



North America's Natural Refrigerant Potential: First Results from an Industry Survey



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WHY? - GUIDE World / Europe



- starting point: aim to quantify + illustrate the global market potential for NR
- method: the world's biggest survey on NR with 1,200+ respondents from 92 countries
- result: "GUIDE to Natural Refrigerants: Market Growth for Europe" published in February 2012
- viewed online: 5500+ individual readers; 83,000+ pages viewed
- next: detailed analysis of the North American market potential, strengths & weaknesses of NR
- outlook 2012-2020

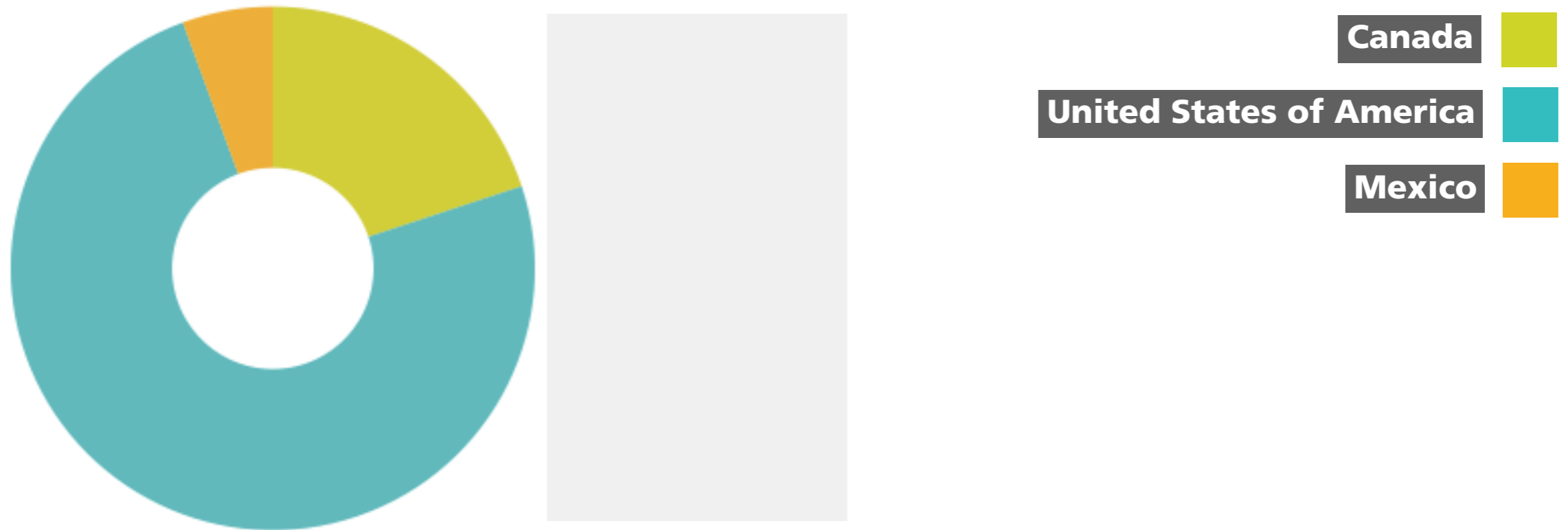


HOW? survey on North America



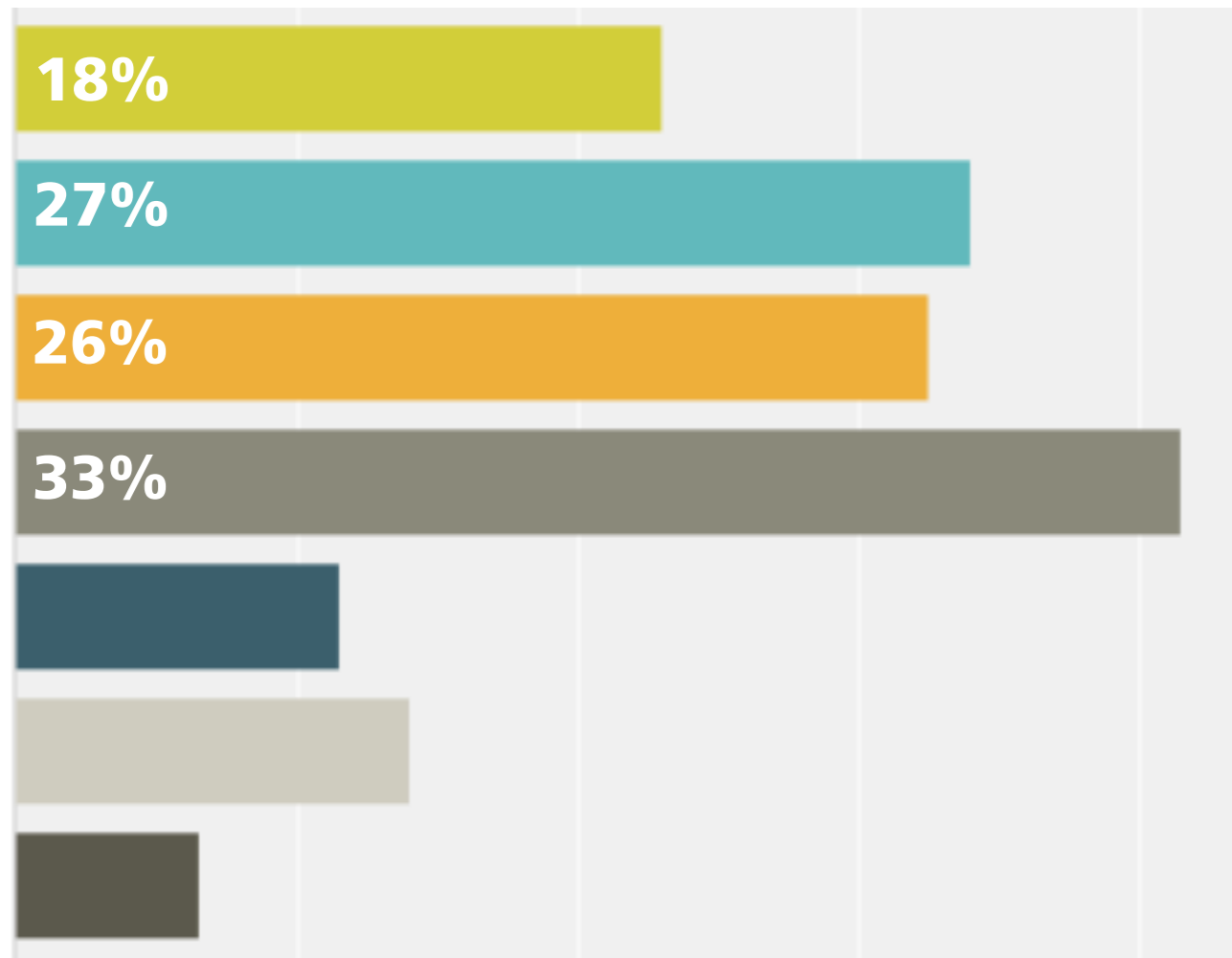
- online survey launched in March
- until end-May 250 responses (+270 in 2011) received to questions in the field of:
 - market state, trends & drivers
 - industry expectations by refrigerant and application
 - NR leadership capacity
 - barriers & opportunities to the use of CO₂, NH₃, HC, H₂O, Air

WHO? - respondents location & size



- ▶ **location: nearly 3/4 of respondents are US-American based / active**
- ▶ **organization size: 41% small (1-99 staff); 38% large (500+ staff)**

WHO? - respondents activity type



End Users

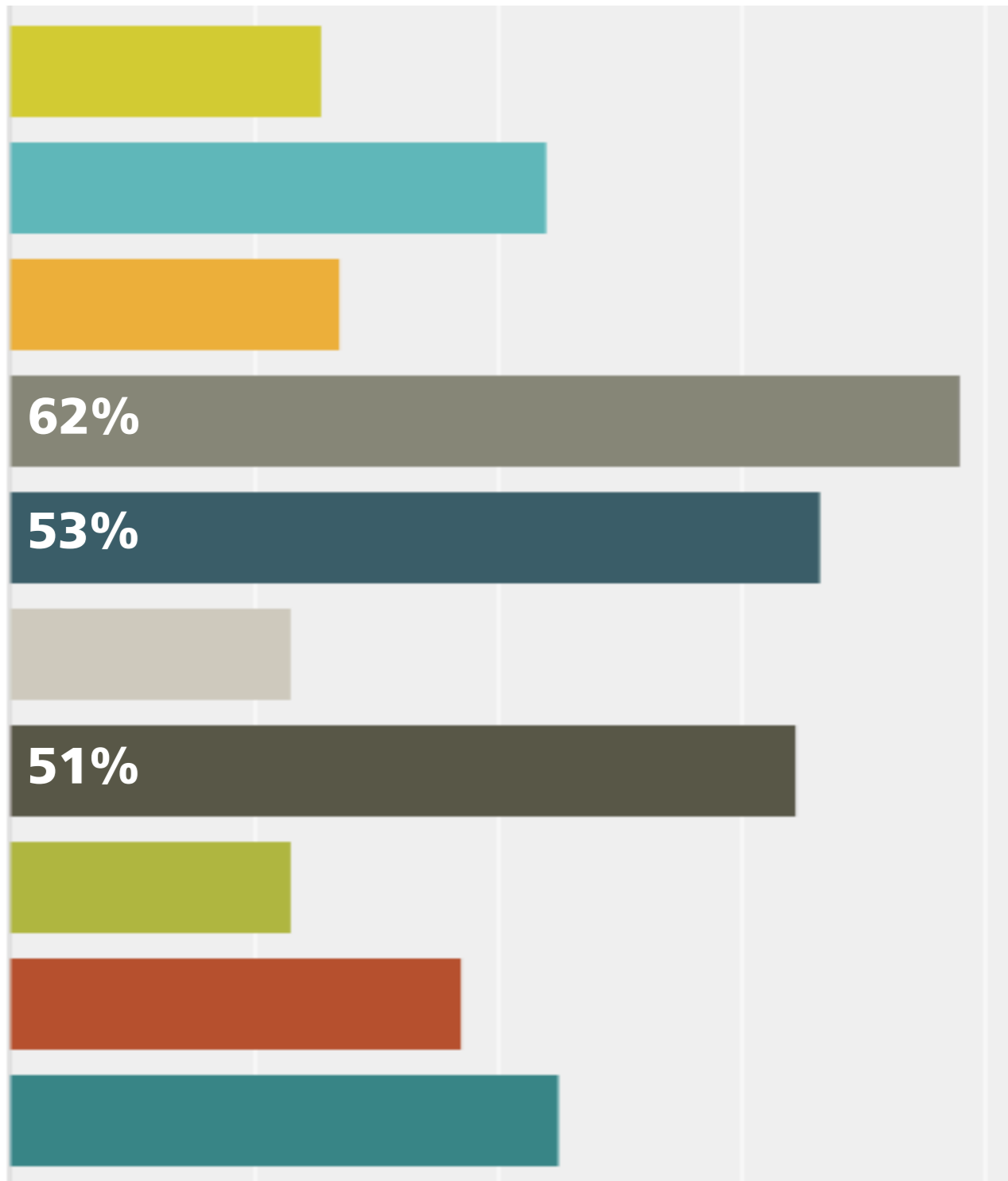
System Manufacturer

Component Supplier

Engineering & Contractor

- ▶ most respondents are active in engineering & contracting, system manufacture and/or component supply
- ▶ **18% end-users; 11% training & research**

WHO? - respondents activity sector

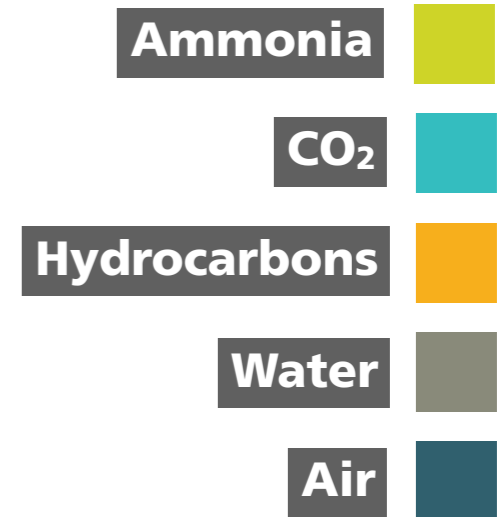
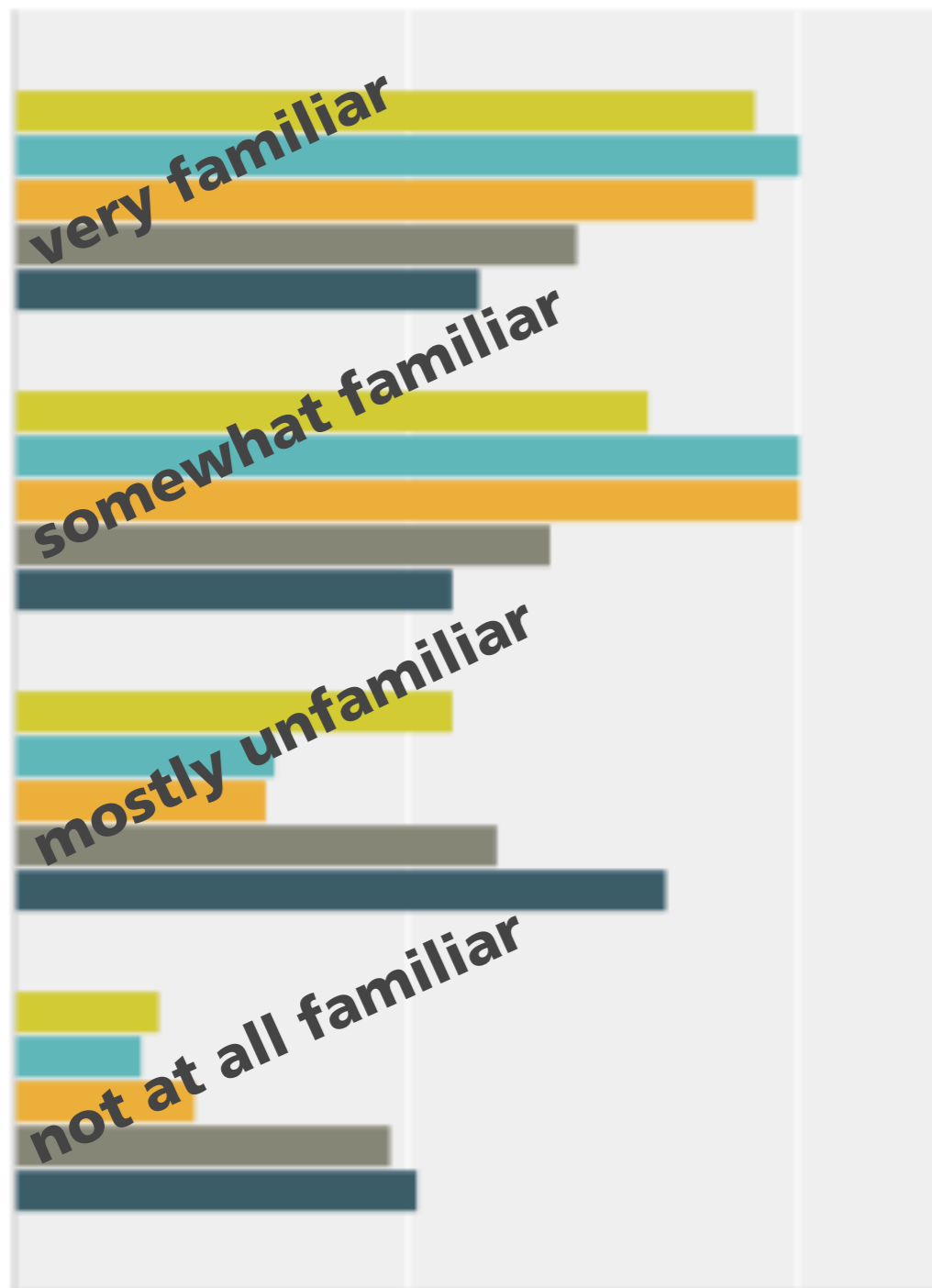


Refrigeration - Commercial

Refrigeration - Industrial

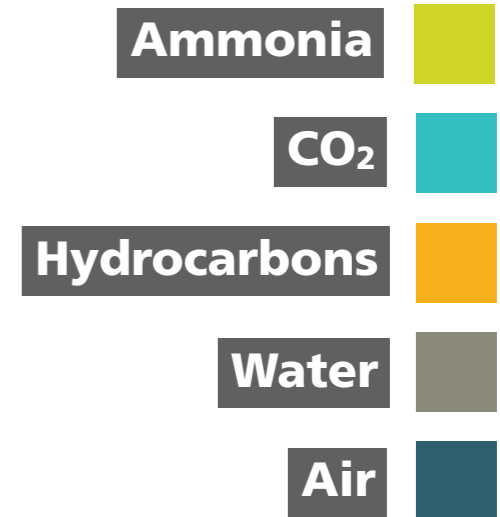
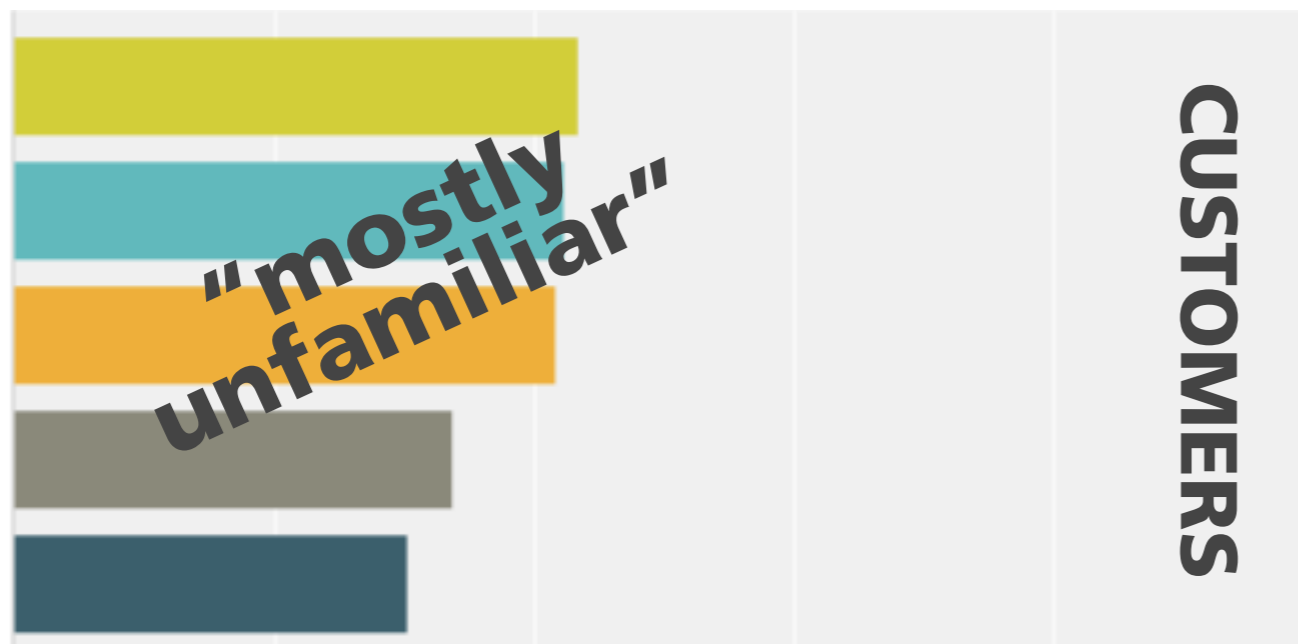
A/C - Industrial & Commercial

familiarity with refrigerants



- ▶ **80% of respondents are very or somewhat familiar with CO₂ , followed by HCs (78%) and ammonia (70%)**
- ▶ **water and air have the lowest awareness levels (19% and 21% not at all familiar)**

familiarity respondents vs customers



- ▶ consistently lower NR familiarity for customers than for respondents
- ▶ best match for NH₃ - all other show a mismatch between respondents and what they think their customers know

NR used today



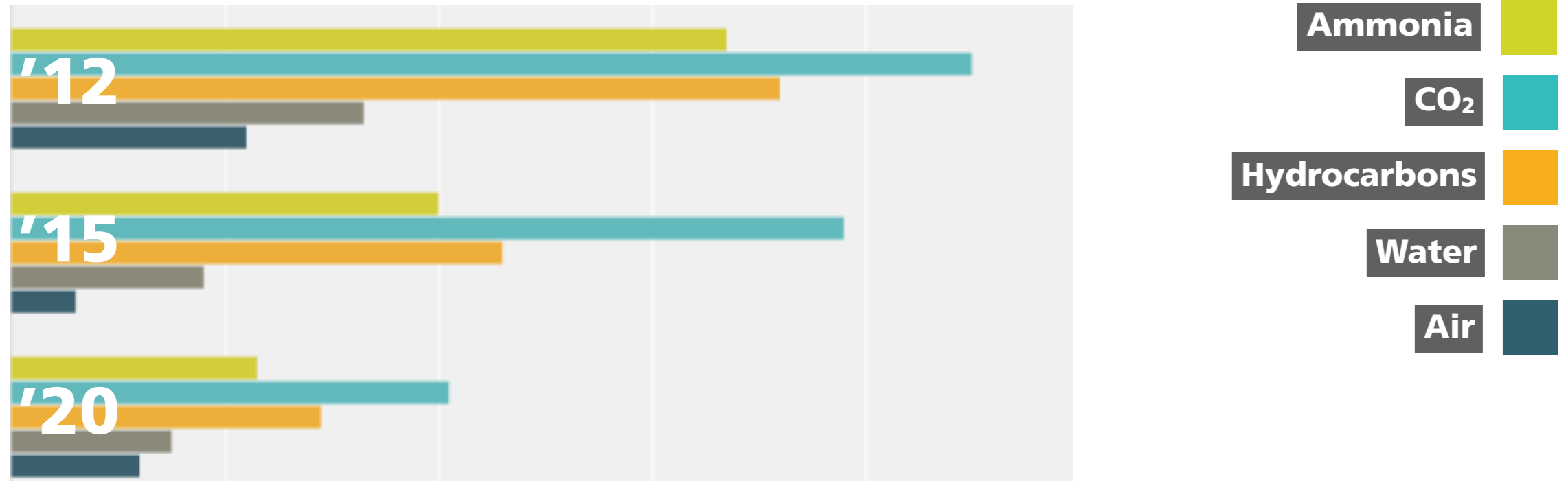
- ▶ **69% of respondents already use NR; 26% do not (yet); 5% don't know**
- ▶ **out of those providing/using NR, most use CO₂, NH₃ and HCs**

plans to use NR



- ▶ **pro-NR respondents: 92% are planning to use NR in the future; 2% will not use them; 6% do not know**
- ▶ **non-NR respondents: 38% are planning to use NR in the future; 22% will not use them; 43% do not know**

plans to use NR in 2012, 2015, 2020



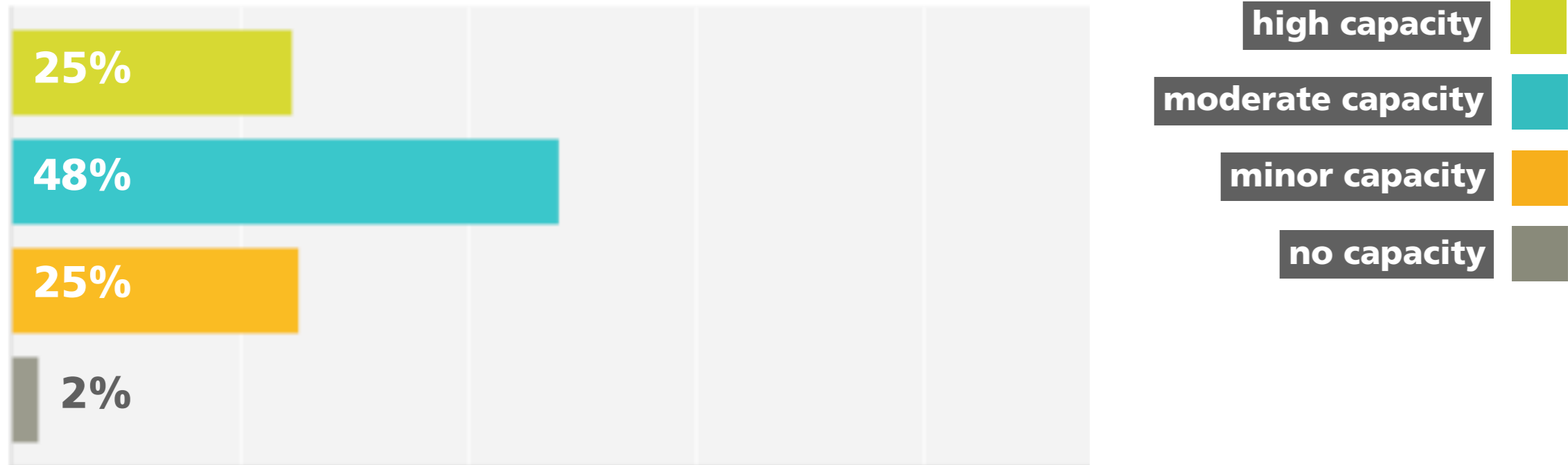
- ▶ **pro-NR respondents: most will use CO₂ by 2012 and by 2015**
- ▶ **non-NR respondents: total adoption rate is lower; most will use HCs by 2012, and CO₂ by 2015**

business & regulatory climate



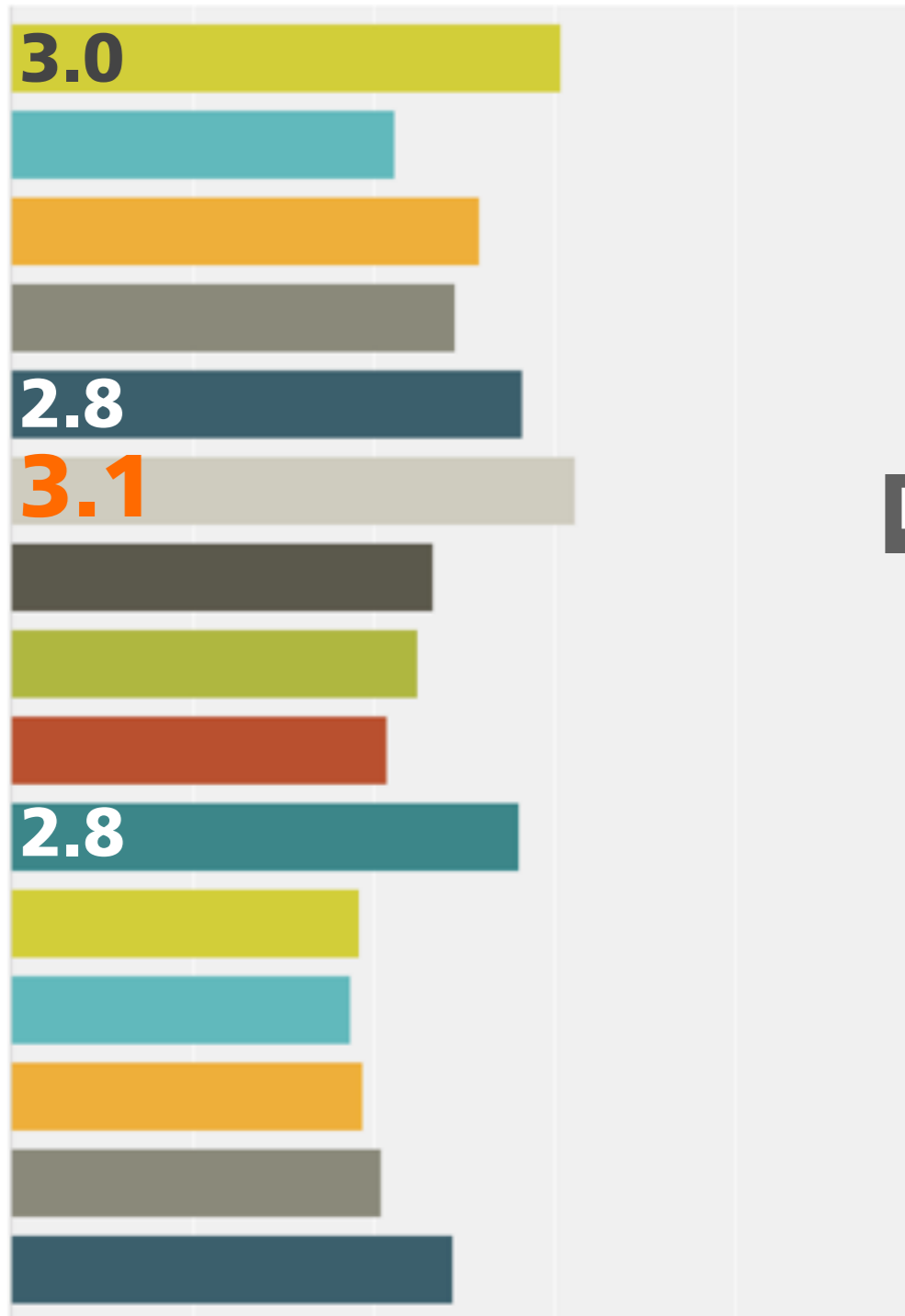
- ▶ **pro-NR respondents: 90% see very or rather favorable climate for CO₂ ; only 50% confirm that for HCs**
- ▶ **non-NR respondents: most see the climate for NR overall, CO₂ and HC as rather favorable; that for NH₃ as rather negative**

north america's NR capacity



- ▶ **pro-NR respondents: 50% see moderate capacity for North America to become a world leader in NR (25% high capacity; 25% minor/no capacity)**
- ▶ **non-NR respondents: 44% see moderate capacity (23% high capacity; 33% minor/no capacity)**

NR strengths



Refrigerant costs

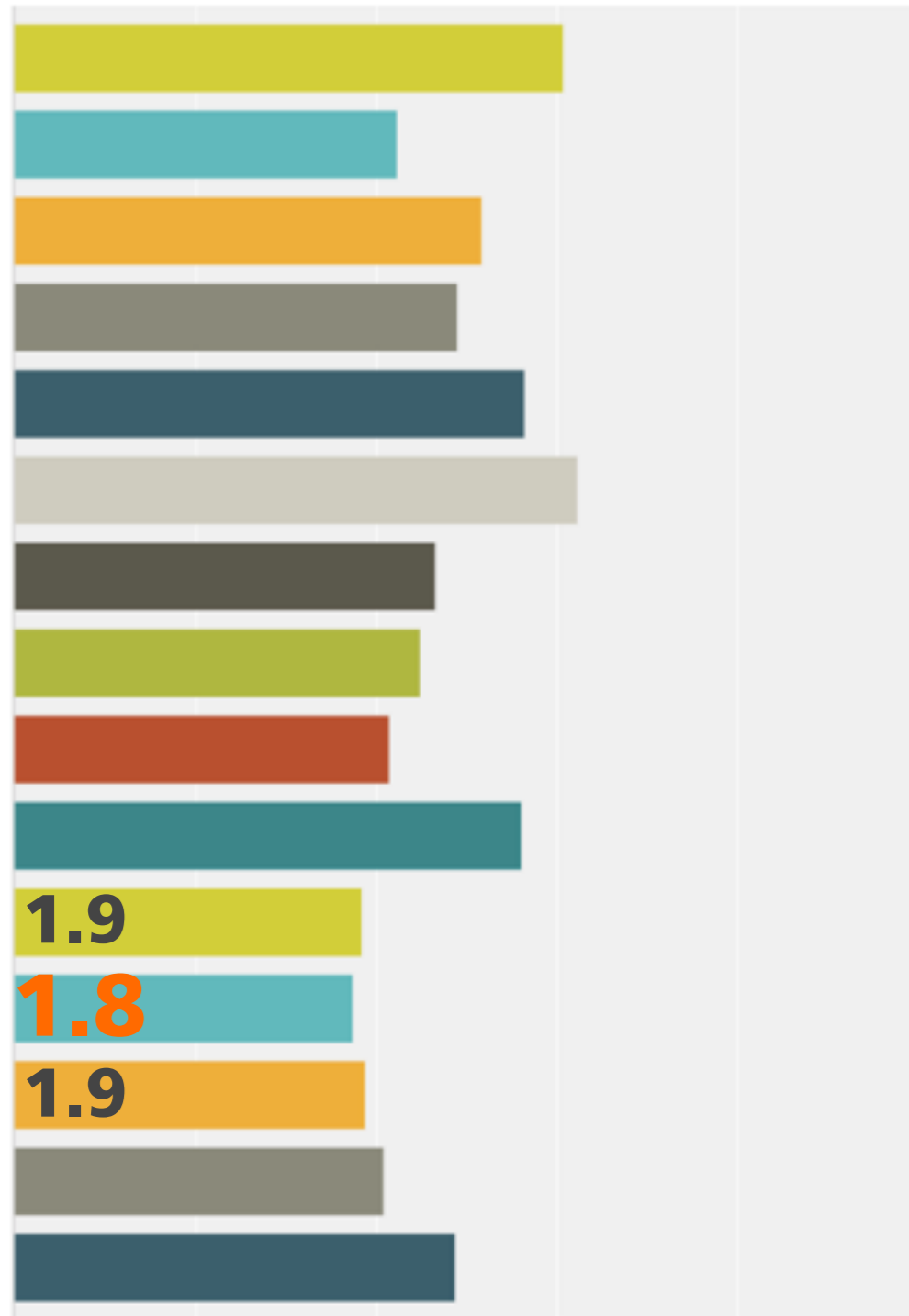
Performance, efficiency

Direct & indirect environmental impact

Competitive advantage, green image

scale from ++ (4) to -- (0)
above 2 = stronger

NR weaknesses



scale from ++ (4) to -- (0)
below 2 = weaker

Lack of awareness; misconceptions

Lack of skilled personnel

Lack of uniform standards

THE GUIDE North America '12



- easy-to-access **reference guide** for **CO₂, NH₃, HCs, (water, air)** in **North America**
- illustrate + quantify the **market potential** through industry expectations, barriers & opportunities, policy analysis
- **free distribution** to industry, end-users, regulators

THE GUIDE'12 - content



- ◎ **“Ecosystems”**: the applications of NR
- ◎ **Market outlook by refrigerant / application 2012, 2015, 2020**
- ◎ **CO₂ supermarket map for Canada & the USA**
- ◎ **NA regulation & standards analysis**
- ◎ **Case studies**
- ◎ **Company directory**
- ◎ **End Users' statements**



launch: Autumn 2012

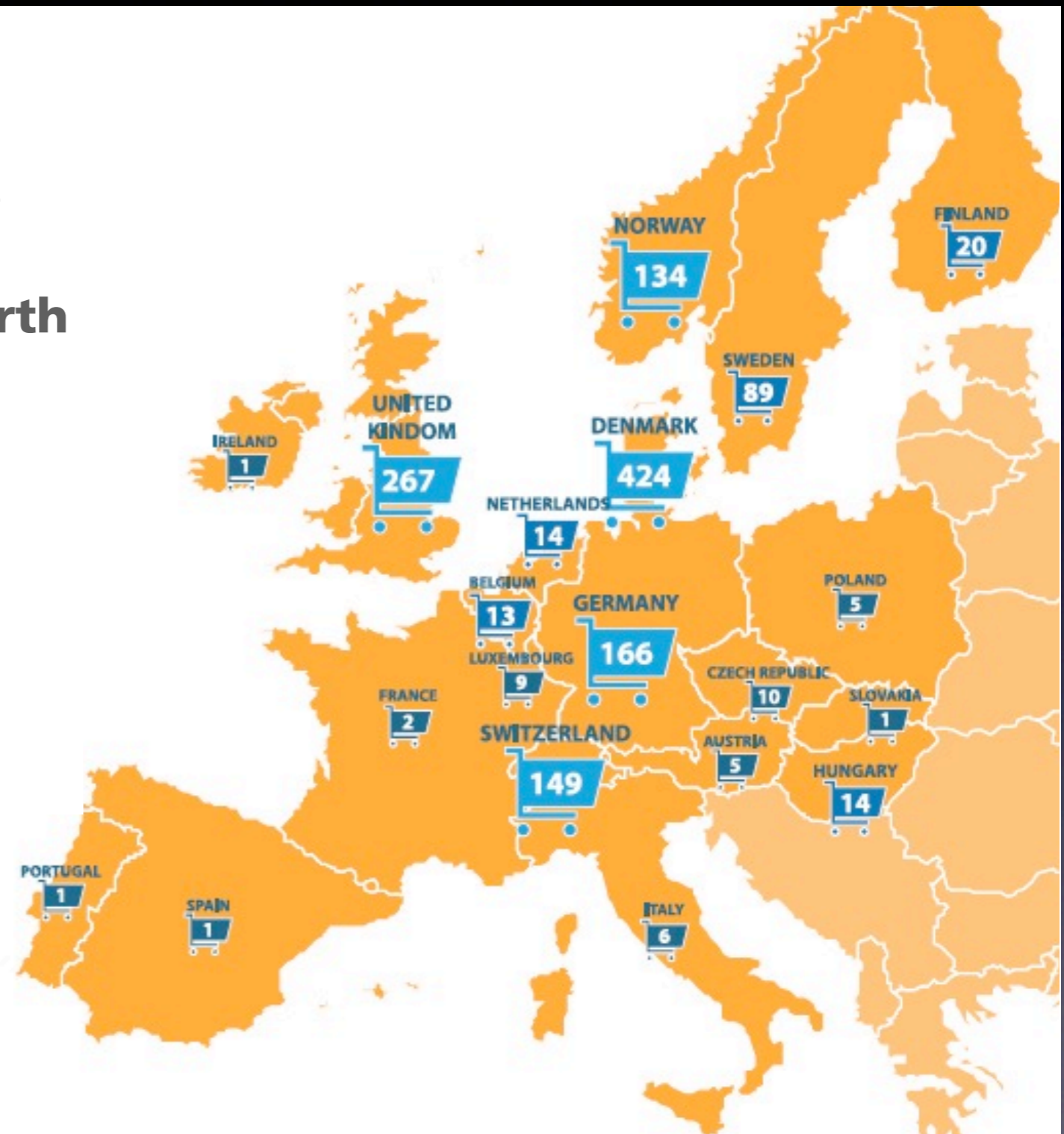
CO₂ supermarket map

verified: 1,331 transcritical stores by end-2011 for Europe

supermarket map for North America:

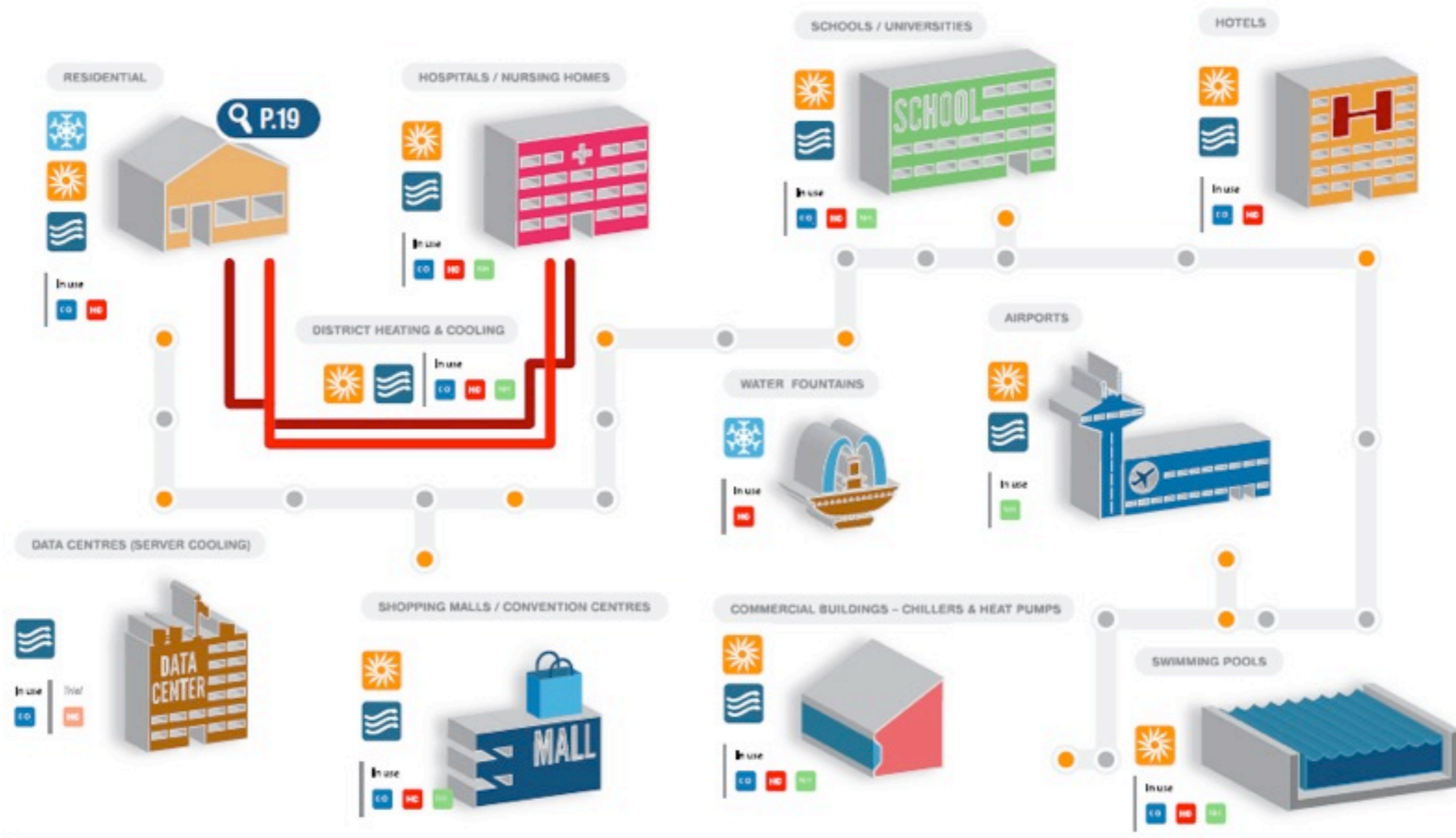
- ▶ **transcritical**
- ▶ **secondary**
- ▶ **cascade**

missing: your input



"Ecosystems" - applications

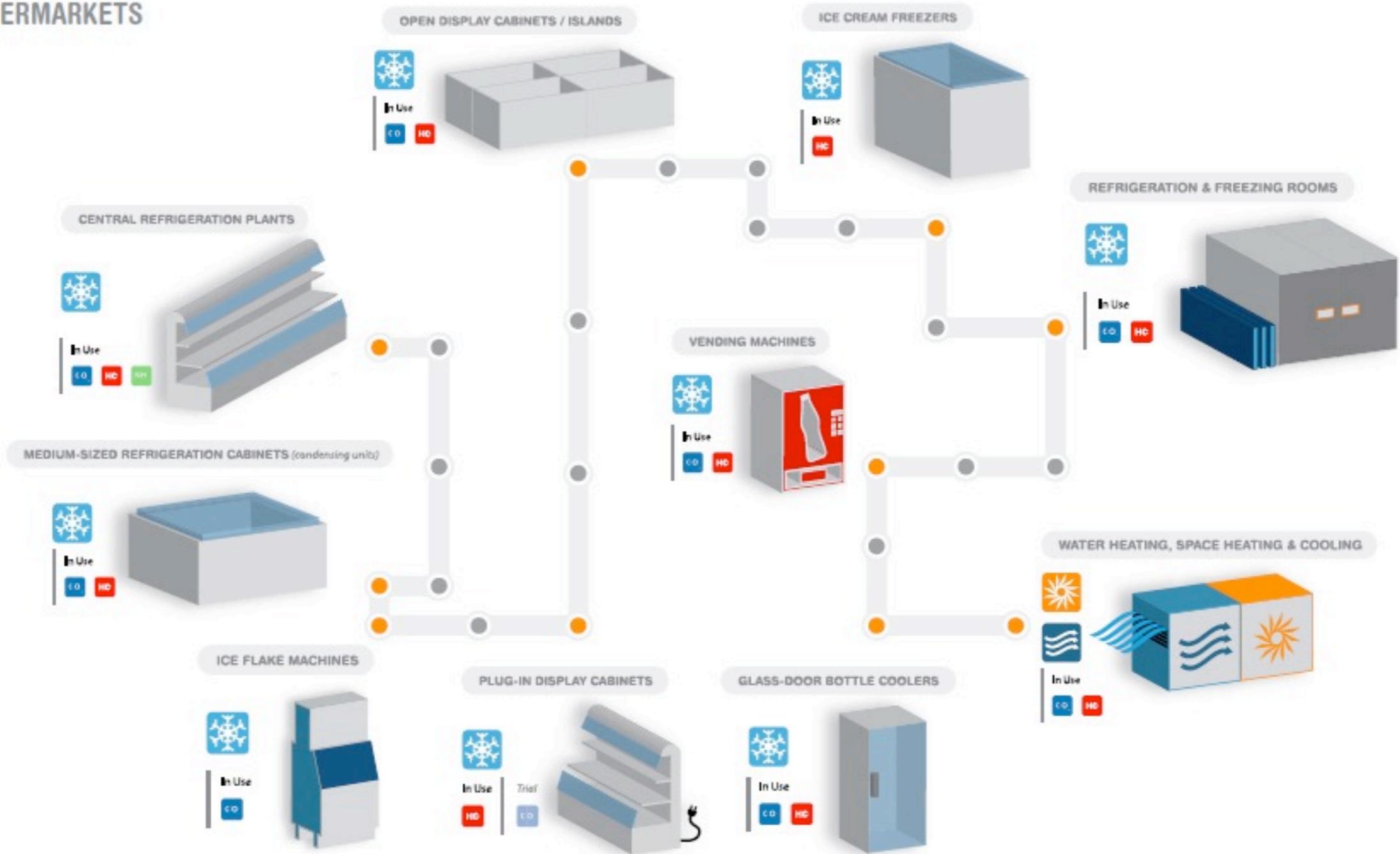
CITY & BUILDINGS



 Ammonia |  Carbon Dioxide |  Hydrocarbons |  Refrigeration |  Heating |  Air Conditioning

"Ecosystems" - applications

SUPERMARKETS



THE GUIDE - current supporters



contact & more information



- ◎ **Download the GUIDE - Market Growth for Europe**
- ◎ **Take the SURVEY for the GUIDE North America**
- ◎ **<http://guide.shecco.com>**

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live polling



- ◎ **What is North America's capacity to become a world leader in Natural Refrigerants?**
 - ◎ **high capacity**
 - ◎ **moderate capacity**
 - ◎ **minor capacity**
 - ◎ **no capacity**

- ◎ **Send a code via text message to 22333 from your US phone**
- ◎ **Visit www.pollev.com/ATMOSphere and select the answer**