

Air Conditioning-Chillers Rebate Guidelines

All Chiller equipment must meet Air-Conditioning and Refrigeration Institute (ARI) standards (550/590-98), be UL listed, use a minimum ozone depleting refrigerant, (e.g. HCFC), and meet specified energy efficiency qualifications.

Air Conditioning-Chillers Rebate Worksheet Instructions

Attach manufacturer's data to verify rated efficiency in kW/ton (according to ARI Standard 550/590-98).

Required Documentation Checklist

- Equipment schedule or manufacturer's specification and data sheets listing unit's Manufacturer, Model Number, Capacity at Full Load and Integrated Part Load Value (IPLV) Efficiency
- Description of Existing Equipment (For Retrofit Projects)
- Air Conditioning (Chillers) Rebate Worksheet
- Rebate Application

Applicant Information

- 1) Enter Applicant Name
- 2) Enter Project Description (e.g. Facility, Building, Location, etc.)
- 3) Specify Type of Construction ("E" for Existing Facilities and "N" for New Construction)

Chillers (Centrifugal or Rotary Screw)

Fill in the following information using one line for each unit installed. Identical units may be grouped on a single line.

1. Chiller Equipment
 - a) Centrif. - Centrifugal
 - b) Rotary - Rotary Screw
 - c) Scroll - Scroll
 - d) Recip. - Reciprocating
2. Quantity of Units - Quantity of a particular unit type [Column F]
3. Cooling Capacity [Column E] - Nominal Capacity (in Tons) of equipment per unit

4. Retrofit Reason (R or B, for Existing Facilities)
 - a) R - Retrofit of Chiller Systems before the end of its service life for energy efficiency
 - b) B - Burnout Chillers Systems needing immediate replacement due to equipment failure
5. Equipment IPLV Efficiency [Column B] - Nominal IPLV Efficiency in kW/Ton. Please attach appropriate manufacturer's data or specifications.
6. Qualifying IPLV Efficiency [Column A] - Reference the Qualifying Efficiency and Rebate Table
7. Manufacturer and Model Number
8. Rebate Amount
 - a) Calculate the Rebate using the Rebate Program Factors, Equipment Specifications, and the following formula:
$$\text{Rebate} = \{ [(\text{Qualifying Efficiency} - \text{Equipment Efficiency}) \times \text{Efficiency Rebate}] + \text{Equipment Rebate} \} \times \text{Cooling Capacity} \times \text{Qty of Units}$$
 - b) Subtract the Equipment IPLV Efficiency IPLV from the Qualifying IPLV Efficiency [Column A - Column B]
 - c) Multiply the result by the appropriate Existing Facilities or New Construction Efficiency Rebate Amount [Column C]
 - d) Add the appropriate Existing Facilities or New Construction Equipment Rebate Amount [Column D]
 - e) Multiply the value by the Cooling Capacity [Column E]
 - f) Multiply the product by the Number of Units [Column F]
9. Add all Rebate Amount entries to determine your Total Air Conditioning Rebate and enter total in the space provided



Air Conditioning-Chillers Rebate Worksheet

Hawaiian Electric Company *EnergySolutionsSM for Business* Program (Effective February 2, 2005)

APPLICANT INFORMATION

Applicant	Application No. HECO
Project	<input type="checkbox"/> Existing Facility <input type="checkbox"/> New Construction
Document Checklist	<input type="checkbox"/> Rebate Application <input type="checkbox"/> Air Conditioning Rebate Worksheet <input type="checkbox"/> Chiller Specification Sheet at ARI Standard IPLV Conditions <input type="checkbox"/> Invoice

CHILLERS INFORMATION

	F	E		B	A		
Chiller Equipment (Centrif. or Rotary)	Quantity of Units	Cooling Capacity ² (Tons)	Retrofit Reason (B = Burnout R = Retrofit)	Equipment IPLV ¹ Efficiency (kW/ton)	Qualifying IPLV Efficiency (kW/ton)	Manufacturer & Model Number (Submit Manufacturer Specification Sheet Showing Cooling Capacity)	Rebate Amount (See Formula Below)
Centrif.	1	300	B	0.48	0.55	Example Brand X, Model: 300XYZ-1	\$11,250

TOTAL AIR CONDITIONING REBATE

CHILLERS QUALIFYING EFFICIENCIES AND REBATE TABLE

		A	C	D
Chiller Compressor	Cooling Capacity ² (tons)	Qualifying IPLV Efficiency (kW/ton)	Efficiency Rebate (per kW/ton under Qualifying Efficiency)	Equipment Rebate (per ton)
Centrifugal, Rotary Screw, Scroll, & Reciprocating	Less than 150	0.70	\$250	\$20
	150 to 225	0.63		
	226 to 300	0.55		
	Over 300	0.50		

CALCULATING YOUR REBATE

Rebate = { [(Qualifying Efficiency - Equipment Efficiency) x Efficiency Rebate] + Equipment Rebate } x Cooling Capacity x Qty. of Units

Rebate = { [(A - B) x C] + D } x E x F

$$\{ [(\boxed{A} - \boxed{B}) \times \boxed{C}] + \boxed{D} \} \times \boxed{E} \times \boxed{F} = \boxed{\text{Rebate}}$$

EXAMPLE

Existing Facility, One Centrifugal Chiller, 300 ton Capacity, 0.48 kW/ton IPLV
 Replacement due to equipment failure (B=Burnout)
 Qualifying IPLV Efficiency = 0.55 kW/ton (From Table)
 Rebate = { [(0.55 kW/ton - 0.48 kW/ton) x \$250] + \$20 } x 300 tons x 1 unit = \$ 11,250

NOTES

¹ Chiller efficiency rating must be based on ARI Standard 550/590-98 IPLV conditions.
² Conversion: 12,000 Btuh = 12 MBtuh = 1 ton
 IPLV = Integrated Part Load Value