7	4.3	3.8	3.9	3.8	4	4.2	3.9	3.8	3.9	4.2	3.9	4	3.8	3.9	3.8	3.9	4.1	4.1	3.9	3.8	3.9	4.1	4.1	3.9	3.8	4	3.9	4	3.9	3.9
		-66	-34	-27	-21	-26	-174	-57	-55	-61	-173	-68	-72	-33	-173	-61	-70	-42	-173	-90	-83	-173	-69	-28	-30	-47	-174	-62	-24	-32	-51	-169	-69	-105	-174	-44	-130	-174
I better understand how to work with existing equipment	Strongly disagree	3%	0%	15%	0%	0%	4%	2%	2%	7%	4%	6%	1%	3%	4%	7%	3%	0%	4%	2%	5%	4%	6%	0%	7%	0%	4%	6%	0%	6%	0%	4%	4%	3%	4%	5%	3%	4%
	2	6%	9%	7%	10%	4%	7%	11%	2%	8%	7%	2%	11%	9%	7%	2%	14%	3%	7%	12%	1%	7%	2%	11%	7%	13%	7%	2%	13%	6%	12%	7%	6%	8%	7%	5%	8%	7%
	3	34%	35%	37%	20%	36%	33%	46%	24%	30%	33%	32%	33%	33%	33%	43%	30%	23%	33%	29%	38%	33%	33%	32%	23%	40%	33%	44%	35%	22%	27%	33%	28%	37%	33%	36%	32%	33%
	4	29%	24%	22%	50%	24%	29%	25%	36%	25%	29%	35%	25%	24%	29%	31%	20%	41%	29%	23%	35%	29%	35%	36%	23%	19%	29%	31%	35%	28%	24%	29%	29%	28%	29%	25%	30%	29%
	Strongly agree	28%	32%	19%	20%	36%	27%	16%	36%	30%	27%	25%	29%	30%	28%	18%	33%	33%	28%	33%	21%	28%	24%	21%	40%	28%	27%	18%	17%	38%	37%	27%	32%	24%	27%	30%	27%	27%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	Mean	3.7	3.8	3.2	3.8	3.9	3.7	3.4	4	3.6	3.7	3.7	3.7	3.7	3.7	3.5	3.7	4.1	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.6	3.7	3.5	3.6	3.8	3.9	3.7	3.8	3.6	3.7	3.7	3.7	3.7
		-65	-34	-27	-20	-25	-171	-56	-55	-60	-171	-65	-72	-33	-170	-61	-70	-39	-170	-90	-80	-170	-66	-28	-30	-47	-171	-62	-23	-32	-51	-168	-68	-103	-171	-44	-127	-171
I better understand payback issues	Strongly disagree	6%	0%	12%	5%	0%	5%	4%	4%	7%	5%	6%	4%	3%	5%	5%	4%	5%	5%	3%	6%	5%	6%	4%	10%	0%	5%	5%	0%	10%	2%	4%	7%	3%	5%	2%	5%	5%
	2	14%	0%	15%	19%	4%	11%	14%	7%	10%	11%	10%	14%	3%	11%	8%	12%	12%	11%	11%	10%	11%	10%	7%	10%	13%	11%	8%	8%	10%	14%	10%	13%	9%	11%	12%	10%	11%
	3	20%	30%	42%	38%	31%	29%	41%	22%	25%	29%	29%	26%	34%	29%	40%	28%	15%	29%	26%	32%	29%	30%	30%	17%	35%	29%	41%	38%	10%	26%	30%	29%	29%	29%	29%	29%	29%
	4	40%	36%	12%	19%	46%	33%	29%	42%	29%	33%	34%	29%	44%	34%	33%	36%	29%	34%	33%	34%	34%	33%	37%	38%	28%	33%	33%	38%	52%	22%	34%	30%	35%	33%	29%	35%	33%
	Strongly agree	20%	33%	19%	19%	19%	22%	13%	25%	29%	22%	21%	27%	16%	22%	13%	20%	39%	22%	26%	18%	22%	20%	22%	24%	24%	22%	13%	17%	19%	36%	22%	20%	24%	22%	27%	21%	22%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	Mean	3.5	4	3.1	3.3	3.8	3.6	3.3	3.8	3.6	3.6	3.5	3.6	3.7	3.6	3.4	3.6	3.9	3.6	3.7	3.5	3.6	3.5	3.7	3.6	3.6	3.6	3.4	3.6	3.6	3.8	3.6	3.4	3.7	3.6	3.7	3.6	3.6
		-65	-33	-26	-21	-26	-171	-56	-55	-59	-170	-68	-70	-32	-170	-60	-69	-41	-170	-88	-82	-170	-69	-27	-29	-46	-171	-61	-24	-31	-50	-166	-69	-102	-171	-41	-130	-171
I am more interested in long term energy efficiency	Strongly disagree	5%	0%	12%	5%	0%	4%	2%	0%	10%	4%	6%	3%	3%	4%	5%	4%	2%	4%	3%	5%	4%	6%	0%	7%	2%	4%	5%	0%	6%	2%	4%	3%	5%	4%	5%	4%	4%
	2	9%	0%	4%	5%	0%	5%	9%	4%	2%	5%	4%	6%	3%	5%	7%	6%	0%	5%	4%	5%	5%	4%	4%	7%	4%	5%	7%	0%	6%	4%	5%	7%	3%	5%	2%	5%	5%
	3	18%	21%	31%	24%	12%	20%	27%	20%	13%	20%	22%	19%	16%	20%	20%	23%	14%	20%	20%	20%	20%	23%	19%	13%	21%	20%	21%	25%	9%	22%	20%	17%	22%	20%	5%	25%	20%
	4	24%	35%	27%	29%	31%	28%	30%	25%	30%	28%	24%	29%	38%	28%	33%	27%	24%	28%	27%	30%	28%	23%	30%	33%	32%	28%	33%	29%	34%	22%	29%	30%	27%	28%	40%	25%	28%
	Strongly agree	44%	44%	27%	38%	58%	43%	32%	51%	46%	43%	44%	43%	41%	43%	35%	40%	60%	43%	46%	40%	43%	43%	48%	40%	40%	43%	34%	46%	44%	51%	43%	42%	43%	43%	49%	41%	43%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	Mean	3.9	4.2	3.5	3.9	4.5	4	3.8	4.2	4	4	4	4	4.1	4	3.9	3.9	4.4	4	4.1	4	4	3.9	4.2	3.9	4	4	3.9	4.2	4	4.2	4	4	4	4	4.3	3.9	4
		-66	-34	-26	-21	-26	-173	-56	-55	-61	-172	-68	-72	-32	-172	-60	-70	-42	-172	-90	-82	-172	-69	-27	-30	-47	-173	-61	-24	-32	-51	-168	-69	-104	-173	-43	-130	-173
I can sell energy efficiency to my own managment better	Strongly disagree	11%	3%	15%	0%	0%	7%	4%	4%	14%	7%	8%	6%	9%	7%	9%	7%	5%	7%	7%	8%	7%	8%	9%	9%	9%	2%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
	2	8%	6%	12%	21%	0%	8%	8%	9%	8%	8%	13%	7%	3%	8%	12%	7%	5%	8%	6%	12%	8%	13%	4%	10%	4%	8%	12%	0%	9%	8%	9%	9%	8%	8%	10%	8%	8%
	3	26%	18%	12%	37%	33%	24%	26%	27%	19%	24%	22%	25%	25%	24%	21%	26%	26%	24%	27%	21%	24%	23%	26%	30%	21%	24%	22%	22%	31%	22%	24%	25%	24%	24%	19%	26%	24%
	4	32%	42%	42%	32%	42%	37%	43%	40%	29%	37%	38%	38%	34%	37%	41%	40%	26%	37%	34%	40%	37%	38%	41%	30%	38%	37%	41%	52%	34%	30%	38%	34%	39%	37%	33%	38%	37%
	Strongly agree	24%	30%	19%	11%	25%	23%	19%	20%	31%	23%	19%	25%	28%	23%	17%	20%	38%	23%	27%	19%	23%	19%	22%	17%	34%	23%	17%	17%	16%	38%	23%	24%	23%	23%	31%	21%	23%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	Mean	3.5	3.9	3.4	3.3	3.9	3.6	3.7	3.6	3.5	3.6	3.5	3.7	3.7	3.6	3.5	3.6	3.9	3.6	3.7	3.5	3.6	3.5	3.7	3.3	4	3.6	3.5	3.7	3.4	3.9	3.6	3.6	3.6	3.7	3.6	3.6	3.6
		-66	-33	-26	-19	-24	-168	-53	-55	-59	-167	-63	-72	-32	-167	-58	-70	-39	-167	-90	-77	-167	-64	-27	-30	-47	-168	-59	-23	-32	-50	-164	-67	-101	-168	-42	-126	-168
My company has changed or will change some of its policies	Strongly disagree	9%	9%	36%	26%	13%	16%	8%	15%	23%	16%	24%	6%	23%	16%	23%	12%	13%	16%	9%	23%	16%	23%	15%	13%	7%	16%	22%	9%	13%	10%	15%	18%	14%	16%	12%	17%	16%
	2	18%	9%	12%	26%	17%	16%	23%	13%	13%	16%	14%	24%	3%	16%	14%	21%	13%	16%	19%	13%	16%	14%	26%	17%	13%	16%	14%	22%	19%	14%	16%	18%	15%	16%	14%	17%	16%
	3	23%	29%	24%	21%	35%	26%	35%	22%	22%	26%	30%	22%	23%	25%	28%	22%	28%	25%	22%	30%	25%	31%	22%	17%	27%	26%	29%	30%	19%	27%	27%	20%	30%	26%	23%	27%	26%
	4	29%	24%	20%	16%	26%	25%	28%	22%	25%	19%	25%	37%	25%	25%	31%	15%	25%	27%	22%	25%	19%	11%	33%	36%	25%	24%	17%	31%	27%	25%	26%	24%	25%	28%	24%	25%	
	Strongly agree	20%	29%	8%	11%	9%	17%	10%	22%	20%	17%	13%	24%	13%	18%	11%	15%	33%	18%	23%	12%	18%	13%	26%	20%	18%	17%	10%	22%	19%	22%	17%	18%	17%	17%	23%	15%	17%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	Mean	3.3	3.6	2.5	2.6	3	3.1	3.1	3.3	3	3.1	2.8	3.4	3.1	3.1	2.9	3.2	3.4	3.1	3.4	2.9	3.1	2.8	3.1	3.3	3.4	3.1	2.9	3.2	3.3	3.4	3.1	3.1	3.2	3.1	3.4	3	3.1
		-65	-34	-25	-19	-23	-166	-52	-54	-60	-166	-63	-72	-30	-165	-57	-68	-40	-165	-88	-77	-165	-64	-27	-30	-45	-166	-58	-23	-32	-49	-162	-66	-100	-166	-43	-123	-166
I am more likely to specify "energy efficient" equipment	Strongly disagree	5%	0%	12%	0%	0%	3%	4%	0%	7%	3%	6%	1%	3%	4%	7%	3%	0%	4%	2%	5%	4%	6%	0%	7%	0%	3%	7%	0%	6%	0%	4%	4%	3%	3%	5%	3%	3%
	2	2%	0%	4%	5%	4%	2%	0%	2%	5%	2%	1%	4%	0%	2%	2%	4%	0%	2%	3%	1%	2%	1%	0%	3%	4%	2%	2%	0%	3%	4%	2%	1%	3%	2%	0%	3%	2%
	3	8%	15%	4%	29%	15%	12%	18%	9%	10%	12%	13%	10%	16%	12%	15%	11%	10%	12%	10%	15%	12%	13%	7%	10%	15%	12%	15%	4%	6%	12%	11%	12%	13%	12%	7%	14%	12%
	4	29%	29%	31%	38%	19%	29%	43%	25%	20%	29%	30%	25%	34%	29%	33%	30%	20%	29%	24%	33%	29%	31%	37%	23%	26%	29%	34%	38%	28%	22%	30%	36%	24%	29%	26%	30%	29%
	Strongly agree	57%	56%	50%	29%	62%	53%	36%	64%	59%	53%	49%	60%	47%	53%	43%	51%	71%	53%	60%	46%	53%	49%	56%	57%	55%	53%	43%	58%	56%	63%	54%	46%	57%	53%	63%	50%	53%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	Mean	4.3	4.4	4	3.9	4.4	4.3	4.1	4.5	4.2	4.3	4.1	4.4	4.2	4.3	4.1	4.2	4.6	4.3	4.4	4.1	4.3	4.1	4.5	4.2	4.3	4.3	4	4.5	4.3	4.4	4.3	4.2	4.3	4.3	4.4	4.2	4.3
		-65	-34	-26	-21	-26	-172	-56	-55	-61	-172	-67	-72	-32	-171	-60	-70	-41	-171	-90	-81	-171	-68	-27	-30	-47	-172	-61	-24	-32	-51	-168	-69	-103	-172	-43	-129	-172
I still continue to use or refer to the information	Strongly disagree	3%	0%	12%	5%	0%	3%	5%	2%	3%	4%	3%	4%	3%	4%	3%	6%	0%	4%	4%	2%	4%	3%	4%	3%	4%	3%	3%	4%	3%	4%	4%	4%	3%	3%	5%	3%	3%
	2	6%	0%	12%	5%	15%	7%	14%	2%	5%	7%	7%	8%	3%	7%	8%	6%	7%	7%	7%	7%	7%	7%	15%	3%	4%	7%	8%	13%	6%	4%	7%	9%	6%	7%	5%	8%	7%
	3	30%	21%	20%	33%	23%	26%	34%	22%	22%	26%	28%	25%	22%	26%	34%	24%	17%	26%	21%	31%	26%	29%	30%	27%	19%	26%	35%	21%	31%	14%	26%	34%	21%	26%	19%	29%	26%
	4	29%	24%	36%	33%	38%	31%	27%	33%	33%	31%	31%	28%	38%	31%	29%	34%	29%	31%	31%	31%	31%	31%	15%	40%	34%	31%	28%	25%	38%	33%	31%	24%	36%	31%	37%	29%	31%
	Strongly agree	32%	56%	20%	24%	23%	33%	20%	42%	37%	33%	30%	35%	34%	33%	25%	30%	48%	33%	37%	28%	33%	29%	37%	27%	38%	33%	25%	38%	22%	45%	32%	29%	35%	33%	35%	32%	33%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	Mean	3.8	4.4	3.4	3.7	3.7	3.8	3.4	4.1	4	3.8	3.8	3.8	4	3.8	3.6	3.8	4.2	3.8	3.9	3.8	3.8	3.8	3.7	3.8	4	3.8	3.6	3.8	3.7	4.1	3.8	3.6	3.9	3.8	3.9	3.8	3.8
		-66	-34	-25	-21	-26	-172	-56	-55	-60	-171	-67	-72	-32	-171	-59	-70	-42	-171	-90	-81	-171	-68	-27	-30	-47	-172	-60	-24	-32	-51	-167	-68	-104	-172	-43	-129	-172
Over time, the information has faded in my memory	Strongly disagree	24%	35%	22%	29%	27%	27%	20%	18%	42%	27%	27%	29%	19%	27%	24%	25%	33%	27%	27%	26%	27%	28%	15%	27%	33%	27%	25%	21%	22%	34%	27%	26%	28%	27%	35%	24%	27%
	2	30%	32%	43%	29%	38%	34%	38%	35%	29%	34%	29%	39%	32%	34%	31%	38%	31%	34%	38%	29%	34%	28%	33%	37%	39%	34%	31%	46%	31%	32%	33%	30%	36%	34%	28%	35%	34%
	3	29%	21%	26%	29%	12%	24%	20%	31%	20%	24%	24%	21%	32%	24%	26%	23%	24%	24%	20%	29%	24%	24%	41%	23%	15%	24%	25%	21%	28%	22%	24%	26%	23%	24%	26%	24%	24%
	4	11%	12%	4%	14%	23%	12%	18%	15%	5%	12%	17%	8%	13%	12%	17%	12%	7%	12%	11%	14%	12%	16%	11%	10%	9%	12%	17%	13%	13%	8%	13%	15%	11%	12%	12%	13%	12%
	Strongly agree	6%	0%	4%	0%	0%	3%	4%	2%	3%	3%	3%	3%	3%	3%	3%	2%	5%	3%	3%	3%	3%	3%	0%	3%	4%	3%	2%	0%	6%	4%	3%	3%	3%	3%	0%	4%	3%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Total	Mean	2.4	2.1	2.3	2.3	2.3	2.3	2.5	2.5	2	2.3	2.4	2.2	2.5	2.3	2.4	2.3	2.2	2.3	2.3	2.4	2.3	2.4	2.5	2.3	2.1	2.3	2.4	2.3	2.5	2.2	2.3	2.4	2.3	2.3	2.1	2.4	2.3
		-66	-34	-23	-21	-26	-170	-55	-55	-59	-169	-66	-72	-31	-169	-58	-69	-42	-169	-89	-80	-169	-67	-27	-30	-46	-170	-59	-24	-32	-50	-165	-66	-104	-170	-43	-127	-170

Table 6. SinceVisit to CTAC, Purchases or Upgrades made

		Current job title						Length of time in				Percent of time				Percent of time				Management and			Number of buildings responsible for					Number of buildings responsible for					Number of			Reasons for		
		Mgrs	Engs	Execs	Techs	Other	Total	Less than 3 years	3-5 years	More than 5 years	Total	No time	Some time, but no more than 50% of my time	More than 50%	Total	No time	Some time, but no more than 50% of my time	More than 50%	Total	Responsible for both	Not responsible for both	Total	None	1 building	2-5 buildings	More than 5 buildings	Total	None	1 building	2-5 buildings	More than 5 buildings	Total	1 course	2 or more	Total	Were thinking about a purchase	Other reason	Total
Lighting equipment	**Yes**	58%	64%	36%	28%	52%	52%	42%	52%	59%	52%	44%	54%	58%	51%	39%	53%	66%	51%	58%	43%	51%	45%	28%	60%	67%	52%	40%	25%	58%	75%	53%	39%	59%	52%	56%	50%	52%
	No	42%	36%	64%	72%	48%	48%	58%	48%	41%	48%	56%	46%	42%	49%	61%	47%	34%	49%	42%	57%	49%	55%	72%	40%	33%	48%	60%	75%	42%	25%	47%	61%	41%	48%	44%	50%	48%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-64	-33	-25	-18	-23	-163	-50	-54	-59	-163	-59	-70	-33	-162	-56	-68	-38	-162	-88	-74	-162	-60	-25	-30	-48	-163	-57	-20	-31	-51	-159	-61	-102	-163	-45	-118	-163
HVAC equipment	**Yes**	45%	63%	20%	42%	30%	42%	35%	41%	49%	42%	39%	40%	53%	42%	26%	43%	64%	42%	47%	36%	42%	38%	29%	47%	52%	42%	25%	30%	48%	61%	42%	34%	47%	42%	49%	40%	42%
	No	55%	38%	80%	58%	70%	58%	65%	59%	51%	58%	61%	60%	47%	58%	74%	57%	36%	58%	53%	64%	58%	62%	71%	53%	48%	58%	75%	70%	52%	39%	58%	66%	53%	58%	51%	60%	58%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-65	-32	-25	-19	-23	-164	-51	-54	-59	-164	-57	-72	-34	-163	-54	-70	-39	-163	-91	-72	-163	-58	-28	-30	-48	-164	-55	-23	-31	-51	-160	-64	-100	-164	-43	-121	-164

Table 7. Same Type and Efficiency

		Current job title						Length of time in				Percent of time				Percent of time				Management and			Number of buildings responsible for					Number of buildings responsible for					Number of			Reasons for		
		Mgrs	Engs	Execs	Techs	Other	Total	Less than 3 years	3-5 years	More than 5 years	Total	No time	Some time, but no more than 50% of my time	More than 50%	Total	No time	Some time, but no more than 50% of my time	More than 50%	Total	Responsible for both	Not responsible for both	Total	None	1 building	2-5 buildings	More than 5 buildings	Total	None	1 building	2-5 buildings	More than 5 buildings	Total	1 course	2 or more	Total	Were thinking about a purchase	Other reason	Total
Lighting equipment	**Yes**	44%	50%	38%	75%	17%	43%	38%	26%	59%	43%	32%	54%	37%	43%	38%	53%	33%	43%	48%	35%	43%	31%	83%	53%	39%	43%	36%	60%	53%	39%	43%	52%	39%	43%	33%	46%	43%
	No	56%	50%	63%	25%	83%	58%	62%	74%	41%	58%	68%	46%	63%	57%	62%	47%	67%	57%	52%	65%	57%	69%	17%	47%	61%	58%	64%	40%	47%	61%	58%	48%	61%	58%	67%	54%	58%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-36	-20	-8	-4	-12	-80	-21	-27	-32	-80	-25	-35	-19	-79	-21	-34	-24	-79	-48	-31	-79	-26	-6	-17	-31	-80	-22	-5	-17	-36	-80	-23	-57	-80	-24	-56	-80
HVAC equipment	**Yes**	74%	67%	50%	100%	67%	71%	86%	63%	70%	71%	63%	72%	80%	71%	60%	69%	80%	71%	74%	67%	71%	63%	75%	70%	77%	71%	60%	71%	69%	76%	71%	71%	72%	71%	81%	68%	71%
	No	26%	33%	50%	0%	33%	29%	14%	37%	30%	29%	38%	28%	20%	29%	40%	31%	20%	29%	26%	33%	29%	38%	25%	30%	23%	29%	40%	29%	31%	24%	29%	29%	28%	29%	19%	33%	29%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-23	-18	-4	-5	-6	-56	-14	-19	-23	-56	-16	-25	-15	-56	-10	-26	-20	-56	-38	-18	-56	-16	-8	-10	-22	-56	-10	-7	-13	-25	-55	-17	-39	-56	-16	-40	-56
Equipment regulating	**Yes**	40%	100%	0%	25%	75%	52%	50%	63%	45%	52%	43%	50%	67%	52%	25%	55%	63%	52%	60%	38%	52%	43%	0%	100%	50%	52%	25%	0%	100%	46%	52%	50%	53%	52%	17%	65%	52%
	No	60%	0%	100%	75%	25%	48%	50%	38%	55%	48%	57%	50%	33%	48%	75%	45%	38%	48%	40%	63%	48%	57%	100%	0%	50%	48%	75%	100%	0%	54%	48%	50%	47%	48%	83%	35%	48%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-10	-4	-1	-4	-4	-23	-4	-8	-11	-23	-7	-10	-6	-23	-4	-11	-8	-23	-15	-8	-23	-7	-1	-3	-12	-23	-4	-1	-5	-13	-23	-6	-17	-23	-6	-17	-23
Water using equipment	**Yes**	64%	86%	0%	100%	50%	70%	50%	80%	67%	70%	83%	67%	60%	70%	80%	60%	75%	70%	69%	71%	70%	83%	100%	67%	60%	70%	80%	100%	71%	60%	70%	80%	67%	70%	60%	72%	70%
	No	36%	14%	100%	0%	50%	30%	50%	20%	33%	30%	17%	33%	40%	30%	20%	40%	25%	30%	31%	29%	30%	17%	0%	33%	40%	30%	20%	0%	29%	40%	30%	20%	33%	30%	40%	28%	30%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-11	-7	-1	-2	-2	-23	-4	-10	-9	-23	-6	-12	-5	-23	-5	-10	-8	-23	-16	-7	-23	-6	-1	-6	-10	-23	-5	-1	-7	-10	-23	-5	-18	-23	-5	-18	-23
Waste disposal	**Yes**	67%	50%	0%	0%	0%	62%	100%	75%	43%	62%	33%	57%	100%	62%	0%	80%	50%	62%	70%	33%	62%	33%	0%	100%	57%	62%	0%	0%	100%	44%	62%	50%	64%	62%	40%	75%	62%
	No	33%	50%	0%	0%	0%	38%	0%	25%	57%	38%	67%	43%	0%	38%	0%	20%	50%	38%	30%	67%	38%	67%	0%	0%	43%	38%	0%	0%	0%	56%	38%	50%	36%	38%	60%	25%	38%
Total	100%	100%	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%	100%	0%	100%	100%	100%	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-9	-4	0	0	0	-13	-2	-4	-7	-13	-3	-7	-3	-13	0	-5	-8	-13	-10	-3	-13	-3	0	-3	-7	-13	0	0	-4	-9	-13	-2	-11	-13	-5	-8	-13

Table 8a. Lighting Equipment Purchase Decisions

		Current job title						Length of time in				Percent of time				Percent of time				Management and			Number of buildings responsible for					Number of buildings responsible for					Number of			Reasons for		
		Mgrs	Engs	Execs	Techs	Other	Total	Less than 3 years	3-5 years	More than 5 years	Total	No time	Some time, but no more than 50% of my time	More than 50%	Total	No time	Some time, but no more than 50% of my time	More than 50%	Total	Responsible for both	Not responsible for both	Total	None	1 building	2-5 buildings	More than 5 buildings	Total	None	1 building	2-5 buildings	More than 5 buildings	Total	1 course	2 or more	Total	Were thinking about a purchase	Other reason	Total
Purchase equipment	**Yes**	73%	70%	44%	25%	75%	67%	57%	78%	65%	67%	56%	70%	74%	67%	52%	72%	71%	67%	76%	52%	67%	58%	71%	72%	71%	67%	55%	60%	72%	73%	67%	65%	68%	67%	68%	67%	67%
	No	27%	30%	56%	75%	25%	33%	43%	22%	35%	33%	44%	30%	26%	33%	48%	28%	29%	33%	24%	48%	33%	42%	29%	28%	29%	33%	45%	40%	28%	27%	33%	35%	32%	33%	32%	33%	33%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-37	-20	-9	-4	-12	-82	-21	-27	-34	-82	-25	-37	-19	-81	-21	-36	-24	-81	-50	-31	-81	-26	-7	-18	-31	-82	-22	-5	-18	-37	-82	-23	-59	-82	-25	-57	-82
Purchase equipment	**Yes**	64%	56%	33%	67%	67%	59%	50%	67%	58%	59%	50%	61%	68%	59%	37%	65%	71%	59%	70%	43%	59%	48%	71%	59%	64%	59%	35%	60%	65%	70%	59%	55%	60%	59%	70%	55%	59%
	No	36%	44%	67%	33%	33%	41%	50%	33%	42%	41%	50%	39%	32%	41%	63%	35%	29%	41%	30%	57%	41%	52%	29%	41%	36%	41%	65%	40%	35%	30%	41%	45%	40%	41%	30%	45%	41%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-33	-18	-9	-3	-12	-75	-20	-24	-31	-75	-22	-33	-19	-74	-19	-34	-21	-74	-46	-28	-74	-23	-7	-17	-28	-75	-20	-5	-17	-33	-75	-22	-53	-75	-20	-55	-75
Purchase equipment	**Yes**	37%	40%	25%	50%	25%	35%	29%	42%	34%	35%	46%	29%	37%	36%	40%	23%	52%	36%	31%	43%	36%	44%	14%	29%	37%	35%	38%	0%	24%	44%	35%	18%	42%	35%	48%	30%	35%
	No	63%	60%	75%	50%	75%	65%	71%	58%	66%	65%	54%	71%	63%	64%	60%	77%	48%	64%	69%	57%	64%	56%	86%	71%	63%	65%	62%	100%	76%	56%	65%	82%	58%	65%	52%	70%	65%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-35	-20	-8	-4	-12	-79	-21	-26	-32	-79	-24	-35	-19	-78	-20	-35	-23	-78	-48	-30	-78	-25	-7	-17	-30	-79	-21	-5	-17	-36	-79	-22	-57	-79	-23	-56	-79
In what way was it different?	**Color spectrum**	25%	0%	0%	50%	33%	19%	17%	10%	27%	19%	9%	33%	14%	19%	0%	38%	17%	19%	27%	8%	19%	9%	0%	0%	36%	19%	0%	0%	0%	31%	19%	25%	17%	19%	18%	19%	19%
	Energy saving	25%	38%	0%	50%	33%	30%	17%	60%	9%	30%	36%	22%	29%	30%	43%	25%	25%	30%	27%	33%	30%	36%	100%	25%	18%	30%	43%	0%	50%	19%	30%	0%	35%	30%	27%	31%	30%
	New technology	0%	25%	50%	0%	0%	11%	0%	0%	27%	11%	18%	11%	0%	11%	14%	0%	17%	11%	7%	17%	11%	18%	0%	25%	0%	11%	14%	0%	0%	13%	11%	0%	13%	11%	9%	13%	11%
	Custom design	0%	13%	0%	0%	0%	4%	0%	0%	9%	4%	0%	11%	0%	4%	0%	0%	8%	4%	7%	0%	4%	0%	0%	0%	9%	4%	0%	0%	0%	6%	4%	0%	4%	4%	9%	0%	4%
	Different	8%	0%	0%	0%	33%	7%	0%	20%	0%	7%	0%	11%	14%	7%	0%	13%	8%	7%	13%	0%	7%	0%	0%	25%	9%	7%	0%	0%	25%	6%	7%	0%	9%	7%	0%	13%	7%
	Different	25%	0%	50%	0%	0%	15%	33%	0%	18%	15%	18%	11%	14%	15%	29%	0%	17%	15%	7%	25%	15%	18%	0%	0%	18%	15%	29%	0%	0%	13%	15%	75%	4%	15%	18%	13%	15%
	Better	17%	25%	0%	0%	0%	15%	33%	10%	9%	15%	18%	0%	29%	15%	14%	25%	8%	15%	13%	17%	15%	18%	0%	25%	9%	15%	14%	0%	25%	13%	15%	0%	17%	15%	18%	13%	15%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%	100%	100%	
		-12	-8	-2	-2	-3	-27	-6	-10	-11	-27	-11	-9	-7	-27	-7	-8	-12	-27	-15	-12	-27	-11	-1	-4	-11	-27	-7	0	-4	-16	-27	-4	-23	-27	-11	-16	-27
Purchase equipment	**Yes**	38%	21%	43%	25%	42%	34%	19%	40%	39%	34%	35%	35%	32%	34%	26%	36%	38%	34%	38%	28%	34%	35%	29%	28%	39%	34%	26%	20%	33%	41%	34%	38%	33%	34%	52%	26%	34%
	No	62%	79%	57%	75%	58%	66%	81%	60%	61%	66%	65%	65%	68%	66%	74%	64%	63%	66%	62%	72%	66%	65%	71%	72%	61%	66%	74%	80%	67%	59%	66%	62%	67%	66%	48%	74%	66%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-37	-19	-7	-4	-12	-79	-21	-25	-33	-79	-23	-37	-19	-79	-19	-36	-24	-79	-50	-29	-79	-23	-7	-18	-31	-79	-19	-5	-18	-37	-79	-21	-58	-79	-25	-54	-79

Table 8b. HVAC Equipment Purchase Decisions

		Current job title					Total	Length of time in			Total	Percent of time			Total	Percent of time			Total	Management and		Total	Number of buildings responsible for				Total	Number of buildings responsible for				Total	Number of		Total	Reasons for		
		Mgrs	Engs	Execs	Techs	Other		Less than 3 years	3-5 years	More than 5 years		No time	Some time, but no more than 50% of my time	More than 50%		No time	Some time, but no more than 50% of my time	More than 50%		Responsible for both	Not responsible for both		None	1 building	2-5 buildings	More than 5 buildings		None	1 building	2-5 buildings	More than 5 buildings		1 course	2 or more		Were thinking about a purchase	Other reason	Total
Purchase equipment	**Yes**	59%	82%	25%	40%	57%	62%	67%	60%	60%	62%	40%	68%	71%	62%	30%	66%	71%	62%	71%	39%	62%	40%	75%	62%	71%	62%	30%	67%	64%	71%	62%	50%	67%	62%	63%	61%	62%
	No	41%	18%	75%	60%	43%	38%	33%	40%	40%	38%	60%	32%	29%	38%	70%	34%	29%	38%	29%	61%	38%	60%	25%	38%	29%	38%	70%	33%	36%	29%	38%	50%	33%	38%	38%	39%	38%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-27	-17	-4	-5	-7	-60	-15	-20	-25	-60	-15	-28	-17	-60	-10	-29	-21	-60	-42	-18	-60	-15	-8	-13	-24	-60	-10	-6	-14	-28	-58	-18	-42	-60	-16	-44	-60
Purchase equipment	**Yes**	42%	56%	50%	20%	57%	47%	40%	55%	43%	47%	33%	54%	47%	47%	20%	46%	60%	47%	55%	28%	47%	33%	57%	62%	43%	47%	20%	40%	64%	48%	46%	33%	53%	47%	44%	48%	47%
	No	58%	44%	50%	80%	43%	53%	60%	45%	57%	53%	67%	46%	53%	53%	80%	54%	40%	53%	45%	72%	53%	67%	43%	38%	57%	53%	80%	60%	36%	52%	54%	67%	48%	53%	56%	52%	53%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-26	-16	-4	-5	-7	-58	-15	-20	-23	-58	-15	-26	-17	-58	-10	-28	-20	-58	-40	-18	-58	-15	-7	-13	-23	-58	-10	-5	-14	-27	-56	-18	-40	-58	-16	-42	-58
Purchase equipment	**Yes**	23%	47%	50%	40%	29%	34%	27%	35%	38%	34%	20%	37%	41%	34%	20%	39%	33%	34%	41%	17%	34%	20%	38%	46%	35%	34%	20%	17%	36%	41%	33%	22%	39%	34%	38%	33%	34%
	No	77%	53%	50%	60%	71%	66%	73%	65%	63%	66%	80%	63%	59%	66%	80%	61%	67%	66%	59%	83%	66%	80%	63%	54%	65%	66%	80%	83%	64%	59%	67%	78%	61%	66%	63%	67%	66%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-26	-17	-4	-5	-7	-59	-15	-20	-24	-59	-15	-27	-17	-59	-10	-28	-21	-59	-41	-18	-59	-15	-8	-13	-23	-59	-10	-6	-14	-27	-57	-18	-41	-59	-16	-43	-59
In what way was it different?	**Color spectrum**	0%	0%	50%	0%	0%	5%	0%	14%	0%	5%	0%	10%	0%	5%	0%	9%	0%	5%	6%	0%	5%	0%	0%	17%	0%	5%	0%	0%	20%	0%	5%	0%	6%	5%	0%	7%	5%
	Energy saving	17%	0%	50%	0%	0%	10%	0%	14%	11%	10%	33%	10%	0%	10%	50%	0%	14%	10%	6%	33%	10%	33%	33%	0%	0%	10%	50%	0%	0%	0%	5%	50%	0%	10%	0%	14%	10%
	New technology	17%	0%	0%	0%	0%	5%	0%	14%	0%	5%	0%	0%	14%	5%	0%	9%	0%	5%	6%	0%	5%	0%	0%	17%	0%	5%	0%	0%	20%	0%	5%	25%	0%	5%	17%	0%	5%
	Different	0%	13%	0%	0%	50%	10%	0%	14%	11%	10%	0%	10%	14%	10%	0%	9%	14%	10%	12%	0%	10%	0%	0%	0%	25%	10%	0%	0%	0%	18%	11%	0%	13%	10%	17%	7%	10%
	Different	0%	13%	0%	0%	50%	10%	25%	0%	11%	10%	0%	10%	14%	10%	0%	9%	14%	10%	12%	0%	10%	0%	0%	0%	25%	10%	0%	0%	0%	18%	11%	0%	13%	10%	17%	7%	10%
	Better	17%	13%	0%	0%	0%	10%	0%	14%	11%	10%	0%	20%	0%	10%	0%	9%	14%	10%	12%	0%	10%	0%	33%	17%	0%	10%	0%	0%	20%	9%	11%	0%	13%	10%	0%	14%	10%
	Better quality	17%	25%	0%	100%	0%	25%	25%	14%	33%	25%	33%	20%	29%	25%	0%	27%	29%	25%	24%	33%	25%	33%	0%	17%	38%	25%	0%	0%	20%	36%	26%	0%	31%	25%	33%	21%	25%
	More efficient	17%	13%	0%	0%	0%	10%	25%	14%	0%	10%	0%	0%	29%	10%	0%	18%	0%	10%	12%	0%	10%	0%	33%	17%	0%	10%	0%	100%	20%	0%	11%	25%	6%	10%	17%	7%	10%
	On going	17%	25%	0%	0%	0%	15%	25%	0%	22%	15%	33%	20%	0%	15%	50%	9%	14%	15%	12%	33%	15%	33%	0%	17%	13%	15%	50%	0%	0%	18%	16%	0%	19%	15%	0%	21%	15%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-6	-8	-2	-2	-2	-20	-4	-7	-9	-20	-3	-10	-7	-20	-2	-11	-7	-20	-17	-3	-20	-3	-3	-6	-8	-20	-2	-1	-5	-11	-19	-4	-16	-20	-6	-14	-20
Purchase equipment that we had not planned on purchasing	**Yes**	41%	24%	25%	40%	29%	33%	33%	30%	36%	33%	33%	32%	35%	33%	40%	38%	24%	33%	33%	33%	33%	33%	13%	38%	38%	33%	40%	17%	36%	36%	34%	28%	36%	33%	44%	30%	33%
	No	59%	76%	75%	60%	71%	67%	67%	70%	64%	67%	67%	68%	65%	67%	60%	62%	76%	67%	67%	67%	67%	67%	88%	62%	63%	67%	60%	83%	64%	64%	66%	72%	64%	67%	56%	70%	67%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-27	-17	-4	-5	-7	-60	-15	-20	-25	-60	-15	-28	-17	-60	-10	-29	-21	-60	-42	-18	-60	-15	-8	-13	-24	-60	-10	-6	-14	-28	-58	-18	-42	-60	-16	-44	-60

Table 9. Did Visit to CTAC Affect How Your Business Uses any of its Equipment

		Current job title					Total	Length of time in			Total	Percent of time			Total	Percent of time			Total	Management and		Total	Number of buildings responsible for				Total	Number of buildings responsible for				Total	Number of		Total	Reasons for		Total
		Mgrs	Engs	Execs	Techs	Other		Less	3-5	More		No	Some	More		No	Some	More		Responsible	Not		None	1	2-5	More than		None	1	2-5	More than		1	2 or		Were	Other	
Did your	Yes	51%	47%	23%	37%	24%	40%	31%	45%	44%	40%	41%	46%	27%	40%	42%	28%	60%	40%	39%	42%	40%	40%	25%	43%	48%	40%	41%	21%	41%	48%	40%	34%	44%	40%	45%	38%	40%
visits to	No	49%	53%	77%	63%	76%	60%	69%	55%	56%	60%	59%	54%	73%	60%	58%	72%	40%	60%	61%	58%	60%	60%	75%	57%	52%	60%	59%	79%	59%	52%	60%	66%	56%	60%	55%	62%	60%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-65	-34	-26	-19	-25	-169	-54	-55	-59	-168	-64	-71	-33	-168	-57	-69	-42	-168	-89	-79	-168	-65	-28	-30	-46	-169	-58	-24	-32	-50	-164	-65	-104	-169	-44	-125	-169

Table 10. Type of Equipment That Changed the Operations

		Current job title					Total	Length of time in			Total	Percent of time			Total	Percent of time			Total	Management and		Total	Number of buildings responsible for				Total	Number of buildings responsible for				Total	Number of		Total	Reasons for		Total
		Mgrs	Engs	Execs	Techs	Other		Less	3-5	More		No	Some	More		No	Some	More		Responsible	Not		None	1	2-5	More than		None	1	2-5	More than		1	2 or		Were	Other	
HVAC	Yes	18%	50%	50%	14%	67%	32%	6%	36%	46%	32%	27%	30%	56%	32%	21%	42%	36%	32%	37%	27%	32%	27%	0%	46%	41%	32%	21%	20%	31%	50%	33%	18%	39%	32%	45%	27%	32%
Equipment	No	82%	50%	50%	86%	33%	68%	94%	64%	54%	68%	73%	70%	44%	68%	79%	58%	64%	68%	63%	73%	68%	73%	100%	54%	59%	68%	79%	80%	69%	50%	67%	82%	61%	68%	55%	73%	68%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-33	-16	-6	-7	-6	-68	-17	-25	-26	-68	-26	-33	-9	-68	-24	-19	-25	-68	-35	-33	-68	-26	-7	-13	-22	-68	-24	-5	-13	-24	-66	-22	-46	-68	-20	-48	-68
Lighting	Yes	64%	81%	67%	71%	67%	69%	71%	64%	73%	69%	65%	70%	78%	69%	75%	68%	64%	69%	69%	70%	69%	65%	57%	69%	77%	69%	75%	60%	54%	75%	70%	68%	70%	69%	70%	69%	69%
Equipment	No	36%	19%	33%	29%	33%	31%	29%	36%	27%	31%	35%	30%	22%	31%	25%	32%	36%	31%	31%	30%	31%	35%	43%	31%	23%	31%	25%	40%	46%	25%	30%	32%	30%	31%	30%	31%	31%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
		-33	-16	-6	-7	-6	-68	-17	-25	-26	-68	-26	-33	-9	-68	-24	-19	-25	-68	-35	-33	-68	-26	-7	-13	-22	-68	-24	-5	-13	-24	-66	-22	-46	-68	-20	-48	-68

Appendix G
Manufacturer, Distributor, Vendor Research – In-depth Interview Guide

Lighting and HVAC Trade Allies -- MDV Interview Guide

SCE CTAC Market Effects Research

Introduction

Hello, I'm [fill name] from Hagler Bailly, a consulting firm located in Madison, Wisconsin.

[IF CONTACT KNOWN] May I please speak with [fill respondent name]?

1 CONTINUE
2 CALLBACK

[IF NO CONTACT] May I please speak with the person who is most familiar with your company's sales of lighting/HVAC equipment in Southern California?

1 CONTINUE [Record CONTACT NAME/INFO: _____]
2 CALLBACK

Hello, I'm [fill name] from Hagler Bailly in Madison, Wisconsin. We are an independent market research firm hired by Southern California Edison to collect information on the sale and installation of high efficiency lighting/HVAC equipment over time. We are not selling anything – we are simply helping SCE to better understand the market for this equipment. Your answers are completely confidential and will be used to help SCE plan future projects that may be useful to companies such as yours. This survey should take no longer than 15 minutes of your time.

Background/Screener

(These questions are designed to get a better handle on what business the respondents are in, assuming we won't know beforehand. This will give us the needed perspective for the remaining questions in the survey. Also, in this section we try to establish the respondent's depth of knowledge when representing his/her company by asking how long they have worked for their company. At the end of the survey, we attempt to get an indication of the "size" of the business for response weighting purposes.)

First, I'd like to get some background information about your firm to help me better understand your responses. I'd like to remind you that all of your answers will be kept confidential.

1. What type of business is your company in? *(Try to check only one answer, but it is possible more than one may apply.)*

   1 Lighting/HVAC equipment manufacturer
   2 Lighting/HVAC equipment manufacturer agent/rep
   3 Distributor
   4 Architectural or Engineering firm/Consultant/Designer
   5 Installation Contractor/Electrical Contractor
   6 Other *(Specify: _____)*

2. Who are your primary customers/clients – that is, to whom do you sell your products & services? *(Try to check only one answer, additional responses can be coded in Question 3)*

    1 Wholesale lighting/HVAC/electrical equipment outlets
    2 Retail lighting/HVAC/electrical equipment companies
    3 Installation contractors/Electrical contractors
    4 Architectural/Engineering Firms/Consultants
    5 Residential end-users
    6 Commercial, industrial end-users
    7 Other *(Specify: _____)*

3. Any others? *(Check all that apply)*

    1 Wholesale lighting/HVAC/electrical equipment outlets
    2 Retail lighting/HVAC/electrical equipment companies
    3 Installation contractors/Electrical contractors
    4 Architectural/Engineering Firms/Consultants
    5 Residential end-users
    6 Commercial, industrial end-users
    7 Other *(Specify: _____)*

5. How long have you been employed by your firm?

    _____MONTHS AND/OR _____YEARS

6. What is your current job title?

    1 owner
    2 president/vice-president/CEO
    3 sales manager
    4 sales representative/account representative
    5 other *(Specify: _____)*
    9 DK
    8 Refused

7. How long have you held this position?

    _____MONTHS AND/OR _____YEARS

As I said earlier, the main purpose of this interview is to help SCE understand the market for energy efficient lighting/HVAC equipment – for example, we want to understand the extent to which there have been permanent changes in the market for high-efficiency lighting/HVAC equipment over time, and the extent to which there has been changes in the behavior of buyers and sellers that have resulted in more sales of energy efficient lighting/HVAC options. When I say "buyers and sellers", I'm including companies such as manufacturers, distributors, lighting/HVAC system designers and specifiers, installation contractors, and businesses who ultimately use the lighting/HVAC equipment.

1. First, let me ask you – from your perspective – what do you think are the most significant barriers to the adoption of energy efficient lighting/HVAC equipment in the current market? By "barriers" I mean things that keep businesses from buying energy efficient lighting/HVAC equipment, suppliers from selling it, manufacturers from producing it, etc. Can you think of any others? *[Record verbatim answers. Use probes as appropriate such as "Why do you say that?" Can you explain that for me?" Then, if appropriate, try to code responses using categories below. Do not force verbatim responses into these categories – we can add new ones. We may also need to clarify/remind respondents what we mean by "barriers" – these are things that keep consumers from demanding, suppliers from selling and/or manufacturers from producing energy efficient products.]*

_____

_____

_____

_____

_____

Potential Response Categories for Coding After Analysis of Verbatim Responses

1	Customer awareness/knowledge
2	Customer demand/interest
3	Customer acceptance
4	Product availability
5	Product reliability/quality
6	Vendor/contractor awareness/knowledge
7	Vendor/contractor promotion ("sales push")
8	Vendor/contractor acceptance
9	Price

2. Would you say these barriers existed five years ago? If so, was it about the same, less significant or more significant than it is today? *(Repeat for each barrier mentioned in Question 1)*

_____

_____

_____

_____

_____

3. Are there any barriers that existed five years ago that aren't around today, or at least not as significant?

    1 Yes ---> (*Specify below. Again record verbatim responses and probe appropriately. Then try to code responses using categories shown in Question 1.)*
    2 No
    9 Don't know

_____

_____

_____

_____

_____

4. Finally, what types of barriers do you think will be significant, say, for the next five years? *(Again record verbatim responses and probe appropriately. Then try to code responses using categories shown in Question 1)*

_____

_____

_____

_____

_____

market in general for energy efficient lighting/HVAC products and services. Also, I'd like you to tell me what you think these changes can be attributed to.

(Generalizations are OK, but only if appropriate. Probe for specific examples to better understand respondents' generalizations or to highlight areas where generalizations aren't appropriate. Try to think of responses in terms of whether they indicate "positive changes" – those that would indicate a market barrier has been reduced/eliminated; "negative changes" – those that indicate a barrier has been amplified/increased; or "no change" – a barrier has remained unchanged.)

5. Over the last five years, how has …*[read from list]* changed?
6. To what do you attribute this change?
7. Over the next five years, how do you expect it to change, if at all?
8. To what do you expect to attribute this change?

Your awareness of and interest in energy-efficient lighting/HVAC equipment 1 = Non-existent 2 = Minor 3 = Significant 4 = Drives our business	Change in past five years: Attribution: Expected change in next five years: Expected attribution:
Your acceptance of or confidence in energy-efficient lighting/HVAC equipment 1 = Non-existent 2 = Minor 3 = Significant 4 = 100%	Change in past five years: Attribution: Expected change in next five years: Expected attribution:

Your sales/promotion of energy-efficient lighting/HVAC equipment 1 = Non-existent 2 = Minor 3 = Significant 4 = Drives our business	Change in past five years: Attribution: Expected change in next five years: Expected attribution:
The quality/performance of energy-efficient lighting/HVAC equipment 1 = Sub-standard 2 = Standard 3 = Superior	Change in past five years: Attribution: Expected change in next five years: Expected attribution:
The relative price differences between standard and energy-efficient lighting/HVAC equipment 1 = Huge difference 2 = Some difference 3 = No difference 4 = Less expensive	Change in past five years: Attribution: Expected change in next five years: Expected attribution:

Delays in obtaining energy-efficient lighting/HVAC equipment 1 = Constant / Chronic 2 = Significant 3 = Minor 4 = None	Change in past five years: Attribution: Expected change in next five years: Expected attribution:
Business customer awareness of energy-efficient lighting/HVAC equipment 1 = Non-existent 2 = Minor 3 = Significant 4 = Drives our business	Change in past five years: Attribution: Expected change in next five years: Expected attribution:
Business customer demand for energy-efficient lighting/HVAC equipment 1 = Non-existent 2 = Minor 3 = Significant 4 = Drives our business	Change in past five years: Attribution: Expected change in next five years: Expected attribution:

Business customer acceptance of, or satisfaction with, energy-efficient lighting/HVAC equipment 1 = Non-existent 2 = Minor 3 = Significant 4 = 100%	Change in past five years: Attribution: Expected change in next five years: Expected attribution:
Utility support and financial incentive programs for energy-efficient lighting/HVAC equipment 1 = Non-existent 2 = Minor 3 = Significant 4 = Drives our business	Change in past five years: Attribution: Expected change in next five years: Expected attribution:

It is very important that we discuss all of the possible factors that may have influenced the market for energy efficient lighting/HVAC equipment over the past five years. I would like to read you a list of possible factors that have "theoretically" influenced this market <u>in general</u> -- feel free to agree or disagree with these theoretical factors as appropriate. For each, please rate the influence you think it has had upon the shift toward more energy-efficient lighting/HVAC equipment on a scale of 1 to 5, with 1 being "no influence" and 5 being "a great deal of influence." *[ROTATE LIST]*

9. OK, so on the market in general for energy-efficient lighting/HVAC equipment, how influential has … [READ FACTOR] been? Why is that? [ROTATE LIST]

Utility rebate or other financial incentive programs	
Changes in federal, state and/or local building codes and regulations	
Changes in availability of energy-efficient lighting/HVAC products	
Rising energy costs	
Environmental concerns of business customers	
Improvements made in quality and performance of energy-efficient lighting/HVAC products	
Reductions in the prices of energy-efficient lighting/HVAC products	
Your own efforts to market energy-efficient lighting/HVAC systems	
Utility educational and informational programs	

The preceding questions have addressed a number of factors that have influenced the overall market for energy efficient lighting/HVAC equipment from many points within the distribution system. Now, I'd like to focus on issues and factors that you believe have an influence on equipment selection decisions that are made by the businesses who eventually install and use this equipment. That is, what makes a difference for them when choosing between standard and energy efficient options?

Please indicate how influential each of the following factors has been (and will continue to be) on the business customers' equipment selection decisions. Let's use the same scale of 1 to 5, with 1 being "No influence" and 5 being "A great deal of influence".

10. For business customers' equipment selection decisions, how influential is … [READ FACTOR]? Why is that? [ROTATE LIST]

The availability of impartial and objective information concerning technology choices	
The availability of credible/reliable information concerning the technology choices	
The availability of information that is convenient to obtain (i.e., not a hassle, timely)	
The availability of information at a low cost	
The availability of comparable technology choices with similar cost implications	
Business customers' knowledge or sophistication with respect to comparing different technology choices	

11. Finally, I'd like to discuss possible ways in which most business customers "learn" about

energy efficient lighting/HVAC options. Obviously there are many ways – what do you think are the top five most frequent sources of information used by the majority of business customers to learn more about energy efficient lighting/HVAC options? *[RECORD FIRST FIVE MENTIONS IN ORDER OF MENTION]*

1 From me, my staff, my company
2 From other distributor/sales reps
3 From equipment specifiers, system designers (engineers)
4 From installation contractors
5 From manufacturers literature/product specs
6 From other print materials (e.g., newsletters, magazines, trade journals)
7 Through seminars/workshops
8 From utility programs/personnel
9 From professional colleagues/co-workers
8 Other *(Specify: _____)*

12. Are you aware of seminars/workshops that are available for business customers, equipment specifiers, installation contractors, etc. to learn more about energy efficient lighting/HVAC equipment? *(Remind respondent that we're interested in seminars/workshops in the Southern California area.)*

1 Yes
2 No

13. Who sponsors these seminars/workshops? Where are they held?

1 SCE / CTAC
2 Other *(Specify: _____)*

14. Has your company ever attended or participated in seminars/workshops held in Southern California?

1 Yes
2 No

15. What influence, if any, do you think these types of seminars/workshops have on the eventual equipment end-users' lighting/HVAC equipment selection decisions? Please answer on a scale of 1 to 5, where 1 is "No influence" and 5 is "a great deal of influence".

_____

16. Why do you say that?

_____

17. Finally, what do you think can be done, if anything, to expand the market for – or increase the market share of – energy efficient lighting/HVAC equipment?

_____

18. What do you think can be done, if anything, to increase business customer demand for energy efficient lighting/HVAC equipment?

_____

Before I hang up, I'd like to get some indication of the "size" of your business. Again, let me remind you that all of your answers will be kept confidential.

(We will probably need to repeat the confidentiality statement and that we're just looking for estimates. Also, it is possible that some respondents will only do business in California and others will do business regionally as well as nationally. Some will do business at many levels of the "supply chain" and in many sectors including residential, commercial, industrial, institutional, etc. We'll have to try real hard to get them to give us some idea of the magnitude of lighting/HVAC business they do in Southern California that would eventually wind up in non-residential facilities. If it is impossible for respondents to give us this information this way, ask first for lighting/HVAC business, then in Southern California, then in non-residential facilities.)

19. Which of the following best describes the annual business volume for your company related to the sale of lighting/HVAC equipment for installation in non-residential facilities located in Southern California?

    1 Less than $100,000
    2 $100,000 to $499,999
    3 $500,000 to $999,999
    4 $1 million or more
    5 Other *(Specify: _____)*
    9 DK
    8 Refused *(Repeat confidentiality statement and probe as described above)*

20. Does this amount of business represent ….*[READ LIST]* of your total annual business volume? *(Get actual percentage if given. Otherwise, instruct respondent to state closest %.)*

    1 100%
    2 75%
    3 50%
    4 25%
    5 10%
    6 Less than 10%
    7 Other *(Specify: _____)*
    9 DK
    8 Refused

That's all I have for you. Thank you very much for your time.

Appendix H
Manufacturer, Distributor, Vendor Research – Interview Capsules

Product Manager
Large HVAC manufacturer
12/18/97

Background information

- International HVAC manufacturer
- Primary customers/clients: 1) commercial/industrial dist. 2) residential dist.
- Employed by firm 5 years
- Current title: Product Manager
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 80% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is the nature of the distribution system of the business.

> *"The contractor puts a bid on the project. The project has to be done under budget. The contractor is looking for the lowest price equipment."*

> *"Unless [the end-user) specifically demands the higher efficiency, they're not going to get it."*

> *"With commercial HVAC equipment, you can't always show a payback. That varies from case to case, but even if you can demonstrate a payback, it still often doesn't matter."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Same	"Efficiency is one of the things you talk about. It's a marketing tool. But that doesn't mean that our customers care."
Acceptance of or confidence in energy-efficient equipment	Same	
Sales/promotion of energy-efficient equipment	Same	

Relative price differences between standard/energy-efficient equipment	▸	Slight decrease Expected to decrease slightly	Costs can not be cut that much.
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to remain very low	"If we make it, it is just as available."
End-user awareness of energy-efficient equipment:	▸	Increased DK future	A trend in the industry - facility managers are starting to get a little smarter
End-user demand for energy-efficient equipment	▸	Increased slightly Expected to increase slightly	On very large projects, for stable businesses.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increase	Satisfaction is quite high

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3.5	"Rebates probably have been a serious factor. It allows you to sell a higher-cost unit at the same price as the standard product."
Changes in state and local building codes/regs	2	Mentioned ASRE 90.1 - energy standard for commercial buildings - set minimum efficiencies for efficient HVAC. "The code is written to be translated into law. If it becomes a law, I would give it a 5. This takes some of the risk out of it from the manufacturers standpoint because all of the manufacturers have to get up to the same standards." Mentioned that this applies more to the smaller commercial units.

Changes in federal building codes and regulations	2	
Rising energy prices	1	Not a factor people think about - no impending energy crunch
Environmental concerns of commercial and industrial customers	1.5	"You get your occasional company that cares, but not a predominant theme."
Improvements made in energy-efficient products	1	Can not translate into actual change in the market
Reductions in the prices of energy-efficient products	1	Prices have not fallen
Your own efforts to market energy-efficient systems	1.5	Not helping the demand much
Utility educational / informational programs	1	"I've not seen any evidence of a real effect here."

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	2
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	3
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	3

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from advertisements, although he does not feel that advertising in the HVAC industry is driving customer decisions.

"I think [information is diseminated] more at the level of communication between

distribution forces - sales engineers, unitary distributors, design-contractors and engineers."

As for the value of seminars/workshops:

"I'm a member of the association of Energy Engineers and so I see all kinds of fliers of different programs like this. I know that people see it, but I don't know that it's having any effect on how people go buy stuff."

"The bottom line is customer demand often comes down to relationships and applications. 'Who's stuff is going to do what I need it to do,' and 'which contractor am I friends with', and 'which engineer knows my sales engineer locally.' "

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to hit them at the bottom line.

"If you really want to get somebody to do something, you've got to hit 'em at the bottom line. You know, you tax the hell out of R-11, people stop buying it. There's always going to be an increment above minimum that people aren't going to want to pay for. Cost is king."

Commercial Sales Manager
Large HVAC Manufacturer
12/12/97

Background information

- International HVAC manufacturer
- Primary customers/clients: 1) residential 2) commercial
- Employed by firm 20 years
- Current title: Commercial sales manager
- Business size: Over $1,000,000 in annual sales to non-residential market in Southern CA- represents roughly 45% of the company's total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is the price.

> *"You have to overcome the up-front cost, but with the help of rebates like Edison's, it helps offset the costs."*

He also feels that end-users lack information when it comes to high-efficiency HVAC equipment. Therefore, they have to rely on the recommendations of the contractors who generally do not push high-efficiency systems. In this way, he feels that contractors, too, could benefit from more information and training regarding efficient HVAC systems.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	"A major company focus has been on creating efficient models for several years."
Acceptance of or confidence in energy-efficient equipment	▸ Same	
Sales/promotion of energy-efficient equipment	▸ Increased Expected to increase	"We spend a considerable, and increasing amount, on promoting efficient equipment." "You have to spend the money and the time to promote it."

Relative price differences between standard/energy-efficient equipment	▸	Slight decrease Expected to decrease slightly	Innovations make it less expensive to create the efficient equipment.
Delays in obtaining energy-efficient equipment	▸	No	"If we make it, it is available to our customers."
End-user awareness of energy-efficient equipment:	▸	Increased slightly Expected to increase significantly	Utility programs have helped a lot.
End-user demand for energy-efficient equipment	▸	Increased slightly Expected to increase slightly	Increased emphasis on operation cost is sending demand slightly higher.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increase	High quality products.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4	Gives customers incentives to choose efficient unit.
Changes in state and local building codes/reg.s	2	Does not push the industry
Changes in federal building codes and regulations	3	
Rising energy prices	5	More people are more concerned about operation costs
Environmental concerns of commercial and industrial customers	4	Gaining momentum among large energy users, especially high-tech companies.
Improvements made in energy-efficient products	2	Has had very little effect
Reductions in the prices of energy-efficient products	3	Makes payback easier to swallow
Your own efforts to market energy-efficient systems	3	"We feel we are doing

		everything we can"
Utility educational / informational programs	4	Puts focus on operating costs

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	5
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from their contractors, and then from the newspapers.

He feels that manufacturers have their own advertising programs in trade magazines, but those magazines do not get into the hands of the consumers.

The respondent was aware of seminars sponsored by manufacturers for distributors and contractors. His company puts on the seminars, and his sales representatives attend workshops put on by the utilities. He found these seminars very effective.

> *"The people who attend the seminars pass on their knowledge to their associates, their company, the contractors, and the information eventually passes on to the end-users."*

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is for the manufacturers to team up with the utilities and the contractors to work together as a team to promote efficient products. He suggested using the Internet to get the information to the widest possible audience.

Sales Manager
HVAC Manufacturer
12/19/97

Background information

- < Manufacturer of custom commercial and industrial HVAC equipment
- ▸ Primary customers/clients: Reps deal directly with commercial/Industrial customers
- ▸ Employed by firm 18 years
- ▸ Current title: Sales Manager
- ▸ Business size: Over $2.5 million annually in sales to non-residential market in Southern CA - represents roughly 15% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is motor/compressor efficiencies. All of the equipment the company produces has a premium efficiency motor, and they also oversize their condensers, but they would like to make even more efficient models.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased	Customer awareness has quadrupled in recent years
Acceptance of or confidence in energy-efficient equipment	▸ Increased	Awareness has gone up, so confidence has followed. No longer a "new" product.
Sales/promotion of energy-efficient equipment	▸ Increased	Trying to utilize increased demand
Relative price differences between standard/energy-efficient equipment	▸ Same	The gap is fairly small, but not really changing.
Delays in obtaining energy-efficient equipment	▸ Decreased Expected to remain very low	No difference between standard/efficient
End-user awareness of	▸ Increased	

energy-efficient equipment:		Expected to increase	
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	Demand has driven our company's shift towards the efficient equipment
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Same	No difference between standard and efficient models

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	2	The need for lower utility bills drives the market, rebates helped lower the bills.
Changes in state and local building codes/regs	2	Somewhat of an effect with higher efficiency heat exchangers
Changes in federal building codes and regulations	1	
Rising energy prices	4	This drives the demand for efficiency
Environmental concerns of commercial and industrial customers	3	"We've had a small percentage of customers who want to pursue alternative refrigerants."
Improvements made in energy-efficient products	2	Customer usually does not "see" the improvements.
Reductions in the prices of energy-efficient products	3	Increases sales
Your own efforts to market energy-efficient systems	3	"We push it very hard"
Utility educational / informational programs	4	"We supply equipment to a lot of performance contractors, and several of those are tied into the utilities. We feel there will be more and more of that in the future."

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	4
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	5
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	5

End-user Information Sources

The respondent feels that the majority of end-users receive information regarding energy efficient HVAC equipment from 1) trade publications 2) seminars (local ASHRE chapters) 3) manufacturers reps and 4) trade shows.

The respondent is aware of seminars sponsored by ASHRE chapters, and by the World Energy Conference. He feels the seminars have a direct effect on the end-user's equipment selection decisions, because they introduce the end-user to all of the possible options. (rated seminar influence on end-user decisions as a 4 out of 5).

Respondent suggestions for expanding market / increasing demand

The respondent suggested that there should be more research on the part of the manufacturers with regard to more efficient motors.

On the demand-side, the respondent suggests offering more creative programs, such as performance contracting, to offset customer fears over the initial investment.

> *"We supply equipment to a lot of performance contractors, and several of those are tied into the utilities. We feel there will be more and more of that in the future."*

He also suggests that the utility could send customized monetary savings information to company

facility staff packaged in with their utility bills. The utility could base this on the company's current usage, and give them several options in terms of efficiency levels.

Product Manager
HVAC Manufacturer
12/5/97

Background information

- HVAC manufacturer
- Primary customers/clients: 1) residential (60%) 2) commercial (40%)
- Employed by firm 1 year, in the field 11 years
- Current title: Product Manager
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents less than 5% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is finding a way to comply with environmental regulations made in Washington D.C.

> *"Customer awareness is easy. The regulatory stuff is what kills us. The regulatory agencies need to tell everyone what they are trying to accomplish, and then we can all find a way of making that happen."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	Gone to different kinds of compressors, coil surfaces, different air flows.
Acceptance of or confidence in energy-efficient equipment	▸ Same	Always was high
Sales/promotion of energy-efficient equipment	▸ Same	Always was high
Relative price differences between standard/energy-efficient equipment	▸ Same	Has not come down. Cost-cutting has been offset by methods to get higher efficiency.
Delays in obtaining energy-	▸ Decreased	Not an issue

efficient equipment		Expected to remain very low	
End-user awareness of energy-efficient equipment:	▸	Increased slightly Expected to increase	
End-user demand for energy-efficient equipment	▸	Same.	Has not increased as much as residential side. There is not that much difference in efficiency on the commercial side.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increase	High

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	5	This is based on experience with a utility rebate in Indiana that was very attractive.
Changes in state and local building codes/regs	2	Needed desperately - high potential for change
Changes in federal building codes and regulations	2	Needed desperately
Rising energy prices	1	Not an issue
Environmental concerns of commercial and industrial customers	1	"I see the need for it, but companies won't care unless they are absolutely forced to, kicking and screaming. You've got to hit them at their pocketbook."
Improvements made in energy-efficient products	1	No effect on sales because every manufacturer had to do it by law.
Reductions in the prices of energy-efficient products	1	Hasn't been much price reduction.

Your own efforts to market energy-efficient systems	2	"Nobody wants to buy this stuff, no matter what we say."
Utility educational / informational programs	5	Helps at many levels.

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	5
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from trade magazines, or a contractor/architect/engineer. He feels that the distributors and manufacturers need to educate more at the contractor/architect/engineer level. He mentioned a possible problem with information at the distributor level, in that the manufacturer only sends information to the main office of a distributor, not each branch, so it is their responsibility to circulate that info to the branch offices. He feels that many times this does not get done.

He is familiar with seminars in Southern California, but does not know if anyone from his company has attended any of these functions.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is through regulation.

> *"The end user on the commercial side is more concerned about his bottom line than his utility bill. You've got to find a way around that. The best way is to regulate them."*

Sales Representative
Large HVAC distributor
12/18/97

Background information

- HVAC contractor
- Primary customers/clients: 1) residential (60%) 2) commercial (40%)
- Employed by firm 3 years, in field 17 years
- Current title: Sales Representative
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 20% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is a lack of end-user understanding regarding the benefits of energy efficient equipment. He feels this lack of understanding is due to poor understanding by the contractor.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Increased Expected to increase	The profits are higher on the higher efficiency units.
Acceptance of or confidence in energy-efficient equipment	Same	
Sales/promotion of energy-efficient equipment	Increased	We operate from the standpoint that the contractor should always try to up-sell in regards to efficiency. They talk to their dealers about this.
Relative price differences between standard/energy-efficient equipment	Same	Gap is still quite large
Delays in obtaining energy-efficient equipment	Decreased Expected to remain very low	It's all readily available.

End-user awareness of energy-efficient equipment:	▸	Same
End-user demand for energy-efficient equipment	▸	Same
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Same

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	5	"Because that brings in the awareness by bringing in a concrete benefit."
Changes in state and local building codes/regs	2	Only from a mandated minimum standpoint
Changes in federal building codes and regulations	2	
Rising energy prices	4	Directly affects the payback
Environmental concerns of commercial and industrial customers	2	Not much
Improvements made in energy-efficient products	3	Higher efficiency
Reductions in the prices of energy-efficient products	1	No major reductions
Your own efforts to market energy-efficient systems	1	No marketing
Utility educational / informational programs	5	"There is always a ripple effect. Just them telling the public seems to have an effect."

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	4
Availability of information at a low cost	4
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	5

* The respondent feels there needs to be more up-to-date information.

End-user Information Sources

The respondent believes that the majority of his customers receive information regarding energy efficient HVAC equipment from the engineer/contractor, or from the utility.

He is not aware of any seminars, but he lives in N. CA, even though ½ of his sales are in So. Cal.

Respondent suggestions for expanding market / increasing demand

The respondent believes that the best way to expand the market for efficient electric equipment is to educate the contractor in the retrofit market, or the architect/engineer in the new construction market.

He would like to see the utility, along with distributors, improve the contractor/engineer/ architects' understanding of how to translate high efficiency into a dollars benefit for the end-user. He feels this could be done via training programs.

> *"If there is some way that SCE could relay information to contractors that THEY can make more money selling higher efficiency, and that [SCE] would be able to keep rates lower because they won't need to build more power plants or whatever, that would be constructive. Maybe this would be through a tool the contractor could use to put the savings information in front of the end-user."*

He stressed that on the end-user side, education must be kept simple (i.e., "you will save 10% on

your cooling costs, period." This could also be done via some kind of "reward" for choosing efficient equipment (rebates, financing, etc.).

Assistant Manager
HVAC Distributor
12/18/97

Background information

- HVAC contractor, one location of the nation's largest HVAC distribution companies (300 locations)
- Primary customers/clients: 1) commercial 2) residential (roughly 50/50 split)
- Employed by firm 3 years
- Current title: Assistant Manager
- Business size: About $2,00,000 annually in sales to non-residential market in Southern CA - represents roughly 40% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is up-front cost.

> *"The payback just isn't fast enough. We have to tell people realistically that if they put in a high efficiency unit they're looking for a payback of 5 to 7 years. The average business turns over pretty quickly."*

Furthermore, the respondent feels that even if the payback period was half as long, commercial customers would not respond.

> *"[Commercial customers] aren't interested in saving money on utility bills, they're more interested in saving money on maintenance. The building owner goes for the cheapest thing he can find."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Slight increased Expected to increase	
Acceptance of or confidence in energy-efficient equipment	Increased	
Sales/promotion of energy-	Same	"I don't sell [high efficiency

efficient equipment			HVAC units] per se. I deal with the contractor, he's the one who makes the sales. All we do is supply what [the contractor] need[s]." "We offer high efficiency units, and we try to teach our contractors the value of selling those products, but we don't deal with the general public."
Relative price differences between standard/energy-efficient equipment	▸	Same	"The prices may have come down a little bit, but the gap is still the same."
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to remain very low	No problem
End-user awareness of energy-efficient equipment:	▸	Increased slightly Expected to increase	Feels awareness can only help so much. "Demand speaks louder than awareness."
End-user demand for energy-efficient equipment	▸	Increased slightly Expected to increase slightly	"In comparison [to standard units], demand is still pretty low. I'm not going to say we don't sell any."
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	DK	

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	2	Rebates had an effect on the residential side, but not the commercial side.
Changes in state and local building codes/regs	1	No code that requires higher than 80% efficient unit.
Changes in federal building codes and regulations	1	

Rising energy prices	1	Building owners are not the ones who are paying the utility bills.
Environmental concerns of commercial and industrial customers	3	With larger customers, and schools/municipalities. "Your average commercial person, they don't care."
Improvements made in energy-efficient products	1	"Nothing has changed on the commercial side in the last few years."
Reductions in the prices of energy-efficient products	2	Not enough to bolster demand
Your own efforts to market energy-efficient systems	1	No marketing efforts
Utility educational / informational programs	2	The good news is that everybody is aware of it. The bad news is that [awareness] is not the problem - demand is."

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	2
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	2
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	2

> *"No amount of information could solve the real problem here. If you're dealing with an agency or municipality, who actually pay the bills, they might have an interest in efficient*

equipment, but anybody else could care less, because they are not paying the bills."

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from the contractor themselves, who are generally too busy trying to compete with one another to push the more efficient units.

> *"I would admit that contractors have to be trained to try to sell the higher SEER stuff instead of going in there to be the lowest bidder. It depends on the size of the contractor, but they are just trying to stay in business."*

He is not aware of seminars or workshops.

Respondent suggestions for expanding market / increasing demand

The respondent could not think of a way to realistically expand the market or increase the demand for energy efficient equipment.

Commercial Sales Manager
HVAC Distributor
12/18/97

Background information

- HVAC contractor
- Primary customers/clients: 1) commercial 2) residential
- Employed by firm 8 years
- Current title: Commercial Sales Manager
- Business size: Between $500,000 and $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 60% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is up-front cost.

> *"You're not going to sell a lot of this stuff if the payback is 7 years, I'll tell you that right up front. The climate here just doesn't make for quick payback periods."*

He also stressed that commercial building owners are generally not interested in efficiency, since they are not generally responsible for the utility bills. He says that these customers are looking for the cheapest available model that is "up to code", which is usually an 80% efficient model.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Slight increase Expected to increase	Awareness is not the problem
Acceptance of or confidence in energy-efficient equipment	Increased	They would like to sell more, but they go by what the market wants.
Sales/promotion of energy-efficient equipment	Same	"We offer higher SEER models, but we aren't in a position to push them. That's somebody else's job. My job is to get them when someone else says they need them."

Relative price differences between standard/energy-efficient equipment	▸	Same	"We haven't seen a change in the gap."
Delays in obtaining energy-efficient equipment	▸	Same	Never was much of a problem except on custom models (very big) - no difference between standard and efficient models
End-user awareness of energy-efficient equipment:	▸	Increased DK	"Awareness is the easy part, but how many people really UNDERSTAND it."
End-user demand for energy-efficient equipment	▸	Increased DK	Demand is still very low among average commercial customers.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Same	High customer satisfaction.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	Effected residential side more, but also increased awareness and demand on the commercial side.
Changes in state and local building codes/regs	1	Code only requires 80% efficiency.
Changes in federal building codes and regulations	1	
Rising energy prices	2	Energy prices only matter to commercial customers if they are paying the electricity bill.
Environmental concerns of commercial and industrial customers	1	"Not a bit, not that I've seen."
Improvements made in energy-efficient products	1	"What improvements?"

Reductions in the prices of energy-efficient products	2	No substantial reductions in price at end-user level.
Your own efforts to market energy-efficient systems	1	They do not market.
Utility educational / informational programs	3	Seminars and workshops are helpful for trade allies.

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	4
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	1
Customer's knowledge/sophistication in comparing technology choices	1

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from contractors, and from their trade associations.

He is aware of seminars put on by "some of the utilities, and then the big [manufacturers]." He said he used to go to these sometimes but does not have the time to go anymore. He did not think they were worth his time.

Respondent suggestions for expanding market / increasing demand

The respondent suggested the only way to have an impact on the market for energy efficient HVAC equipment is to bring the payback down to a more reasonable length of time. He feels that 5 to 7 years is too long for all but the most motivated customers. This could be done through rebates, or some kind of guaranteed savings programs with financing bundled in. The respondent also suggested using the World Wide Web for information about utility programs and rebates.

Territory Manager
HVAC Distributor
12/19/97

Background information

- HVAC distributor
- Primary customers/clients: 1) commercial contractors
- Employed by firm 4 years, in field for 15 years.
- Current title: Territory Manager
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 100% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is first cost.

> *"In Southern California, the climate is too mild to justify the first costs. Therefore, it is very hard to sell anybody on the payback idea."*

He also went on to describe the inherent limitations of the HVAC distribution network.

> *"Most of the stuff we sell to contractors is plan & spec kind of business. So if standard efficiency is specified by the engineer/architect, they're going to bid at standard efficiency. There's no way they're going to even attempt to convice the GC that he ought to consider high efficiency. The only person who might care about efficiency is the owner, and in general, the A/C contractor never has contact with the owner."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Slight increase Expected to increase	"Only for the last two years has our manufacturer offered a full line of standard and a full lind of HE equipment. Before that, we didn't always have two models available. That's pretty much true with all the big manufacturers (Carrier, Trane, York).
Acceptance of or confidence	Increased	

in energy-efficient equipment			
Sales/promotion of energy-efficient equipment	▸	Increased	They make more money on the efficient models.
Relative price differences between standard/energy-efficient equipment	▸	Slight decrease Expected to decrease slightly	"It is getting a bit smaller."
Delays in obtaining energy-efficient equipment	▸	Not an issue	"We can provide either type as fast as the other."
End-user awareness of energy-efficient equipment:	▸	Increased slightly Expected to increase significantly	It has gone up over the last 3 or 4 years or so, as a result of the rebates.
End-user demand for energy-efficient equipment	▸	Increased slightly Expected to increase slightly	It has gone up over the last 3 or 4 years or so, as a result of the rebates.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased	Product improvements.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	1	
Changes in state and local building codes/regs	1	"Only a couple of years ago when the minimum became 10 SEER on 5-ton and under. There has been no real update in efficiency requirements for a while."
Changes in federal building codes and regulations	1	
Rising energy prices		
Environmental concerns of commercial and industrial customers	1	Not an issue.

Improvements made in energy-efficient products	3	Has an effect, but only with national account-type customers who are interested in life cycle cost of the equipment. "There's no magic, the metrics of air conditioning haven't changed. Its just two coils, a fan, and a pump."
Reductions in the prices of energy-efficient products	2	Small reductions
Your own efforts to market energy-efficient systems	2	"Only to big customers. We don't get a chance to do a presentation to the owner of some small retail builder."
Utility educational / informational programs	3	Raises awareness, but results are rather nebulous

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	2
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	4
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	5

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from utilities and from advertisements in industry trade magazines in the customers' trades (i.e., Restaurant News). He feels there is plenty of information out there, but that much of it is ineffective because it never reaches the end-user. As a result, he insists rebates are critical because they directly target the end-user.

> *"I have the information. I have the payback programs [computer software], and all kinds of software that will analyze how the customer can afford the equipment, or if they have to finance it. I show the contractor and most of them don't care until the owner ASKS THEM for it."*

The repsondent was aware of CTAC seminars, and has attended them. He gave them a rating of three out of five in terms of their influence on customer equipment selection decisions, stating moreover that the seminars were very well done and informative. However, the benefits are difficult to measure, aside from increased general awareness.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to bring back the rebate programs, because he feels it is critical to get to the end user, or the "guy who is paying the utility bill."

He feels the large national chains should be heavilly targeted, because their stability and longevity within one building makes them targets for high efficiency HVAC.

> *"Those guys are in it for the long term. They're going to live with the equipment as far as they can see into the future. They're not planning on bailing on the building. They open a building because they plan on making a profit."*

He feels that getting more information to the engineers would be worth some effort, but stressed that "if the end-user doesn't see [the benefits of efficient HVAC equipment], the engineer generally does not want to take the time to explain it to them."

Manager
HVAC Distributor
12/17/97

Background information

- HVAC distributor
- Primary customers/clients: 1) Electrical contractors
- Employed by firm 5 years.
- Current title: Manager
- Business size: Between $100,000 and $500,000 annually in sales to non-residential market in Southern CA - represents roughly 80%-90% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is the initial investment. He states that even when people understand the benefits of high efficiency HVAC equipment, people either do not care [have no stake in the energy costs], or are generally afraid to lay out the high first cost of the equipment.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased	The manufacturers whose products they sell only recently began offering high efficiency models.
Acceptance of or confidence in energy-efficient equipment	▸ Increased Expected to increase	"Increased as we get more experience with the products."
Sales/promotion of energy-efficient equipment	▸ Same	No real promotion "We send out what gets ordered."
Relative price differences between standard/energy-efficient equipment	▸ Slight decrease DK	"It's still a substantial difference." Feels the price has to come down a lot for it to be a realistic option for the average business.
Delays in obtaining energy-	▸ Same	Never had a problem

efficient equipment			
End-user awareness of energy-efficient equipment:	▸	Increased slightly	The “big guys” are looking into it more [national accounts]
End-user demand for energy-efficient equipment	▸	Increased slightly Expected to increase slightly	Still low
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased slightly	Still low

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	DK	Knows that rebates helped on the residential side.
Changes in state and local building codes/regs	1	Not aware of any stringent building code that requires high SEER units
Changes in federal building codes and regulations	1	
Rising energy prices	1	“What rising energy prices?”
Environmental concerns of commercial and industrial customers	3	Some larger companies, municipalities.
Improvements made in energy-efficient products	DK	
Reductions in the prices of energy-efficient products	DK	No drop in price since they started selling.
Your own efforts to market energy-efficient systems	1	Respondent’s company does not market them.
Utility educational / informational programs	1	

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	3
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

No response

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to help the end-user overcome their fears about the up-front investment via financing or performance contracting/guaranteed savings arrangements. He also suggested that there needs to be training for the contractors to sell the higher SEER units.

Owner
HVAC Distributor
12/17/97

Background information

- HVAC distributor
- Primary customers/clients: 1) Electrical contractors
- Employed by firm 4 years, in field for 15 years.
- Current title: Territory Manager
- Business size: Over $200,000 annually in sales to non-residential market in Southern CA - represents roughly 50% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is the up-front cost, coupled with lack of incentives for contractors and end-users, and lack of awareness for end-users.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	More models available in the last few years
Acceptance of or confidence in energy-efficient equipment	▸ Increased Expected to increase	"That's why we sell it."
Sales/promotion of energy-efficient equipment	▸ Same Expected to stay same	They make more money on selling the efficient models, but they don't market to the contractors too much.
Relative price differences between standard/energy-efficient equipment	▸ Slight decrease DK	"The prices are coming down a bit, but still not enough to make the [higher SEER units] attractive to most small- to medium-sized businesses."
Delays in obtaining energy-efficient equipment	▸ Decreased substantially	"Not a problem at this point."

End-user awareness of energy-efficient equipment:	▸	Increased slightly	More information is needed at the end-user and contractor level.
End-user demand for energy-efficient equipment	▸	Increased slightly Expected to increase slightly	Only among the larger customers
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased Expected to increase	"Everyone is very interested in the efficient models. Whether they buy them, that's another story."

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4	Rebates solved the problem of lack of incentive for end-user.
Changes in state and local building codes/regs	2	"That hasn't been an issue since the first requirements came out a few years back."
Changes in federal building codes and regulations	1	
Rising energy prices	1	Not an issue. Prices are not rising any faster than other prices.
Environmental concerns of commercial and industrial customers	2	He finds that if it is not an issue of compliance, this is very seldom an issue for any customer of any size.
Improvements made in energy-efficient products	1	Does not affect the market at all, unless this means increased energy savings. Confused what "improvements" refers to, because he feels there have not been "improvements"
Reductions in the prices of energy-efficient products	4	It gets people's attention when the bottom line looks good.

Your own efforts to market energy-efficient systems	2	The do very little marketing, and he feels that the contractors do not care about selling efficient equipment anyway.
Utility educational / informational programs	2	Not effective at conveying the bottom-line incentive of efficient equipment.

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	2
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	3
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from contractors, and perhaps utility mailings. He feels that the most important thing, however, is to get the message of "payback" to the end user.

"You gotta hit the end user, because the contractor doesn't care. He can make more money by being the cheapest than he can by being the most efficient guy on the block."

He is aware only of seminars put on by manufacturers, which he feels are little more than "moving catalogs," and have no effect on end-user equipment selection decisions.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to target the end-user with some kind of incentive for purchasing high-efficiency equipment, because the contractor does not care.

> *"Nobody thinks that its their job to educate people. Not the manufacturers, not the utilities, not the utilities, not the contractors."*

Assistant Manager
HVAC Distributor
12/19/97

Background information

- HVAC distributor
- Primary customers/clients: 1) commercial contractors
- Employed by firm 5 years
- Current title: Assistant Manager
- Business size: Approx. $100,000 annually in sales to non-residential market in Southern CA - represents roughly 90% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is price.

> *"[End-users] don't have the foresight, or the incentive, to pay a higher cost up-front. You can't change the foresight, so you have to give them an incentive."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Slight increase Expected to increase	Awareness has gone up since distributors began carrying more models
Acceptance of or confidence in energy-efficient equipment	▸ Same	Still getting familiar with all of the models
Sales/promotion of energy-efficient equipment	▸ Increased Expected to increase	Would like to sell more - higher margins.
Relative price differences between standard/energy-efficient equipment	▸ Same Expected to decrease	Just started stocking the efficient models
Delays in obtaining energy-efficient equipment	▸ Not an issue	
End-user awareness of	▸ Increased	Among large customers

energy-efficient equipment:		Expected to increase	
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	"We've been watching this for a while. Ever since the rebates we've had people calling us [regarding efficient HVAC equipment]."
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased	"Haven't had any problems yet."

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4	This started the phone calls asking about efficient equipment
Changes in state and local building codes/regs	1	No effect - everyone just follows the minimum.
Changes in federal building codes and regulations	1	
Rising energy prices		
Environmental concerns of commercial and industrial customers	1	"If its out there, we haven't seen any of it."
Improvements made in energy-efficient products	DK	
Reductions in the prices of energy-efficient products	DK	
Your own efforts to market energy-efficient systems	2	Now that they have the products, efforts have started in earnest
Utility educational / informational programs	2	"It comes down to a case where you can educate me all you want, but if what's in it for me?"

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	4
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	5
Availability of information at a low cost	2 - not an issue
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	3

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from the utilities through programs which offer incentives such as rebates.

He is aware of, and has personally attended, seminars put on at CTAC and from the manufacturers. He feels they are not creating any real demand, but do have a large effect on awareness.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to bring back the rebate programs, and continue educating.

> *"You've got to get this stuff out there, whether its seminars or commercials on TV, or in the newspaper. If nobody's heard of it, it doesn't have a chance. You got to get people talking about it. Rebates are a good way to do that. It worked last time."*

Manager
HVAC Distributor
12/23/97

Background information

- HVAC distributor
- Primary customers/clients: 1) commercial 2) residential
- Employed by firm about 5 years
- Current title: Manager
- Business size: Over $1,00,000 annually in sales to non-residential market in Southern CA - represents roughly 33% of total annual business volume.

Perceived barriers

The manufacturers his distributorship works with have not begun production on high efficiency commercial HVAC models. These companies offer 10 and 11 SEER units, but not the 12, 13, or 14 SEER units.

Due to the lack of availability from the manufacturers the company is affiliated with, this distributor does not sell any high efficiency units at this time. These have not begun production on 12, 13, or 14 SEER commercial units. As soon as the manufacturers begin making these higher-SEER models, the respondent's company will be "ready" to begin promoting and selling these units. He states frustration over that fact that he has lost some business because of this lack of availability.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Slight increased Expected to increase	Other manufacturers are really pushing this kind of equipment.
Acceptance of or confidence in energy-efficient equipment	N/A	
Sales/promotion of energy-efficient equipment	N/A	
Relative price differences between standard/energy-efficient equipment	Decreased Expected to decrease	Feels that efficient equipment is still substantially more expensive.

Delays in obtaining energy-efficient equipment	▸	can't get it	Their manufacturers claim they will offer efficient models in 1998.
End-user awareness of energy-efficient equipment:	▸	Increased greatly Expected to increase even further	Contractors are pushing the efficient units.
End-user demand for energy-efficient equipment	▸	Increased slowly Expected to increase	Among larger customers
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	DK	Not aware of any problems

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	Effective among early adopters.
Changes in state and local building codes/regs	1	No effect
Changes in federal building codes and regulations	1	No effect
Rising energy prices	1	No effect
Environmental concerns of commercial and industrial customers	1	Feels companies are "more talk than action" on this.
Improvements made in energy-efficient products	5	Higher efficiencies = quicker payback.
Reductions in the prices of energy-efficient products	4	Lower prices = more immediate payback.
Your own efforts to market energy-efficient systems	N/A	Does not sell efficient systems yet.
Utility educational / informational programs	DK	

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	2
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	4
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	5
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from the contractors or engineers (depending if it is retrofit or new construction) that they are working with. The respondent is not aware of any seminars or workshops regarding efficient equipment, although he expects the manufacturers to begin offering these kinds of educational programs in the near future.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to educate and incent contractors/engineers regarding efficient HVAC equipment. This will increase customer knowledge and demand, which will in turn incent *ALL* manufacturers to begin producing and promoting a full range of energy efficient HVAC units.

Manager
HVAC Distributor
12/18/97

Background information

- HVAC and refrigeration distributor
- Primary customers/clients: 1) commercial 2) residential
- Employed by firm 3 years, in business 5 years
- Current title: Manager
- Business size: Over $1,00,000 annually in sales to non-residential market in Southern CA - represents roughly 25% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is equipment availability. The manufacturers his distributorship works with (Amana and Rheem) have not begun production on high efficiency commercial HVAC models. These companies offer 10 and 11 SEER units, but not the high efficiency 12, 13, or 14 SEER units.

Due to this lack of availability, this distributor does not sell any high efficiency units at this point, unless the contractor can wait for up to a year for delivery. The manufacturers have announced that they will begin making higher SEER units within 6 to 9 months, and the respondent is hopeful that at that point he can begin selling the high efficiency units.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Slight increase Expected to increase	"That's the direction the market is going." He also indicated that a higher profit is made off the sale of higher efficiency units.
Acceptance of or confidence in energy-efficient equipment	N/A	
Sales/promotion of energy-efficient equipment	N/A	
Relative price differences between standard/energy-efficient equipment	Decreased Expected to decrease	"There's still a pretty wide gap."

Delays in obtaining energy-efficient equipment	▸	N/A	
End-user awareness of energy-efficient equipment:	▸	Increased greatly	Contractors are pushing the efficient units.
End-user demand for energy-efficient equipment	▸	Increased greatly Expected to increase	Esp. Schools, large commercial contracts, government facilities
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	DK	

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	Somewhat effective. "Not a lot of people have been made aware of the rebates."
Changes in state and local building codes/regs	1	No effect
Changes in federal building codes and regulations	1	No effect
Rising energy prices	1	No effect
Environmental concerns of commercial and industrial customers	1 or 2	Not much of this
Improvements made in energy-efficient products	4	More energy savings
Reductions in the prices of energy-efficient products	3	Makes higher SEER more feasible for a wider variety of customers
Your own efforts to market energy-efficient systems	N/A	"I do no marketing"
Utility educational / informational programs	1	"I have not seen any of this"

Factors of influence on end-user equipment selection decisions

The respondent rated the 1influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	2
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	5
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from advertisements on the television and from the contractors (or engineers/specifiers) they are working with.

The respondent stated that he is not aware of any seminars or workshops that are available besides those sponsored by his own company. He feels that although they are not currently selling high efficiency models, these seminars will help sell the efficient HVAC units in the long run.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to pressure manufacturers to "get on the ball" and begin producing the full range of energy efficient HVAC units. When asked if he could change manufacturer affiliation based upon lack of availability, the respondent stated that his company is but a branch of a large corporation, and that the decisions are made at the corporate level. He feels like his "hands are tied," because he would like to begin selling the higher SEER units to make more profit and keep some of his larger commercial and municipal customers, but until the product is made available, he will just have to wait.

Owner/President
HVAC vendor
12/5/97

Background information

- HVAC contractor
- Primary customers/clients: 1) residential (75%) 2) commercial (25%)
- Employed by firm 15 years
- Current title: Owner / President
- Business size: About $250,000 annually in sales to non-residential market in Southern CA - represents roughly 25% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is cost.

> *"Whoever is putting the building in doesn't want to spend any more than they have to in order to get tenants in and start making some money."*

> *"I don't get a lot of people coming in asking me for super efficient equipment. Usually they want a competitive bid."*

He also pointed out the lack of incentive for some building owners to install efficient equipment.

> *"Well, it all depends on what kind of building it is. If it is a person who owns this building himself and is going to be operating a business in this building, he may think of getting the more efficient equipment, but if its a person who is putting in a building and renting it to Joe Shmoe, he doesn't care about the equipment, because he doesn't pay the bills."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Slight increase Expected to increase	If it starts to become popular, he learns about it. "For a while, distributors were really pushing it, so we heard it all."
Acceptance of or confidence in energy-efficient equipment	Increased	"Makes no difference to me"

Sales/promotion of energy-efficient equipment	▸	None	"To me, all today's equipment is high-efficient. The least efficient stuff today would have been high efficienct 20 years ago."
Relative price differences between standard/energy-efficient equipment	▸	Slight decrease	"It's coming down a little."
Delays in obtaining energy-efficient equipment	▸	None	Not an issue
End-user awareness of energy-efficient equipment:	▸	Increased Expected to increase	Only among building owner-occupants who have a stake in the energy costs.
End-user demand for energy-efficient equipment	▸	Increased slightly	Only among building owner-occupants who have a stake in the energy costs.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	DK	

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	5	"We got a lot of calls on that when the rebates were around."
Changes in state and local building codes/regs	1	No effect
Changes in federal building codes and regulations	1	
Rising energy prices	1	This is not a factor. Fluctuations are not big enough.
Environmental concerns of commercial and industrial customers	1	"I haven't had any customers like this."
Improvements made in energy-efficient products	2	Only in terms of increased

		efficiency
Reductions in the prices of energy-efficient products	2	The reductions have been small so far.
Your own efforts to market energy-efficient systems	N/A	They do not market any systems
Utility educational / informational programs	3	The educational programs associated with the rebates were effective.

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	1
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	3
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	3

End-user Information Sources

The respondent reported that the majority of his customers receive information regarding energy efficient HVAC equipment through billing statement bulletins (or bangtails).

He is aware of seminars sponsored by manufacturers and large distributors, but he does not attend them because they are all "down the hill" in L.A.

Respondent suggestions for expanding market / increasing demand

The respondent believes that the best way to expand the market for efficient electric equipment is through more advertisements targeted at the end-user, and increased pressure on distributors to

promote the equipment at the engineer/architect/specifier level.

> *“The building plans are drawn up and are out on the market by the time I see them. You’ve got to somehow get the distributors and manufacturers working with the engineers/specifiers to get them to spec this stuff.”*

He also mentioned that he just got news that Lennox Pulse furnaces - one of the first high efficiency furnaces -- are being recalled. He feels that this kind of bad press scares people away from the new efficient equipment.

Owner
HVAC vendor
12/16/97

Background information

- HVAC contractor
- Primary customers/clients: 1) residential 2) commercial
- Employed by firm 12 years
- Current title: Estimator - 7 years
- Business size: Between $500,000 and $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 40% of total annual business volume.

Perceived barriers

The respondent had difficulty identifying any significant barriers to energy efficient HVAC equipment.

> *"With the cost of energy being what it is, people are choosing efficient systems without too much effort."*

With the rebates from the utility, the respondent stated that in most cases the payback periods are within a couple of years. For many customers, that period is considered acceptable. That fact has caused the demand for efficient HVAC units to increase greatly.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	"We make a higher margin on energy efficient units."
Acceptance of or confidence in energy-efficient equipment	▸ Increased	"We believe in the efficient equipment, that's why we sell it."
Sales/promotion of energy-efficient equipment	▸ Increased Expected to increase	"We make a higher margin on energy efficient units."
Relative price differences between standard/energy-efficient equipment	▸ Slight decrease DK	

Delays in obtaining energy-efficient equipment	▸	Decreased Expected to remain very low	"No, we've had great support." No problems
End-user awareness of energy-efficient equipment:	▸	Increased slightly Expected to increase significantly	Rebates have taught people about the higher efficiency units
End-user demand for energy-efficient equipment	▸	UP and down	High with rebates Low without
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	DK	

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	5	"With a rebate program, we can sell 95% of our customers on higher SEER units. Without rebates, that will drop to about 10%."
Changes in state and local building codes/regs	3	Title 24 is an energy calculation law that has changed things greatly. It has helped quite a bit. It has changed the industry permanently.
Changes in federal building codes and regulations	3	
Rising energy prices		
Environmental concerns of commercial and industrial customers	1	"Commercial accounts never mention this as one of their concerns."
Improvements made in energy-efficient products	2	Not many real improvements
Reductions in the prices of energy-efficient products	1	"It's not that the prices have actually come down, its that the old models are unavailable. The

		lower efficiency models get discontinued, so it SEEMS like the price difference between the high SEER and the low SEER is shrinking."
Your own efforts to market energy-efficient systems	3	"We mention it to all the customers and let them make their own decisions, but mainly because of the rebates, we can sell nearly everyone [on high-efficiency equipment]."
Utility educational / informational programs	3	"The utilities should do more [of these kinds of programs], so when the rebate budget dries up, the demand doesn't"

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	5
Availability of credible/reliable information	5
Availability of information that is convenient to obtain	5
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	5*
Customer's knowledge/sophistication in comparing technology choices	5

* through rebates

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy

efficient HVAC equipment from the contractor they are working with, or from literature that the utilities put out.

He is not aware of any seminars or workshops except for those put on by the A/C suppliers themselves and the big manufacturers. His company attends these, and feels that the seminars are "helpful" for his staff, but does not believe they have a large impact on the equipment end-users selection decision.

Respondent suggestions for expanding market / increasing demand

The respondent reported that the best way to expand the market for efficient electric equipment is to put out more information at the end-user level. He believes that this information will create more demand, and more of an incentive for contractors to be aware of efficient equipment options.

> *"Then people can come in and question us and our competitors. The contractors are forced to be up-to-speed on the latest efficiency information, which is not the case for all contractors today."*

> *"If you look towards the auto industry, they have done a tremendous job convincing the public that they have to have a brand new vehicle every couple of years. With the leasing, and the innovations, I think if we look towards that industry, we could probably boost some sales."*

Owner
HVAC vendor
12/5/97

Background information

- HVAC installation contractor
- Primary customers/clients: 1) commercial 2) industrial
- Employed by firm 12 years
- Current title: Sales manager, entire 12 years
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents 100% of total annual business volume.

Perceived barriers

The respondent reported that the most significant barriers to increased use of energy efficient HVAC equipment is customer demand and price. Additionally, the lack of vendor sales push for efficient equipment is a large barrier. He feels these barriers have gotten less significant over the last five years, but are still formidable.

The respondent was uncertain as to how deregulation would effect the market for energy efficient HVAC equipment.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	People are more educated
Acceptance of or confidence in energy-efficient equipment	▸ Increased	Products are getting more reliable
Sales/promotion of energy-efficient equipment	▸ Same	They always tried hard to sell efficient equipment
Relative price differences between standard/energy-efficient equipment	▸ Same Expects to remain same	Prices came way down in the early part of the decade.
Delays in obtaining energy-efficient equipment	▸ Decreased Expected to remain very low	Never viewed this as a problem

End-user awareness of energy-efficient equipment:	▸	Increased significantly Expected to increase significantly	People are becoming more aware of efficient equipment as they become more educated
End-user demand for energy-efficient equipment	▸	Increased	More people are aware, which leads to more demand.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increase	Product improvements - "They worked out the bugs with the equipment"

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	These were just what customers needed to push them "over the edge" to buy efficient equipment.
Changes in state and local building codes/regs	DK	
Changes in federal building codes and regulations	DK	
Rising energy prices	3	Prices are fairly stable, but the higher they go, the more the customer can save.
Environmental concerns of commercial and industrial customers	3	This applies mostly to the "big guys" (i.e., IBM, Intel, etc.)
Improvements made in energy-efficient products	4	"You can hardly tell the difference [between standard and efficient fixtures] nowadays"
Reductions in the prices of energy-efficient products	2	Does not see the prices have come down much in a long time
Your own efforts to market energy-efficient systems	2	They try, but "can only do so much."
Utility educational / informational programs	3	He feels this needs to increase.

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	3
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from the specifying engineers, who specify about 75% of the projects that the respondent works on. Professional colleagues and trade shows were also mentioned as frequent sources of information.

The only seminars the respondent is aware of are at CTAC, and through the gas company. He has participated seminars sponsored by both of these sources, but feels that the CTAC seminars had the largest influence (3 out of 5) on end-user decisions by making specifiers and contractors aware of the new products. He rated the gas company seminars a 2 out of 5 in terms of influence on customer equipment selection decisions.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to solicit engineers and specifiers who make the equipment decisions. As a contractor, he feels he rarely makes the choice as to which equipment to use on a project. When asked how to solicit these individuals, the respondent suggested targeting them at their trade shows (mentioned ASHRE). In terms of increasing demand on the customer side, the respondent also recommends targeting people at trade shows or through trade magazines. He believes that "TV commercials are a waste of time."

Sales Manager
HVAC vendor
12/16/97

Background information

- HVAC contractor
- Primary customers/clients: Commercial and residential
- Employed by firm 18 years
- Current title: Sales manager -- 13 years
- Business size: Between $500,000 and $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 40% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is that there is not enough utility and manufacturer financial incentives.

> *"Right now, there is no incentive to the building owner or tenant to make it worth their while to upgrade to more efficient equipment."*

> *"Everything is driven by the cost of the equipment."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Slight increase Expected to increase	"Our distributors are doing a decent job of marketing the efficient equipment to us."
Acceptance of or confidence in energy-efficient equipment	Increased Expected to increase	"The products speak for themselves."
Sales/promotion of energy-efficient equipment	Same	"We only do residential promotion, because you can't do financing on a revolving credit line for commercial."
Relative price differences between standard/energy-efficient equipment	Decrease DK future	"This didn't change as much as one would expect it to in the last 3-5 years."

Delays in obtaining energy-efficient equipment	▸	Decreased Expected to remain very low	No delays
End-user awareness of energy-efficient equipment:	▸	Slight increase	They have to become more aware of what it can do for them in terms of savings.
End-user demand for energy-efficient equipment	▸	Slight increase	
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased	Quality performance

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	2	"Developed more interest, but mostly residential. The gas company programs were a better incentive, because they gave so many dollars per BTU."
Changes in state and local building codes/regs	4	
Changes in federal building codes and regulations	4	"Pretty much drives the new construction demand"
Rising energy prices	3	"The message isn't getting across. Even with rising costs, the paybacks are way too long (7 years). A lot of companies don't know if they will be in a property seven years from now. Customers want to see a 3 to 4 year payback."
Environmental concerns of commercial and industrial customers	1	Not an issue
Improvements made in energy-efficient products	2	People need to be more aware of this

Reductions in the prices of energy-efficient products	2	Prices have not changed much in a while
Your own efforts to market energy-efficient systems	2	Not much impact
Utility educational / informational programs	2	These need to be attached to some financial incentives.

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	2
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	3
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent reported that the majority of his customers receive information regarding energy efficient HVAC equipment from the manufacturers, and often over the web, and sometimes from his company. He is not aware of any seminars or workshops regarding energy efficient options.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to introduce utility or manufacturer incentive programs for purchasing efficient equipment, or bundling the equipment with leasing programs so that businesses can finance the equipment.

Owner
HVAC vendor
12/15/97

Background information

- HVAC contractor
- Primary customers/clients: 1) Commercial/Industrial 2) Residential
- Employed by 25 years, but over 40 years in the HVAC industry
- Current title: Owner
- Business size: About $150,000 annually in sales to non-residential market in Southern CA - represents roughly 30% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is the lack of manufacturer innovations.

> *"Over the years, the modifications have helped, but I can't take an air conditioner out and put a new one in, and have it TRULY operate at half the electricity consumption. It's more like maybe 10% less consumption. So, despite the fact that the manufacturers do have some new models, they have not come up with a model efficient enough to justify the up-front cost to the customer."*

He feels that this barrier has become more significant over time. He has little confidence in the new "efficient" models that manufacturers are offering, because he has performed tests on them and does not believe the manufacturers' efficiency claims. Therefore, he and his staff try to sell his customers the lowest efficeincy models available (10 SEER), because they are so considerably less expensive, and not that much less efficient than the newer, more "efficient" models.

> *"We are in a bidding market, and price is everything. So if I don't believe that the new models are more efficient, why would I try to sell these models?"*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Decreased Expected to decrease	Respondent does not think this will increase until a manufacturer introduces a product that can stand up to its claims of energy savings.

Acceptance of or confidence in energy-efficient equipment	▸	Decreased	Does not believe the manufacturers' claims
Sales/promotion of energy-efficient equipment	▸	Decreased	He is in a bidding market, and almost always bids the lowest cost model.
Relative price differences between standard/energy-efficient equipment	▸	Slight decrease Expected to decrease slightly	Prices have come down, but not far enough.
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to remain very low	Not a problem
End-user awareness of energy-efficient equipment:	▸	Increased slightly Expected to increase	More people ask about it, because more people are hearing about it.
End-user demand for energy-efficient equipment	▸	Increased slightly Expected to increase slightly	Customers want a model that will live up to the manufacturers' claims of savings.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	DK	They rarely sell highly efficient models

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	1	"The utility companies should be just in the business of selling energy."
Changes in state and local building codes/regs	2	"These have a minimal effect, but they don't mandate higher than 10 SEER."
Changes in federal building codes and regulations	2	
Rising energy prices	1	"This affects customer awareness, but the payback periods are still way too long,

		especially if we want to make a few bucks off the deal."
Environmental concerns of commercial and industrial customers	1	"That's not something that a small business or dental office would ever think of." "It would be a rarity to find an individual who has the environment as a primary concern. His primary concern is 'we need heat and how much.'"
Improvements made in energy-efficient products	1	"The innovations just haven't been there in terms of increased efficiency."
Reductions in the prices of energy-efficient products	1	Prices still aren't low enough
Your own efforts to market energy-efficient systems	1	They don't do it
Utility educational / informational programs	DK	

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	5
Availability of credible/reliable information	5
Availability of information that is convenient to obtain	3
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	1
Customer's knowledge/sophistication in comparing technology choices	1

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from contractors.

> *"The only time they receive information from us is when they ask us, or they have a need for new equipment."*
>
> *"Ninety-nine percent of my customers listen to what we recommend, and buy it. That's why we feel the need to be honest with them, and recommend what's best for them. Usually that's not [the more efficient model]."*
>
> *"There was never any real incentive for dealers to push the efficient equipement. We never pushed it, for the simple reason that we were an older, established company who already had a customer base, and we didn't have to rely on rebates."*

The respondent's staff attends seminars every winter that are sponsored by the large manufacturers. These seminars are informative, but he still does not believe the messages of efficiency are true.

Estimator/Sales
HVAC Vendor
12/16/97

Background information

- HVAC installation contractor
- Primary customers/clients: 1) residential 2) commercial & industrial
- Employed by firm 3 years, in trade 25 years
- Current title: Estimator/sales
- Business size: About $250,000 annually in sales to non-residential market in Southern CA - represents roughly 30% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is up-front cost.

> *"If you could bring [the cost of efficient units] down…so people could actually afford them, everyone would want one."*

The respondent placed the current payback period for most 12 SEER units at between 2 and 3 years, but people still can not afford the up-front cost. He says that the manufacturer-sponsored financing would help, but their [Carrier's] interest rates are "ridiculous."

He says that his company gets "points" from their distributor for selling higher efficiency units. These points can be cashed in for free trips. ("I just came back for Mexico.") He reports that Carrier has had this kind of system in effect for many years.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Slight increase	The distributor pushes the contractor to sell more.
Acceptance of or confidence in energy-efficient equipment	DK	
Sales/promotion of energy-efficient equipment	Slight increase	They are rewarded with incentives from the distributor for selling higher SEER units.

Relative price differences between standard/energy-efficient equipment	▸	Slight decrease Expected to decrease slightly	"They're getting closer, but its still a large chunk out of your pocket to get an efficient system."
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to remain very low	Not a problem
End-user awareness of energy-efficient equipment:	▸	Increased Expected to increase	The real increase has been among residential customers. "Unless it's a small business where a guy is shelling out his own money, and owns the whole building, that guy would get the higher SEER equipment."
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	Very small percentage of commercial customers choose higher SEER equipment. "Basically, it's a suggestion from us. They rarely go for it."
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Same DK	These things are mass produced, just like any other equipment, and so there are some lemons.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	"These had a big impact when they were in effect."
Changes in state and local building codes/regs	3	
Changes in federal building codes and regulations	4	"We didn't even regulate refrigerants five years ago."

Rising energy prices	1	Only impacted market for residential equipment.
Environmental concerns of commercial and industrial customers	1	Not a factor
Improvements made in energy-efficient products	1	No improvements. "For commercial, the 'efficient' units are basically standard equipment with a few extra fail-safes."
Reductions in the prices of energy-efficient products	2	"This makes the higher SEER units a little easier to sell, but doesn't help much."
Your own efforts to market energy-efficient systems	2	"We suggest [higher SEER] wherever we can"
Utility educational / informational programs	2	He doesn't really see the message getting across at any level.

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	2
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	5
Availability of information at a low cost	5
Availability of comparable technology choices with similar costs	5
Customer's knowledge/sophistication in comparing technology choices	5

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from manufacturer-sponsored commercials on the TV and radio, the

newspaper, or from the contractor they are working with on the job.

With regard to seminars and workshops, his company does not attend any.

> "*The manufacturers send me all the information for their seminars, but who are you going to get to go to them? There's nothing in it for me, you know? Let's put it this way, I wouldn't give up Monday Night Football for it."*

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to bring back the rebate programs.

> *"I still get people asking me about those rebates. Those really got people going. Now that there is no more, people are scared."*

He feels people are waiting for rebates to come back before they enter into a major efficient HVAC purchase.

> *"I had six jobs this summer that I could have sold the customer on the high SEER equipment, but once they found out there were no rebates, they figured 'oh, geez, I guess I can wait another summer without it.'"*

Owner
HVAC vendor
12/5/97

Background information

- HVAC vendor
- Primary customers/clients: 1) commercial 2) industrial 3) residential
- Employed by firm 8
- Current title: Owner
- Business size: About $200,000 annually in sales to non-residential market in Southern CA - represents roughly 80% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is price. He doesn't feel that the price has come down enough to make this kind of equipment a good investment.

> *"Without rebates, we figure our chances of selling [efficient models] are slim to none. It's just too expensive."*

The respondent was uncertain as to how deregulation would effect the market for energy efficient HVAC equipment, but he does not see it creating more demand.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Slight increased Expected to increase	
Acceptance of or confidence in energy-efficient equipment	Increased	People are getting more educated
Sales/promotion of energy-efficient equipment	Same	It is difficult to sell equipment when the paybacks are so long.
Relative price differences between standard/energy-efficient equipment	Slight decrease Expected to decrease slightly	Prices have not come down far enough yet.

Delays in obtaining energy-efficient equipment	▸	Decreased Expected to remain very low	"This is not a barrier"
End-user awareness of energy-efficient equipment:	▸	Increased slightly Expected to increase significantly	"People are slowly starting to figure out that efficiency saves money in the long run"
End-user demand for energy-efficient equipment	▸	Increased slightly Expected to increase slightly	
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increase	"People seem pretty happy with the stuff."

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	5	"This created the demand in the first place. Until prices come down, rebates are the only answer."
Changes in state and local building codes/regs	2	Larger companies are more effected by these standards
Changes in federal building codes and regulations	2	
Rising energy prices	1	Not a factor in the last five years
Environmental concerns of commercial and industrial customers	1	None of his customers care about this.
Improvements made in energy-efficient products	3	Mostly added features
Reductions in the prices of energy-efficient products	2	Prices have not come down enough
Your own efforts to market energy-efficient systems	2	They can't recommend units with ridiculously long payback periods (i.e., 7-10 years) to small customers.

Utility educational / informational programs	3	"Every little bit helps."

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	3
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from advertisements in trade journals, or the contractor they are working with on the job. If the contractor can not make a good case for the higher efficiency model being economically feasible, the customer has a very negative reaction to the high up-front cost of the higher SEER model.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to bring back the rebate programs. He does not feel that the message of energy efficiency is an issue that most of his customers will ever care about.

Short of bringing back rebates, the respondent suggests introducing leasing programs, perhaps with some kind of performance contracting-type guarantees.

Owner
HVAC vendor
12/15/97

Background information

- HVAC contractor
- Primary customers/clients: 1) residential 2) C&I
- Employed by firm 7 years
- Current title: Owner
- Business size: Around $100,000 annually in sales to non-residential market in Southern CA - represents roughly 50% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient HVAC equipment is the price of the efficient equipment.

> *"Most people just don't want to pay the extra money."*

Also, he feels there are not very many choices of high-efficiency commercial HVAC models that are 7.5 tons are larger.

> *"If you're going to buy a unit that is 7.5 tons or more, you're going to have to buy what you can get, which is going to run about 9 SEER."*

He feels that the market for efficient equipment has stayed the same for many years. *"[The manufacturers Trane & Rheem] come out with new units, but they are not necessarily more efficient."* The only way he can sell efficiency to C&I customers is to sell them the controls that will cut down on run time for the equipment.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	N/A	Lack of models.
Acceptance of or confidence in energy-efficient equipment	N/A	Lack of models
Sales/promotion of energy-efficient equipment	N/A	People buy what they can get. There are no "efficient"

			choices for commercial.
Relative price differences between standard/energy-efficient equipment	▸	Slight decrease Expected to decrease slightly	Prices have not come down
Delays in obtaining energy-efficient equipment	▸	N/A	
End-user awareness of energy-efficient equipment:	▸	N/A	
End-user demand for energy-efficient equipment	▸	Increased	"The demand is there, but the equipment choices are not."
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	N/A	

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	2	Briefly increased awareness
Changes in state and local building codes/reg.	2	Does not drive the manufacturers to create new models
Changes in federal building codes and regulations	2	
Rising energy prices	2	Can have an effect on the demand for efficient models
Environmental concerns of commercial and industrial customers	1	Non-existent in this area
Improvements made in energy-efficient products	1	N/A
Reductions in the prices of energy-efficient products	1	N/A
Your own efforts to market energy-efficient systems	3	He is able to sell commercial

	customers the controls for the current models that ramp up, ramp down, etc.
Utility educational / informational programs	DK

Factors of influence on end-user equipment selection decisions

The respondent rated the influence each of the following factors has had (and will continue to have) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	DK
Availability of credible/reliable information	DK
Availability of information that is convenient to obtain	DK
Availability of information at a low cost	DK
Availability of comparable technology choices with similar costs	5
Customer's knowledge/sophistication in comparing technology choices	3

End-user Information Sources

The respondent feels that the majority of his customers receive information regarding energy efficient HVAC equipment from their contractor. He states that he can sell the efficient controls equipment 95% of the time.

He is not aware of any seminars or workshops that are available to teach people more about energy efficient HVAC equipment.

> *"I don't have the money to afford those kinds of things anyways."*

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is for

the manufacturers to offer efficient models for commercial customers. He sells efficient equipment for residential, but does not have any “high efficiency” models to sell to his commercial customers.

> *“In my area, people are very conscious of the value of a dollar. Therefore, they are very resistant to buying anything over the minimum efficiency level. That’s why I think that Edison has to offer rebates, or get together with the manufacturers to bring down the cost of higher efficiency equipment, or bring down the cost of the cusomers’ power ½ cent per kWh as an incentive.”*

Service Manager
HVAC Vendor
12/5/97

Background information

- HVAC/refrigeration contractor located in Monrovia, CA.
- Primary customers/clients: 1) industrial, 2) institutional3) commercial 4) residential (no new construction).
- Employed by firm 1 year, but been in business for 12 years
- Current title: Service manager
- Business size: Over $1million/year in HVAC sales to non-residential market in Southern CA - represents roughly 35% of total annual business volume.

Perceived barriers

According to the respondent, the largest barrier facing the current market for energy efficient HVAC equipment is the price of the efficient units. *"People don't want to spend the money."* Also important is climate, because they have relatively low heating and cooling demands, which extends the payback period for this equipment even further.

These barriers are less influential now than they were five years ago. Also, people trust the technology more, and are not as afraid of buying the "first off the line."

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	Greater selection, more sales push
Acceptance of or confidence in energy-efficient equipment	▸ Increased	Product improvements
Sales/promotion of energy-efficient equipment	▸ Increased Expected to increase	They now recommend it for almost every contract they do
Relative price differences between standard/energy-efficient equipment	▸ Decreased Expected to stabilize	Increased manufacturer emphasis on efficient fixtures
Delays in obtaining energy-	▸ Decreased	As demand continues to

efficient equipment		Expected to decrease	increase, suppliers are stocking more.
End-user awareness of energy-efficient equipment:	▸	Slight increase Future uncertain	Still not as high as it should be
End-user demand for energy-efficient equipment	▸	Slight increase	Most people still just want the lowest cost unit.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Slight increase	Product improvements

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4	City of Anaheim has a great package, and it is very effective
Changes in state and local building codes and regulations	DK	
Changes in federal building codes and regulations	DK	
Rising energy prices	2	Prices have remained fairly stable for some time
Environmental concerns of commercial and industrial customers	1	Commercial and industrial customers do not care about environmental concerns at all
Improvements made in energy-efficient products	4	Very influential to commercial customers who have custom needs for the product (aesthetics)
Reductions in the prices of energy-efficient products	3	Bottom line is always important
Your own efforts to market energy-efficient systems	5	Feels they have been very effective at pushing efficient systems within their sphere of

		influence
Utility educational / informational programs	DK	No experience

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	5
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	4
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	2*

* Feels that all of the manufacturers are different from one another. It is difficult to compare them against one another.

End-user Information Sources

The respondent feels that customers get their information regarding energy efficient HVAC options through literature from contractors and manufacturers. The only seminars he is aware of are sponsored by trade organizations and large manufacturers, which are held at supply houses. His company has attended these seminars on occasion, and he feels the seminars have a marginal influence on the eventual end-users equipment selection decisions.

Suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for energy efficient HVAC equipment would be to educate the customers. The respondent added that an effective way to do this would be to demonstrate to customers how much money they could save by choosing a more efficient unit in one of their monthly statements.

> *"Calculate the payback for them, and keep it simple. This might finally get the message across to business customers."*

However, in general, he was slightly pessimistic about educating commercial and industrial customers about the advantages of efficient equipment.

> *"No matter how you try to spread the message, it doesn't fully sink in to commercial/industrial customers. They don't know how long they will be in the building, and they just want the cheapest thing."*

President
HVAC Vendor
12/5/97

Background information

- HVAC contractor located in Santa Fe Springs, CA.
- Primary customers/clients: 1) industrial, 2) institutional3) commercial 4) residential (no new construction).
- Current position: President - 13 years, employed by firm 17 years
- Business size: Over $1million/year in HVAC sales to non-residential market in Southern CA - represents roughly 20% of total annual business volume.

Perceived barriers

According to the respondent, the most significant barrier facing the current market for energy efficient HVAC equipment is the lack of awareness and effort on the part of the sales force. The respondent feels that the overall trend is towards more awareness and "push" on behalf of the sales staff, but he still feels the company does not sell as much as it should.

> *"We're in a competitive situation, and its just flat out easier for us to sell the standard equipment."*

He is quick to add that price also represents a significant barrier, because high up-front cost makes it more difficult for salespeople to sell the efficient models.

He does not feel that any of these barriers have changed much in the last five years. However, he is very concerned that with deregulation, if the cost of energy goes down, people may not be as interested in efficient equipment.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	Increased selection, and greater sales push
Acceptance of or confidence in energy-efficient equipment	▸ Increased Expected to increase	Product improvements
Sales/promotion of energy-efficient equipment	▸ Same	Most of his sales people do not think about efficient models when they are trying to make a sale.

Relative price differences between standard/energy-efficient equipment	▸	DK	Feels that the gap is still larger than it should be. He feels the prices of efficient equipment are kept artificially high by the manufacturers.
Delays in obtaining energy-efficient equipment	▸	Same Expected to stay same	Never been a problem
End-user awareness of energy-efficient equipment:	▸	Slightly increased	Slightly increased sales push from salespeople and manufacturers.
End-user demand for energy-efficient equipment	▸	DK	Afraid of the effects that deregulation will have on demand
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Slight increase Expected to increase	Product improvements

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4 .5	These made an enormous difference when they were available.
Changes in state and local building codes and regulations	DK	
Changes in federal building codes and regulations	DK	
Rising energy prices	3	Prices will always impact demand because they fit right into the customers' payback equation
Environmental concerns of commercial and industrial customers	1	Commercial and industrial customers do not care about environmental concerns at all. He feels far too much is made of this "supposed concern." He

		does not expect this to increase any time soon.
Improvements made in energy-efficient products	2	The products were always good
Reductions in the prices of energy-efficient products	3	Bottom line is always important.
Your own efforts to market energy-efficient systems	3	"It gets very frustrating trying to sell this stuff."
Utility educational / informational programs	1	More agressive advertising targeted towards the end-user needed.

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	1
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	1
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	1
Customer's knowledge/sophistication in comparing technology choices	2*

> *"The end users are looking for someone to handle their problems, they have no time to look into this stuff. They're not going to do a study on it, they rely on us to look into it."*

End-user Information Sources

The respondent feels that the most frequently used sources for information regarding energy efficient HVAC equipment are internal staff and contractors.

The only seminars he is aware of are CTAC, and other seminars that you pay substantially for (sponsored by "Octavio"). He feels these seminars have little influence on the eventual end-user equipment selection decisions (rated 2 out of 5).

> *"I don't think they have a whole lot of influence. If we're talking about increasing demand, the rebates did it all, the seminars don't do much."*

> *"If you go to a CTAC seminar, it is impressive for about 2 weeks, but if you don't do anything with it right away after that, the knowledge goes away."*

Suggestions for expanding market / increasing demand

The respondent is very specific in his suggestions for expanding the market for energy efficient HVAC equipment.

> *"Seventy percent of the market was created by utility rebates. They made the end-users aware that there are other options available, and that they could get some bucks for trying it. The other 30% was driven by large companies with internal pressure to cut costs. Any demand you are trying to create should be directed to these two areas."*

The respondent also recommended educating the sales force that deals directly with the market, and somehow making it beneficial to them to be highly aware of the benefits of high-efficiency equipment. He added that regulation is another possible avenue for expanding the market.

> *"If efficient equipment became the standard, it would be great, but as long as there is a choice, most companies will always choose the cheaper product."*

New Products Manager
Large Lighting Manufacturer
12/19/97

Background information

- Regional Unit of Large Lighting Manufacturer
- Primary customers/clients: C&I and residential distributors
- Employed by firm 1 year, but in industry 27 years
- Current title: New Products Manger
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 90% of total annual business volume (for this regional unit of the company).

Perceived barriers

The respondent believes that the most significant barrier to increased institutional use of energy efficient lighting is up-front cost of the individual fixtures and systems.

> *"The payback is still not something that the customer sees as 'real money'"*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	"I'm trying to bring products into our development cycle and get them into the market. I know that efficiency is a selling feature you want to have on a new product." "Five years ago, efficiency wasn't the buzzword that it has become today."
Acceptance of or confidence in energy-efficient equipment	▸ Increased Expected to increase	
Sales/promotion of energy-efficient equipment	▸ Increased Expected to Increase	More products out there, so more promotion.
Relative price differences	▸ Decreased	"A lot of the controls

between standard/energy-efficient equipment		DK future	packages have become more competitive because there are more players out there. There is some new technology in industrial lighting that are much less expensive than the controls - so price comepetitive things have become more of a commodity.
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to decrease	No delays, except on brand-new products
End-user awareness of energy-efficient equipment:	▸	Slow increase	"There are two sides to this: Plant managers that have just installed efficient equipment seem to be very astute at selecting the right systems. On the other end, sometimes I'll be at an electrical distributor speaking to contractors who have never heard of these controls."
End-user demand for energy-efficient equipment	▸	Increase	Up among a certain type of customer who can afford the cost and who is stable enough to receive the benefits.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased	Those with experience with the equipment are very satisfied.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	5	Raised awareness Brought the demand curve up
Changes in state and local building codes and regulations	1	Loopholes in the standards. Everyone gravitates towards the lowest edge - the minimum

		levels available.
Changes in federal building codes and regulations	1	
Rising energy prices	4	"You don't see incandescent light bulbs in Japan with the power rates that they have."
Environmental concerns of commercial and industrial customers	1	Fits with mantra of big corporate partners like a WAL-MART , but without teeth, environmental concerns are rare.
Improvements made in energy-efficient products	3	Better and better lamps and sources, especially pulse-start systems - allow retail stores to use 10% less fixtures, and therefore, 10% less maintenance labor.
Reductions in the prices of energy-efficient products	2	The prices haven't come down much
Your own efforts to market energy-efficient systems	3	Company put much effort into marketing the bi-level system. These efforts help, but are not "earth-shattering"
Utility educational / informational programs	3	Not really sure. Tough to measure this.

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	2
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	2
Availability of information at a low cost	1

Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the most frequent information source for customers regarding energy efficient lighting options is from manufacturer mailers. He feels, however, that the most credible, and widely-accepted and believed information comes from the utility companies.

> *"If the utility companies were to endorse a selection of products, then that would probably cut a lot of the busywork out of investigating all the products, and serve to grease the wheels of the whole market [for efficient lighting equipment]."*

The only seminars the respondent is aware of are from the Council of Energy Engineers, and IES. He has not attended these seminars.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is through TV advertising.

> *"If done in the correct way, it can cut through all the layers of 'who reports to whom', and get an idea instilled in the minds of the operations manager or a VP, that this is something that could be done proactively to reduce their energy costs."*

Senior sales rep
Large lighting manufacturer
Commercial/Industrial Panel
12/5/97

Background information

- One of the "big three" lamp manufacturers" - now manufactures lamps and ballasts.
- Primary customers/clients: 1) Wholesale distributors for C&I accounts 2) Electrical contractors
- Employed by firm 1 year, in industry 15 years.
- Current title: Senior Sales Rep., and Senior Technical Support
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA

Perceived barriers

The respondent believes that the most significant barrier to increased use of energy efficient lighting is awareness. She finds this lack of knowledge at all levels of the distribution diagram for lighting equipment. She feels this is one of the most frustrating problems that her company faces right now.

At the customer level, she finds most people are very unaware.

> *"They are so busy doing their day-to-day business that they don't have the time to look into efficiency."*

At the distributor/contractor level, she finds it is difficult to train sales staff regarding this equipment. For example, her company has training programs that simply attempt to educate distributors and contractors on why they should suggest efficient technologies in retrofit situations, and they find that even this task is very difficult to accomplish.

> *"Most counter people are not aggressive enough, or interested enough, to even make a suggestion."*

Beyond trying to distribute information regarding energy efficient lighting options, one of the biggest challenges is educating the correct people.

> *"We're finally getting the knowledge to the maintenance people, but they aren't the decision-makers. When it comes down to a major energy project, you have to get up the ladder. Get the information to the CEO, the President. These people do not have the knowledge."*

She does admit that the situation is improving. She is beginning to encounter more companies, as well as contractors and distributors, that are knowledgeable and interested in efficient lighting .

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased tremendously Expected to increase	It is the future of the business
Acceptance of or confidence in energy-efficient equipment	▸ Same	Always been high. "Greenlight ally of the year"
Sales/promotion of energy-efficient equipment	▸ Increased tremendously	
Relative price differences between standard/energy-efficient equipment	▸ Decreased Expected to decrease further, but at a slower rate	The production has gone up, the price has come down
Delays in obtaining energy-efficient equipment	▸ Decreased Expected to decrease	Feels delays are virtually non-existent today
End-user awareness of energy-efficient equipment:	▸ Increased Expected to continue this trend	Education within professional organizations. Information in trade magazines and trade journals. More sales people pushing it. "Its all additive, and people are being bombarded with it. If you don't read it, you're going to see it on TV or in the newspaper."
End-user demand for energy-efficient equipment	▸ Increased Expected to continue this trend	As education permeates the higher levels of businesses, this will become more prevalent.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸ Increase	Product improvements. They are trying to close the "aesthetics gap" between standard and high-efficiency.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION

Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4	Very influential, but somewhat temporary.
Changes in state and local building codes and regulations	3	Hits a certain segment, but only "encourages the minimum"
Changes in federal building codes and regulations	3	
Rising energy prices	3	
Environmental concerns of commercial and industrial customers	3	Seeing more of this for larger companies, who are forced to comply with certain standards. Also, they have environmental management services. She has only ran into a few businesses that are actually "environmentally conscious."
Improvements made in energy-efficient products	4	Makes them more acceptable, because the bugs have been worked out, such as the electronic ballasts, with their performance problems.
Reductions in the prices of energy-efficient products	3	Still more expensive, but it helps.
Your own efforts to market energy-efficient systems	3	The company spends a lot on marketing, but she is not convinced of the results. The company put out a large campaign for low mercury lamps. "We're in all the trade magazines, but people still don't know about it" She feels perhaps people are overwhelmed with information.
Utility educational / informational programs	3	Have an effect on the "easy to effect" segment of the market.

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	4
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	3
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the majority of end-users get their information first through trade journals, then distributors salespeople, then contractor staff, and, finally, manufacturers.

The respondent is aware of seminars/programs at both CTAC and through manufacturers. The respondent's company will conduct seminars at large industrial customers whenever asked. She also mentioned an AEEE show in Anaheim where there will also be seminars.

She feels that these seminars/workshops do have some effect on the eventual end-users equipment selection decisions (rated a 3 out of 5). "They're another part of it all. They are all things that we need to do to get the information out. I don't think anything is the one answer to [expanding the market for energy efficient lighting]. I think we need to do all of these things."

Respondent suggestions for expanding market / increasing demand

The respondent thinks that they need to keep hammering away at the end-users. One method they are using are incentives for key distributors to sell more efficient lighting products. They are also sponsoring programs where the are giving rewards to distributors who get more end-users to attend their their seminars. The respondent feels one of the best ways to increase demand for energy efficient lighting equipment is to educate at a higher level; that is, to the CEO's, owners, the VP's.

> *"I remember a few years ago bidding a retrofit on a huge project, and the bottom line was $250,000/year in energy savings. The CEO writes across the number 'IS THIS*

POSSIBLE?’ They don’t believe it, even when you show them the numbers. They want proof and guarantees -- we feel like the proof is in the number.”

“It seems that the more different places they hear it from, the more they believe it, so you just have to keep at it.”

Manufacturer Sales Rep.
Large Lighting Manufacturer
12/22/97

Background information

- Large International lighting manufacturer. Company has large manufacturing and distribution facilities in Southern California.
- Primary customers/clients: Commercial, Industrial, Outdoor, Residential
- Employed by firm 7 years
- Current title: Sales Rep. -- 8 years in position
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents a small (but unknown) percentage of company's total sales (a larger percentage if we are just speaking for this manufacturing/distribution center).

Perceived barriers

The respondent believes that the most significant barriers to increased institutional use of energy efficient lighting are related to low public awareness.

> *"There is a certain amount of frustration, because…we can make a quality product, one that will deliver on its promises of high efficiency; we can distribute that product in a cost effective manner; we can promote that product; we can back that product; but the one thing we can't do is get anybody to care."*

He stressed that the most difficult segment to reach is the actual decision-makers, and that the facilities people who understand efficient lighting are not always the ones making the purchasing decision. Furthermore, the facilities staff do not always feel confident that they are in a position to push for these more expensive systems.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	N/A	Been a major emphasis of the company for many years now.
Acceptance of or confidence in energy-efficient equipment	N/A	

Sales/promotion of energy-efficient equipment	▸	Major increase Expected to increase	The company has begun heavily promoting fluorescent fixtures for C&I, as well as residential applications.
Relative price differences between standard/energy-efficient equipment	▸	Decrease DK future	Gap has been slowly shrinking for years
Delays in obtaining energy-efficient equipment	▸	Decreased	Not an issue for their equipment, with the exception of custom design equipment.
End-user awareness of energy-efficient equipment:	▸	Slow increase DK	Feels this is the key issue in the efficient lighting market. He has seen awareness increase slightly, but not as quickly as he anticipated it would. Rebates helped significantly in some markets.
End-user demand for energy-efficient equipment	▸	Slow increase Expected to increase	Increasing particularly among larger companies
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increase	Satisfaction has always been very high.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4	Large impact on awareness
Changes in state and local building codes and regulations	2	Very seldom does this impact customer equipment selection decisions
Changes in federal building codes and regulations	1	No effect
Rising energy prices	1	No effect - but would effect

		demand tremendously if prices did rise significantly.
Environmental concerns of commercial and industrial customers	2	Although larger companies have more regulations, and more at stake, the environment remains a non-issue for the vast majority of smaller companies.
Improvements made in energy-efficient products	3	The efficiency levels have improved, as well as the aesthetics (His company has a decorative fluorescent lighting unit.)
Reductions in the prices of energy-efficient products	4	First-cost has a major impact on an uninformed decision-maker
Your own efforts to market energy-efficient systems	2	Frustrating
Utility educational / informational programs	3	Hopeful in this area.

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	3
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	5
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	5+

End-user Information Sources

The respondent feels that the most frequent information source for his customers regarding energy efficient lighting options is from contractors/engineers/architects/designers.

He is aware of seminars/programs for educating end-users and installers that are offered by his own company, other large manufacturers, and the major utilities. His company firmly believes in education through demonstrations and workshops, and feels that they can have a substantial impact on end-user equipment selection decisions (rated 4 out of 5).

His company recently opened a Lighting Center which showcases products in realistic environments. It also has meeting space for workshops in lighting options. The company hopes to expand on this idea, and open up Lighting Centers in other parts of the country (this one is in the Southeast).

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to raise awareness at the end-user (decision maker) level, while using educational tools and/or incentives to help contractors/distributors/engineers/designers sell the efficient equipment more effectively.

Product Manager
Lighting Manufacturer
12/31/97

Background information

- Lighting Manufacturer
- Primary customers/clients: C&I and residential distributors
- Employed by firm 7 years
- Current title: Product Manger
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 60% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased institutional use of energy efficient lighting is customer awareness, coupled with the up-front cost of the individual fixtures and systems.

He also identified specific barriers which apply to new construction and retrofit markets on the commercial side.

> *"It depends on whether you're talking about new construction or the retrofit [market]. With new construction… frequently, there is no incentive for the builder to put the [efficient lighting] in. With retrofits, that's different because … the decision maker is going to realize the benefit of those efficient lights, and it is easy to calculate. Then it's just a matter of getting the message [of payback] accross to the customer."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	"The new product development dollar today is almost entirely focused on efficient equipment."
Acceptance of or confidence in energy-efficient equipment	▸ Increased Expected to increase	Especially increased with ballasts.
Sales/promotion of energy-	▸ Increased	Many new efficient products

efficient equipment		Expected to Increase	to promote.
Relative price differences between standard/energy-efficient equipment	▸	Decreased Expected to stay fairly steady	"The increase in competition [for efficient lighting products] in the last five years is unreal. You have to keep your prices down somewhere or you're gone."
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to decrease	Not an issue
End-user awareness of energy-efficient equipment:	▸	Depends	"People seem to be aware. But there are the 'haves and the have nots.' People who don't follow this kind of thing know nothing about it, while those who are interested in [efficient lighting technology] are often already employing it."
End-user demand for energy-efficient equipment	▸	Increase Expected to increase	Up in almost all market segments.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Depends	Satisfaction with equipment is often more related to quality installation than quality product.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4	"Got everybody's attention."
Changes in state and local building codes and regulations	1	Regulation has been an ineffective form of efficiency promotion thus far. More stringent regulations would help.
Changes in federal building codes and regulations	1	

Rising energy prices	3	Rising operational costs force companies to look at ways to trim the bottom line.
Environmental concerns of commercial and industrial customers	1	Very seldom
Improvements made in energy-efficient products	4	Higher efficiency levels, and less labor-intesive systems have helped transform the market.
Reductions in the prices of energy-efficient products	3	Prices came down a great deal at first, but the decrease has slowed.
Your own efforts to market energy-efficient systems	3	Difficult to gauge the effects of this
Utility educational / informational programs	4	Coupled with rebates, this can be extrememely effective.

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	4
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	4
Availability of information at a low cost	4
Availability of comparable technology choices with similar costs	5
Customer's knowledge/sophistication in comparing technology choices	5

End-user Information Sources

The respondent believes that the most frequent information source for customers regarding energy efficient lighting options is contractors/engineers/designers/architects, depending on the

type and size of the project.

*** * Respondent terminated interview due to time constraints.**

Owner
Lighting distributor
12/11/97

Background information

- Lighting wholesale distributor, specializing in efficient models
- Primary customers/clients: 1) contractors 2) homeowners assn.'s 3) hotels/motels 4) light industrial
- Employed by firm 18 years
- Current title: Owner
- Business size: Approximately $500,000 annually in sales to non-residential market in Southern CA - represents roughly 70% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient lighting is the price of the efficient equipment, coupled with lack of information at the end-user level.

> *"We can't educate people unless they come in here, so its not really our place. I think it is up to the utility to educate the public, and that would make it easier for the contractors and the distributors to sell [efficient equipment]."*

The respondent feels that the future market for efficient lighting equipment depends largely on the electricity rates, in that if the rates go up, there will be more incentive for people to choose efficient equipment.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Stayed the same Expected to stay the same	"We've always been geared to sell efficient equipment."
Acceptance of or confidence in energy-efficient equipment	▸ Stayed the same	"That is our business"
Sales/promotion of energy-efficient equipment	▸ Stayed the same	"That is our business"
Relative price differences between standard/energy-	▸ DK DK future	"We spoiled the people with the rebates, now they all want

efficient equipment			that low price. If they don't get that price, they will put in an incandescent."
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to decrease	Not a problem
End-user awareness of energy-efficient equipment:	▸	Slow increase	Went up with rebates, is still up a bit from before rebates
End-user demand for energy-efficient equipment	▸	Increase, then decrease	Went up with rebates, and now is way down
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased	Up with product improvements

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	5	"My goodness did it ever help!" "We had a 20% increase in our business when the utility had rebates."
Changes in state and local building codes and regulations	3	Contractors have to put in the efficient levels in certain areas, and they have to double switch certain areas.
Changes in federal building codes and regulations	3	
Rising energy prices	3	Will effect the demand in the future.
Environmental concerns of commercial and industrial customers	1	"There is no such thing. There wouldn't be 1% of customers that care about this"
Improvements made in energy-efficient products	3	Does not increase demand, but increases satisfaction
Reductions in the prices of energy-efficient	3	Prices are fairly steady at this

products		point.
Your own efforts to market energy-efficient systems	3	"We can't have that much effect unless people come to us."
Utility educational / informational programs	3	"These need to be better, and in conjunction with rebates, to get a lasting message across."

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	3
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	3
Availability of information at a low cost	4
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	5

End-user Information Sources

The most frequent information sources for customers regarding energy efficient lighting options according to the respondent are TV ads, Edison pamphlets, and newspaper articles.

The only seminars the respondent is aware of are those held at Edison's CTAC. He has participated in programs at CTAC, and rated the seminars' influence on end-user equipment selection decisions as a 4 out of 5. He thinks if you could take CTAC on the road, to different locations, it would have a greater influence on the general public.

Respondent suggestions for expanding market / increasing demand

The respondent believes that the best way to expand the market for efficient electric equipment is through more advertising on the TV, in the newspaper, or through mass mailings:

> *"If Edison would provide mailers for distributors, that we could drop in our monthly statements and send to our customers, that might make a big difference."*

He also stated that it would be very effective if SCE could somehow take CTAC on the road, or replicate it in several locations.

Manager
Lighting Distributor
12/8/97

Background information

- Electrical wholesale distributor
- Primary customers/clients: 1) commercial 2) chain commercial 3) industrial
- Employed by firm 5 years
- Current title: Operations Manager
- Business size: About $500,000 annually in sales to non-residential market in Southern CA - represents roughly 90% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of efficient lighting is lack of understanding.

> *"There is confusion from the manufacturers on down to the customer base. Nobody knows what is best for them. In the last five years, the market has been bombarded with information about efficiency, and now everyone is trying to sort it out."*

He feels this is partially due to both the lack of information regarding efficient lighting options, and a mis-use of the information that is out there.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	However, "there a lot of mis-informed people out there"
Acceptance of or confidence in energy-efficient equipment	▸ Increased	Product improvements.
Sales/promotion of energy-efficient equipment	▸ Quadrupled Expected to quadruple again in the next 5 years.	More demand
Relative price differences between standard/energy-efficient equipment	▸ Decreased Expected to decrease.	"It was never a secret that the price was too high for the actual production costs. Now it is getting more

			reasonable." "Now the bottom is falling out of electronic ballasts."
Delays in obtaining energy-efficient equipment	▸	No change Expected to not change	"This is still a problem."
End-user awareness of energy-efficient equipment:	▸	Increased Expected to increase	People are getting smarter. There is more information out there.
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	As price comes down further, demand will go up further
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased Expected to increase	Never a problem

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4	From a commercial standpoint, even the smallest of rebates were making a huge difference. Also increases demand on the residential side.
Changes in state and local building codes and regulations	2	Hasn't effected our business, because the business was going in that direction anyway.
Changes in federal building codes and regulations	2	
Rising energy prices	3	Makes efficiency more attractive.
Environmental concerns of commercial and industrial customers	3 - 4	"This is probably a solid '1' in any other state, but in CA, I give it a 3 or 4."
Improvements made in energy-efficient products	4	Does not help make sales, but definitely increases satisfaction with efficient lighting.

Reductions in the prices of energy-efficient products	5	"This is the biggest thing, because, like rebates, it gets the customer past the 'bottom line' concern."
Your own efforts to market energy-efficient systems	3	"We have some success with converting people, but we usually can't do it alone."
Utility educational / informational programs	4	

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	2
Availability of credible/reliable information	5
Availability of information that is convenient to obtain	2
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	1
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent believes that most customers get their information regarding efficient lighting options from trade shows or seminars put on by local distributors. He also mentioned blanket mailers through SCE.

The seminars the respondent is aware of are those sponsored by SCE and manufacturers such as GE and Sylvania. He attends these routinely, and feels that they have a major effect on customers' equipment selection decisions (rated a 4 out of 5 in terms of influence).

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is a

continuation of current efforts, including the smallest of rebates.

> *"Even the smaller perks help. The informed people are going to push through the budget on an efficient retrofit no matter what. But the less informed ones need some grease on their palms. Last year I sold two huge building retrofits based solely on the $15 rebate per exit sign."*

He feels the rebates are necessary not to convince the facilities people at a company to do a retrofit, but to convince the decisionmakers (owners and VP's).

> *"The people at a company who push for the retrofit, they do it for the right reasons. The people who approve, and pay for the retrofit, do it for the rebates."*

Manager
Large Lighting Distributor
12/11/97

Background information

- International electrical wholesale distributor with 400 offices
- Primary customers/clients: Large commercial, industrial, and contractors
- Employed by firm 18 years
- Current title: Manager
- Business size: Approximately $500,000 annually in sales to non-residential market in Southern CA - represents roughly 15% of total annual business volume (rest of business is conduit wire fitting, variable speed drives, programmable controllers, etc.)

Perceived barriers

The respondent believes that the most significant barrier to increased institutional use of energy efficient lighting is competition. He feels the lighting industry is becoming a specialty business, and it is difficult for a non-specialty business to compete.

> *"There are a lot of little mom and pop businesses popping up, and all they do is lighting. Well, it is hard to compete with them because even though we have more buying power, we do not concentrate solely in one area."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Awareness increased Interest decreased	Decreased interest because of high competition
Acceptance of or confidence in energy-efficient equipment	Increased greatly	"It keeps getting better"
Sales/promotion of energy-efficient equipment	Same	"Very Limited" - they do so many other things
Relative price differences between standard/energy-efficient equipment	Decreased Expects to decrease further	Because of competition, and because it will become the standard
Delays in obtaining energy-efficient equipment	Decreased	Not ever a problem

End-user awareness of energy-efficient equipment:	▸	Increased Expected to increase	It is becoming the standard
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	It is becoming the standard
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased Expected to increase	High quality and performance

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	2	"Rebates help, but they probably only help the people who are going to choose efficient technology anyways." However, he admits that they do help force a decision by having expiration deadlines.
Changes in state and local building codes and regulations	4	Makes efficiency the standard
Changes in federal building codes and regulations	4	
Rising energy prices	4	Changes the payback cycle
Environmental concerns of commercial and industrial customers	2	Only the government offices are worried about that
Improvements made in energy-efficient products	4	
Reductions in the prices of energy-efficient products	3	No large reductions recently
Your own efforts to market energy-efficient systems	1	"We don't have the time to market this part of our business"
Utility educational / informational programs	5	"Nobody will do anything until they know the facts."

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	4
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	2
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	3

> *"Let me put it this way – with the number of products available today, no one has an excuse not to understand there are ways to save money on lighting. And, with the amount of information out there, even the common person should understand."*

End-user Information Sources

The respondent reported that the most frequent information source for customers regarding energy efficient lighting options are distributors, manufacturers, trade magazines, and utilities.

The only seminars the respondent is aware of are at CTAC. He has participated in many of these activities, and rated their influence on end-user equipment selection decisions as a 5 out of 5. "They do an excellent job of educating." He also mentioned that lighting manufacturers also provide seminars, which he finds to be very useful for the end-user as well.

> *"You've got to understand the equipment first. Then you can make a decision on what is best for your company."*

Respondent suggestions for expanding market / increasing demand

The respondent believes that the best way to expand the market for efficient electric equipment is through a joint effort between the utilities and the manufacturers of lighting equipment.

> *"If Edison were to combine forces with the lamp manufacturers and the lighting equipment conpanies, and come up with a training seminar and take it on the road doing on-sites at major plant engineering companies, property management companies,*

engineering firms, and contractor firms, they could really get some education out there. Take CTAC on the road!"

Sales Manager
Lighting Distributor
12/17/97

Background information

- Electrical distributor located in Corona, CA
- Primary customers/clients: 1) C&I 2) Residential (small %)
- Employed by firm 12 years.
- Current title: Sales Manager
- Business size: Between $500,000 and $1,000,000 in annual business volume for sales of lighting equipment to non-res. customers in So. Cal.

Perceived barriers

The respondent feels that the most significant barrier to increased institutional use of energy efficient lighting is lack of awareness of the benefits of efficient lighting equipment.

> *"Not everybody can understand that in the long-run, a larger up-front investment can save or make you money in the long run. I can't blame them. Here, we've all taken classes and been taught these benefits."*

> *"You're trying to sell these people something that's new to them, it's more expensive, and they don't understand it. That's a tough sell."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Stayed the same Expected to stay the same	
Acceptance of or confidence in energy-efficient equipment	Increased slightly Expected to increase	
Sales/promotion of energy-efficient equipment	Increased Expected to Increase	"Oh yes. We try our best to spread the word. That will undoubtedly continue."
Relative price differences between standard/energy-efficient equipment	Decreased DK future	Compared it to the falling prices for other "new" products, like VCRs.

Delays in obtaining energy-efficient equipment	▸	Decreased Expected to decrease	"Unless they are after something BRAND NEW on the market, we can get it in a hurry."
End-user awareness of energy-efficient equipment:	▸	Increase Expected to increase	"More people are starting to get wind of the reasons why efficient lighting is smarter."
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	Especially daylight lamp (SP-65).
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased Expected to increase	Very high

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	"They helped out, but failed to get any message across" (rebates are no longer available)
Changes in state and local building codes and regulations	2	"They only pertain to new structures."
Changes in federal building codes and regulations	2	
Rising energy prices	1	Have not had any customer tell them that this was the motivation for choosing efficient equipment.
Environmental concerns of commercial and industrial customers	1	Have not had any customer tell him that this was the motivation for choosing efficient equipment.
Improvements made in energy-efficient products	4	"I've watched it get better and better. There are more options every day."

Reductions in the prices of energy-efficient products	5	This is the biggest thing. It gives motivation for purchase.
Your own efforts to market energy-efficient systems	3	"We can only do so much."
Utility educational / informational programs	1	"I don't think they're being informed at all. I watch TV, I read the paper. I haven't heard enough about it."

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	5
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the most frequent information source for customers regarding energy efficient lighting options is his company and magazines that pertain to the lighting distribution industry.

The only seminars the respondent is aware of are through manufacturers (GE and Sylvania) which are located at the warehousing facility. "They do an excellent job laying out their products." He has participated in these activities, but rated their influence on end-user equipment selection decisions as a 2 out of 5.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is through more information/advertising.

> *"Once I get 10 minutes with a customer out at the counter, and can just hit him with everything I've got, and try to keep it simple, they all find it very interesting. Some pursue it, some don't, but you've got to get the message across."*

> *"More mail in the customer's mailbox, more TV commercials. Somebody at the utility has got to come up with something real catchy, that's going to catch everyone's eye, and make them look for a few seconds. That's the job of the creative ad staff."*

Manager
Lighting Distributor
12/8/97

Background information

- Electrical wholesale distributor
- Primary customers/clients: 1) commercial
- Employed by firm 1 year, 33 years in industry
- Current title: Special projects manager
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 20% of total annual business volume.

Perceived barriers

The respondent feels that there are no significant barriers to efficient lighting today.

> *"We're seeing more and more of it, and people are getting more and more knowledgeable about it, and from the way our business is going I don't see any barriers. We have seen a tremendous difference in the past 5 years."*

The respondent attributes this difference to utility programs and the Greenlights program.

> *"From my 33 years in the industry, I know that fixture manufacturers are very slow to react until they are forced into it. Some of these programs have forced them into efficient lighting."*

He also believes that the current trend in the market for efficient lighting will continue.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	Increased demand due to rebates.
Acceptance of or confidence in energy-efficient equipment	▸ Increased Expected to increase	We were slow to adapt to efficient equipment because we weren't knowledgeable.
Sales/promotion of energy-efficient equipment	▸ Increased Expected to increase	

Relative price differences between standard/energy-efficient equipment	▸	Decreased Expected to decrease.	The margin has narrowed to the point where the efficient lamps are almost always asked for now.
Delays in obtaining energy-efficient equipment	▸	Decreased Needs to decrease more.	This has been a problem. "We don't have enough slim-line or high output fixtures."
End-user awareness of energy-efficient equipment:	▸	Increased Expected to increase	
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	He sees demand going up with new innovations. (i.e. Philips ALTUS series of lamps that eliminates waste disposal costs because of the trace levels of mercury).
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased Expected to increase	Product improvements - aesthetics

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	5	This created the awareness and demand.
Changes in state and local building codes and regulations	3	There are many loopholes to these codes
Changes in federal building codes and regulations	3	
Rising energy prices	4	This is important because it dictates the payback period.
Environmental concerns of commercial and industrial customers	5	Greenlights had an awful lot to do with it, as well as the oil crisis in '73.
Improvements made in energy-efficient products	4	Reductions in depth and weight of fixtures had a positive

		influence on the manufacturers' interest in efficient products.
Reductions in the prices of energy-efficient products	4	
Your own efforts to market energy-efficient systems	4	"We've recently retrofitted two major projects entirely due to our internal efforts."
Utility educational / informational programs	5	"These need to stay affordable for the little guy."

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	5
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	2
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	5

End-user Information Sources

The respondent believes that most customers get their information regarding efficient lighting options from lighting manufacturers' reps.

> *"The manufacturers reps have computer programs that give them a before and after comparison."*

He also mentioned trade shows, and organizational meetings (APEM, IES). The only seminars the respondent is aware of are sponsored by CTAC and the large manufacturers. He felt these seminars and workshops have a large effect on end-users' equipment selection decisions, but warned that the subjects of the seminars should be kept broad enough to attract a large audience.

"Anything that shows the end-user a way to save money using new technology is going to be a winner."

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to "keep pounding away with education." He recommended initiating a program wherein SCE representatives put on seminars "in-house" at major distributors and contractors. This would eliminate the high "opportunity cost" of attending a seminar, and get the message of efficient lighting across to a wide variety of people. To increase demand for this equipment, the respondent recommeded penetrating groups like BOMA (Building Owner Management Association).

Sales Representative
Lighting Distributor
12/15/97

Background information

- Wholesale electric distributor
- Primary customers/clients: Electrical contractors
- Employed by firm 2 years, but in the industry for 4 years.
- Current title: Sales Rep.
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 60% of total annual business volume.

Perceived barriers

The respondent believes that the most prominant barrier to increased institutional use of energy efficient lighting is the price of the equipment. He feels this barrier existed five years ago, and it is getting less significant.

He feels that most customers understand the benefits of efficient equipment, but still are unwilling to spend the extra money on the up-front cost. In his view, awareness and the lack of information are not barriers.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	Becoming more of a company emphasis
Acceptance of or confidence in energy-efficient equipment	▸ Increased slightly Expected to increase	The products are better now than they were five years ago.
Sales/promotion of energy-efficient equipment	▸ Same	Very low. Feels it is the contractor's responsibility.
Relative price differences between standard/energy-efficient equipment	▸ Decreased Expected to decrease	More competition
Delays in obtaining energy-efficient equipment	▸ Same	He has only been in industry a few years

End-user awareness of energy-efficient equipment:	▸	Same	Most customers are only interested in the bottom line.
End-user demand for energy-efficient equipment	▸	Same	Low - Contractors very rarely order the efficient equipment, so he figures demand must be quite low.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	DK	Does not deal with end-user

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	DK	He has only been in industry a few years
Changes in state and local building codes and regulations	5	This is the major factor in increasing the market - "Make it mandatory. That's the only way."
Changes in federal building codes and regulations	5	This is the major factor in increasing the market
Rising energy prices	4	Increases demand for efficient products
Environmental concerns of commercial and industrial customers	DK	Does not deal with end-user - feels that this is probably increasing.
Improvements made in energy-efficient products	2	There have been improvements, but he does not know if these changes impact the market.
Reductions in the prices of energy-efficient products	3	This increases demand
Your own efforts to market energy-efficient systems	N/A	They do not "market" specific systems

Utility educational / informational programs DK Not aware of any

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	1
Availability of credible/reliable information	1
Availability of information that is convenient to obtain	2
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	3

End-user Information Sources

The respondent feels that the most frequent information source for customers regarding energy efficient lighting options is from contractors. He feels that it is the contractor's responsibility to educate consumers and promote efficient lighting.

The only seminars the respondent is aware those sponsored by the large distribution and manufacturing companies. He has participated in one of these seminars (in Las Palmas), and rated its influence on end-user equipment selection decisions as a 2 out of 5. He pointed out that while the seminars were very informative to him, he is not in the position to "push" high efficiency equipment, and as a result he does not think the seminars had a large effect on end-user equipment selection decisions.

Respondent suggestions for expanding market / increasing demand

The respondent believes that the best way to expand the market for efficient electric equipment is through regulation which outlaws non-efficient equipment for certain commercial and industrial applications.

"For me, I feel pretty helpless in the whole [efficient lighting promotion] picture. It's up

to the government to step up and make some [lighting efficiency] standards."

Branch Manager
Lighting Distributor
12/11/97

Background information

- Wholesale electrical supply
- Primary customers/clients: 90% C&I, 10% residential
- Employed by firm 25 years
- Current title: Branch Manager, in position for 15 years
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 90% of total annual business volume.

Perceived barriers

The respondent feels that there are very few barriers to increased use of efficient lighting. The most significant barrier he did mention was the reluctance of engineers to spec' efficient products into their new plans.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Large increase Expected to increase	Demand is so high that they are very aware
Acceptance of or confidence in energy-efficient equipment	Large increase Expected to increase	Products keep getting better
Sales/promotion of energy-efficient equipment	Large increase Expected to increase	They do not do much "promotion" but they will always recommend efficient equipment
Relative price differences between standard/energy-efficient equipment	Large decrease	Almost non-existant - the two cost about the same
Delays in obtaining energy-efficient equipment	Eliminated	More manufacturer emphasis
End-user awareness of energy-efficient equipment:	Large increase	

End-user demand for energy-efficient equipment	▸	Increased greatly Difficult to predict future	Attributes increase in customer demand and awareness to the health of the economy. Businesses are more willing to make long-term decisions, and have more capital at their disposal.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased	Product improvements, good value. "It seems like every day there is a new improvement to efficient equipment."

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	At the time, these had a large influence, but the influence has worn off. Very effective for outdoor lighting market
Changes in state and local building codes and regulations	1	Title 24 hasn't changed
Changes in federal building codes and regulations	4	National Energy Act has all but phased-out non-efficient equipment.
Rising energy prices	5	Makes the savings more tangible
Environmental concerns of commercial and industrial customers	1	Non-existant - not the motivator.
Improvements made in energy-efficient products	5	Especially with electronic ballasts - "Lights are like computers now - there is a new model every week that makes the old model obsolete."
Reductions in the prices of energy-efficient products	5	Come down so far from 5 years ago. Attributes this to

		manufacturer emphasis.
Your own efforts to market energy-efficient systems	4	"We do whatever we can"
Utility educational / informational programs	2	Only targeted to large users

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	1
Availability of credible/reliable information	1
Availability of information that is convenient to obtain	1
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	1
Customer's knowledge/sophistication in comparing technology choices	2

"Lack of information is not a problem, there is almost a glut of information."

End-user Information Sources

The respondent reported that the most frequent information sources for customers regarding energy efficient lighting options are: 1) lighting distributors, 2) manufacturers literature, 3) utility programs, 4) in-house engineering staff, and 5) newspaper ads

The respondent has attended seminars sponsored by GE, Philips, and Lathonia. He gave particular praise to Lathonia's seminars, because they were structured in two separate meeting groups, one for contractors, one for end-users. He rated these seminars' influence on end-user equipment selection decisions as a 4 out of 5.

Respondent suggestions for expanding market / increasing demand

The respondent could not think of any suggestions to expand the market for efficient lighting.

> *“Keep on the same track. The manufacturers keep making impovements in terms of efficiency, output, and aesthetics, and as long as the products keep improving, the market will improve as well.”*

Manager
Large Lighting Distributor
12/11/97

Background information

- Electrical wholesale distributor
- Primary customers/clients: C&I contractors
- Employed by firm 5 years
- Current title: Manager
- Business size: Approximately $800,000 annually in sales to non-residential market in Southern CA - represents roughly 30% of total annual business volume

Perceived barriers

The respondent believes that the most significant barrier to increased institutional use of energy efficient lighting is simple economics.

> *"Its a fact of life most people aren't willing to pay more now for more later."*

He feels that currently, the payback periods for efficient lighting are "right on the bubble" for most customers.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	Competition
Acceptance of or confidence in energy-efficient equipment	▸ Increased Expected to increase	
Sales/promotion of energy-efficient equipment	▸ Same	"We don't put much into promotion. We try to stay educated enough that we can answer questions."
Relative price differences between standard/energy-efficient equipment	▸ Decreased Expected to decrease	More and more manufacturers are putting their resources into efficient production.

Delays in obtaining energy-efficient equipment	▸	N/A	Not ever an issue
End-user awareness of energy-efficient equipment:	▸	Increased Expected to increase	Awareness still relatively low
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	Demand going up among the aware segment of the market
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased Expected to increase	Never a problem

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	Helped briefly, but had no tangible long-standing effects, except in very large companies (national chains).
Changes in state and local building codes and regulations	4	
Changes in federal building codes and regulations	3	Raises the standard from the manfuacturers down to the end-users
Rising energy prices	4	Quicker paybacks (commented that this has not been a factor recently)
Environmental concerns of commercial and industrial customers	1	"Not in this lifetime"
Improvements made in energy-efficient products	2	Not many real improvements
Reductions in the prices of energy-efficient products	5	"This is the most important part of the customer's [equipment selection] process."
Your own efforts to market energy-efficient systems	1	They do not market much

Utility educational / informational programs	5	"These are the best way to reach a wide-spread audience."

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable informatin	3
Availability of information that is convenient to obtain	2
Availability of information at a low cost	3
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	3

End-user Information Sources

The respondent feels that the most frequent information source for customers regarding energy efficient lighting options are distributors, utilities, manufacturer's reps, and trade magazines.

He is aware of seminars/workshops put on by the major distributors (GE, Sylvania), as well as CTAC. His company has attended CTAC and the manufacturer's seminars, and believes they are both very helpful, but could not comment on the actual effect on the end-user equipment selection decision. "It depends on exactly who goes to the things."

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is through a reduction in the cost of efficient equipment in order to push end-users "over the edge" to selecting efficient equipment. Right now the payback times are slightly too long for many, and if they could be reduced, even marginally, through rebates, manufacturer price cuts, or any other means, many more people would choose the efficient lighting.

Manager
Large Lighting Distributor
12/12/97

Background information

- Distributor of lighting and electrical distribution equipment
- Primary customers/clients: Commercial and light industrial contractors
- Employed by firm 3 years
- Current title: Inside Sales
- Business size: Approximately $400,000 annually in sales to non-residential market in Southern CA - represents roughly 20% of total annual business volume

Perceived barriers

The respondent feels that the most significant barrier to increased institutional use of energy efficient lighting is the distribution structure, and the lack of regulations.

> *"If it's not required or specified, the contractor does not care. They're just going to appease the end-user by bidding the lowest cost items."*

She said these barriers are not as significant in institutional work, but much more significant in commercial and industrial work, where the owner makes the decision.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Increased Expected to increase	People do see the savings
Acceptance of or confidence in energy-efficient equipment	Increased greatly Expected to increase	
Sales/promotion of energy-efficient equipment	Same	"We don't have the time to promote certain kinds of lamps. We could promote all day long, but the contractor still doesn't care."
Relative price differences between standard/energy-	Decreased Expects to decrease	As it gets more competitive between manufacturers.

efficient equipment		further	
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to decrease	More manufacturers, more models, less delays
End-user awareness of energy-efficient equipment:	▸	Increased Expected to increase	Up. The savings are well publicized.
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	More people are requesting efficient lamps.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased Expected to increase	High quality and performance

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	Depending on the size of the company, the size of the building, and the energy usage.
Changes in state and local building codes and regulations	5	"If an engineer has to comply with efficiency codes, it has a huge effect"
Changes in federal building codes and regulations	DK	
Rising energy prices	3	"Again, it depends on the size of the building"
Environmental concerns of commercial and industrial customers	0	"That's a lot of hype as far as I'm concerned"
Improvements made in energy-efficient products	1	"Nobody notices"
Reductions in the prices of energy-efficient products	3	The contractor can sell the efficient lamps a lot easier if they are only a couple dollars more expensive
Your own efforts to market energy-efficient systems	1	"We don't have the time to

		market this part of our business"
Utility educational / informational programs	3	"This goes more towards the engineers and specifiers than anyone else."

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	4
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	3

End-user Information Sources

The respondent feels that the most frequent information source for customers regarding energy efficient lighting options are contractors, who do not care about efficiency levels, only about bidding out at the lowest price in order to win the job.

The only seminars the respondent is aware of are those put on by the major manufacturers. She feels they do a good job of educating, but has not seen any real effect on the market for efficient products as a result of these seminars.

Respondent suggestions for expanding market / increasing demand

The respondent feels that the best way to expand the market for efficient electric equipment is through targeting contractors, as well as creating demand by targeting the decision-makers within companies who create the budgets for the contractors to work within.

> *"The most important thing is that the information has to be directed to the right individual."*

Owner
Lighting Distributor
12/11/97

Background information

- Wholesale electrical supply
- Primary customers/clients: 97% commercial/industrial
- Employed by firm 3 years
- Current title: Sales Estimator
- Business size: Over $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 75% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased institutional use of energy efficient lighting is a lack of understanding across the board. "Probably half of my customers (end-users and contractors) understand efficient lighting, and how it can help them out."

> *"About half of the contractors are not aware of efficient lighting, and the other half don't care. Its just not a selling point for them. When it comes to a contractor, his concern is how easy it will be to get the job done, not how efficient it can be."*

> *"If people understood, or could see for themselves, how nice energy efficient lighting could look when its done properly, that would really make an improvement. If someone could go in and sit down and spend a little time with [the customers], I think more of them would go with [energy efficient lighting]."*

He also made the distinction between new construction and retrofit markets, stating that retrofit projects are much more likely to consider efficient equipment than new construction.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	The manufacturers are really pushing the efficient products now. That has helped awareness more than anything.
Acceptance of or confidence in energy-efficient equipment	▸ Increased slightly Expected to increase	Product improvements

Sales/promotion of energy-efficient equipment	▸	Same - low	"If they have questions, I will try to drive them in the direction of efficient lighting, but basically, the contractor is going to be the one in contact with the end-user."
Relative price differences between standard/energy-efficient equipment	▸	Decreased Expected to decrease	More competition
Delays in obtaining energy-efficient equipment	▸	Same	No delays - there is enough competition between distributors that everyone can produce an order pretty quickly.
End-user awareness of energy-efficient equipment:	▸	Same	"I think people need to get a better understanding of fluorescent lighting. I think more people need to see the different kinds of fluorescent lighting that are available out there, whether its commercial or residential. If people understood, or could see for themselves, how nice energy efficient lighting could look when its done properly, that would really make an improvement."
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	Those who are aware of efficient lighting demand it.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased Expected to increase	People are happy with the savings

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	5	Way back when, this started the movement towards efficient lighting.
Changes in state and local building codes and regulations	4	Title 24: Your primary switch when you walk into a rest-room or a kitchen has to have X many lumens – 99% of the time, the fluorescent is going to give the customer the light at a low energy cost. But contractors find loopholes in this code.
Changes in federal building codes and regulations	2	
Rising energy prices	DK	"I don't know that it has had much of an effect, except that a lot of people are waiting around for deregulation to see what will happen."
Environmental concerns of commercial and industrial customers	1	"I have not come across one person who stated that their reason to get efficient lighting has anything to do with the environment. I think it's purely the bottom line."
Improvements made in energy-efficient products	3	"This is huge, but not enough people know about all the improvements."
Reductions in the prices of energy-efficient products	DK	Prices have been stable for some time
Your own efforts to market energy-efficient systems	N/A	They do not market
Utility educational / informational programs	DK	

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	2
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	4
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	4

> *"I don't think there is enough information out there to get peoples' ATTENTION."*

End-user Information Sources

The respondent feels that the most frequent information source for customers regarding energy efficient lighting options is through his staff.

The only seminars the respondent is aware of are sponsored by the manufacturers. He feels that these are mainly conducted simply to familiarize the distributors with the manufacturers' product lines. "That's where I've gotten the majority of my information regarding energy efficient lighting products." He rated these seminars' influence on end-user equipment selection decisions as a 3 out of 5, stating that the effect depends on who actually attends the seminars. "If it is the end-user, great, or the contractor, great, but a guy like me, it doesn't have much effect on the customer."

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is through utility programs which would give companies a break on their rates.

> *"If the utility were to say 'hey, if you do certain things in your business to become more efficient we'll give you a break on your rates' that would do a lot to increase demand. Why would a guy go through his business and make changes if he can't see any tangible benefits?"*

Sales Manager
Lighting Vendor
12/22/97

Background information

- Lighting Vendor/Designer
- Primary customers/clients: Commercial
- Employed by firm 6 years
- Current title: Sales Manager -- 3 years in position
- Business size: Between $100,000 and $500,000 annually in sales to non-residential market in Southern CA - represents roughly 75% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barriers to increased institutional use of energy efficient lighting are the perceptions of poor lighting quality from efficient fixtures.

> *"People really don't know what these [efficient lighting systems] can do in terms of appearance."*

He feels that businesses are hesitant to spend more money on a fixture that they feel will not look as good as the cheaper incandescent model. He hopes that this hesitation will become less significant as companies become more educated about efficient lighting systems.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase.	More "push" from manufacturers, and more demand from clients.
Acceptance of or confidence in energy-efficient equipment	▸ Increased Expected to increase	Aesthetic improvements
Sales/promotion of energy-efficient equipment	▸ Increased Expected to Increase	"Where we feel it fits with our client's particualr needs, we've taken a more agressive stance [towards promoting efficient lighting]."
Relative price differences	▸ Same	Prices are now very

between standard/energy-efficient equipment			comparable to standard fixtures
Delays in obtaining energy-efficient equipment	▸	Decreased slightly Generally not a problem	Problems specific to distributors, not efficiency levels.
End-user awareness of energy-efficient equipment:	▸	Slow increase	Feels that although there is more information currently available regarding efficient lighting, but people are still not informed about the aesthetic improvements.
End-user demand for energy-efficient equipment	▸	Slow increase	The monetary savings are the real motivators to this point.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Same	Has never been a problem

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	This got the decision-makers excited about efficient lighting.
Changes in state and local building codes and regulations	2	Rarely effects what kind of equipemnt they specify.
Changes in federal building codes and regulations	2	Rarely effects what kind of equipemnt they specify.
Rising energy prices	1	No real rise
Environmental concerns of commercial and industrial customers	2	Only factors in with very large customers.
Improvements made in energy-efficient products	4	Still room for improvement
Reductions in the prices of energy-efficient products	3	Payback period

Your own efforts to market energy-efficient systems	3	Starting to have some effect
Utility educational / informational programs	3	Information is key, and utility is considered a credible, and objective source for info.

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	4
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	4
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	5

End-user Information Sources

The respondent feels that the most frequent information source for his customers regarding energy efficient lighting options is from his company. Some of his compenies other customers work/have worked with contractors, or manufacturers reps, and have gleaned information from these two sources. He is not aware of any seminars/programs for educating end-users/installers, etc…

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is by educating lighting designers on how to effectively market lighting options, and educating large businesses on the benefits and capabilities of energy efficient lighting. His customers are primarilly large commercial, and he feels that it would be much easier to sell to this market if both sides were educated on these issues.

Co-owner
Lighting vendor
12/22/97

Background information

- Electrical contractor
- Primary customers/clients: 1) commercial/industrial 2) institutional
- Current title: Co-owner - 14 years
- Business size: roughly $300,000/year in lighting sales to non-residential market in Southern CA - represents roughly 90% of total annual business volume

Perceived barriers

The respondent was quick to point out that the characteristics and barriers of the municaipal market for energy efficient lighting are very different from those of the C&I market.

For C/I customers, the respondent stated that the most significant barrier to increased use of energy efficient lighting equipment is customer awareness. He feels that many businesses simply are not aware of the payback they can receive on energy efficient lighting. He finds, in general, that if he is able to "sit down and lay out the numbers" with C&I customers, most of them decide to choose the efficient lighting over standard efficiency.

> *"It's just a matter of getting the message across. These people don't want to listen to a word you say until you start talking dollars."*

On the municipal side, the respondent sees a market equally willing to select energy efficient lighting equipment, but with the additional barrier of strict budget constraints and complex buerocracies. Many of the schools and municipalities have yearly budgets that do not account for issues like payback, only up-front cost. Additionally, the decision-making bureaucracies associated with these institutions are often somewhat more complex and nebulous than their C/I counterparts.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased	Increased, but slower for C&I customers
Acceptance of or confidence in energy-efficient equipment	▸ Same	Always accepted the equipment

Sales/promotion of energy-efficient equipment	▸	Increased	Increased highly - as price has come down
Relative price differences between standard/energy-efficient equipment	▸	Decreased Expected to continue to decrease	Made a large difference in both acceptance and demand
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to continue to decrease	Increased manufacturer emphasis on efficient fixtures, and competition
End-user awareness of energy-efficient equipment:		Increased	Still a lack of information
End-user demand for energy-efficient equipment	▸	Slight increase Expected to increase	"It's much easier to sell the stuff now that the prices are so low. It's almost a no-brainer."
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Slight increase Expected to continue to increase	Improvements made to the products themselves.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	Gave rise to the new wave of demand for efficient lighting
Changes in state and local building codes and regulations	3	Effects municipal projects (some cities and school districts have codes that either mandate, or in some cases, virtually prohibit the use of efficient lighting).
Changes in federal building codes and regulations	1	
Rising energy prices	1	Would be a huge factor if prices rose substantially, but as things stand, not a factor
Environmental concerns of commercial and	4 - Mun	Schools, municipals more

industrial customers	1 - C/I	concerned about this. Commercial customers do not care.
Improvements made in energy-efficient products	4	Improvements add more selling points
Reductions in the prices of energy-efficient products	5	"Almost makes [choosing efficient lighting] a no-brainer."
Your own efforts to market energy-efficient systems	4	"Has gotten much easier to sell the [efficient lighting products] since the price has come down." Their efforts have increased greatly, and the majority of customers who they try to "sell" efficient equipment to, eventually choose efficient equipemnt.
Utility educational / informational programs	3	Feels it is difficult for small- to medium-sized businesses to justify the cost of sending someone to a seminar

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	4
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	4
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent felt that most customers received their information regarding energy efficient lighting options via their contractors.

> *"It's rare if we go into a situation where the customer is really informed on this stuff, unless we talked to them before. Usually it's us who ends up going over the whole sales routine with them."*

The only seminars he is aware of are from the gas company, and manufacturer training workshops, which are available for distributors and contractors. He also said some of the larger distribution houses sponsor educational workshops. He has personally participated in all of these activities, and said that their influence on end-user equipment selection decisions varies, but rates them as a 4 out of 5. He gave the workshops a high rating because he did not know where customers would get their information regarding efficient lighting if not from contractors and distributors.

Respondent suggestions for expanding market / increasing demand

The respondent feels that the market for efficient lighting equipment can be expanded through more programs like manufacturer rebates.

> *"Bring down the price, bring back rebates…anything that makes it easier for us to sell [efficient lighting products] would be appreciated."*

Marketing Manager
Small Lighting Vendor
12/11/97

Background information

- Lighting Designer
- Primary customers/clients: Commercial – office buildings
- Employed by firm 1 year, but in the industry for 4 years.
- Current title: Marketing Manager
- Business size: Less than $100,000 annually in sales to non-residential market in Southern CA - represents roughly 80% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased institutional use of energy efficient lighting is the aesthetics of the lights themselves. According to her, fluorescent lighting has its strengths and limitations.

> *"It depends on the usage of the light, the area, how much space they want to light. In some cases, fluorescent lamps just won't fill the lighting needs."*

Large companies are more likely to choose efficient lighting, since they have a large number of employees, and enormous lighting needs.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	"We have been doing much more efficient lighting lately."
Acceptance of or confidence in energy-efficient equipment	▸ Increase slightly	Performance has improved dramatically.
Sales/promotion of energy-efficient equipment	N/A	They spec what they feel is best for the client based on the client's needs.
Relative price differences between standard/energy-efficient equipment	▸ Decreased DK future	Manufacturers are geared up for more efficient fixtures.

Delays in obtaining energy-efficient equipment	▸	Stayed the same	"I haven't noticed a difference between efficient and standard fixtures."
End-user awareness of energy-efficient equipment:	▸	Slow increase	Still very low.
End-user demand for energy-efficient equipment	▸	Increase	Especially among the large companies
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased	Customers are very satisfied with efficient lighting.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	DK	
Changes in state and local building codes and regulations	3	This rarely dictates what efficiency level will be installed.
Changes in federal building codes and regulations	2	
Rising energy prices	1	Haven't seen prices go up
Environmental concerns of commercial and industrial customers	3	Only among the biggest customers
Improvements made in energy-efficient products	3	Aesthetic improvements. There is still a lot of room for improvement here. Bulbs should be less "industrial"
Reductions in the prices of energy-efficient products	4	Usually not a barrier at this point
Your own efforts to market energy-efficient systems	3	"We don't market per se, we just give suggestions to fit their needs"

Utility educational / informational programs	DK	Not aware of any

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	4
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	4
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	5

End-user Information Sources

The respondent feels that the most frequent information source for customers regarding energy efficient lighting options is from manufacturers reps and contractors. According to her, their own customers rely on her company to advise them of such options. She is not aware of any seminars or workshops to help educate about efficient lighting options.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is by educating lighting designers on efficient lighting options. She feels that that is the direction the market is going, and that the big companies who are interested in efficient options are the ones who are likely to hire a designer instead of a contractor to do lighting work. If the designers were more educated, they might recommend more efficient lighting.

> *"A lot of people are becoming more conscious about commercial lighting, because that's where people are spending their time. They are in the office for 8 or 10 hours per day, and they want what's best for them."*

She also mentioned more advertising.

> *"People are going to go with something they know, so you've got to hit them every way*

you can. If its a better choice, and as long as it isn't double the price, people will go for it."

However, the respondent did not recommend mass mailings, which she feels are most often thrown away by recipients.

Owner
Large Lighting Vendor
12/11/97

Background information

- Lighting Installation & Maintenance contractor, subsidiary of a utility company
- Primary customers/clients:Manufacturing, Industrial, Commercial
- Employed by firm 2 years, but in the industry for 8 years.
- Current title: Regional Sales Manager
- Business size: Approximately $120,000,000 annually in sales to non-residential market in Southern CA - represents roughly 50% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased institutional use of energy efficient lighting is up-front cost.

> *"Companies don't realize the importance of the change enough to put it in the budget."*

According to the respondent, another major barrier to efficient lighting is competition.

> *"The Los Angeles market is very competitive. There's always 100 bids on everything, so you have to cut something if you want to be the cheapest."*

He feels like this barrier has gotten much more significant in the last five years. One barrier that he feels will become significant in the next five years is customer perception of deregulation.

> *"People think they will reap the savings from deregulation, which might take the focus away from energy efficiency. We get questions about that every day."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Stayed the same Expected to stay the same	Has not changed much in the last five years
Acceptance of or confidence in energy-efficient equipment	▸ Increased slightly Expected to increase	The equipment is much more "proven" today.
Sales/promotion of energy-	▸ Increased	Has increased with

efficient equipment		Expected to Increase	confidence, acceptance
Relative price differences between standard/energy-efficient equipment	▸	Decreased DK future	Manufacturers are geared up for more efficient fixtures.
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to decrease	More manufacturer emphasis. "Five years ago you were lucky if you could fill an order with electronic ballasts."
End-user awareness of energy-efficient equipment:	▸	Slow increase	Some industries (real estate) are more aware than others.
End-user demand for energy-efficient equipment	▸		
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased	The equipment is much more "proven" today. There used to be a lot of concerns with harmonic distortion.

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	5	Great, when they are around
Changes in state and local building codes and regulations	1	No changes outside of Title 24, which was quite a while back
Changes in federal building codes and regulations	1	
Rising energy prices	1	Haven't seen prices go up
Environmental concerns of commercial and industrial customers	1	Generally not a factor in the commercial market
Improvements made in energy-efficient products	3	There has been very little improvement

Reductions in the prices of energy-efficient products	2	Minimal reductions
Your own efforts to market energy-efficient systems	3	"We could be doing better"
Utility educational / informational programs	3	"Have a good effect on the few people who attend them, but these people are mostly from pro-active firms. You're sort of 'preaching to the choir here."

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	4
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	5
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	3

End-user Information Sources

The respondent feels that the most frequent information source for customers regarding energy efficient lighting options is lighting manufacturers' catalogs and update bulletins.

The only seminars the respondent is aware of are at an engineering trade society, and through the Greenlights program. He has participated in these activities, but rated the seminars' influence on end-user equipment selection decisions as a 3 out of 5, stating that some of the information "trickles down" to the end user, but mostly it is only useful to those who are in attendance.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is through regulation.

> *"You've got to get some kind of legislation that demands more efficient equipment, or outlaws equipment that isn't."*

Alternately, he feels utilities should bring back financial incentives for the purchase of efficient equipment, as well as educate the markets in the public that do not make it part of their business to look into efficient technologies.

> *"If it's not part of somebody's business, it's not going to be advertised in their trade journals. So they look to an electric contractor, who is going to bid the lowest cost possible."*

Sales Manager
Lighting Vendor
12/22/97

Background information

- Lighting Contractor
- Primary customers/clients: Commercial/Industrial
- Employed by firm 12 years
- Current title: VP Sales -- 4 years in position
- Business size: Between $500,000 and $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 75% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased institutional use of energy efficient lighting is the up-front cost associated with the equipment.

> *"You can blame it on whatever you want, but it really just comes down to simple math. People see the higher price, and some of them aren't going to pay it. It doesn't matter how much [money] they will save."*

According to this respondent, this particular segment of the market will only buy efficient equipment if the price is comparable.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Increased Expected to increase.	More manufacturer emphasis. More demand.
Acceptance of or confidence in energy-efficient equipment	Increased Expected to increase	Equipment improvements.
Sales/promotion of energy-efficient equipment	Slight increase	"With the savings, they practically promote themselves"
Relative price differences between standard/energy-efficient equipment	Slight decrease	

Delays in obtaining energy-efficient equipment	▸	Decreased	Very few significant delays
End-user awareness of energy-efficient equipment:	▸	Slow increase Expected to increase	"You've got to keep hammering away at [customers] about the savings. Eventually they'll get with the program."
End-user demand for energy-efficient equipment	▸	Slow increase Expected to increase	Demand grows as word spreads of the savings potential.
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increase	"Nobody wants to be the first to try out this kind of thing."

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4	Started the ball rolling for customer demand of efficient equipment. "You need the rebates to sell a group of people on [efficient lighting]. After that, word starts to get around.
Changes in state and local building codes and regulations	1	No effect
Changes in federal building codes and regulations	1	No effect
Rising energy prices	1	No effect - but would effect demand tremendously if prices did rise significantly.
Environmental concerns of commercial and industrial customers	3	Large companies like to pay lip service to environmental concerns.
Improvements made in energy-efficient products	3	The efficiencies and life duration of efficient equipment

		have gotten longer.
Reductions in the prices of energy-efficient products	4	Main purchase criteria for many customers is price.
Your own efforts to market energy-efficient systems	3	They try to sell efficient equipment whenever feasible.
Utility educational / informational programs	3	Skeptical public makes it important to keep "hammering away" with information.

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	3
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	3
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the most frequent information source for his customers regarding energy efficient lighting options is from his company. He is aware of seminars/programs for educating end-users/installers offered by large manufacturers, but is skeptical of their impact on eventual equipment end-users (rated a 2 of 5).

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to get the price of the equipment down equal to or near that of standard equipment. Short of that, he felt utilities could continue educational efforts, punctuated briefly by rebates "every so often" to

keep awareness up.

Owner
Lighting vendor
12/11/97

Background information

- Electrical installer
- Primary customers/clients: institutional
- Employed by firm 20 years
- Current title: Owner
- Business size: Less than $100,000 annually in sales to non-residential market in Southern CA - represents roughly 40% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased institutional use of energy efficient lighting is the aesthetics of the efficient lamps. His clients are primarily churches, and so there are high aesthetic demands on the lamps.

> *"If the light does what they want it to do, they let me put in the higher-efficiency bulb. Wherever it doesn't detract from appearance, they choose fluorescent, but if its decorative, they don't let me use the fluorescents."*

He feels that the aesthetics of fluorescent bulbs has improved over the past five years, and that his customers will eventually become more willing to use all fluorescent bulbs.

The next most significant barrier to increased use of efficient lighting is cost.

> *"They don't understand that if you save all that money, you will have the cost back in a few months. They see the cost for a bulb and say 'oh my god, $20' and choose the cheaper one."*

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Increased Expected to increase	"I save so much money in my own home each month that I figure Edison mows my lawn."
Acceptance of or confidence in energy-efficient equipment	Increased Expected to increase	They have improved the products so much.

Sales/promotion of energy-efficient equipment	▸	Increased Expected to Increase	"Now I always push the efficient model. That's what I'm there for."
Relative price differences between standard/energy-efficient equipment	▸	Same Expected to stay the same	He does not understand why the prices stopped coming down. He finds some sales from time to time.
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to decrease	Not a significant problem
End-user awareness of energy-efficient equipment:	▸	Slow increase	His customers (churches) are slow to react to efficient technology. "Let's face it, the priests are not trained in this stuff."
End-user demand for energy-efficient equipment	▸	Slow increase	
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Slow increase	"As they use the products more, their comfort level goes up."

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	Education needed to help the message "stick"
Changes in state and local building codes and regulations	DK	
Changes in federal building codes and regulations	DK	
Rising energy prices	3	Makes people more interested in keeping their consumption down.
Environmental concerns of commercial and	N/A	

industrial customers

Improvements made in energy-efficient products	4	Aesthetic improvements allow these fixtures to be used in churches
Reductions in the prices of energy-efficient products	3	
Your own efforts to market energy-efficient systems	5	"All their demand comes from my efforts."
Utility educational / informational programs	DK	

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	DK
Availability of credible/reliable information	DK
Availability of information that is convenient to obtain	4
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	5

End-user Information Sources

The respondent stated that all of his customers' information came directly from him. Therefore, he was unable to comment on the informational efforts of other entities (utilities, etc.).

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to educate the correct people within each industry.

"It doesn't do any good to educate if you don't reach the right people. You have to first

identify the decision-makers, and then come up with a clever way of getting your message to 'stick' to these people."

Beyond that, the respondent suggested that the manufacturers keep working on improving the aesthetics of efficient lighting equipment. That way, the lamps will achieve higher versatility, and become more accepted for a variety of applications.

Owner
Lighting vendor
12/5

Background information

- Lighting consulting/engineering
- Primary customers/clients: 1) institutional 3) commercial
- Employed by firm 1 year, in the industry 8 years
- Current title: Designer
- Business size: Between $500,000 - $1,000,000 annually in sales to non-residential market in Southern CA - represents roughly 35% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient lighting is the lack of knowledge among consumers. He feels this is due to a lack of information available to the public regarding efficiency.

> *"You go to Home Depot and the main thing they sell is metal halide lamps, but high pressure sodium is a much better light. It's annoying because all the streetlights are HPS, but then you have all the people that go down to Home Depot and pop these things in."*

He feels this has gotten better over the past 5 years, and that this trend is due partly to city codes which require certain levels of efficiency for lighting. In the next five years, he thinks people will become more energy conscious, and that will cause a greater demand for energy efficient lighting.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to increase	The products themselves are so much better than they were five years ago.
Acceptance of or confidence in energy-efficient equipment	▸ Increased Expected to increase	The product improvements drive higher confidence
Sales/promotion of energy-efficient equipment	▸ Increased	Higher confidence drives greater push for the products

Relative price differences between standard/energy-efficient equipment	▸	Decreased Expected to decrease	"When you look at the long-term its usually a push." The products are going to continue to cost less to make.
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to decrease	"It's usually pretty immediate now."
End-user awareness of energy-efficient equipment:	▸	Increased Expected to increase	More awareness of the environment. Still has a long way to go, though.
End-user demand for energy-efficient equipment	▸	Increased Expected to increase	
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Increased	Product improvements

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	"It's not everyone that can tap into that, because not everyone can afford to make the changes to trigger that. It's mostly the big customers that benefit."
Changes in state and local building codes and regulations	4	"When you make it mandatory, it makes it a lot easier to sell."
Changes in federal building codes and regulations	DK	
Rising energy prices	5	Makes efficiency more attractive.
Environmental concerns of commercial and industrial customers	4	People are always getting more concerned about this.
Improvements made in energy-efficient products	4	"The aesthetics have really improved."

Reductions in the prices of energy-efficient products	4	
Your own efforts to market energy-efficient systems	3	"We've had a little effect in our little corner of the world"
Utility educational / informational programs	2	Not enough direct contact.

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	3
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	4
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

1) Pamphlets from the utilities
2) Contractors
3) Professional colleagues

The only seminars the respondent is aware of are at fraternal organizations, and cited IES as an example of these organizations. His company regularly attends these seminars, and he feels they have a legitimate effect on end-user's equipment selection decisions.

> *"I can get a real tangible feel from a seminar. It burns into my memory, and that makes it easier to sell a customer on efficient equipment."*

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to

continue trying to spread the word about energy efficient lighting. He suggests including information with electric bills.

> *"If it's just a mass mailing, everyone throws it away, but if it's inside the actual bill itself, people read it."*

He mentioned a display that he saw at Home Depot, which included a meter where you could actually see how much wattage each bulb demands. He feels this kind of simple, direct approach makes people understand things.

> *"The more we keep it simple, the more we will get people to choose efficient lighting. Not everybody understands all the technical aspects, and they don't want to bother with it. It's like computers – if people don't understand them, they give up. You've got to really make it easy for people."*

Owner
Lighting vendor
12/5

Background information

- Electrical contractor
- Primary customers/clients: 1) industrial, 2) institutional 3) small commercial
- Employed by firm 20 years
- Current title: Owner
- Business size: Between $100,000-$500,000 annually in sales to non-residential market in Southern CA - represents roughly 15%-20% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased use of energy efficient lighting is the cost of the actual switch-over. Also significant barriers are customer awareness/knowledge and price, both of which he feels have gotten more significant over the last 5 years. In addition, the respondent noted that time is a big barrier in today's society.

"With the current downsizing, facilities people are already overloaded without worrying about efficiency. These people simply don't have the time to look into new products, even if they will save money."

On the municipal side, the respondent noted an additional barrier, in that all cities have codes and regulations that denote which fixtures can be used, particularly for outdoor lighting. He feels these codes and regulations have not caught up with efficient lighting technology.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	Increased Expected to increase	More information out there regarding efficient lighting
Acceptance of or confidence in energy-efficient equipment	Same	It has always been a good option
Sales/promotion of energy-efficient equipment	Same	Feels his company has always tried to "plant the seed" for efficient lighting

Relative price differences between standard/energy-efficient equipment	▸	Decreased Expected to decrease	Increased manufacturer emphasis on efficient fixtures, and competition
Delays in obtaining energy-efficient equipment	▸	Decreased Expected to decrease	Multitude of manufacturers dedicated to this kind of technology
End-user awareness of energy-efficient equipment:	▸	Increased among large business, decreased among small business Expected to continue this trend	Information is targeted towards big business, rebates (no longer available) are targeted towards small businesses
End-user demand for energy-efficient equipment	▸	Increased among large business, decreased among small business Expected to continue this trend	Information is targeted towards big business, rebates (no longer available) are targeted towards small businesses
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Slight increase	Product improvements

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	4 or 5	When they were available, SCE's rebates for high pressure sodium lamps were very effective in increasing demand among businesses.
Changes in state and local building codes and regulations	4	This has had a lot to do with the increased demand for efficient lamps.
Changes in federal building codes and regulations	DK	
Rising energy prices	2	Prices have remained fairly stable for some time

Environmental concerns of commercial and industrial customers	4	Only for large companies – smaller companies do not care about these kinds of concerns.
Improvements made in energy-efficient products	1	No effect
Reductions in the prices of energy-efficient products	1	No effect
Your own efforts to market energy-efficient systems	3	Disappointed that lighting manufacturers haven't promoted their products very much.
Utility educational / informational programs	5	Train people at all levels, and it will "trickle down" to the end-user.

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	3
Availability of credible/reliable information	4
Availability of information that is convenient to obtain	4
Availability of information at a low cost	5
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	2

End-user Information Sources

1) From utility programs - Respondent noted that when Edison did energy shows, there was a very high attendance from facility managers.
2) From manufacturers literature, product spec's. These are not as effective because they are not considered "objective."
3) Trade journals
4) Federal Government programs (Greenlights) - Only targeted to large companies.

The only seminars the respondent is aware of are at CTAC, and some of the larger wholesale distributors. He has participated in both of these activities, but felt that the CTAC seminars had the largest influence on end-user decisions. He rated the CTAC seminar's influence as a 5 out of 5, because they are more objective, and affect a better target audience than the distributor seminars, which he gave a 2/5.

Respondent suggestions for expanding market / increasing demand

The respondent felt that the best way to expand the market for efficient electric equipment is to continue programs like those at CTAC, and begin an ad campaign regarding efficient lighting equipment via television. He felt that this would increase demand on the residential side, which would in turn influence demand on the non-residential side. Also, he suggested that direct mailings from utilities could help, especially if the mailings were included with electricity bills.

Vice President Operations
Large lighting vendor
12/4/97

Background information

- Electrical contractor located in Paramount, CA.
- Primary customers/clients: 1) schools/municipalities, 2) property management, 3) other C/I . No residential customers.
- Current title: VP of Operations - 7 years, but been in industry for 21 years.
- Business size: 2.5 million/year in lighting sales to non-residential market in Southern CA - represents roughly 60% of total annual business volume (other 40% is in Northern CA).

Perceived barriers

On the municipal side, the respondent feels that the most substantial barrier to increased use of energy efficient lighting equipment is budget constraints. Most school and municipality budgets are structured such that they favor low up-front costs, not long-term investments like energy efficient fixtures. This barrier is becoming somewhat less significant as the cost of efficient equipment comes down, but remains a major obstacle.

On the C/I side, the respondent stated that the most significant barrier to increased use of energy efficient lighting equipment is customer awareness. Many of these businesses do not have the time to look into energy efficient technologies themselves. This barrier is getting less significant as efficient fixtures become more affordable.

> *"Five years ago, electronic ballasts and T-8 lamps were pretty darn expensive, and compact fluorescent fixtures were very expensive. Now you're only talking about a couple bucks more, so more people are willing to [buy more efficient equipment]. Efficiency always made sense, but it makes even more sense now."*

This respondent believes that customer willingness to invest in energy efficient lighting equipment is increasing as the economy prospers. A greater sense of security among businesses naturally leads to energy choices that are sound over the long-term. This makes it much easier for vendors to sell the efficient equipment.

> *"We're trying to convince businesses that there is nothing they can sell or make or do that gives them a better guaranteed return on their investment than energy efficiency investments."*

According to this respondent, the rebates offered by utilities in the last few years caused more problems then they did good. He believes rebates made people "do the right thing for the wrong reason," and once the rebates were discontinued, people went right back to buying standard

fixtures because they never understood the message of the rebates.

The respondent felt that perhaps deregulation was going to make it more difficult to sell efficient lighting, since it will result in longer payback periods. However, since utility costs are coming down also, he feels paybacks should still be within 1 to 2 years for most systems.

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Same Not expected to change	Company focus, from the beginning, was to focus on efficient products
Acceptance of or confidence in energy-efficient equipment	▸ Same Not expected to change	Company always had confidence in efficient equipment
Sales/promotion of energy-efficient equipment	▸ Same Not expected to change	Company was one of the first Greenlights allies in the state.
Relative price differences between standard/energy-efficient equipment	▸ Decreased Expected to continue to decrease	Increased manufacturer emphasis on efficient fixtures, and competition
Delays in obtaining energy-efficient equipment	▸ Decreased Expected to continue to decrease	Increased manufacturer emphasis on efficient fixtures, and competition
End-user awareness of energy-efficient equipment:	Same Expected to stay same	Lack of information
End-user demand for energy-efficient equipment	▸ Slight increase Expected to continue to increase	Lower costs for efficient equipment
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸ Slight increase Expected to continue to increase	Product improvements

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	3	Have had positive and negative effects, which cancel each other out.
Changes in state and local building codes and regulations	DK	
Changes in federal building codes and regulations	DK	
Rising energy prices	4	This makes the investment that much more attractive
Environmental concerns of commercial and industrial customers	2 - C/I 5 - Mun.	Schools/municipalities are more concerned. Most business customers don't care
Improvements made in energy-efficient products	5	"By making new products, you get people interested"
Reductions in the prices of energy-efficient products	5	"This makes the investment that much more attractive"
Your own efforts to market energy-efficient systems	3	Company feels they are on the front end of pushing efficiency
Utility educational / informational programs	3	Feels it is difficult for small- to medium-sized businesses to justify the cost of sending someone to a seminar

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	RATING
Availability of impartial/objective information	3
Availability of credible/reliable information	3
Availability of information that is convenient to obtain	3
Availability of information at a low cost	1
Availability of comparable technology choices with similar costs	2
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent did not know where customer received their information regarding energy efficient lighting options. "Sometimes I think they don't get information anywhere." The only seminars he is aware of are from CTAC, the gas company, and manufacturer training for distributors. He has participated in all of these activities, and rated their influence on end user equipment selection decisions as a 4 out of 5.

Respondent suggestions for expanding market / increasing demand

The respondent feels that the market for efficient lighting equipment can be expanded through joint efforts on behalf of the manufacturers and utilities. He feels they must approach the customer continuously from different angles, and with different media.

> *"Light bulbs are a commodity in everybody's minds, but efficient light bulbs are an investment. Attacking that gap in perception is the key to increasing customer demand."*

Branch Manager
Lighting Vendor
12/16/97

Background information

- Electrical Contractor
- Primary customers/clients: Commercial and Industrial
- Employed by firm 16 years
- Current title: Branch Manager -- 3 years in position
- Business size: Approximately $500,000 annually in sales to non-residential market in Southern CA - represents roughly 5% of total annual business volume.

Perceived barriers

The respondent feels that the most significant barrier to increased institutional use of energy efficient lighting is the initial capital expenditure.

> *"The payback is running 1 to 2 years now, which is not an acceptable payback period for many customers."*

The barrier is less extreme now than it was five years ago, as people realize the benefits of efficient lighting equipment. "But there will always be stubborn, illogical people."

Influential Factor dynamics

INFLUENTIAL FACTOR	CHANGE OVER TIME	EXPLANATION
Awareness of and interest in energy-efficient equipment	▸ Increased Expected to stay the same	More information available
Acceptance of or confidence in energy-efficient equipment	▸ Increased Expected to increase	Product improvements
Sales/promotion of energy-efficient equipment	▸ Increased Expected to Increase	We've taken on a lighting specialist, and that has helped dramatically. They can do the side-by-side comparisons for the customer, and that has made a huge difference."

Relative price differences between standard/energy-efficient equipment	▸	Decreased DK future	"Makes it a lot easier to sell the [efficient] stuff"
Delays in obtaining energy-efficient equipment	▸	Decreased slightly DK future	Fluorescent ballasts still have some delay problems. This has not affected people's decisions much, though.
End-user awareness of energy-efficient equipment:	▸	Slow increase	Customers need to become more aware
End-user demand for energy-efficient equipment	▸	Slow increase	Still not much real "demand" or customer side push for efficient equipment
End-user acceptance of, or satisfaction with, energy-efficient equipment	▸	Same	"We've never had a problem with satisfaction with efficient equipment."

Theoretical Factor Influence

THEORETICAL FACTOR	RATING	EXPLANATION
Creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	2	"The rebates were a big incentive and they helped us. They gave customers that little final "push" to choose efficient lighting. But they did not have much lasting impact on the market."
Changes in state and local building codes and regulations	4	"This is what you've gotta use"
Changes in federal building codes and regulations	4	
Rising energy prices	5	Makes the payback period shorter
Environmental concerns of commercial and industrial customers	1	"Sad to say, but none of our customers care about this."
Improvements made in energy-efficient products	3	

Reductions in the prices of energy-efficient products	4	Affects payback
Your own efforts to market energy-efficient systems	4	
Utility educational / informational programs	2	"I haven't seen anything lately. Not since the rebates."

Factors of influence on end-user equipment selection decisions

The respondent indicated how influential each of the following factors has been (and will continue to be) on the ultimate end-users' equipment selection decisions.

FACTOR OF INFLUENCE	**RATING**
Availability of impartial/objective information	3
Availability of credible/reliable information	2
Availability of information that is convenient to obtain	4
Availability of information at a low cost	2
Availability of comparable technology choices with similar costs	4
Customer's knowledge/sophistication in comparing technology choices	4

End-user Information Sources

The respondent feels that the most frequent information source for customers regarding energy efficient lighting options is through lighting manufacturers' reps and local distributors, and then through the utilities.

The only seminars the respondent is aware of are put on by his own company for end-users. He could not comment on the effect that the programs have, because they result in sales, but they usually are "preaching to the choir" – in other words the customers that show up to the seminars are the ones who already know the benefits of efficient lighting. Still, he rated the seminar's influence on end-user equipment selection decisions as a 3 out of 5.

Respondent suggestions for expanding market / increasing demand

The respondent suggested that the best way to expand the market for efficient lighting products

would be to identify and target effectively the decision-makers in all types of companies.

> *"Send these customers direct mailing that looks really important. The first line of the mailing says 'how would like to save your company 30% on your energy cost? Call this number now for quick information, and we'll send you $100 just for calling.'"*

> *"Education is great, but if it doesn't effect the decision-maker in some way, it doesn't amount to much."*