

# Energy Sentry Pilot Program Conclusions and Recommendations

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# OCEC Load Characteristics

- Exceptionally low annual load factor – 30% in 2011 – contrast to Benton PUD @46% in 2010
- Appears to be little summer cooling load
- Monthly peak loads can occur on LLH – 1/1/2011 peak of 21.3 MW would not set demand for January under PF-12
- Challenges serving growing winter peak load on long Mazama Feeder

# What is Load Factor?

- Load Factor (“LF”) - Ratio of average energy usage vs. peak demand for a defined period

$$LF = (Total\ Energy / Hours\ in\ Period) / Peak\ Load$$

- Provides a tool for comparing performance of Energy Sentry accounts to Control Accounts for varying weather conditions – relies on the fact that energy consumption remains constant with or without Energy Sentry - only demand varies ( $LF = k / Peak\ Load$ )

# Customer Benefit – 1500 kWh in January

About 1200 Customers used 1500 kWh or more in January 2011

Five year payback requires \$12.50 savings every month – not just January

Many customers may choose to participate because “it’s the right thing to do”, not because they save money to offset Energy Sentry installation

Initial Load Factor	Demand	After .20 Load Factor Improvement	New Demand	Demand Reduction	Savings @ \$2.70/kW
.10	20 kW	.30	6.67 kW	13.33 kW	\$36.00
.20	10 kW	.40	5 kW	5 kW	\$13.50
.30	6.67 kW	.50	4 kW	2.67 kW	\$7.20
.40	5 kW	.60	3.33 kW	1.67 kW	\$4.50
.50	4 kW	.70	2.85 kW	1.15 kW	\$3.10

# Size Matters – 3000 kWh in January

Only about 400 customers used over 3000 kWh in January 2011

Higher use customers start off with higher load factors on average (20-25%)

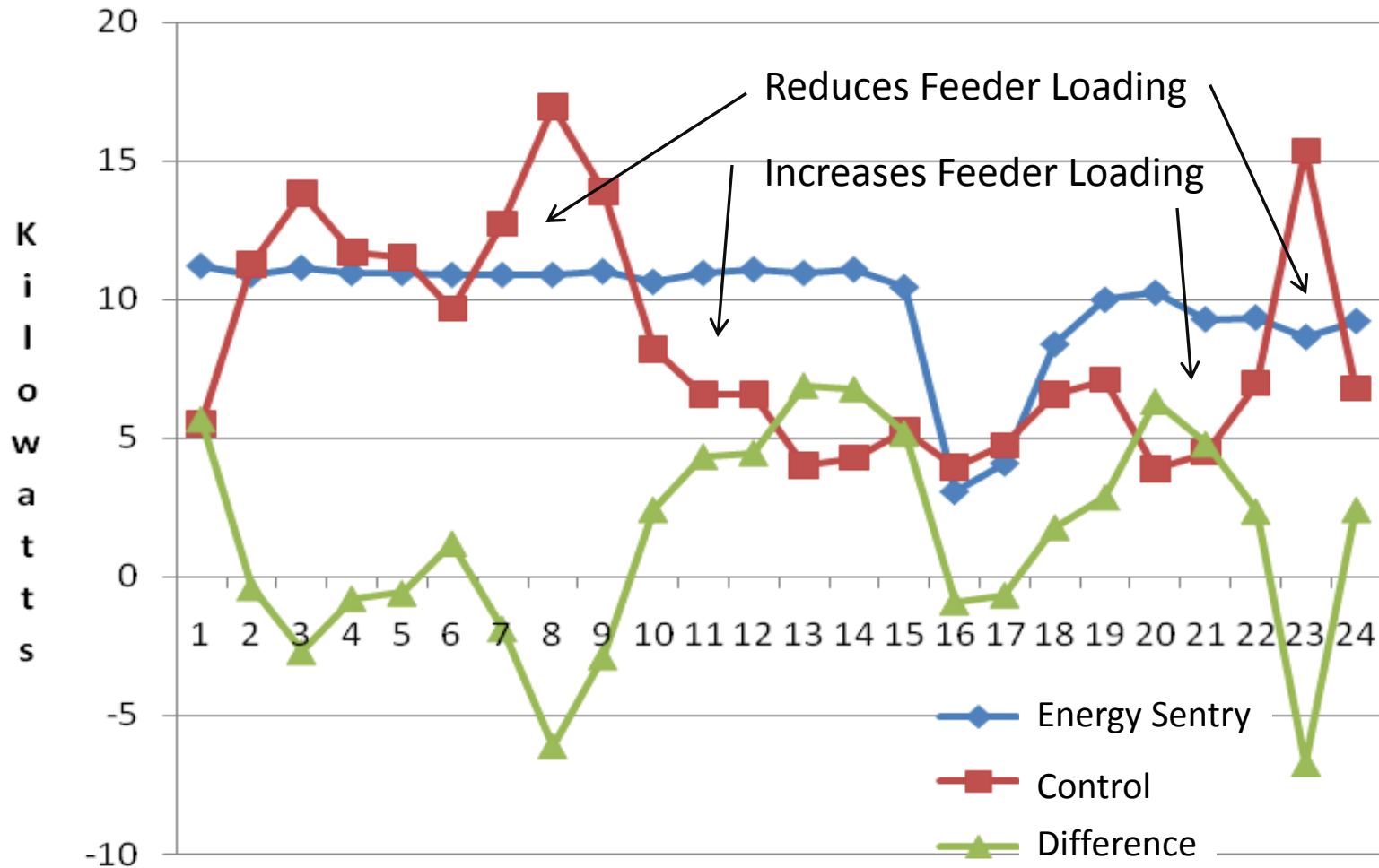
Seasonal residents probably don't receive enough benefit to warrant Energy Sentry installation, although low LF makes it look otherwise

Initial Load Factor	Demand	.20 Load Factor Improvement	New Demand	Demand Reduction	Savings @ \$2.70/kW
.10	40 kW	.30	13.33 kW	26.66 kW	\$72.00
.20	20 kW	.40	10 kW	10 kW	\$27.50
.30	13.33 kW	.50	8 kW	2.67 kW	\$14.40
.40	10 kW	.60	6.67 kW	1.67 kW	\$9.00
.50	8 kW	.70	5.30 kW	1.15 kW	\$6.20

# Observations

- For most customers, winter demand savings from Energy Sentry isn't adequate to provide a reasonable payback period for \$750 (let alone \$1500) customer investment – need similar savings in other months
- Seasonal customers may modify or disable Energy Sentry benefits in an effort to heat or cool the home to a comfortable temperature in a shorter period of time after a long absence

# Energy Sentry vs Control 1/1/11



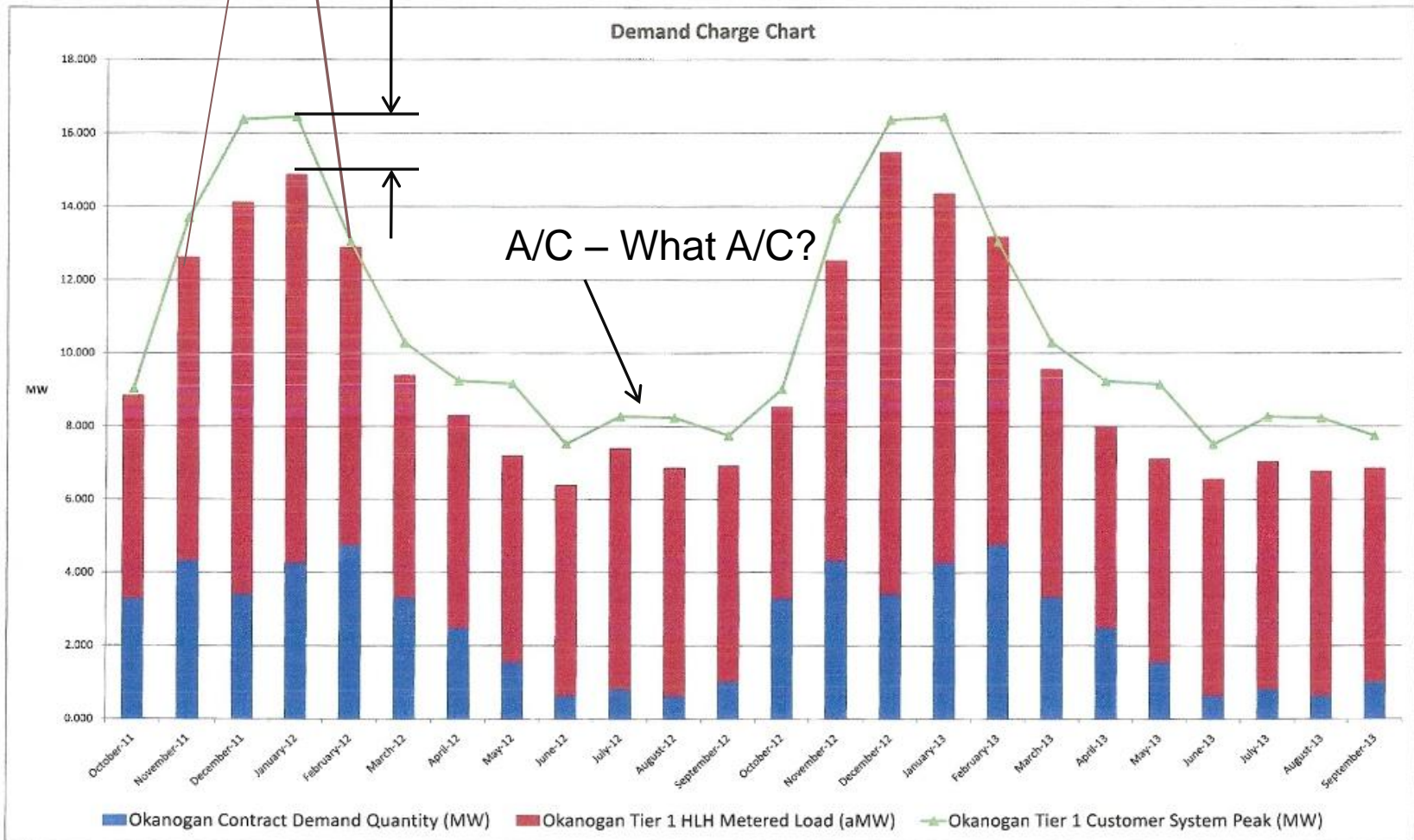
# BPA Benefits

- Translate customer demand improvement back to wholesale power Point of Delivery.
- 60 minute BPA demand interval vs 15 minute OCEC demand interval means less BPA demand improvement than customer demand improvement (perhaps only 60% in winter before hour-to-hour customer load diversity).
- Diversity among customer loads further reduces benefit at POD.

# Forecast OCEC Peak Load Profile

1/1/2011  
21.3 MW

Capacity Billing Det. (@ \$9.70/kW-mo)



# OCEC Lost Revenue vs BPA Savings

- Whereas OCEC loses \$2.70/kW for every kW reduced by the customer, OCEC BPA savings are a function of load diversity among customers and whether OCEC would pay a demand charge to BPA even without Energy Sentry installation.
- LEC optimistic estimates of BPA savings equal \$25k/yr – more than offset by value of employee time required to manage the program.

# Conclusions

- Energy Sentry provides 15-25% LF improvement in the winter and 5-15% summer – expect 15% annual average
- Expect limited BPA savings due to new PF-12 demand charge billing determinants
- No benefit to Mazama Feeder upgrade requirements
- OCEC needs to cover at least 50% of customer cost of Energy Sentry installation
- Program requires significant staff resources to design, market, implement, and evaluate data

# Recommendation

- Best case – Program is a financial break-even , assuming a government grant and customer pay all Entry Sentry device and installation costs.
- OCEC would likely have to fund at least half of the cost of installation with its own funds to get customers to participate after conclusion of the Program
- Program administration would displace other work.

Therefore

**LEC recommends that OCEC not pursue the Program**

# Recommendations – If Board Chooses to Implement Program

- Commit to at least a two year term for pilot Program
- Prepare a standard form customer participation agreement
- Target full-time resident electric heat customers with monthly average usage of at least 1500 kWh/month
- Select a control group of customers with similar usage patterns
- Hire a part-time employee or contractor to administer the Program

# Discussion and Questions



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