Oregon Lighting Market Assessment

Energy Trust of Oregon Lighting Market Assessment Project

HMG Project No: 0911

Date: December 15, 2009

Submitted to:

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1. EXECUTIVE SUMMARY

This study uses existing market research, interviews with industry experts, formal surveys of market actors, and comparisons with previous studies to create a 'snapshot' of the current state of the Oregon commercial and industrial lighting market. This study follows on from, and uses many of the same methods as, an assessment of the northwest lighting market conducted by the Northwest Energy Efficiency Alliance (NEEA) in 2000.

This study finds that energy-efficient lamps and ballasts, and especially lighting controls, have become much more widespread in the previous decade, across all commercial and industrial building types. Lighting power densities (LPDs) and energy use intensities (EUIs) have been reduced. However, these reductions have been offset by increases in building square footage, so the total amount of electricity used for lighting has remained approximately constant over the same period, i.e. no overall progress has been made in terms of energy use reductions.

The major changes to the market are as follows:

- "High Performance T8" (HPT8), introduced approximately five years ago, now makes up 25% of the market for new fluorescent lighting, and Energy Trust has played a major role in educating and transforming the market for these lamps and ballasts. New Federal requirements will make HPT8 mandatory by July 2012, at which point Energy Trust will no longer be able to provide incentives for this technology. We do not recommend that HPT8 incentives be discontinued immediately, but Energy Trust should consider for how much longer they should be provided (especially in new construction) and should consider what technologies or approaches may replace HP T8 as being eligible for incentives.
- Lighting controls have been adopted very rapidly by the market since 2002, and the quantitative data analyzed in this study suggests that the reduction in energy use due to controls may be as much as the reduction due to LPD changes over the past decade. Market actors have a fairly high degree of confidence in the performance of controls, which may be due in part to Energy Trust's recent focus on controls. Although there are no fundamentally new types of controls becoming available, the recent introduction of lower cost wireless controls may soon open up a large retrofit market for controls if costs are brought down to the right level. Although incentive programs are unlikely to help reduce these costs, they could speed up the introduction of wireless controls once the price is within range.
- However, controls require more education on the part of the designer and installer to achieve successful design, installation, commissioning and continued operation. Energy Trust should continue to work with trade allies to maximize effectiveness of the controls that are being installed (i.e., extend the "Year of Controls" effort), and should consider working together with lighting controls manufacturers to enhance the effectiveness and reach of training.
- Due to new Federal rules, most T12 lamps will no longer be sold after July 2012. Because T12 ballasts mostly cannot be directly retrofitted with T8 lamps, many buildings will be retrofitted with either new ballasts or new luminaires in the years and months leading up to and beyond 2012. Because T12s still account for 17% of the existing

lighting market, this will create a large opportunity for energy savings, and for Energy Trust to influence how the market responds to this change. If end-users or lighting services companies undertake to simply change T12s "one for one" for new, more efficient T8s, many spaces may be either overlit or underlit, and savings may be missed even though the new luminaires are more efficient than the old ones. Similarly, if opportunities to install controls are not taken, savings will be missed. Trade Allies are likely to be a valuable resource in optimizing lighting in spaces in which T12 changeouts will occur, and in proactively identifying those spaces as far in advance of 2012 as possible.

- Similarly, the new Federal rules will require more efficient (halogen IR) incandescent lamps to be used, rather than regular PAR lamps or A-lamps. There is a similar danger that if facilities managers change their old lamps for new lamps, they will choose lamps of a similar wattage to what they had previously, and will therefore be overlighting their spaces and failing to achieve savings. Because lamp changes for these lamp types are mostly done by the end-user's own staff rather than by a contractor, the Trade Allies may not be able to help in the majority of cases, and some other outreach, possibly directly to large retailers or via utilities to small retailers, may be effective. Self-ballasted CMH lamps are becoming widely available in a variety of wattages, and Energy Trust should consider whether and how to transform the market (especially the retail market) toward these lamps or toward LEDs.
- Although LPDs and EUIs have come down in retail lighting as much as (or more than) in other building types, actual installed LPDs (in aggregate) are still less than are allowed by Code. This is not the case with other building types, and it suggests that the potential exists for significant savings by tightening code requirements for retail.
- T5 has become the dominant lamp type for new construction in warehouses and industrial buildings, displacing high intensity discharge lamps. This is appropriate given its high efficacy and its photometric suitability for the task, but high output T5 (T5 HO) is also commonly used, and is less efficient than regular T5, so Energy Trust should review the use of T5 HO and consider whether regular T5, HPT8 or newer, more efficient HID lamps can be encouraged where possible.
- Many members of the trade ally network are highly proactive in encouraging their clients to conduct lighting retrofit projects, and become involved in the choice and layout of light fixtures, but most trade allies have not received formal training in lighting design (e.g., LC certification or IESNA "ED" courses), which might help them to fulfill this role more effectively, or even to offer additional levels of service to their clients. Because, according to the market actor survey, trade allies receive much of their training from equipment manufacturers, it may be effective for Energy Trust to work with manufacturers to develop or deliver training.