



conEdison

STEAM COOLING



## BUILDING ON STEAM — A MODERN, VERSATILE, EFFICIENT, COST-EFFECTIVE COOLING SOLUTION

More and more developers, architects, and engineers recommend introducing steam to electric cooling plants to form a hybrid cooling plant for air conditioning in commercial and residential properties. In today's environment, they're choosing a solution that's modern, historically proven, beneficial, and clean.

Con Edison steam customers who use steam for all their cooling needs enjoy an energy source that is:

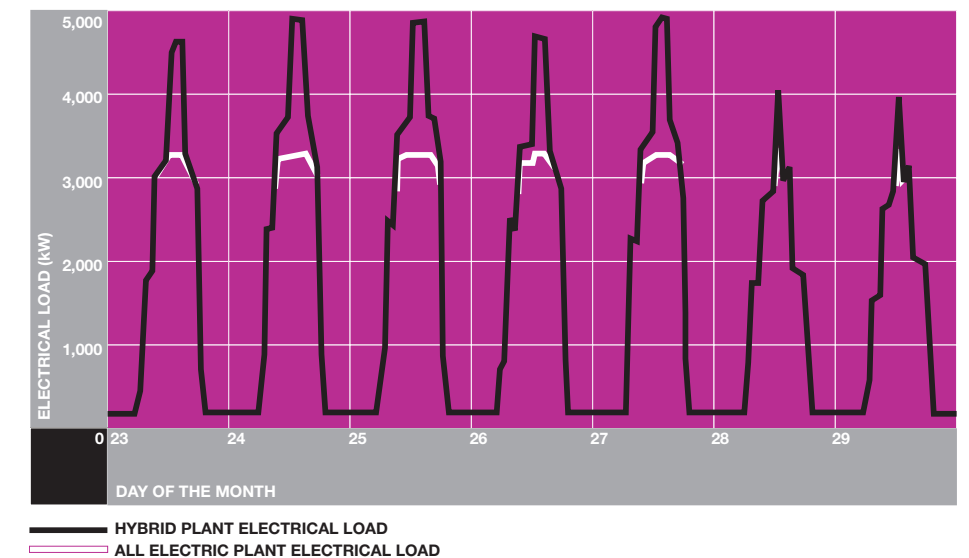
- ▶ reliable — 99.999%
- ▶ clean and green
- ▶ competitively priced
- ▶ flexible
- ▶ backed by 24/7 support and repair services
- ▶ CFC refrigerant free when using absorption technology

### FLEX YOUR POWER WITH STEAM COOLING

Introducing steam chillers into your electric chiller plant offers you the ability to use steam at any given time as the energy source that provides the most benefit. It also makes it easy for you to:

- ▶ use steam to maximize savings during summertime electric-peak demand periods.
- ▶ gain additional electric capacity or service contingency for your tenants.
- ▶ match the capacity to your load: Steam chillers have inherent Variable Frequency/Speed Drive (VFD) capability.

Steam-Electric Hybrid Plants Cost Significantly Less to Operate Than Electric Plants During Peak Cooling Periods.



### SAVE MONEY AND MAKE THE WORLD A LITTLE GREENER

You save energy dollars when your summertime peak-demand cooling load is supplied from a steam chiller. You also dissipate a large electric load, lower the strain on your internal and neighboring electric service, and — all the while helping to lower emissions.

#### Shift Demand and Save:

- ▶ A hybrid cooling plant, where one electric chiller in a typical three electric chiller central plant is converted to steam, can help you reduce summertime electric-peak demand, therefore helping to reduce overall costs.

#### Save with New York State Incentives:

- ▶ NYSERDA incentives for steam chiller installation are available in PON 1097
- ▶ \$600/kW avoided (Coefficient of Performance for Steam Chiller  $\leq 1.02$ )
- ▶ \$1,000/kW avoided (Coefficient of Performance for Steam Chiller  $> 1.02$ )

### Save with Con Edison Discount Programs

- ▶ \$2/mlb discount offered over two summer seasons for replacement or new steam equipment.

Community and environmentally friendly as well, switching to hybrid cooling helps reduce NOx emissions by 50% during summer ozone alert periods.

**NYSERDA Incentives Lower the Installation Costs for Introducing Steam... and Open the Door to the Energy Savings that Come from Operating the Resulting Hybrid Plant**

NYSERDA FON 1097** PEAK LOAD REDUCTION PROGRAM	TONS OF STEAM CHILLER EQUIPMENT INSTALLED IN PLACE OF ELECTRIC UNITS*							
	COEFFICIENT OF PERFORMANCE (COP) AT FULL LOAD	\$/KW AVOIDED INCENTIVE	400	800	1200	1600	2000	2400
	GREATER THAN 1.02	\$1,000	\$ 220,000	\$ 440,000	\$ 660,000	\$ 880,000	\$1,000,000	\$1,000,000
4 TWO STAGE STEAM FIRED ABSORPTION 4 STEAM TURBINE DRIVE CENTRIFUGAL		THERE IS PRESENTLY AN INCENTIVE CAP OF \$1 MILLION PER FACILITY.						
LESS THAN OR EQUAL 1.02	\$ 600	\$ 132,000	\$ 264,000	\$ 396,000	\$ 528,000	\$ 660,000	\$ 792,000	
4 SINGLE EFFECT STEAM ABSORPTION 4 TWO STAGE STEAM FIRED ABSORPTION 4 STEAM TURBINE DRIVE CENTRIFUGAL								

\*Where steam is displacing electric chillers, NYSERDA uses a reference plant to determine kW avoided. The reference is an electric centrifugal at .55kW/ton.

\*\*Contractors will be reimbursed the lesser of 65 percent of the Eligible Project Costs, differential installation cost electric vs. steam, or the incentive caps set forth in the table. Super efficient chillers are eligible for additional incentives.

**STEAM-ELECTRIC HYBRID CHILLER PLANTS ALSO BEAT THE COMPETITION FOR PERFORMANCE, NOT JUST PRICING.**

**More Flexible than All-Electric AC**

- ▶ Steam-Electric Hybrid is less costly to use during peak cooling periods.
- ▶ Steam turbines have intrinsic variable speed control whereas electric chillers require upgrades (VFD).
- ▶ Frees up installed electric capacity for facility and tenant use.

**More Space-Efficient than Thermal Storage Chilled Water Cooling**

- ▶ Steam chillers take up considerably less of your valuable space.
- ▶ Thermal storage space requirements can limit capacity.
- ▶ Steam cooling is JIT (just in time) to match demand as needed compared to building and maintaining an inventory of chilled water that may or may not be used.

**MAJOR OPERATIONAL ADVANTAGES**

Our current steam customers value steam because it's safe, reliable, clean, easy to operate, space-saving, and competitively priced. These are the hallmarks of steam cooling, but there are more reasons why it's an optimum choice for cooling in Manhattan:

- ▶ Favorable payback.
- ▶ Decreased electric load profile.
- ▶ Automated controls to optimize efficiency.
- ▶ Increased overall system efficiency for everyone.
- ▶ Reduced emissions.
- ▶ Equipment first-cost offset by lifecycle operating savings and incentives.
- ▶ No special certifications needed by existing staff - skills transfer readily.
- ▶ Fast, reliable, extensive, and responsive Con Edison support and repair teams.

**BENEFITS OF CONVERTING YOUR ELECTRIC CHILLER PLANT TO A HYBRID ELECTRIC-STEAM CHILLER PLANT**

**ALTERNATIVE ENERGY SOURCE**

Bring Con Edison steam system reliability into your tenant cooling solution

**INTRINSIC VARIABLE SPEED OPERATION**

Variable Frequency/Speed Drive (VFD) capabilities are inherent in a steam turbine driven chiller without the need to add equipment and incur additional costs

**AVOIDS ELECTRIC DEMAND CHARGES AT PEAK RATES**

Reduce energy costs by 10-15% of previous all-electric chiller plant energy costs where steam is designed to satisfy one-third (1/3) of the cooling demand

**ALLEVIATES ELECTRIC CAPACITY AT PEAK PERIODS FOR ALTERNATE USE**

Achieve up to a 30% reduction in electric demand dedicated to cooling. For 3,000 to 10,000 ton cooling plants this would mean 500 kW to 1.7 MW of contingency demand

**LOWERS RISK OF INTERRUPTED ELECTRIC SERVICE FROM SYSTEM STRAIN IN PEAK PERIODS (WITHIN BUILDING AND WITHIN REGION)**

With your all-electric central chiller plant accounting for 30% of the building's electric load, a typical hybrid plant alleviates a load of 10% during peak periods

**STEAM CHILLER PROVIDES ECONOMICAL "ON DEMAND" SUPPLY OF CHILLED WATER AS OPPOSED TO STORAGE SYSTEMS**

Pay only for what energy you use after you use it. Avoids committing valuable space to thermal storage systems

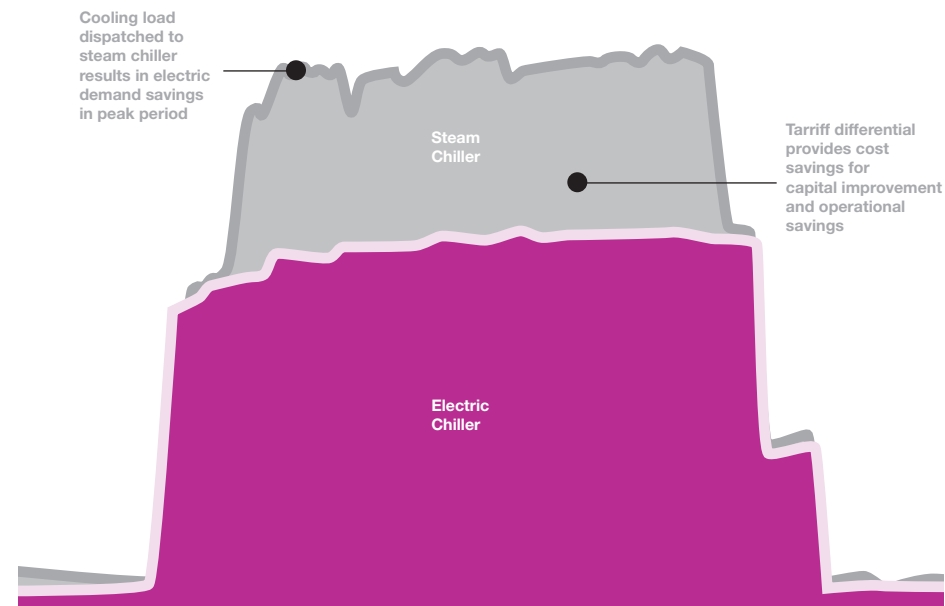
**SOCIETAL BENEFIT OF LOWER EMISSIONS DURING SUMMER OZONE ALERT PERIODS**

Extremely hot days and ozone alerts run hand in hand. Steam generation operates within its optimum efficiency range during those periods whereas electrical generation is focused on meeting demand. Estimated 50% reduction in NOx emissions dispatching to steam

**NO SPECIAL CERTIFICATIONS REQUIRED FOR OPERATORS OF STEAM ABSORPTION CHILLERS**

Existing skill sets of your staff will readily apply to a hybrid plant

## THE HYBRID CHILLER PROMOTION VALUE PROPOSITION



### IS INTRODUCING STEAM COOLING RIGHT FOR YOU?

You can realize the greatest benefit from steam cooling if:

- ▶ your site needs more cooling, but has an electrical load limitation that is expensive to overcome.
- ▶ your current plant can use an upgrade and for the same money you want energy savings.
- ▶ your building already uses steam for heating.
- ▶ you want to reduce your energy costs during peak electric demand periods.

### WHY STEAM COOLING?

**Many leading architects, engineers, developers, and property owners are building on steam for cooling because...**

- ▶ the efficiency, flexibility, and automated controls of steam chillers make it the right choice for cooling, especially in conjunction with existing steam powered heating.
- ▶ with the ability to use steam, you have the flexibility to manage energy costs
- ▶ the growth of computer and video technology in your building eats away at electric capacity. Incorporating steam chillers can offset electric cooling load in peak summer periods.

At Con Edison Steam, we're ready to meet your needs for cooling with higher power reliability, quality and efficiency, lower emissions, and greater flexibility to respond to changing energy needs. It's all about **Building on Steam**.

**Ready to find out if steam cooling is your best choice for smart, adaptive, eco-friendly cooling?**

**Please call or write to find out more. 1-212-460-2011; [steamsales@coned.com](mailto:steamsales@coned.com)**

**You can also visit our Web site at [www.coned.com/steam](http://www.coned.com/steam)**

