

# Products & Practices for Big Lighting Savings

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ACI NW 2007

# Agenda

- Savings & Practices: My Ton, Ecos Consulting
- Practices & Products: Paul Williamson, Dolan Design



# Agenda

- Savings: Background on NW residential new construction market
- Efficient Lighting: Why builders should care
- Efficient Lighting: What are the options
- How to get started
- Where to get started
- Challenges
- Controls & Integration
- Disposal & Recycling



# Savings: Some Background

Overview of the NW residential new construction market

State	# of Permits
ID	15,331
MT	3,425
OR	21,094
WA	36,489
<b>Region</b>	<b>76,339</b>

Source: NEEA



# Savings: Background

Some characteristics of new NW homes

Total Heated Floorspace	% of Homes
600 to 999 sq.ft.	0.3%
1,000 to 1,599 sq.ft.	18.9%
1,600 to 1,999 sq.ft.	21.6%
2,000 to 2,399 sq.ft.	16.7%
2,400 to 2,999 sq.ft.	21.5%
3,000 or more sq.ft.	20.9%

Total Number of People	% of Homes
1	9.8%
2	40.6%
3	17.3%
4	20.0%
5	7.1%
6	4.2%
7	0.7%
8	0.3%
> 8	0.1%

Source: NEEA



# Savings: Background

Some more characteristics of new NW homes

Type of Residence	Fixtures		Lamps		Sample Size
	Average #	EB	Average #	EB	
Overall	48.94	2.13	77.09	2.72	604
Single Family Unattached (1 story)	42.76	2.88	68.39	3.96	206
Single Family Unattached (2 stories)	52.15	2.94	81.83	3.60	375
Single Family Unattached (3 or more stories)	65.46	11.09	96.85	14.14	15
Single Family Attached	27.45	2.53	45.48	2.29	8

Number of Lamps	Percentage of Homes (n = 604)	EB
1 to 20	-	-
21 to 40	6.8%	2.1%
41 to 60	30.2%	3.4%
61 to 80	27.1%	3.3%
81 to 100	16.9%	3.1%
>100	19.0%	3.3%

Source: NEEA



# Savings: Background

Characteristics  
of new NW  
homes – final point

Room	Watts	EB	Sample Size
Basement	376.2	77.4	35
Bathroom - 1	248.2	10.7	569
Bathroom - 2	270.2	15.6	355
Bathroom - 3	239.3	28.7	88
Bathroom- 4	180.0	0.0	1
Master Bathroom	464.3	20.8	604
Bedroom - 1	181.4	8.5	554
Bedroom - 2	177.6	8.6	473
Bedroom - 3	164.8	13.0	208
Bedroom - 4	195.1	29.2	50
Master Bedroom	275.1	14.4	604
Breakfast Nook	213.5	17.7	194
Closet	172.7	11.0	510
Dining Room	329.1	16.1	479
Family Room	319.4	27.4	278
Garage	374.4	22.5	543
Hall	528.9	29.4	598
Kitchen	502.3	27.1	598
Laundry Room	121.2	6.2	546
Living Room	358.5	27.3	512
Office	226.9	17.2	328
Other	258.8	42.1	180
Porch	249.9	21.0	527
Recreation Room	361.1	41.2	141
Whole House	4454.1	154.1	604

Source: NEEA



# Savings: Background

Let's do some math:

- 76,000 new homes per year
- 75 sockets per homes
- 5.7 million light bulbs per year!



# Savings: Background

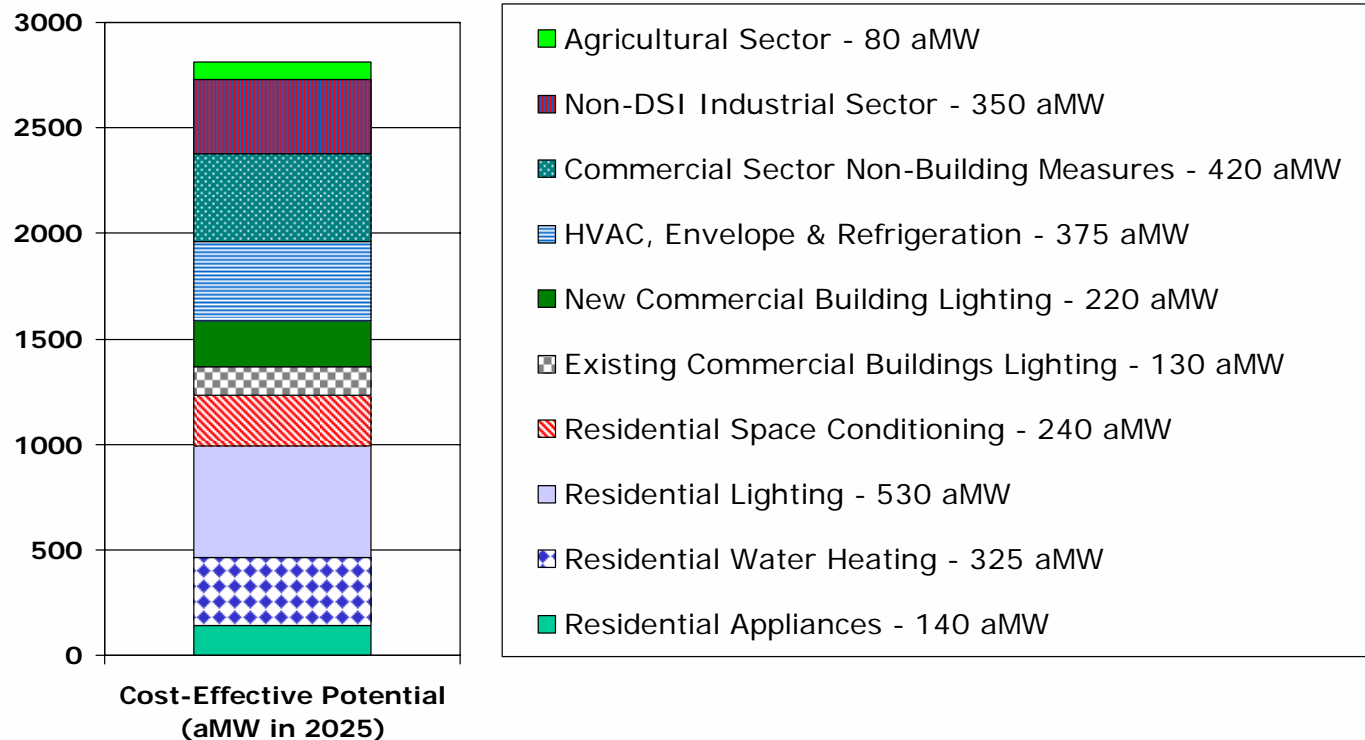
Let's do some more math:

- 288,389,657 kWh per year (at 2.3 hours per day for a 60W bulb)
- \$23,071,172 per year in consumer electric bill (at \$0.08/kWh)
- 418,165,003 pounds of carbon dioxide per year (at 1.45 lbs/kWh)



# Savings: Background

Lighting is a cost effective “resource”:



Source: NPCC



# Why Builders Should Care

- A more competitive market
- Incentives available to “do the right thing”
- Distinguish your homes from other builders



# Why Builders Should Care

- Title 24 in CA requires controls or high efficient sources in specific areas.
- NW ENERGY STAR Homes Program requires specific lighting packages
- Less than 10% new homes in Puget Sound Area have “energy-efficient” lighting



# Efficient Residential Lighting Is Not Yet The Norm

- Consumers are still not comfortable with CFLs
- Over 50% of utility customers in NW are still not using or aware of their efficient options.
- Only 10% of consumers surveyed were aware of CFL-based fixtures

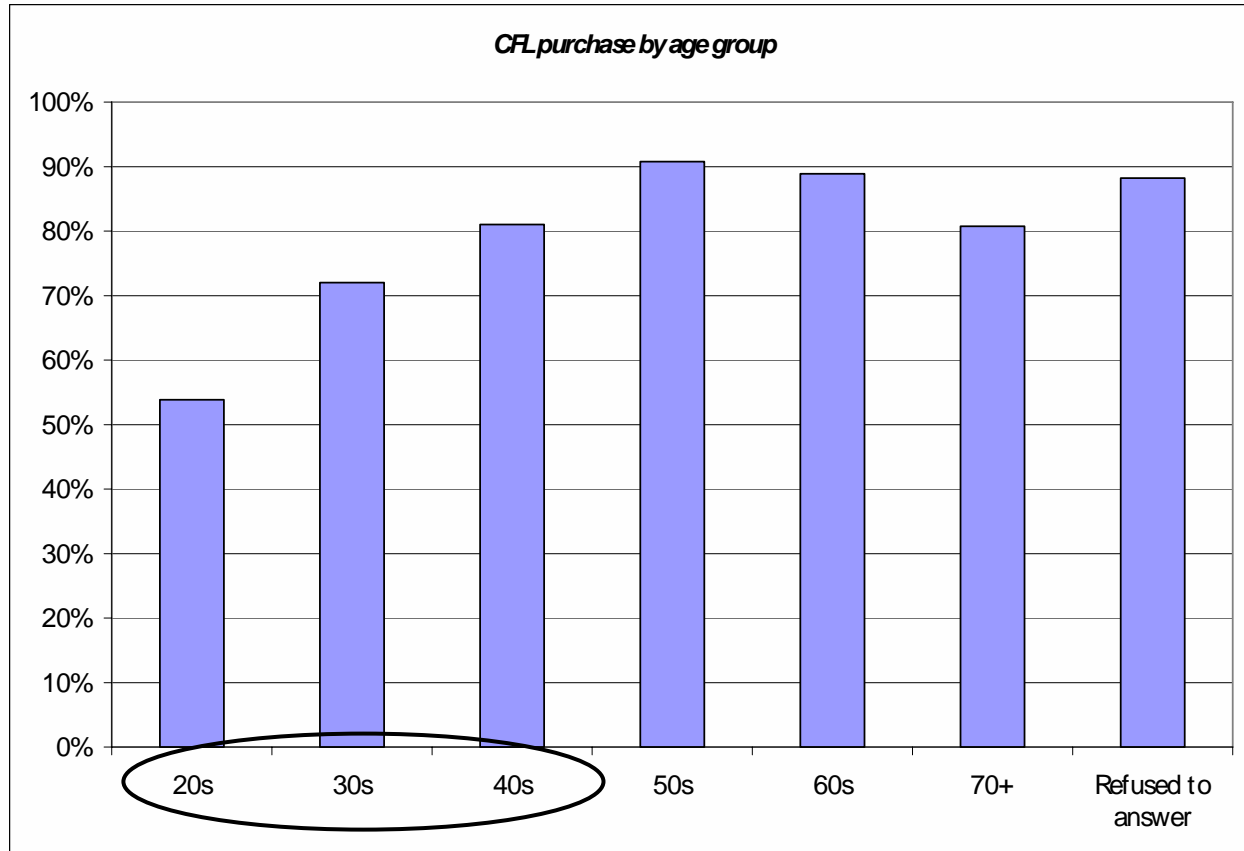


# Time is on Your Side

- CFL market penetration has increased dramatically
- ENERGY STAR® recognition higher than ever
- Decorative ENERGY STAR fixtures are now available from a number of suppliers
- Utility Programs in CA, NW, NE, and other regions focusing on new construction



# Time is on Your Side



# Your Efficient Lighting Options

- Use the off switch.
- Install CFLs in a limited number of locations
- Meet the NW ENERGY STAR Homes lighting requirements with CFLs
- Adopt the EPA's Advanced Lighting Package
- Consider efficient lighting designs & controls



# Limited CFL Installations

- Look for high-use areas:
  - Kitchen
  - Dining Room
  - Family Room
  - Hallways
  - Outdoor
- Use ENERGY STAR qualified products
- Match CFL wattage and color with incandescent equivalent.



# Meet the NWESH CFL Requirements

CFLs must be installed in 50% of a home's total sockets.

- **Step 1:** Create a lighting checklist or schedule
- **Step 2:** Select the locations to be outfitted with ENERGY STAR CFL lighting.
- **Step 3:** Install CFLs

Your ENERGY STAR Homes Northwest Builder Outreach Specialist is available to help





# Meet the ESHNW ALP Requirements

Install ENERGY STAR qualified fixtures in a combination of areas:

<i>Category</i>	<i>% ENERGY STAR Fixtures</i>
<b><u>High-Use Rooms</u></b> Kitchen, Dining Room, Living Room, Family Room, Bathrooms, Halls, Stairways	50%
<b><u>Medium-Use Rooms</u></b> Bedrooms, Den, Office, Basement, Laundry Room, Garage, Closets, and all other rooms	25%
<b><u>Outdoor Lighting</u></b> Affixed to Home, Free-standing Poles excluding landscape and solar lighting	50%
<b><u>Ceiling Fans</u></b> [Where Provided]	100%



# Consider Efficient Lighting Designs and Controls

## An 8-step Plan for Lighting Design

1. Decide which room will be "designed."
2. Decide upon the style and décor of the room.
3. Choose your decorative lighting and location.
4. Locate your tasks and illuminate them.
5. Locate the displays and illuminate them.
6. Determine if ambient lighting is needed.
7. Prepare and make lighting calculations.
8. Add switching and dimming as needed.

Source: from [www.lightingplans.com](http://www.lightingplans.com)



# So How Much Can a Homeowner Expect to Save?

More math:

- One 13W CFL at 3 hrs/day, 365 days/year can save \$4 at \$0.08/kWh
- At 30 sockets, this can mean \$120 per year
- For 76,000 homes, this can translate into \$9.1 million for the whole NW region.



# How to Get Started

Look to the NW ENERGY STAR Homes Program

- Incentives available from local utilities
- Clark, Tacoma Power, Puget Sound Energy, Seattle City Light, and Snohomish PUD have \$20/fixture incentive, as well as incentives for ENERGY STAR Homes
- EWEB, Energy Trust of Oregon have some retail support in Oregon
- There are also CFL incentives through a number of retail and wholesale locations.



# Where to Get Started

- Lighting showrooms in the Puget Sound area:
  - Alexander Lighting, Chuckanut Lighting, Crescent Lighting, Fishtrap Creek Interiors & Lighting, Lamps Plus Builder Division, Lighting Universe, Olympia Lighting Center, Pacific Coast Industrial Lighting, Pacific Lamp & Supply Company, Seattle Lighting, United Lamp Supply, Village Lighting
- Electrical Distributors in the Puget Sound Area:
  - CED, North Coast Electric, Wesco



# Other Developments to Note

- CFL dimming is much improved
- “Multiple Wattages” fixtures are now available
- The “GU-24” base is becoming more common
- More control options for efficient lighting



# Remaining Challenges

- Education
- Product development
- Controls & integration
- Disposal & recycling



# Remaining Challenges

Education...



# Remaining Challenges

Product development...



# Controls & Integration

- “Granite Countertop” effect
- Efficient sources not closely integrated
- Implications for LEDs



# Disposal & Recycling

- CFLs net emissions benefit
- Recycling infrastructure not widely available
- Recycling cost still an issue
- No Hg-free CFLs yet



# Questions?

Thank you for your interest!

