C&I Lighting Market Assessment
CAC January 13, 2010

EnergyTrust of Oregon

Study Information

- Study period: June 2009 – August 2009
- Contractor: Heschong Mahone Group

Background

- Last regional C&I lighting market study in 2000
- Higher free rider rates in EB program
- Market transformation hypothesized in some lighting markets
- Major changes in codes and standards
- 43% of total commercial electric load is lighting (~526 aMWs).
  - 35% of electric load for buildings with electric heat
  - 60% of electric load for buildings with is gas heat

Methods

- Review of Existing Studies :
  - 1998 and 2002-2004 New Construction
  - 2002 and 2007 Existing buildings
  - 6th Power Plan
  - 2000 C&I Lighting Market Assessment
  - Other national and regional market studies
- Surveys/interviews of C&I lighting market actors

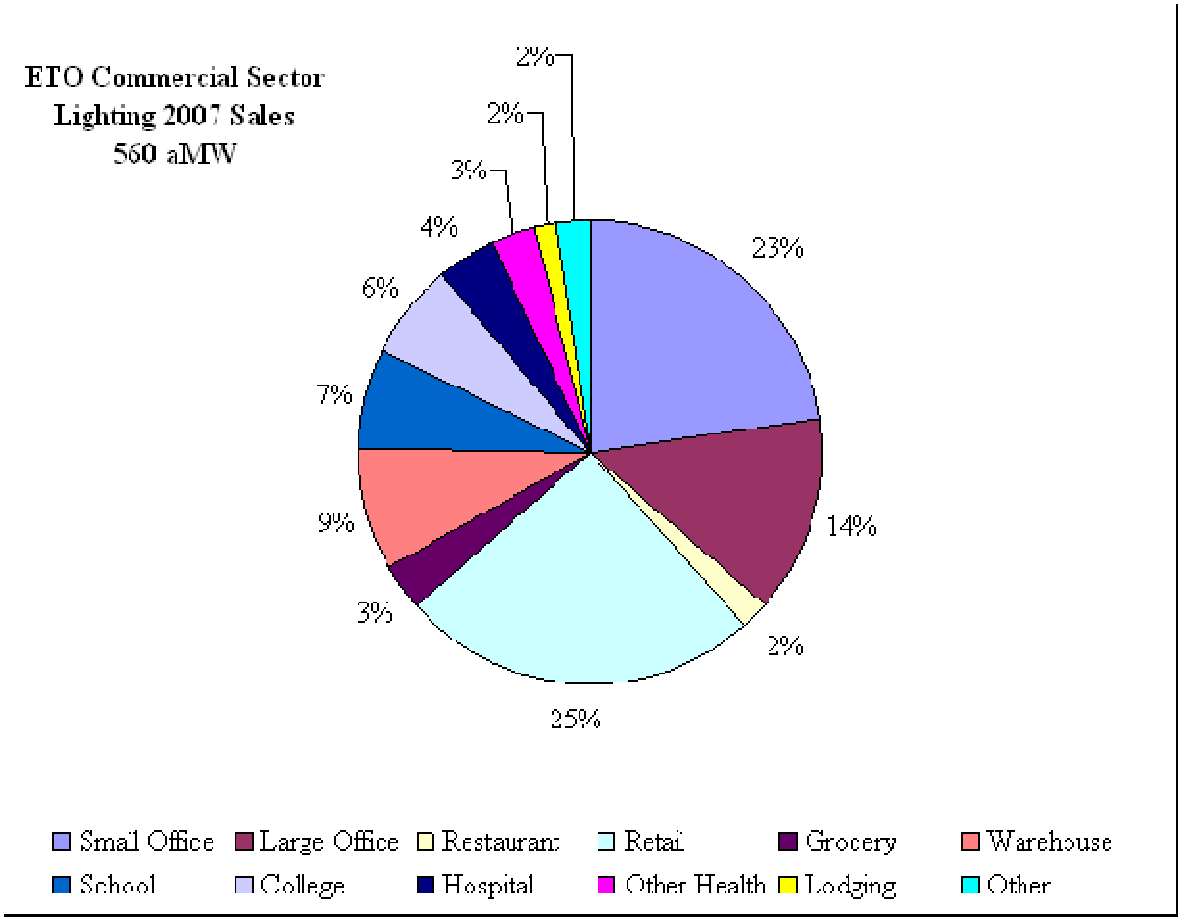
INTERVIEWED GROUPS	GOAL	INTERVIEWED
Energy Trust and Program Staff	6-9	6
Contractors and Distributors	45	59
Designers	15	16

EnergyTrust of Oregon

Energy Trust Program Impacts

- Energy Trust has had an impact on the market reducing lighting energy consumption in the nonresidential sector by ~ 4%
- A large segment of the market actors consider Energy Trust as having influenced the adoption of high performance T8s
  - 55% Energy Trust “major influence”
  - ~25% Energy Trust “most important”
  - Only 2% believe Energy Trust had no influence
- HP T8’s ~25% of the market for new fluorescent lighting

Oregon Lighting Electricity Use by Building Type 2009



EnergyTrust of Oregon

CBSA 2007 Oregon Lighting Technology by Existing SQFT

Lamp Type	Total
Fluorescent T12	17.0%
Fluorescent T8	51.0%
Fluorescent T5	5.0%
Fluorescent Other	9.0%
LED	0.0%
Incandescent	10.0%
HID	5.0%

Program Retrofit Opportunities

- 17% of commercial lighting is T12
- 2012 phase out of T12s will provide Energy Trust a big opportunity
- Buildings built prior to 1994 have larger share of T12s (~27%)
- Changes in code will require more efficient halogen IR lamps

Controls in Existing Buildings also Offer Opportunities

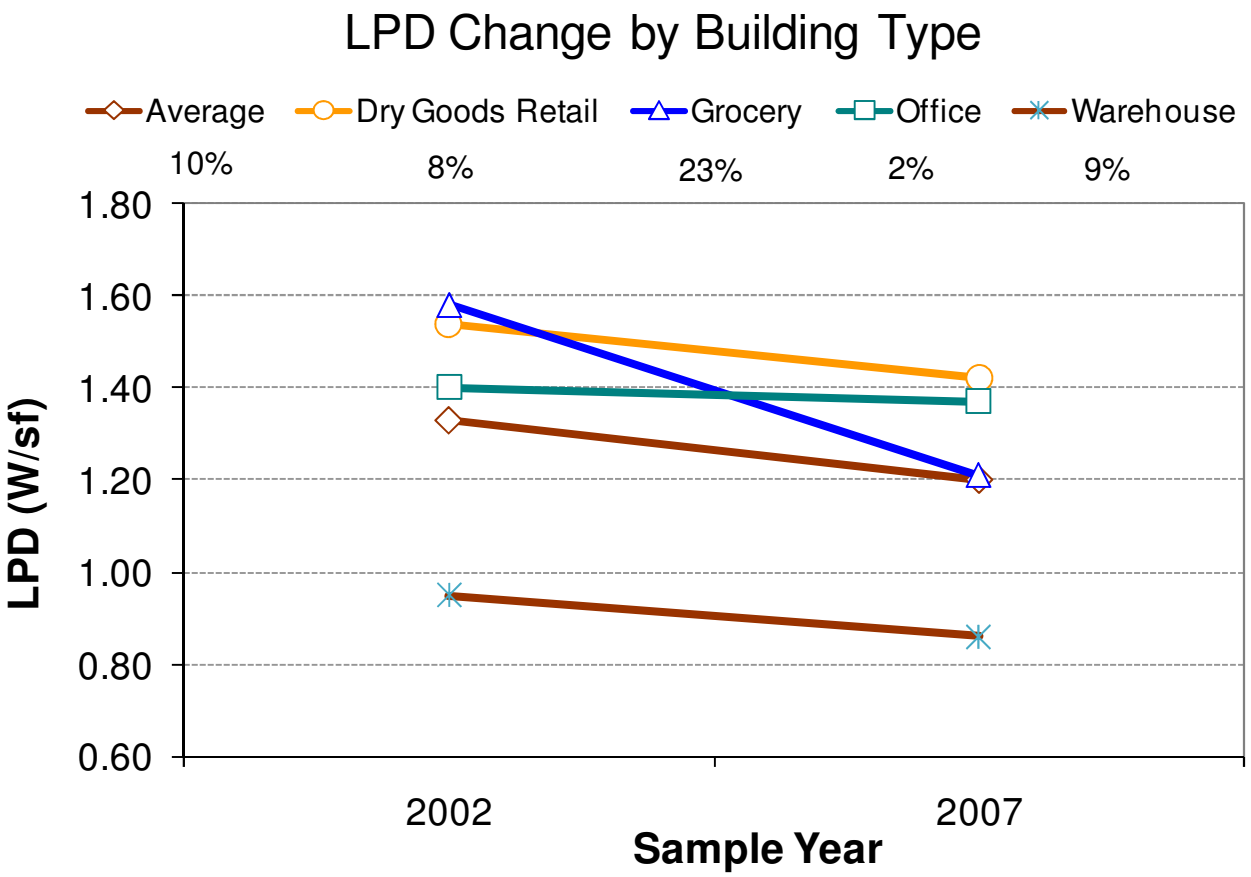
Control Timeclock (On/Off)	**14%**
Control EMS	**14%**
Control Occupancy Sensors	**17%**
Control On/Off Switch	**80%**
Control Dimmer/Daylighting	**7%**
Control Other	**2%**

EnergyTrust of Oregon

Controls Used in Retrofit Projects

Multi-level manual switches (“bi-level”)	Manual dimming controls	Occupancy sensors	Timeclock control	Daylight harvesting
21%	9%	58%	11%	4%

Oregon LPD Change from 2002-2007



EnergyTrust of Oregon

New Construction

- Code making major inroads pushing LPDs
- Some opportunities in improving code
- Code change in 2007 improved LPDs by ~18% over 1998

New Construction, Fluorescent Lamp Changes from 1998 to 2004 (% of lighting watts installed)

State	T12	T5	T8	T8 High Performance	Other Fluorescent
Oregon '04	0.6%	19%	79%	2%	0.1%
Region Average '04	2%	12%	84%	2%	0%
Region Average '98	10%	0%	88%	0%	2%

EnergyTrust of Oregon

Ballasts: New Construction

State	Dimmable Electronic	Efficient Magnetic	Electronic	High Performance Electronic
Oregon '04	3.5%	0.5%	95.6%	0.5%
Region Average '04	6.7%	0.9%	91.3%	1.1%
Oregon '98	3.3%	10%	86.7%	0%
Region Average '98	1.8%	14.4%	83.8%	0%

EnergyTrust of Oregon

Controls in New Construction

State	Sweep	Lighting EMS	Daylighting	Occupancy	Multi-level Switching
Oregon '04	34%	32%	18%	53%	38%
Region Avg '04	37%	34%	18%	47%	39%
Region Avg '98	9%	0%	4%	5%	0%

EnergyTrust of Oregon

Market Actor Findings

- Market actors provide a diverse group of services:
  - Lighting design/specification (>70%)
  - Lighting installation (>60%)
  - Lighting maintenance service (>50%)
  - Selling lighting equipment (retail >40% and wholesale >30%)

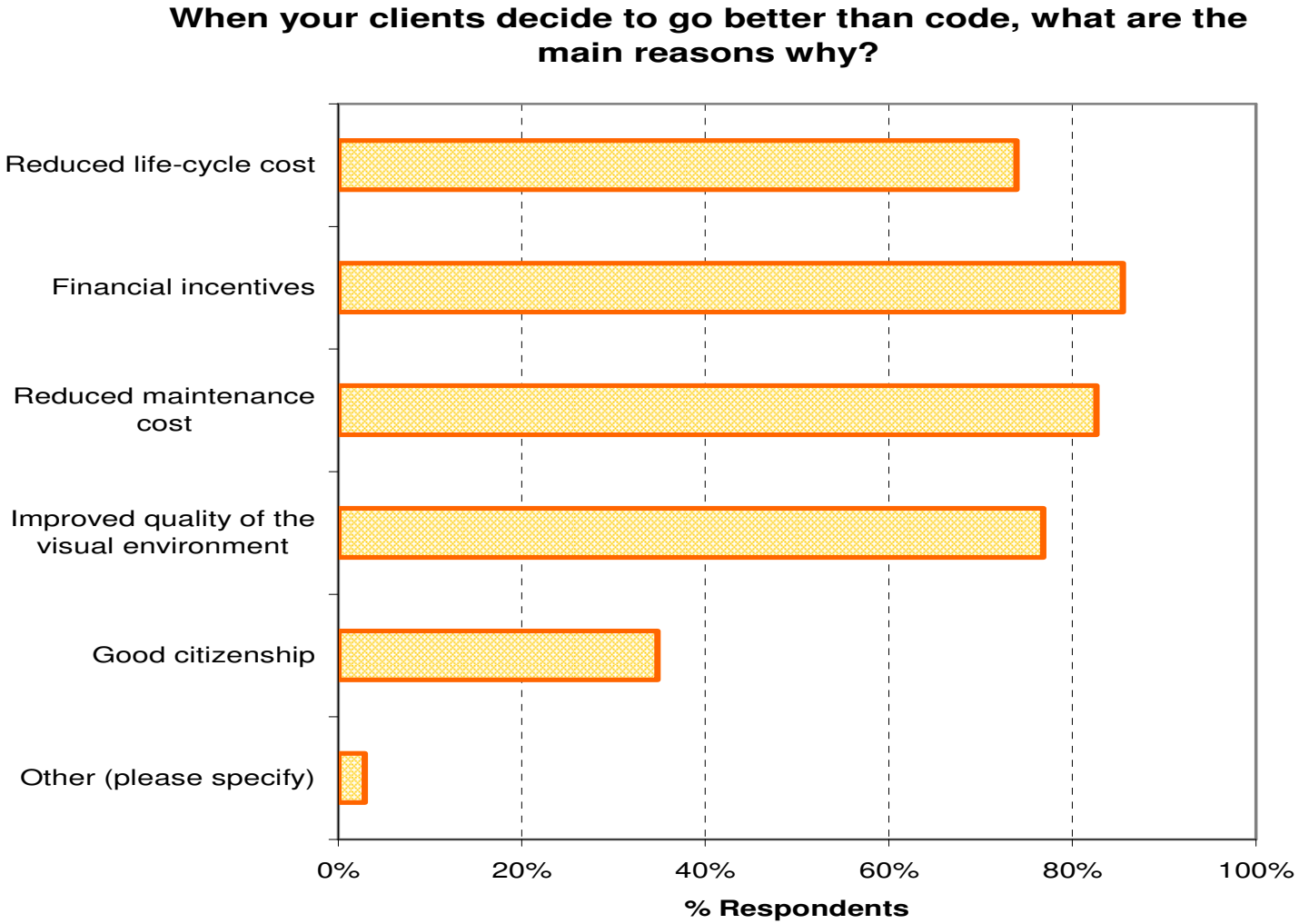
Market Actor Findings 2

- Major source of training on lighting provided by manufactures.
- Major source of information :
  - Manufacturers
  - Trade journals
  - Professional associations

Going beyond code

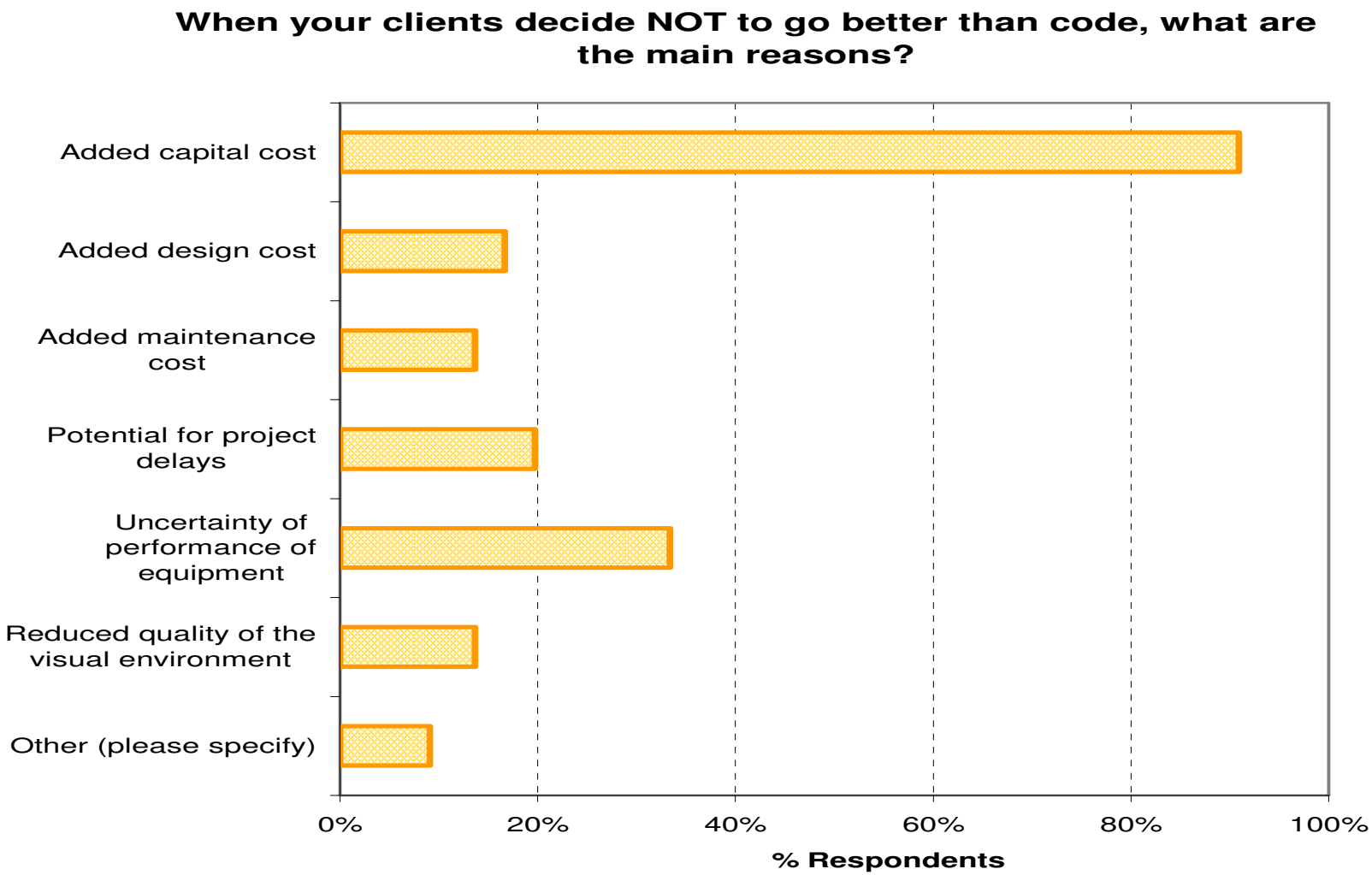
- Contractors discuss taking projects beyond code with their clients on over half (56%) of their projects (just over 20% always discuss it)
- Over 69% of the projects end up being better than code

Reasons for going beyond code



Energy Trust of Oregon

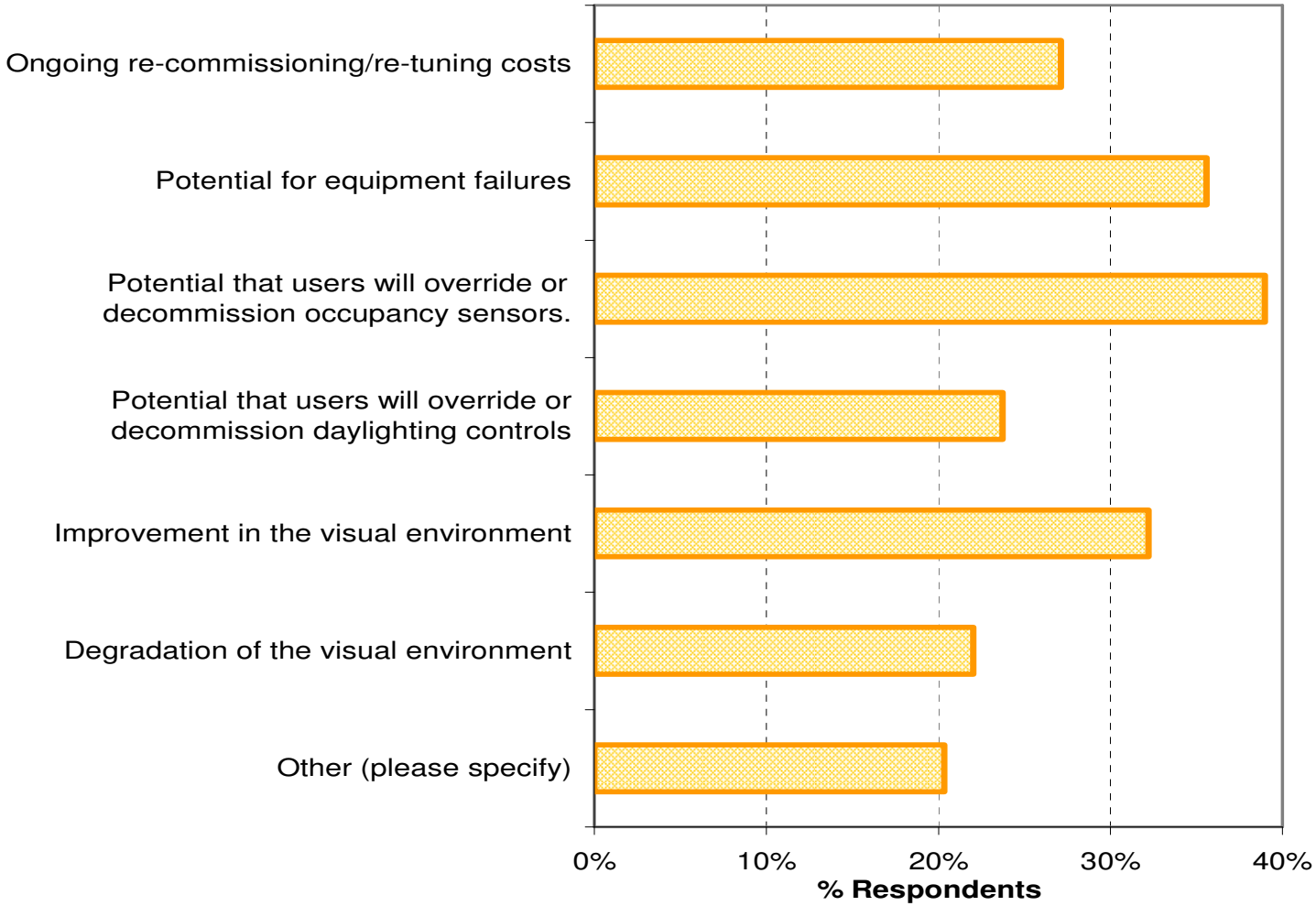
Going beyond code 4



Energy Trust of Oregon

Controls

When you're discussing the use of lighting controls with clients, which of the following issues can make or break the client's decision to specify or purchase the controls?



yTrust of Oregon

Study Recommendations

- T12 turnover is a large opportunity that Energy Trust should plan for
- Now that daylight controls are more prevalent, Energy Trust should ensure that trade allies and others are designing and installing controls effectively.
- Energy Trust should discuss with Trade Ally Network members how frequently they check lighting designs against code and IESNA requirements, to determine whether there are training opportunities to improve their professional practice.
- Energy Trust should explore opportunities to work with manufacturers or learn from their methods in providing information.
- LPDs in next code could easily be improved for some of the building types