

# Once-through Cooling is Expensive and Wasteful

Once-through cooling systems, also known as single-pass cooling systems, use municipal drinking water as a means to remove unwanted heat. These systems remove heat by transferring it to a supply of clean, cold municipal drinking water and discharging it directly to the sewer. Equipment that may use once-through cooling includes commercial and industrial air conditioners, refrigerators, coolers and ice machines.

## Once-Through Cooling Wastes Water and Energy

Once-through cooling systems are often used for small commercial cooling loads because they are relatively inexpensive to install and require little maintenance. However, *the cost of water to operate a small once-through cooling system for two years is usually greater than the cost of installing an air cooled system that uses no water.* For a 12,000 BTU/hour (or 1 ton, roughly equivalent to 1 horsepower) condensing unit, once-through cooling uses more than one million litres of water per year. A typical restaurant has several of these units, together sending thousands of dollars worth of clean water down the drain per year. In addition to this cost, each once-through cooling system also requires a backflow prevention device that must be tested annually.

## Cost-effective options for replacing a once-through cooling system include:

### Packaged air-cooled equipment

Install stand-alone air-cooled ice machines and condensing units

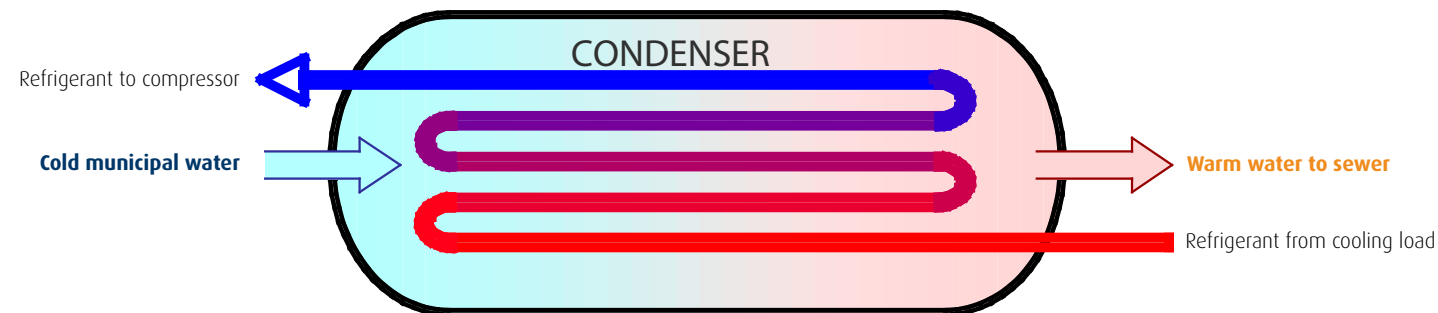
### Closed-loop piping

Recirculate cooling water to a remote air-cooled chiller or cooling tower, or connect to an existing closed-loop system serving another area of the building

### Split-system

Use heat pumps with remote air-cooled condensers.

Installation cost and subsequent payback period varies with the complexity of the system. Payback periods for small commercial systems are often as low as 1.5 years. The increased energy efficiency of more modern equipment may yield even greater savings.



# Cooling Equipment Rebate Program



For industrial, commercial and institutional customers of the Greater Victoria water supply system, CRD Water Services offers rebates of up to **\$1,200 per ton** to eliminate once-through cooled condensers and up to **\$2,400 per ton** to eliminate once-through cooled ice makers; up to a maximum of **\$5,000 per account**. Only existing once-through water cooled equipment (installed before January 1, 2006) is eligible for a rebate.

Saving water.  
It's everybody's business.



**Capital Regional District** | Water Services  
479 Island Highway, Victoria, BC V9B 1H7  
T: 250.474.9684 | F: 250.474.4012  
[www.crd.bc.ca/water](http://www.crd.bc.ca/water)

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Industrial | Commercial | Institutional

# Water Conservation

## Rebates for Efficient Cooling Equipment



# Businesses can receive a rebate

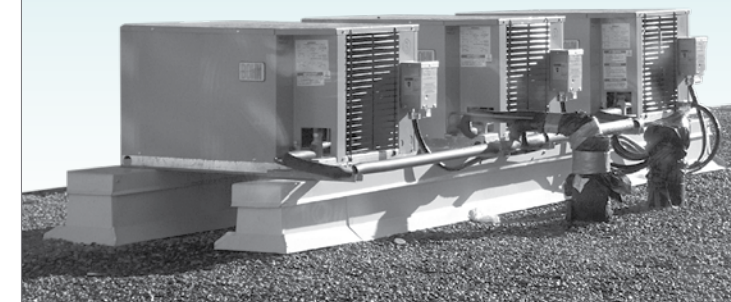
of up to

# \$1,200/ton

to eliminate once-through cooled condensers and up to

# \$2,400/ton

to eliminate once-through cooled ice makers



# Program Requirements

- The applicant must have an industrial, commercial, or institutional water bill account number in the Victoria metropolitan area. **Properties on private wells, on the Gulf Islands, or other parts of the CRD are not eligible, and residential customers are not eligible for this program.**
  - Equipment eligible for replacement or retrofit under this program must:
    - Have been installed and operating prior to January 1, 2006 (new construction is not eligible), and
    - Use municipal water once through for the purpose of removing heat from the equipment, without recovering the water for another beneficial purpose after it has passed through the equipment.
  - Equipment removed under this program must have all CFCs removed and be recycled as scrap at: **Steel Pacific Recycling (formerly Budget Steel Ltd), 2770 Pleasant Street, Victoria or Williams Scrap Iron & Metals Inc., 2690 Munns Road, Highlands** (A signed CRD Water Services recycling receipt is required).
  - Rebate amount will be calculated based on the lesser of the capacity of equipment removed, or the capacity of equipment retrofitted or installed.
  - Equipment installed or retrofitted under this program must reduce municipal water consumption by at least 500 litres per day based on annual average, as determined by CRD.
  - Operation and maintenance measures are not eligible for rebates.
  - Applications must be approved by CRD before work commences. **CRD will not award rebates for work completed before an application is approved.**
  - Rebates will be awarded for the lesser of:
    - \$0.10 per rated BTU/hr of packaged condensing units, and \$0.20 per rated BTU/hr of ice makers, installed, removed or retrofitted to eliminate once through cooling, or
    - \$2.50 per cubic metre per year of water saved by eliminating once-through cooling, or
    - A lifetime maximum of \$5,000 per retail water account under this program.
  - Where cooling capacity of equipment is specified as a range based on operating conditions, CRD will calculate rebate amounts based on the specified capacity using estimated annual average operating conditions at the installation site.
  - Where cooling capacity is not specified by the equipment manufacturer, CRD will assume capacity is 12,000 BTU/hour per rated compressor horsepower.
  - CRD will make the final determination of eligibility for all applications submitted.
- Funding is limited to a budgeted amount for each fiscal year (ending December 31). Rebates will be awarded in the order that eligible applications are received.
  - The applicant agrees to provide access to the equipment to CRD Water Services:
    - for the purpose of inspecting existing equipment and measuring water consumption before work commences, and
    - for up to one year after new equipment enters service.
  - The applicant is responsible for ensuring that the work complies with all applicable codes and regulations, and that building and plumbing permits are obtained where required by the local municipality.

## Application and Rebate Procedure

- Carefully review the Program Requirements, and complete the attached application form. Submit the form by mail, fax or email to:  
**Demand Management**  
Capital Regional District Water Services  
479 Island Highway, Victoria, BC V9B 1H7  
Phone: 250.474.9684 | Fax 250.474.4012  
**Email: [waterwise@crd.bc.ca](mailto:waterwise@crd.bc.ca)**
- CRD will contact the applicant to schedule a site visit and verify the application meets the Program Requirements. CRD will provide a written Confirmation Notice, including the approved rebate amount and a confirmation number (normally within 14 days of receipt of an application).
- Retain a licensed refrigeration and air conditioning mechanic to proceed with the work.
- When the work is completed and you have received a receipt of payment in full for the work, submit the following documents to CRD:
  - Confirmation of Completion form
  - Copy of receipt of full payment for the work, including parts and labour
  - Signed CRD Water Services **recycling receipt** (if any existing equipment was removed)
- CRD may schedule an inspection to verify completion of work according to program requirements (normally within 14 days of receiving Confirmation of Completion).
- CRD will notify the applicant and process the rebate payment when the completed work has been verified to be in accordance with the program requirements. Normally the applicant will receive a rebate cheque by mail within 30 days after the Confirmation of Completion form is submitted to CRD.

# Cooling Equipment Rebate Application Form

## 1. Applicant

Company | Organization Name (as it appears on water bill): \_\_\_\_\_

Contact Name: \_\_\_\_\_

Telephone: \_\_\_\_\_

E-mail: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Postal Code: \_\_\_\_\_

Installation Site Address (where once-through cooling equipment is located): \_\_\_\_\_

Installation Site Municipality: \_\_\_\_\_

Water Bill Account #: \_\_\_\_\_

## 2. Description of Once-Through Cooling Equipment\*

### Type of Equipment

- Packaged condensing unit       Ice maker
- Other (describe): \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Cooling capacity\*\*(if available): BTU/hr      Tons      kW

### Compressor Motor Specifications (if applicable)

Volts AC      Phase      Full Load Amps (FLA)

Rated power (hp or kW) \_\_\_\_\_

### Cooling Water Flow Rate

GPM (US): \_\_\_\_\_ litres per minute: \_\_\_\_\_

## 3. Proposed Work\*

- Replace water cooled with air cooled equipment at same location
- Replace water cooled equipment with rooftop air cooled equipment
- Add rooftop water-to-air heat exchanger to recycle cooling water in a closed loop
- Other (describe): \_\_\_\_\_

### New Equipment Specifications

Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Cooling capacity\*\*(if available): BTU/hr      Tons      kW

### Compressor Motor Specifications (if applicable)

Volts AC      Phase      Full Load Amps (FLA)

Rated power (hp or kW) \_\_\_\_\_

*I certify that I have read and understand the program requirements, and that the above information is complete and accurate. I agree to permit a representative of Capital Regional District Water Services access to inspect this installation if requested, before the work is commenced and for up to one year after the work is completed.*

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

\* If applying to replace or retrofit more than one once-through cooled device, attach a list including details of each once-through cooled device including all parameters indicated in Parts 2 and 3 of this form.

\*\* If cooling capacity is reported as a range in manufacturer's specifications, provide cooling capacity under typical operating conditions at the installation site, or attach manufacturer's specifications to application form.

*Application details are subject to verification. This offer may be withdrawn without notice.*



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