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From: <WSCHENEWERK@aol.com>
To: <cgekas@energy.state.ca.us>
Date: 1/12/2008 9:43 AM
Subject: Numbers Indicate Smart Thermostats Will Waste Money

From:
William Ernest Schenewerk
5060 San Rafael Avenue
Los Angeles CA 90042-3239
wschenewerk@aol.com
January 12, 2008, 17:45 GMT

to:
California Energy Commission.
Re: Smart Thermostats

Ms./Sir.

Past experience with load management indicates that simply serving the load is much cheaper than load management. Southern California Edison tried load management in the 80's. The cost of doing so was several times the cost of simply generating the power using combustion turbines. The effect of resetting the thermostat is secondary. After the power shortage passes, the thermostat goes back to its original setting and power demand goes back to what it was.

For times of one hour or less, the transient response must be modeled. To the extent that home temperature does not rise to the new setpoint, no energy is actually saved. This is because the home temperature must rise to the setpoint temperature before significantly less heat is transferred into the house. Probably takes at least an hour. Otherwise the system simply "Catches up" after the thermostat resets to the original temperature. Very few kilowatt-hours are saved.

To save significant kilowatt-hours, thermostat temperature must be permanently raised. We have been doing that since 1980. Energy "conservation" through increasing the misery index only works one time at best. Public will only accept sacrifice if it is temporary and they believe problem will go away permanently, some time in the future. Future is now, and it is unrealistic to expect the public to accept further sacrifice will somehow be rewarded by future lifestyle improvements. "One shot" energy "conservation" was used up decades ago. Last time we tried "energy conservation" it, we got a new governor. "You can not fool all the people all the time."

When the marginal fuel is natural gas, load leveling is also a secondary effect. CCGT on base load uses, at best, 8000 BTU/kWh. Combustion turbines, AKA airplane motors, use roughly 10,000 BTU/kWh. Difference between servicing demand load versus "demand management" is maximum 2000 Btu/kWh. At $10/Btu natural gas, marginal power cost difference is 2 cents/kWh.

Under extreme conditions, demand load that can be shifted is probably no more than 4,000,000 kWe statewide for a period of 3 hours. In a day, this represents 12,000,000 kWh power. At 2 cents/kWh, this would be $240,000 on a worst-case day. Usually we get 10 days of extreme heat, so total power cost savings, in natural gas is $2.4 million/year. Unlikely a demand management program that involves all the homes in California can be run for $2.4 million/year.

Sincerely,
William Ernest Schenewerk, Ph.D., P.E.