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Perfecting Produce:

**The success of HC secondary systems in the
New Zealand Produce Distribution Sector.**

ECCOCHILL
EXCEPTIONAL TECHNOLOGY,
NATURALLY.

MATTHEW DARBY

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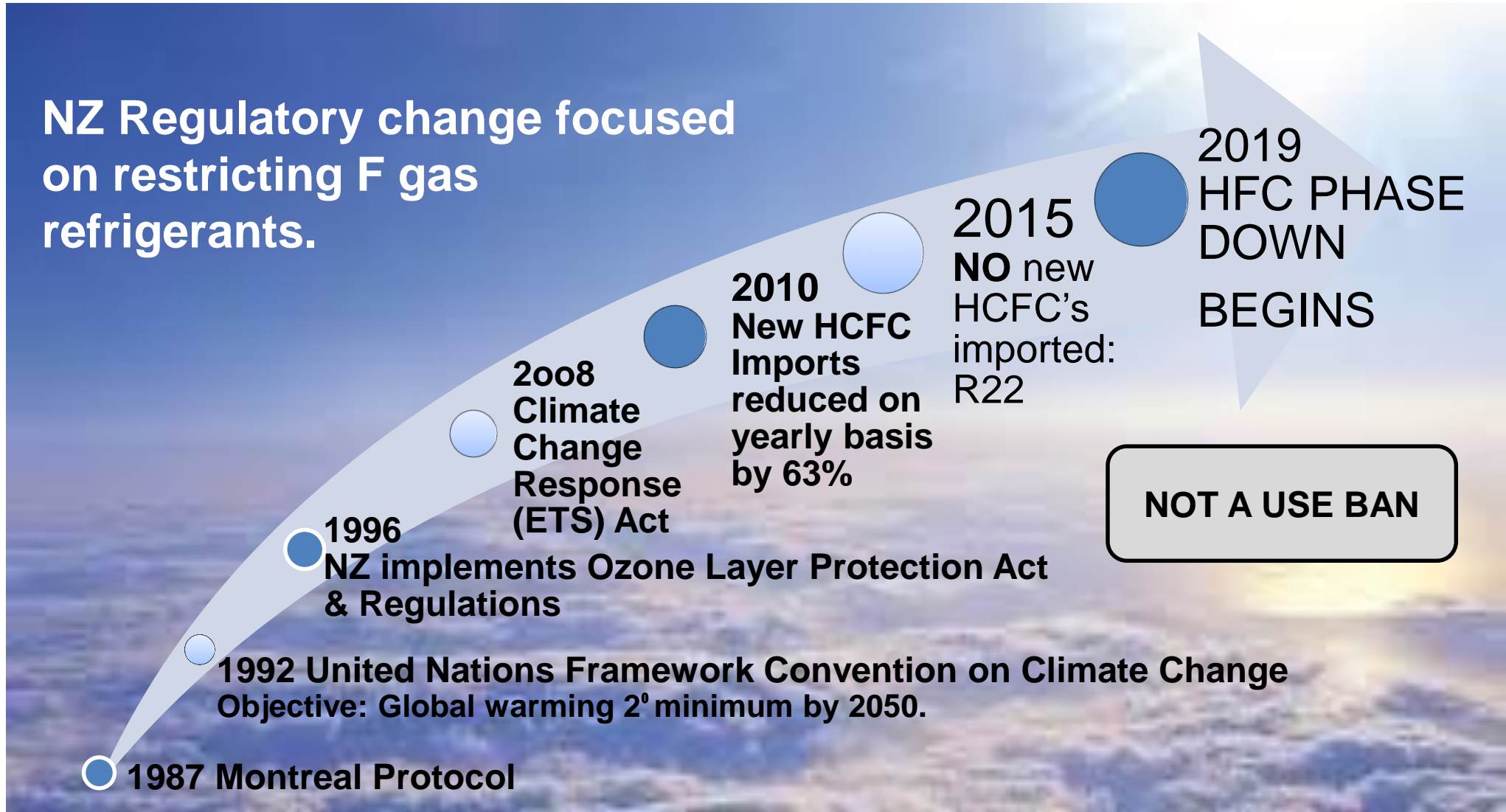
CCCANZ
CLIMATE CONTROL COMPANIES
ASSOCIATION NEW ZEALAND

NZ Produce Sector

Case Studies

Understanding adoption
and success criteria.

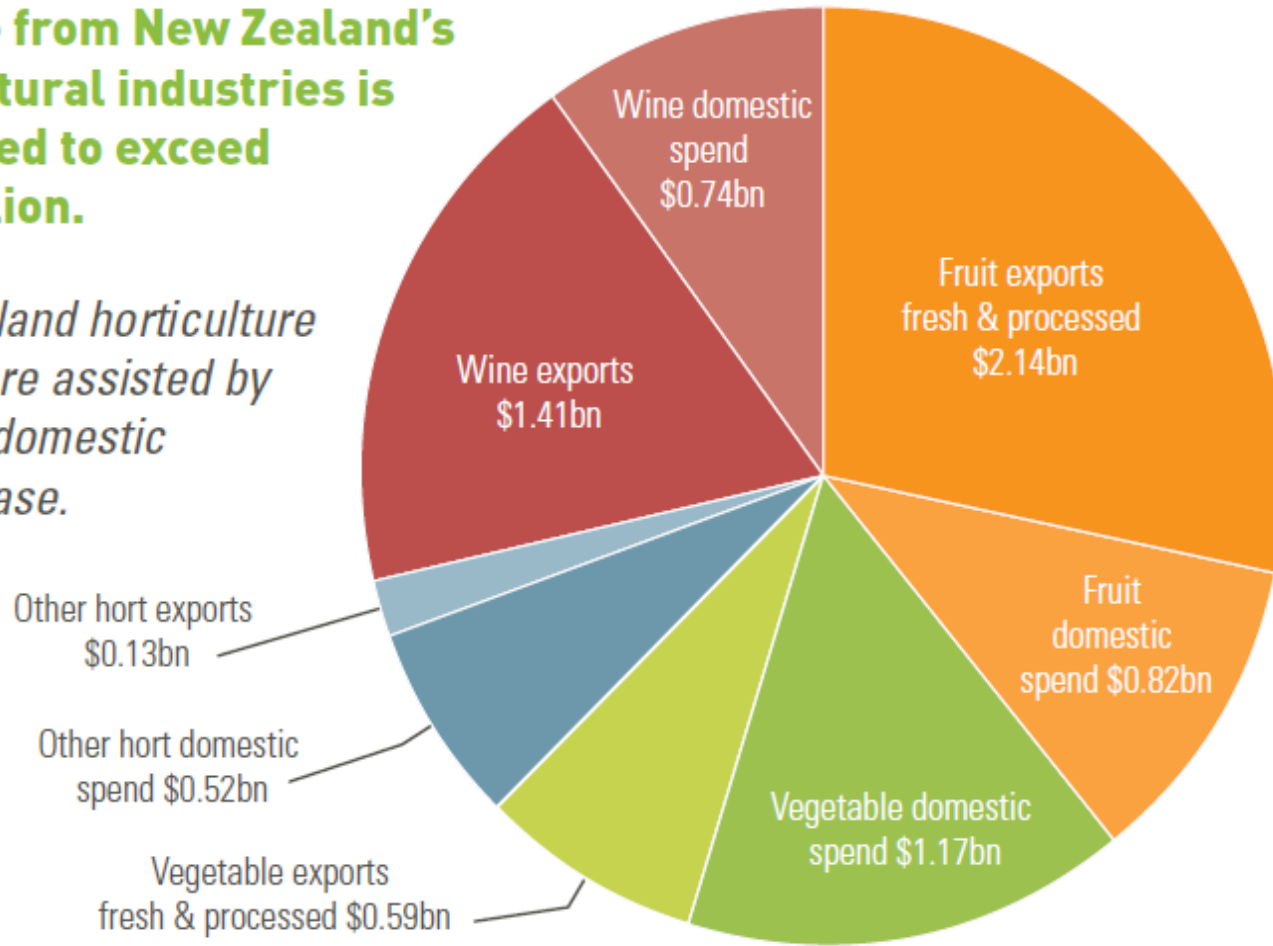
How are we the
problem?



Goal of NZ Horticulture is to be a \$10B industry by 2020.

Produce from New Zealand's horticultural industries is calculated to exceed \$7.5 billion.

New Zealand horticulture exports are assisted by a strong domestic market base.



2015

- 122,000 hectares planted.
- NZ spent \$1.7B on produce.
- Exports grew 9.5% to a record \$4.3B.
- \$40B invested.

SOURCE: FRESH FACTS 2015



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Case Studies

**Natural refrigeration solutions:
better for business - better for the environment.**



Use of Secondary Refrigeration Systems

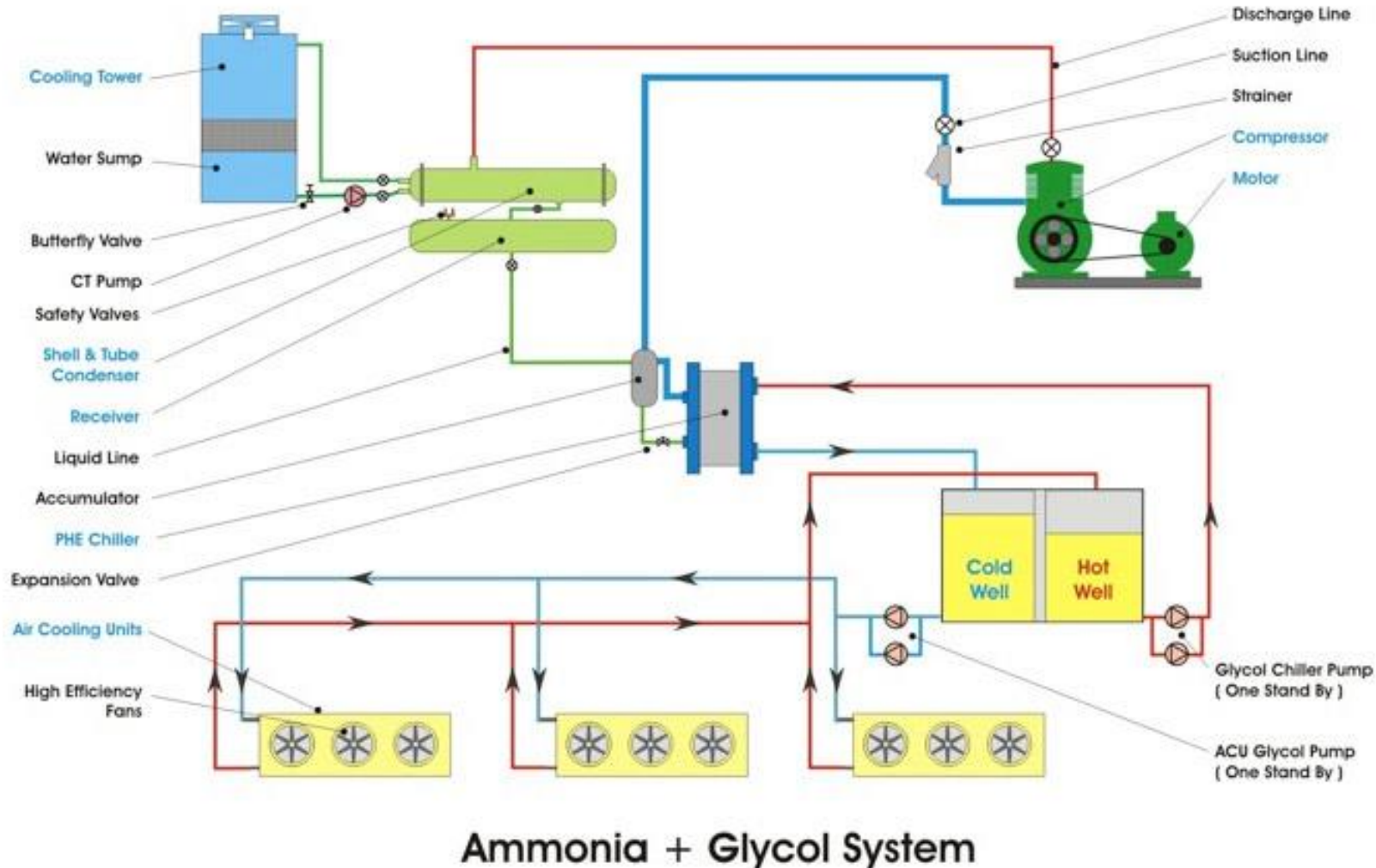


Diagram courtesy of water-food.com

What?

- Smaller primary circuit compared to DX.
- Uses a secondary fluid as main cooling medium.

Why?

- Reduce amount of primary stage refrigerant.
- Reduce leakage rate of primary stage refrigerant.
- Reduced primary system size.
- Easier maintenance.

- Reduced refrigerant charge
- Increased energy efficiency
- Increased system reliability
- Reduced operating costs
- Reduced stored product risk
- Guaranteed system safety and compliance



	Standard Secondary	EcoChill
Expansion Valves	Likely Mechanical	Electronic
Capacity Control	Likely Unloaders	VSD
Primary Circuit Size	Likely Standard	Optimised for Critical Charge
Primary Refrigerant Quantity	Likely Standard	Minimised through design



RANK: 7 TOP 100 F&B

FORMED: 1987

KEY PRODUCTS: DISTRIBUTOR &
WHOLESALE; KIWIFRUIT, CITRUS, GRAPES,
PIPFRUIT, TOMATOES, ASPARAGUS

STAFF: 1500+ CASUALS

TURNOVER: \$996M (2014)



RANK: 51

FORMED: 1997

KEY PRODUCTS: APPLES, CITRUS, BANANAS,
STONEFRUIT

STAFF: 379+ 371 CASUALS

TURNOVER: \$550M (2016)

**Together.
Stronger.**



RANK: 15

FORMED: 1997

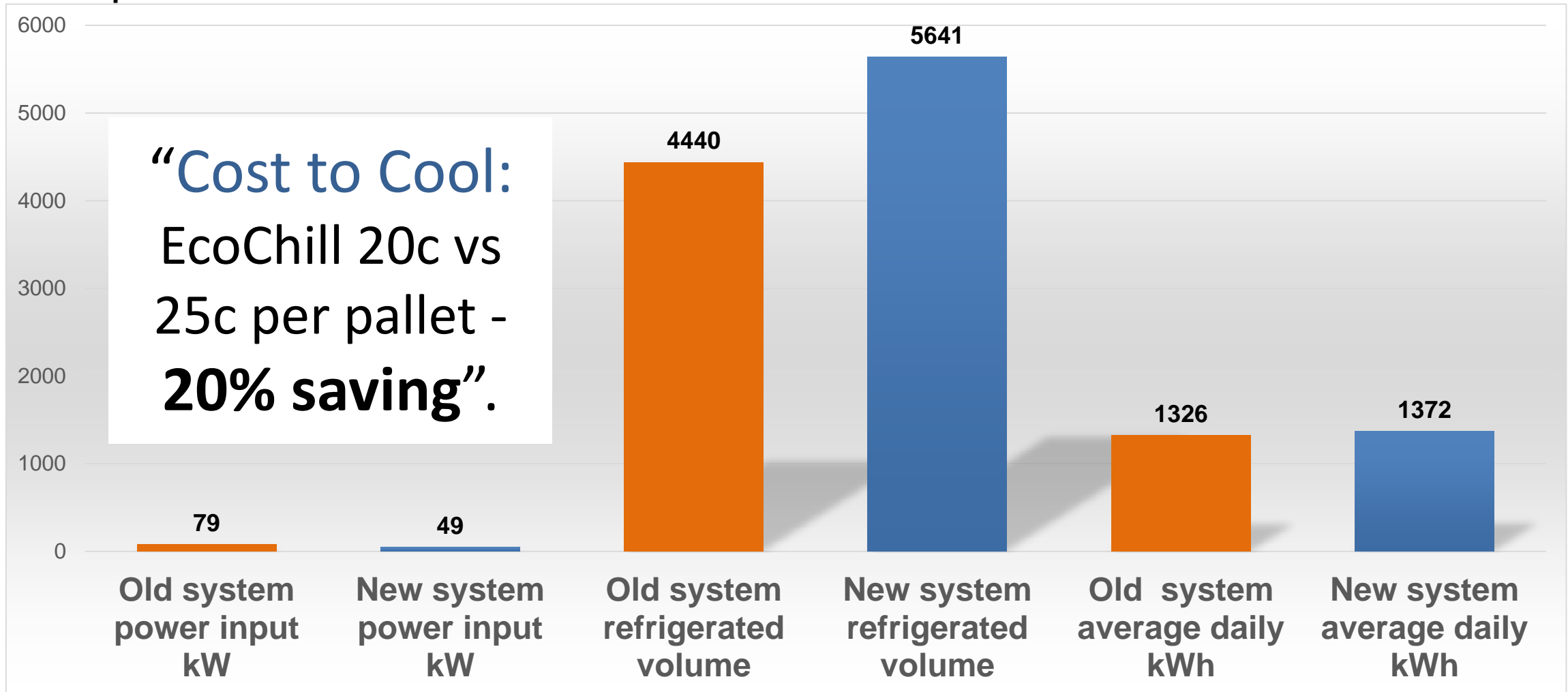
KEY PRODUCTS: DISTRIBUTOR &
WHOLESALE

STAFF: 480

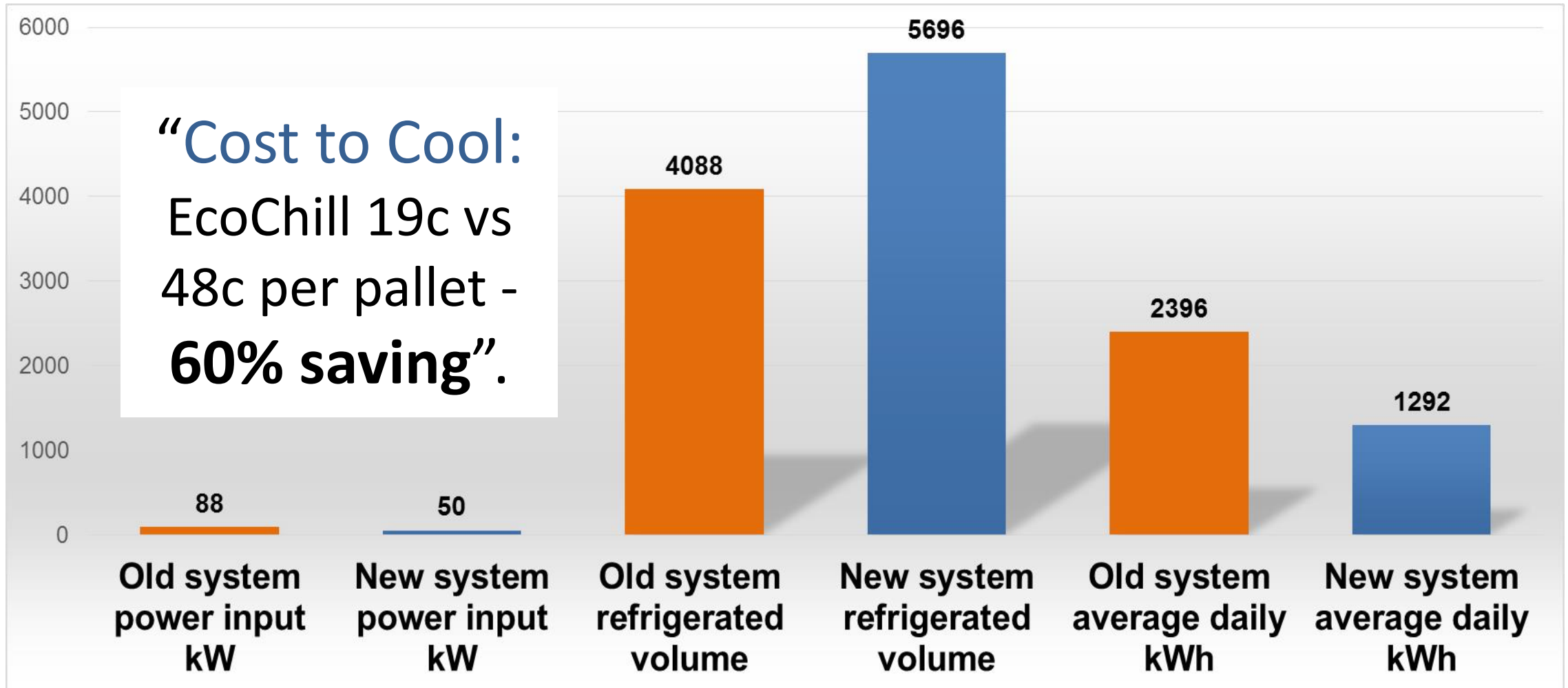
TURNOVER: \$950M (2015)



“Around **75%** market
share in produce
distribution”



“**27%** increase in volume cooled, with **38%** less power input”



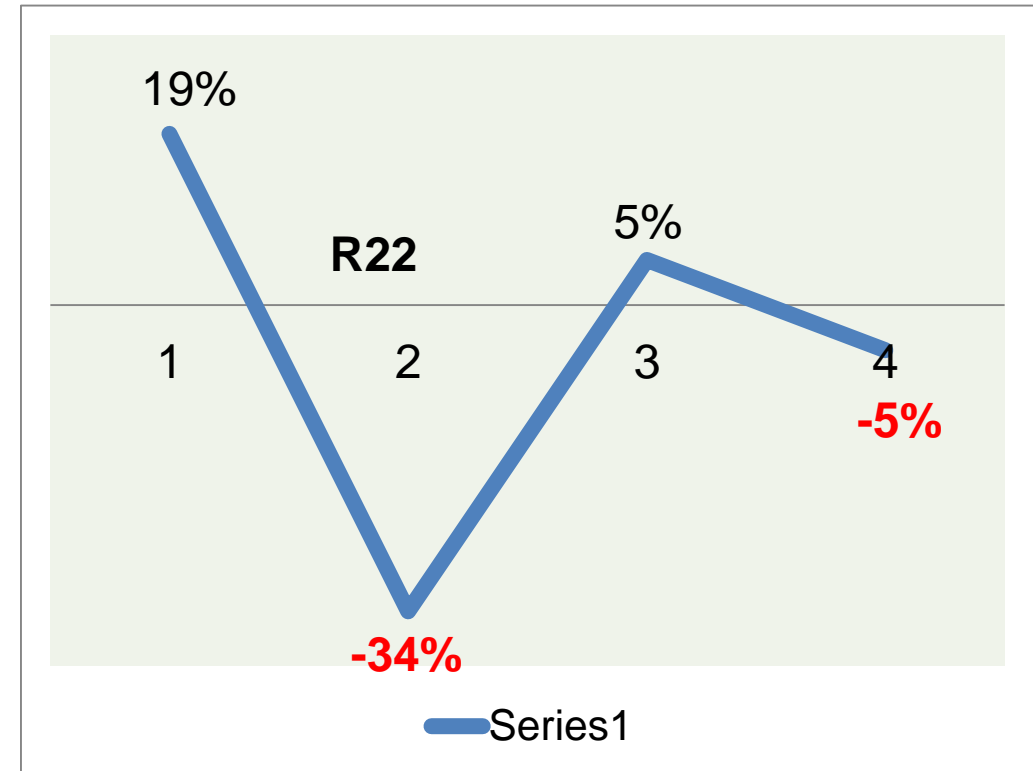
39% increase in volume cooled, with **43%** less power input.

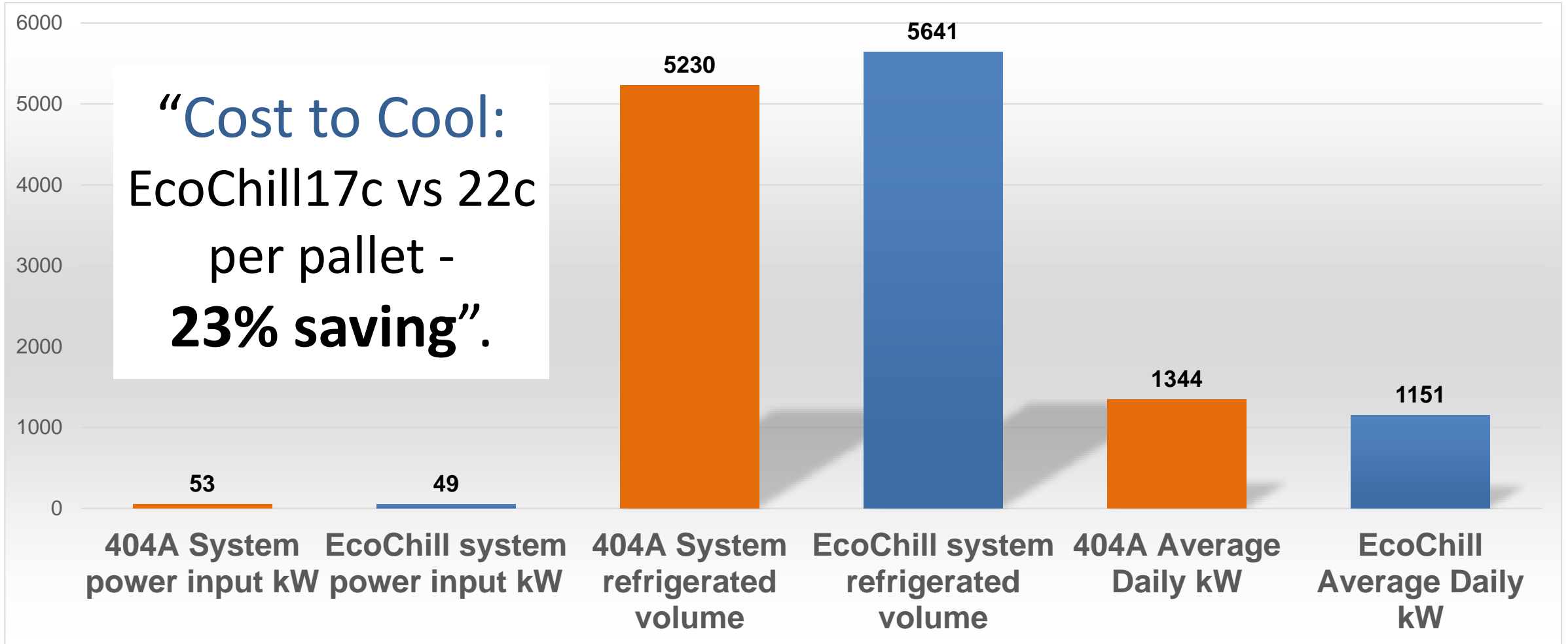


“26% saving on energy costs while cooling more pallets”

	Store capacity (Pallets)	Cost to Cool (Per Pallet/Day)	% Difference
R22	840	\$0.34	Baseline
EcoChill	864	\$0.25	26%

TEWI: **“19% better off than with R22 system”**
 Total Equivalent Warming Impact versus R22





7% increase in volume cooled with **7.5%** less power input.



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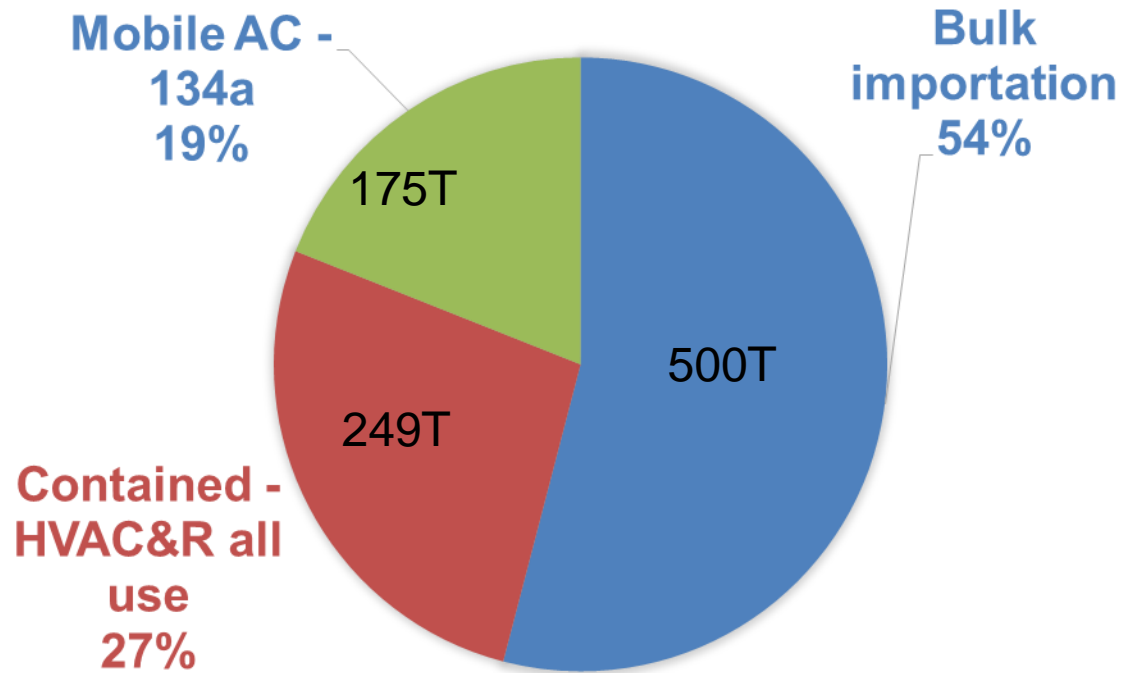
**So why isn't it happening across
the sector?**





Demand for F gases continues to rise 22% increase from 2014 to 2015.

SYNTHETIC REFRIGERANT USE 2015/16 (KG)



Approx. 925 ton across the board.
New Zealand consumed:

- 500 ton to March 2015.
- 22% increase on 2014.
- Estimates of annual leak rate as high as 70%.

Source:

- EPA Synthetic Greenhouse Levy 2015 Report
- Dave Nicholls IRHACE/ Refrigerant Recovery

Despite the increasing cost of the ETS on refrigerants, many end users holding on to R22 or investing in synthetics facing phase out.

Refrigerant	Carbon cost alone*.
R-404a	\$403.78
R-410A	\$220.15
R-134a	\$182.44

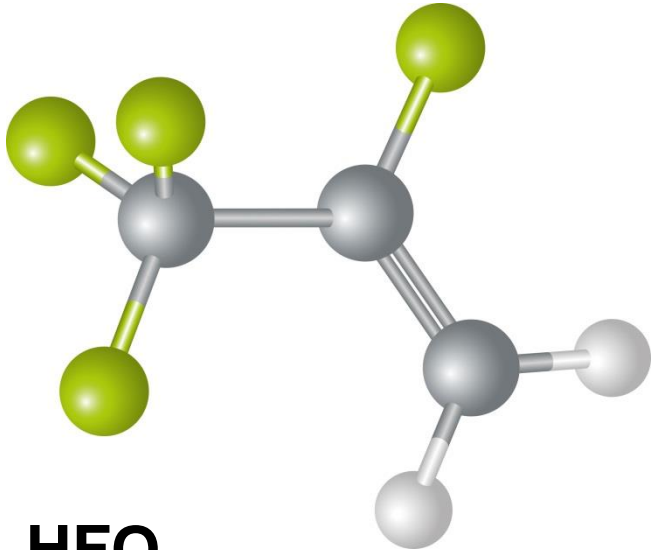
* Carbon price as at February 2017

- Significant additional bottom line.
- Estimated +\$11,000,000 to WHOLESALE costs in 2016.
- Estimated 33.33% **increase** annually for next 3 years as “2 for 1” subsidy removed.

Source: Dave Nicholls
IRHACE

Waiting on HFO as a drop in solution?

**“No current
NZ installs.”**



**HFO
1234yf**

- Under ANZ Standards HFO’s **are not a drop in replacement** for current HCFC and HFC refrigerant systems.
- Not currently in NZ – no installs.
- No cost information.
- Need engagement and education in NZ market.
- Future proof solution?

So why is this segment choosing naturals?

- Large successful companies with the vision to invest.
- Resources available to them.
- Sustainability / environmental criteria increasing importance.
- Ultimately must be sold on the solution and shown continued value of investing.



This is a sector that understands refrigeration as a valued partnership.

**“Refrigeration:
providing
competitive
advantage.”**



- Pack
- Precool



- Uniform Temperature
- High Humidity
- No Air Temp Variations
- Energy Efficient
- Low Maintenance

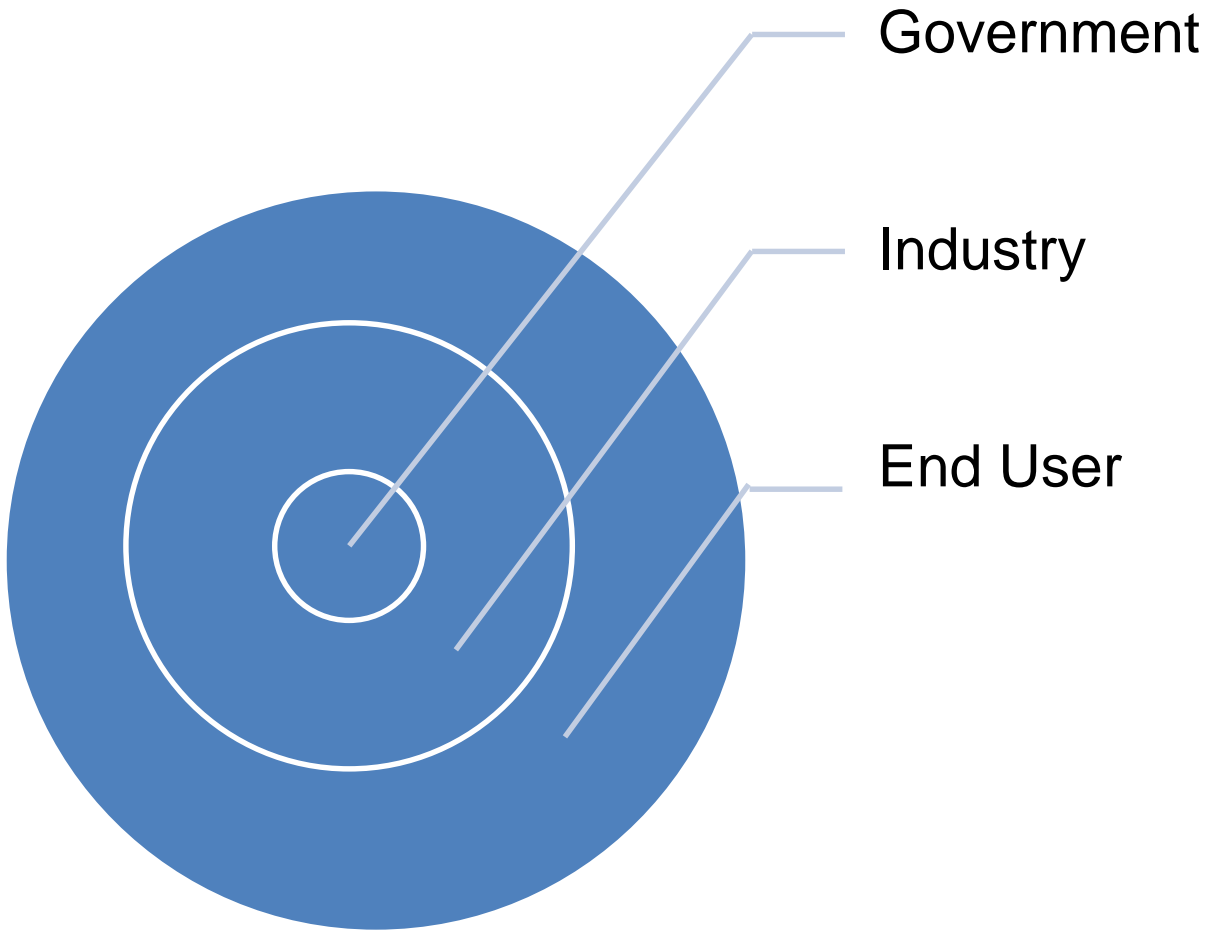


- Increased margin
- Higher “vine to table” volumes

Zespri images courtesy zespri.com



How are we the problem?



» **Government**

- Strategy to lower GWP – include leak and destruction.
- Incentives – subsidies.
- Penalties – deter wrong behaviours.

» **Industry**

- Value itself, move from death spiral of price discounting.
- Support end users, educate on environmental factors and lifecycle costs. Create value???
- Educating itself – not keep doing what it knows as easy solution. Invest in people and skills.
- Make itself visible – critical role it has in industry and environmental goals.
- Sustainable, end game focus.

» **End users**

- Short term thinking -> move to total cost of ownership.
- Nature of business – small players, low margins.



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Thank you very much!

