

# Trans-Critical Booster CO<sub>2</sub> With Parallel Compression & Ejectors (TCBPE)

*Total Cost of Ownership (TCO) &  
Return on Investment (ROI) Analysis*

*Delivering Short Payback & Long-Term Savings*

**KYSOR/WARREN®**

## Financial Benefits of Choosing a TCBPE CO<sub>2</sub> System

- Utility/government rebates available in many areas
- Improved temperature stability resulting in enhanced product appearance and life
- Significant lifetime refrigerant savings
- Savings with installation materials and labor
- A 5-10% energy use savings over HFC's
- NO leak management programs and fines for failure to comply
- NO phase-out and retrofit potential with current regulations

# Trans-Critical CO<sub>2</sub> (TCBPE) System TCO Evaluation

## Key Inputs for TCO/ROI Calculator

### Store Information

Location information	Atlanta, GA	
MT loads	460	kBtu/hr
LT loads	220	kBtu/hr
System life	20	years
Square footage	40,000	sqft

### Refrigeration Information

HFC charge (407A)	2700	Lb
CO <sub>2</sub> charge	700	Lb
Annual leak rate	15	%
HFC cost (R-404)	\$10.00	Lb
New HFC cost (after a retrofit)	\$11.00	Lb
HFC annual cost increase	25	%
CO <sub>2</sub> cost	\$2.50	Lb
CO <sub>2</sub> annual cost increase	3	%

### HFC Install/Service Costs

Install material cost (no refrigerant)	\$4.38	Sqft
Install labor costs	\$6.80	Sqft
Annual service costs (no refrigerant)	\$0.24	Sqft
Annual service cost increase	3	%
Reduced spoilage cost	\$0.30	Sqft
Retrofit costs	\$2.88	Sqft

### Energy/Environmental Costs

Energy costs	\$0.10	KWh
Annual HFC electrical use	1,524,420	Total KWh
Annual energy inflation	2.9	%
Energy savings with TCBP	10	%
Energy rebate of equip costs	-7	% of total

Trans-critical CO<sub>2</sub> Booster versus R-407A HFC System

CO<sub>2</sub> systems with case controllers pull down faster than HFC. This helps improve the appearance and quality of many refrigerated foods boosting shelf life and taste.

Energy savings of 10% from TCBPE CO<sub>2</sub> system

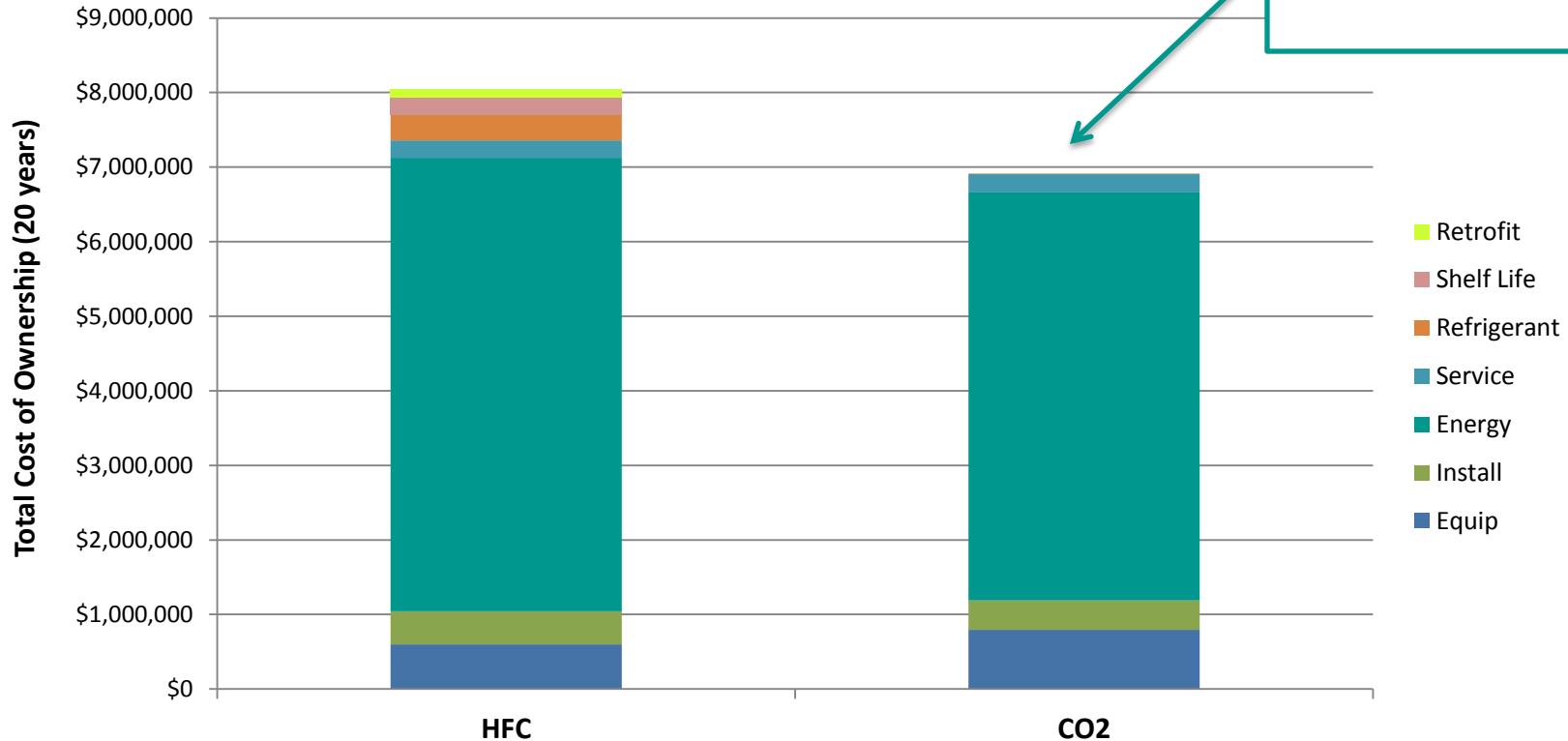
Eligibility for rebate from Georgia Power of at least 7% of equipment costs due to energy savings and GWP reduction

Based on historical HFC refrigerant cost trends  
New HFC refrigerant price price after a retrofit

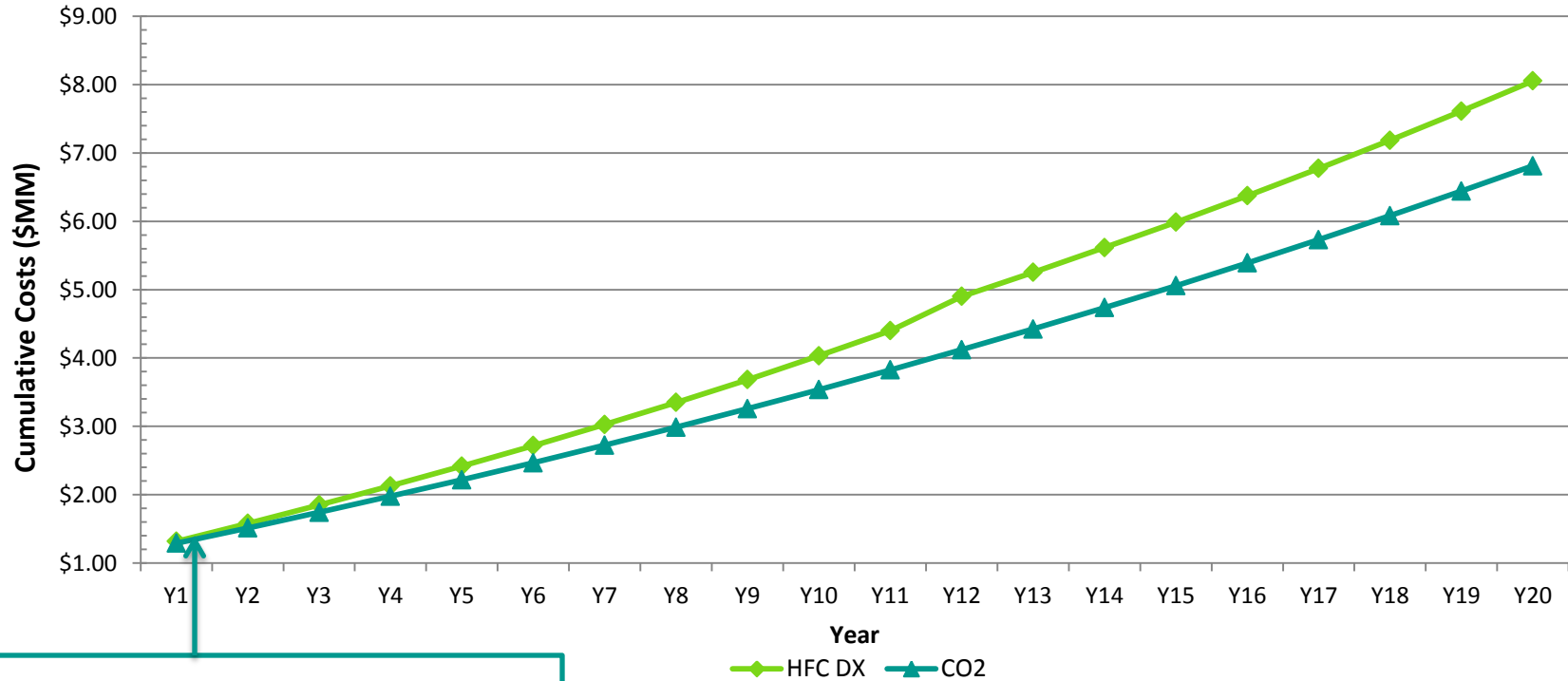
CO<sub>2</sub>: Install material costs are 15% lower due to reduced material costs (fittings and piping)  
Electrical labor costs are 10% less due to factory wiring of many components with case controllers

## Total Cost of Ownership (20 Year Life)

\$1.2 Million in Lifetime Savings  
~\$60,000 in Annual Savings



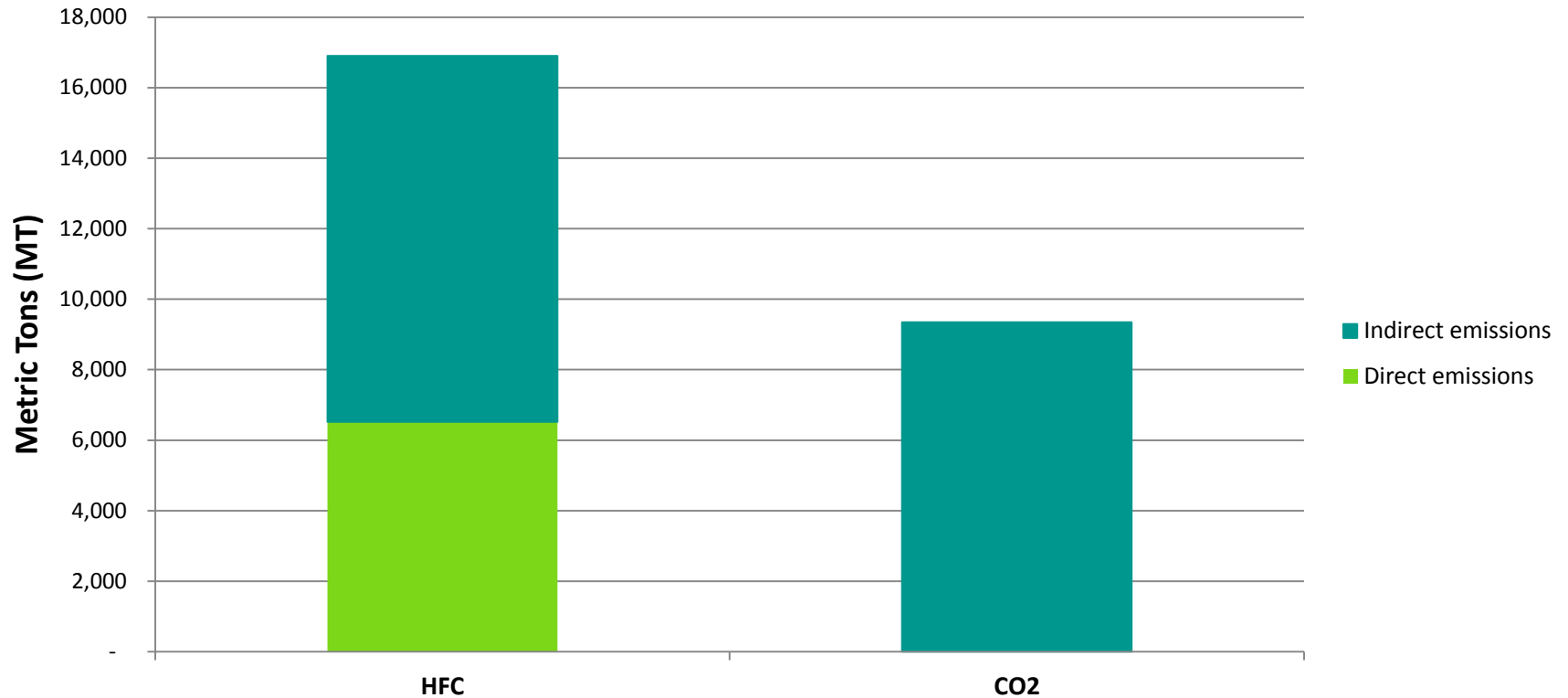
## Payback & Additional Lifetime Savings with CO<sub>2</sub> TCBPE



**Immediate Payback**  
With rebate of 7% of equipment costs (\$50K), initial costs could be less than HFC R-407A system

# Lifetime CO<sub>2</sub> Equivalent Emissions

CO<sub>2</sub> Delivers A Significant Sustainability Impact



**REQUEST YOUR CO<sub>2</sub> EVALUATION**

**UNDERSTAND YOUR CHOICES**

**KYSOR/WARREN**



## **Ensure You Reap the Benefits With Your CO<sub>2</sub> System**

### **Experience the SleepWell<sup>SM</sup> Natural Refrigerant Promise**

- Classroom and hands-on training for contractor and retailer staff
- On-site start-up and commissioning support
- Ready trouble-shooting assistance
- Clear and comprehensive manuals and drawings for responsive repair
- Parts support for system components
- Tried-and-true global platform

**Begin Your Journey to Trouble-Free Savings Today**

Learn More About Your CO<sub>2</sub> Options

KYSOR/WARREN



Contact your Kysor Warren Technical Sales Representative



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