



CEC Ballast efficiency Presentation

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Ballast efficiency energy savings

- ✦ **PG&E energy savings estimates are based primarily on lamp mean lumen efficacy improvements and not ballast efficiency**
- ✦ **Ballast efficiency accounts for less than 1/3 of the projected energy savings**
- ✦ **Lamp / ballast efficacy has the potential for 3 times the energy savings as ballast efficiency alone**

Cost to consumer

- ✦ **Costs estimates to consumers is grossly understated**
- ✦ **Industry estimates for incremental cost are 3-6 times higher than those assumed by PG&E**
- ✦ **Whereas PG&E assumes a net present value savings to the consumer of \$198 for a potential annual energy savings of 219 kWh, industry estimates a net present value cost of (\$37) for an annual energy savings of ~70kWh.**

Reliability

- ⊠ **Lamp/ballast compatibility takes years to verify**
- ⊠ **Comprehensive ANSI standards for electronic lamp/ballast compatibility are many years away**
- ⊠ **High frequency electronic, which are the basis of the present proposal, are not compatible with many high efficiency light sources**
- ⊠ **Industry experience is that electronic ballasts have significant lower reliability compared to 60 Hz systems**

Verification

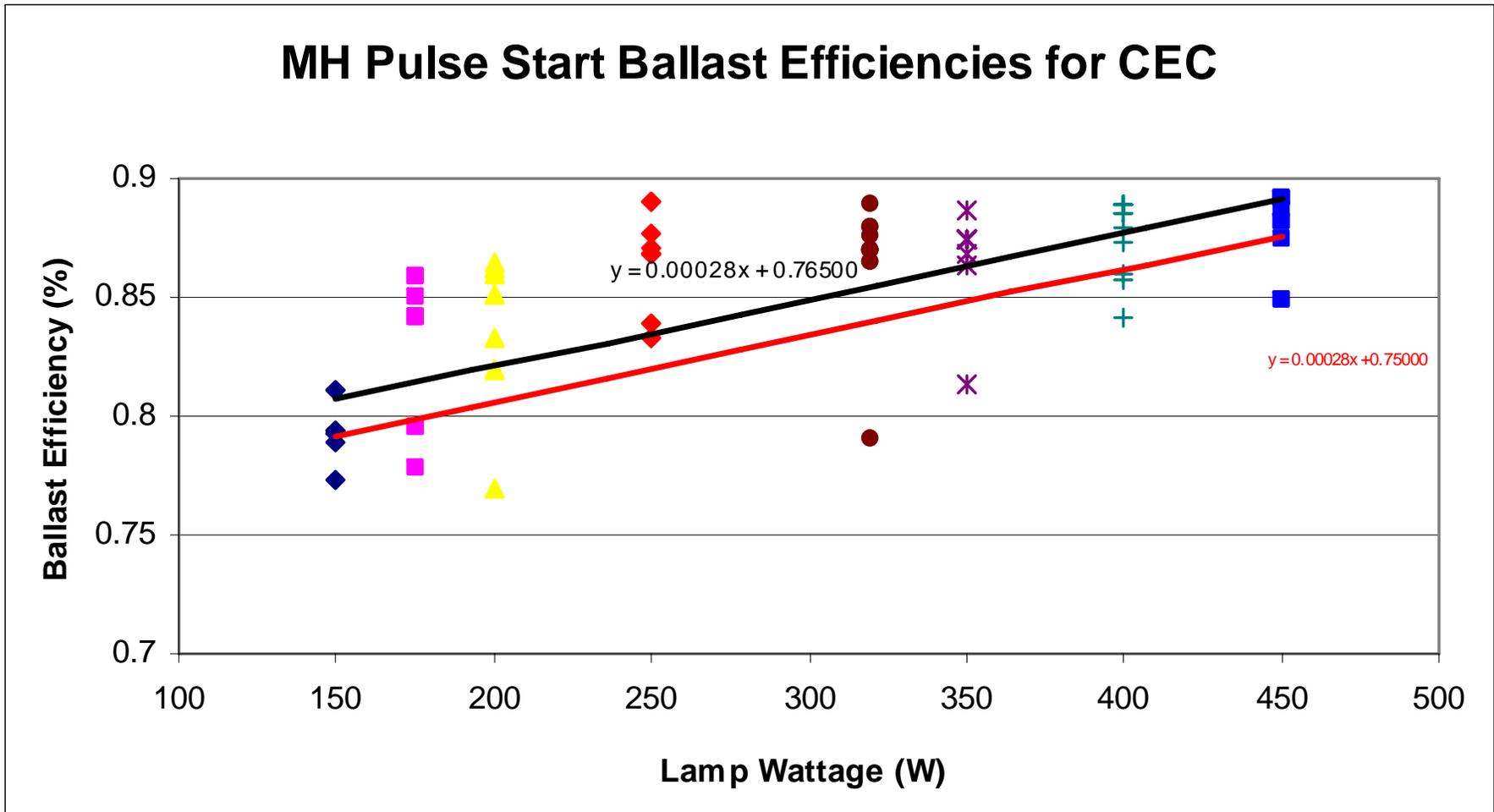
- ✦ **There currently are no standards defining measurement of high frequency electronic ballasts**
- ✦ **The ANSI standard proposed for verification is only applicable to 60 Hz systems**
- ✦ **ANSI is years away from developing high frequency standards**
- ✦ **The CEC will need to define a method of measurement if it institutes requirements based upon high frequency ballasts**

Conclusions and recommendations

- ✦ **Only marginal system efficacy improvement can be realized at substantial cost and questionable reliability with difficult verification with the present proposal**
- ✦ **CEC goals of energy savings can be accomplished with lamp / ballast efficacy specification but this approach will take time to develop**
- ✦ **Advance recommends a moderate ballast efficiency requirement at this time while developing a more aggressive lamp / ballast efficacy approach**

$$Y = 0.00028x + 0.750 \text{ proposal}$$

MH Pulse Start Ballast Efficiencies for CEC



$$Y = 0.00028x + 0.750 \text{ proposal}$$

- ⊠ **Based on minimum and maximum ballast efficiency data from 5 major manufacturers and on NEMA minimum and maximum reported ballast efficiency levels**
- ⊠ **Data based on 60 Hz systems capable of operating on the full range of line voltages and pulse start lamps in the most popular power rating levels**
- ⊠ **Proposed limit removes the least efficient ballasts from the marketplace while allowing the full range of lamp technologies**