Vending Machines – "Energy savings for the thirsty"

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Today's Lineup

- Vending machines "101"
  - Market
  - Energy Consumption
- Savings opportunities
- Transformation strategies
  - New machines
  - Existing
- Final Four predictions

Cold Drink Vending Overview

- Approximately 3 million machines in U.S.
- Annual new sales ~ 250,000/yr
- Average life 10-plus years
- Common sites – hotels, universities, schools, office buildings, gas stations, retail

Vending Machine Realities

- Illuminated billboard.
- Need to provide cold product every time.
- Perception, no lights means machine is assumed to be out of order.
- Most locations have no idea how much they are paying in electricity ($300 –500 +) per machine.

The food chain

Beverage Company – sells syrup to bottlers, product advertising, sets machine performance spec

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Bottler – owns machine, places it on-site, maintains and stocks it, and receives % of coin-box revenue

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Site Owner – allows machine to be placed on-site. Receives % of coin-box. **Pays electric bill**.

Vending Machine Market

- Three players dominate:
  - Royal Vendors – WV
  - Vendo – CA
  - Dixie Narco (Maytag subsidiary) – SC

Energy Picture

- Current machines have:
  - Old lighting technology (T-12s and mag. ballasts)
  - Relatively inefficient refrigeration components
  - Limited insulation
- Most machines are left on 24 hrs/day, 7 day/week.

Energy Consumption

- ASHRAE Test Procedure:
  - 24 hr. energy consumption at 90ºF; no vending activity during the test;
  - Yields _____ kWh/day
  - Revised test method under development
- Typical energy usage = 8-14 kWh/day.

(Note - home refrigerator uses 1-2 kWh/day)

Recent Developments

- **Industry moving toward T-8s and electronics for all new machines (CA requirement in 2003)**
- **Lighting savings of 2 kWh/day or ~700 kWh/yr.**
- **Royal Vendors announced new "Econocool" product line**:
  - Saves up to 50% energy.
  - Better lights, compressor, fan.
  - Incremental cost ~ $75

Other manufacturers working on similar improvements

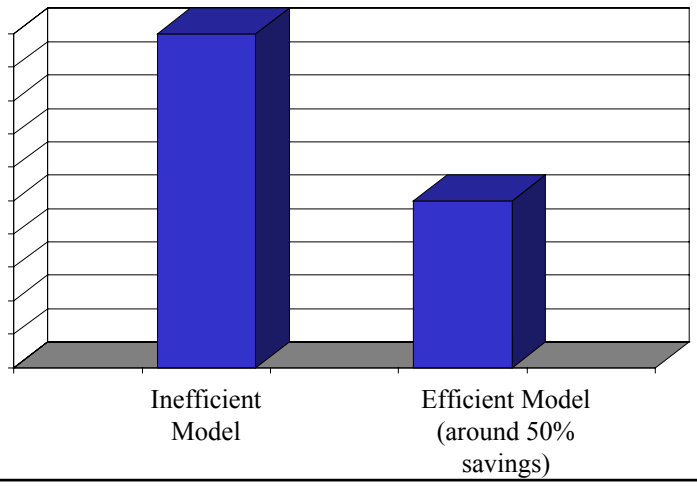
Royal Development In-Depth

- For largest machines, savings ~ 2,000 kWh/yr.
- Savings equals energy consumption of 4 residential refrigerators.
- T-8's translates to longer lamp life and avoided costly service calls. This is the hook for the bottlers, who don't pay for the electricity.
- Additional savings possible via controls.

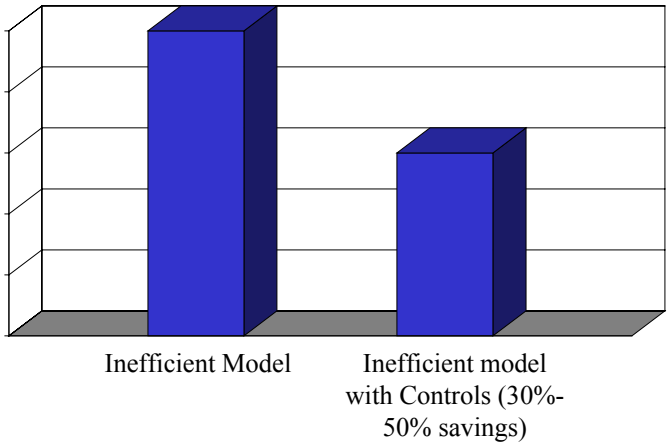
Controls

- Desirable to further reduce daily energy use by “sleep mode.”
- Options:
  - Smart control – motion-sensor based.
  - Site enabled set points – separate for lighting and refrigeration.

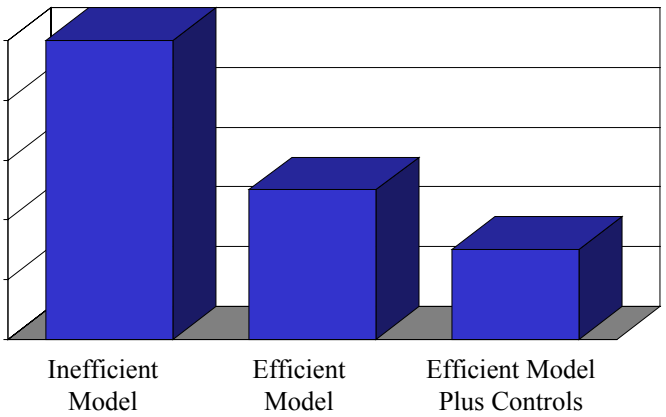
Better Components/No Controls Scenario



Just Controls



Better Components and Controls



Challenge

- Transform new machine market
- Reduce existing machine energy usage (retrofits)

Retrofit Options

- Add on controls (or enable built-in controls)
- Lighting retrofit.
- Refrigeration retrofit.

Retrofit Opportunity – Controls

- Vending Miser by Bayview Technology:
  - Occupancy-based technology.
  - Turns off lights, reduces refrigerator cycling.
  - Keeps product at acceptable temperature
  - Energy savings 30%-50% .
  - Cost about $150 plus simple installation.
  - Can't separately just turn off lights (daytime).
  - Lots installed last summer in the NW.

Program Options

- Create national performance specification (E-Star, hopefully).
- Provide utility incentives for new E-Star machine, and for retrofits
- Establish state or national standards.

The Prize

- Per machine:
  - 2,000 kWh/yr savings for < $100. Greater savings possible with additional controls.
- If all machines down to 8 kWh/day annual national savings:
  - 6 billion kWh/yr.
  - >$500 million/yr.

Next Steps

- Get manufacturer data and set E-Star specification.
- Offer programs in 2003 for new and retrofit programs. Reserve dollars in 2002 filings.
- Develop regional and/or national MT programs via CEE committee.