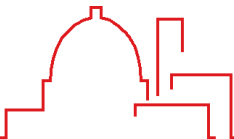


SMUD's Evaporative Cooling Programs

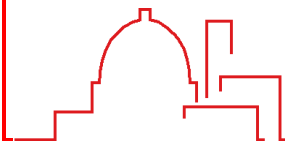
Presented by

**Dave Bisbee, C.E.M.
Customer Advanced Technologies
Sacramento Municipal Utility District**

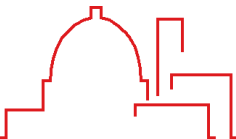


SMUD's Evaporative Cooling Programs

- Evap Cooling Rebates
- Customer Advanced Technologies (CAT) Program



SMUD's Evaporative Cooling Rebates...



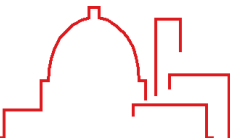
Customer Advanced Technologies (CAT) Program

Mission:

“Work with researchers, customers, and others to develop, test, evaluate and promote new and underutilized energy efficiency technologies.”

Benefits:

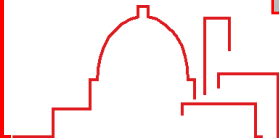
- Help customers sort fact from fiction
- Identify most promising technologies through direct, first-hand experience
- Avoid making major investments in technologies that don't work



Recent HVAC Research Projects

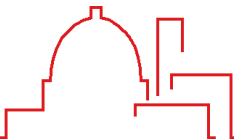


- Coolerado Cooler
- Desert CoolAire Hybrid AC
- OASys (IDEC)
- Freus (evaporative condensed AC)
- Ice Bear (TES)



Memoirs from the frontlines...

- “Swamp cooler mentality”
- Maintenance requirements
- Contractor issues
- Bad reputation

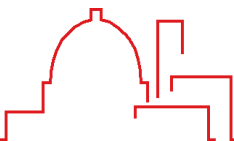


Lose the swamp cooler mentality!

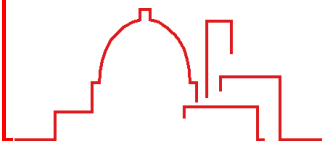
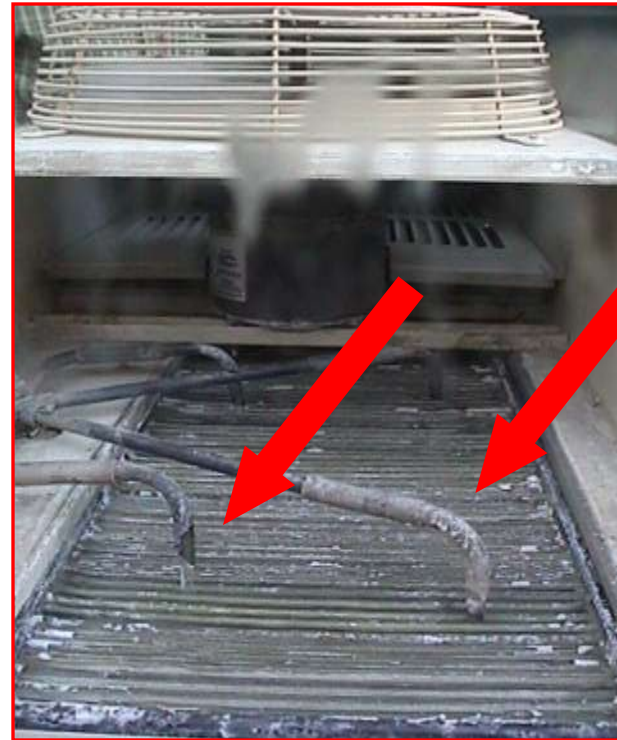
Equipment costs comparable to DX (\$2,500 to \$3,000)

Therefore:

1. Units should be designed to last for at least 10 years with no major replacement parts needed
2. Units should be reliable (not suicidal)
3. Manufacturers need to provide comprehensive owner's manuals
4. Contractors should receive factory training



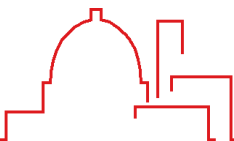
Example of swamp cooler mentality...



Maintenance issues...

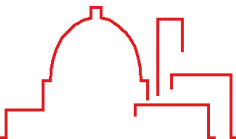
Manufacturers need to provide detailed maintenance procedures and training including:

- Evaporative media replacement
 - When?
 - How?
 - Where to buy?
- Fan belts and pulleys
- Water distribution system (nozzles, pumps, etc.)



More information please!

- Cleaning instructions
- Water treatment guidelines / requirements
- Winter lay up procedures
- Adjusting those darn float valves!
- Customer support

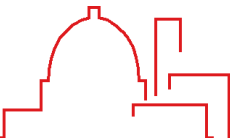


Contractor issues...

- Overcoming bad reputation from failures
- Industry bias (DX systems are well established)
- Strong need for factory provided training
 - Installation procedures
 - Maintenance
 - Troubleshooting and repair

**“Installing IDECs has harmed my company’s reputation –
I will NOT install any more of these systems until
manufacturers produce something that works!”**

- Local HVAC Contractor



What some customers have said...

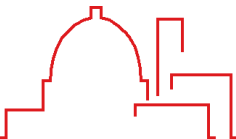
“I sure wish that we could afford a REAL air conditioner!”

- Residential IDEC System Owner

“When the system is working, I absolutely love it. The problem is, it doesn’t work for more than a few weeks at a time”

- Commercial IDEC Owner

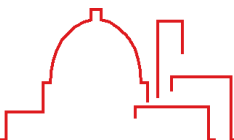
“You tout the benefits from ‘proper maintenance’ and then forget to define the term.”



Conclusions...

- ✓ Thermal performance = good
- ✓ Potential energy savings = impressive
- ✓ Need to improve:
 1. Reliability
 2. Serviceability
 3. Reputation

“The ultimate evaporative cooling system would have the serviceability, reliability and comfort of conventional DX systems yet operate at a fraction of the cost.”



Questions?

