



For Businesses



For Homes



Renewable Energy



For Trade Allies



About Us

EnergyTrust of Oregon

Year of the Control

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Why Lighting Controls?

- Existing Buildings – commercial retrofit program
 - savings from lighting 2002 – 2007
 - 52% average of annual savings
 - 14 million kWh/yr
 - not many projects using controls
- More savings, more savings per project
- Expand delivery channels – involve control companies
- Established delivery channels
- Straightforward implementation

What did we do?

- Focus Group – Lighting Control Companies
 - Engaged control companies to shape effort
 - Focus program on controls
 - Raise incentives
 - Add equipment
 - Provide training
- Measures / Tracking
 - Increased incentives for existing controls
 - Occupancy sensor (ceiling, 180+ watts) - \$50 to \$75
 - Occupancy sensor (wall, 90+ watts) - \$20 to \$75
 - Added new controls and incentives
 - Fixture mounted occupancy sensor - \$50
 - Custom lighting controls – \$0.15/kWh, 30% of project cost, min 25% savings

What did we do?

- Training

- Staff – review projects for controls, consistently ask if controls were considered/included
- Lighting Trade Allies - developed + conducted “Hands on Controls Training“ in Portland + Eugene
 - Approved for continuing education credits - Oregon Building Codes Division, Chief Electrical Engineer
 - Mini-trade show, “hands on” design exercises
 - Roughly 100 attendees at each training

- Project Intervention

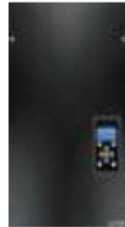
- Question every project about controls
- Explore control opportunities at every field visit

Sample Training Slides

Don't stop at lighting alone!



- Occupancy sensors
- Relay panels
- Daylight harvesting systems
- Addressable systems
- Wireless




west Trade Ally Network
Commercial & Industrial Lighting

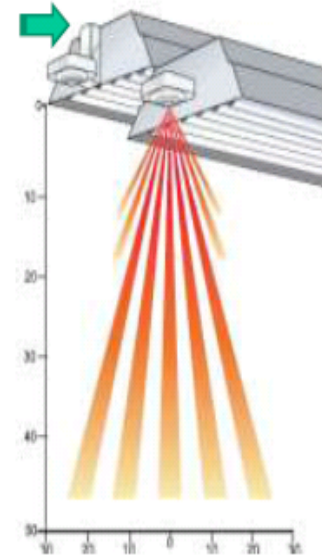



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Huge results with fixture mount sensors!

Things to consider:

- Infrared
- Activate photo cell option (who's in charge)
- View – masking kits or rotating adjustments
- Height
- Mounting brackets
- Timing
- Bi-level
- Alternating relays (extend luminaire lamp life)
- Order with options




Northwest Trade Ally Network
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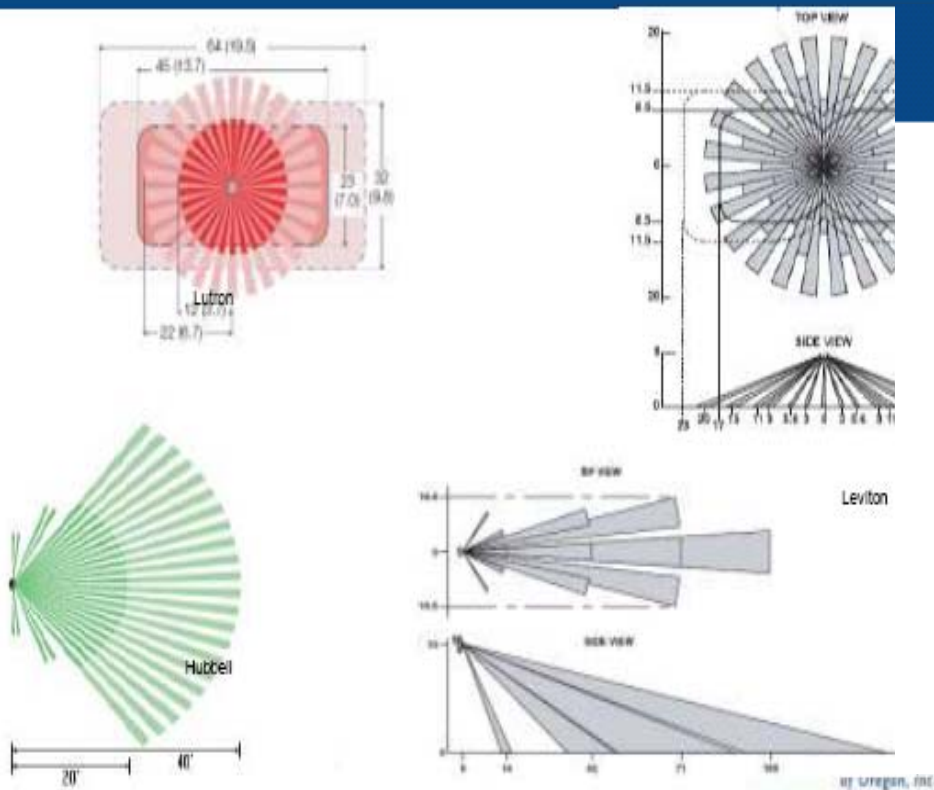


Sensor Switch


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Sample Training Slides

Sample coverage diagrams



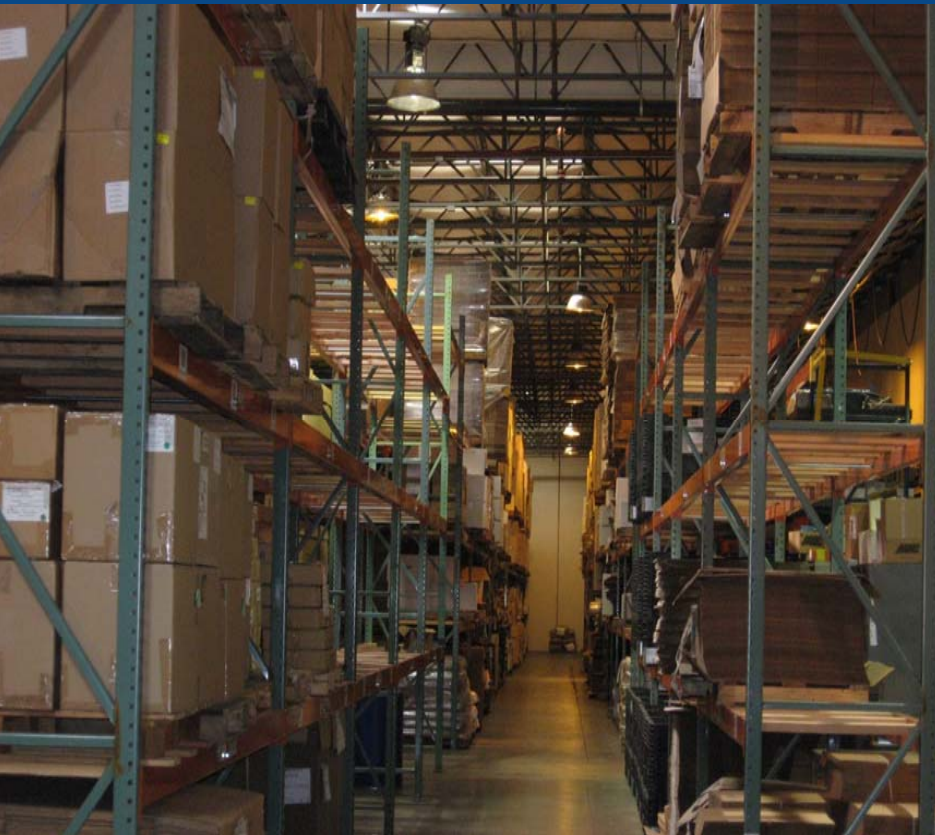
So one more time, why controls?

- **More value to customers**
 - More cost savings = \$ (energy + maintenance)
 - Meets sustainability or green goals
 - Differentiates (sophistication + security benefits)
- **More value to contractors**
 - More revenue (based on more value)
 - More projects (controls only)
 - Differentiates (sophistication + options)

Project Profile - Manufacturer – 24/7

- Replace
 - 1000-w metal halide luminaires
 - 400-w metal halide luminaires
 - 400-w HPS
 - T12 lamps + magnetic ballasts
- Install
 - 6 lamp T5HO luminaires – 15 controlled by daylight harvesting system (35% savings)
 - 4 lamp T5HO luminaires – fixture mounted occupancy sensors (25% savings)
 - High performance T8 lamps + electronic ballast
 - Wall + ceiling occupancy sensors - offices, restrooms, lunch rooms, training rooms (25% savings)
- No control measures on original proposal
- Control added an additional 47,997 kWh

Project Profile - Manufacturer – 24/7



- Warehouse 400 HPS and metal halide 10 foot-candles in aisles

- Warehouse with new 4-lamp T5HO with integral occ sensors. Light level readings, 35 foot-candles.

Results

- Staff trained + knowledgeable enough to engage every project about controls
- Lighting control companies – engaged
- Nearly 200 lighting trade allies trained

Results

- 2007
 - 7,200 controls installed (excludes 3,500 controls installed at 2 very large warehouses)
 - \$294,000 incentives
 - 2.6 million kWh
 - Cost - \$0.11/kWh
 - Levelized cost - \$0.014/kWh (10 yr life)
- 2008
 - 13,400 controls installed – 187% increase
 - \$600,000 incentives – 204% increase
 - 4.0 million kWh – 152% increase
 - Cost - \$0.15/kWh – 134% increase
 - Levelized cost - \$0.020/kWh (10 yr life) – 137% increase

	2007	2008
Ceiling	6,505	8,183
Fixture	0	2,924
Wall	717	2,130
Custom	0	239
Total	7,222	13,476

Evaluation of Savings

- Pre/post install inspections
 - Any project receiving incentives over \$5,000
 - Visual inspection of installs and operation of fixtures and controls verified
- Quality control inspections
 - Random sample of projects with incentives less than \$5,000 (about 10% inspected)
 - Get under the hood
- Evaluation – Realization Rates (custom/standard)
 - 2004 – 93.9% / 100.9% - lighting specific
 - 2005 – 103.8% / 91.5% - lighting specific
 - 2006 – 98.4% - all kWh
 - 2007 – 97.6% - all kWh
 - 2008 - TBD

Future – More Savings, More Projects

- Stay the course – continue focus on controls
- More trainings – expanding Hands on Control Training statewide
- The Economy
 - Preferred rate loans with Umpqua Bank – GreenStreet Lending, www.umpquabank.com/greenstreet
- Engage union/non-union electrical unions + shops
- Engage lighting equipment distributors/wholesalers

Questions?

- Thank you
- Contact info
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