



# Advances in CO<sub>2</sub> Supermarket Refrigeration in North America

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Hill PHOENIX*

## Why all the interest in CO<sub>2</sub>?

“Just give me a natural refrigerant...  
I am tired of all the retrofits.”

**R-22**

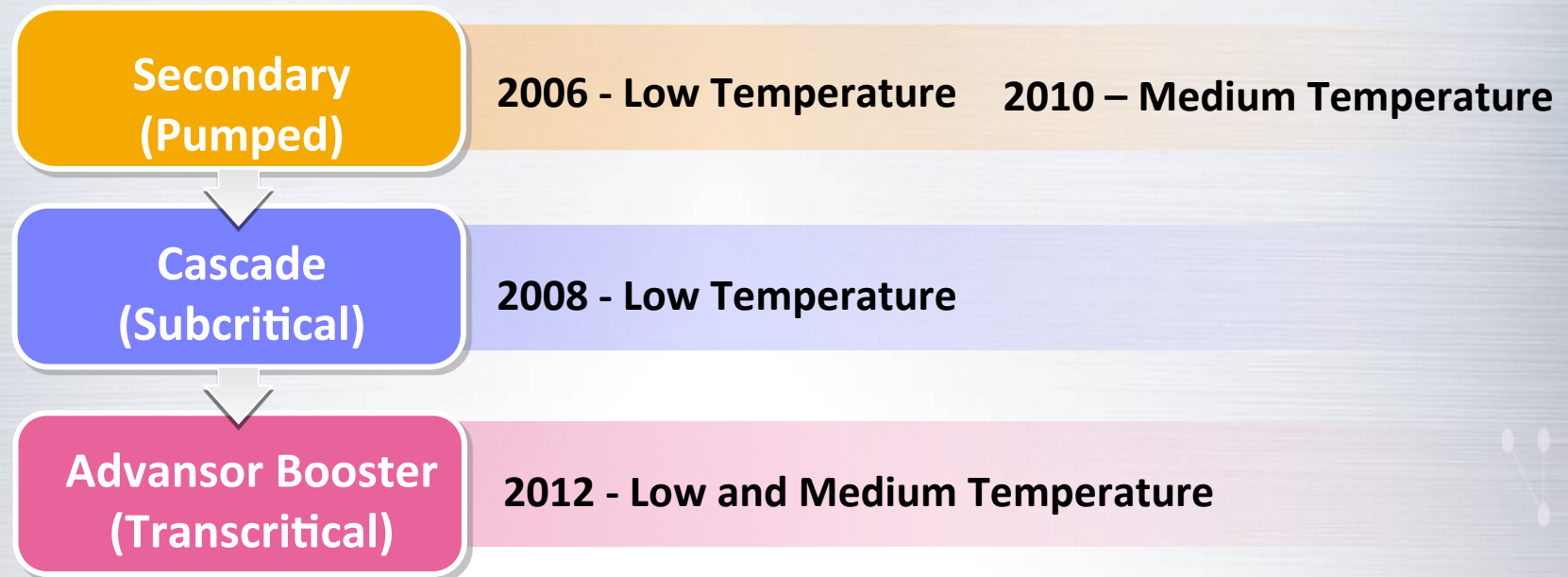
**Hi GWP HFC - R404A**

**Lower GWP HFC - R407A/F**

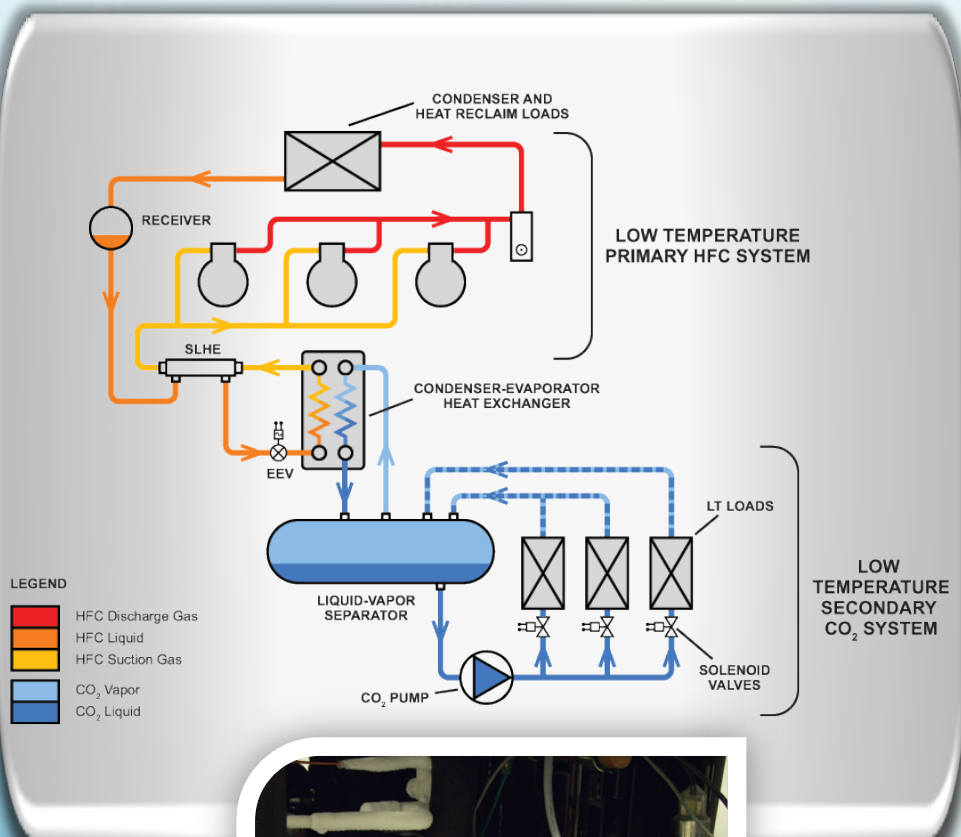
**Lowest GWP - HFO's or Blends**

Most of us  
began our  
careers with  
R-12 and R-502  
as the standard

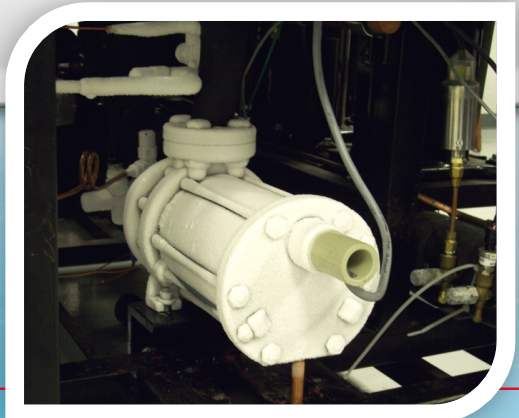
# CO<sub>2</sub> System Evolution for the North American Market



# LT2 – CO<sub>2</sub> Secondary (pumped)

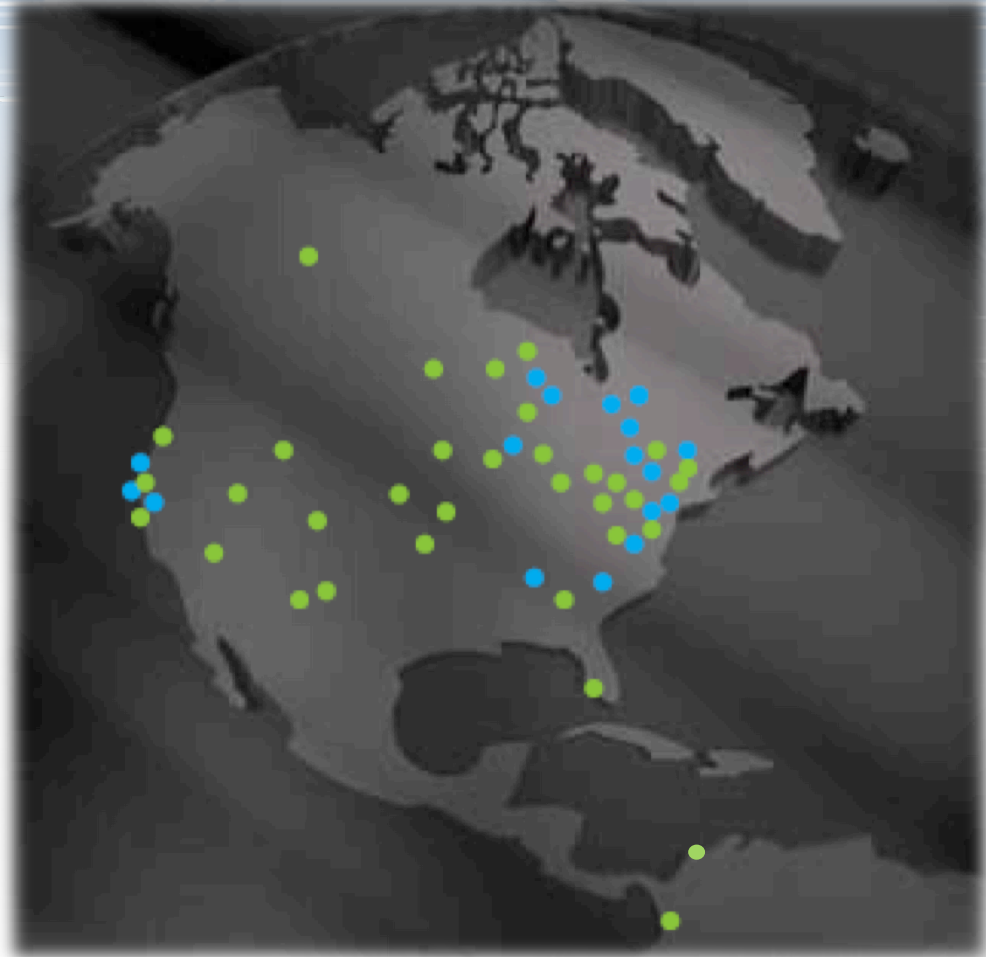


- Liquid CO<sub>2</sub> is circulated to provide refrigeration
- Significantly reduces carbon emissions over traditional DX technology.
- Simple system design. On/Off solenoid operation for temperature control

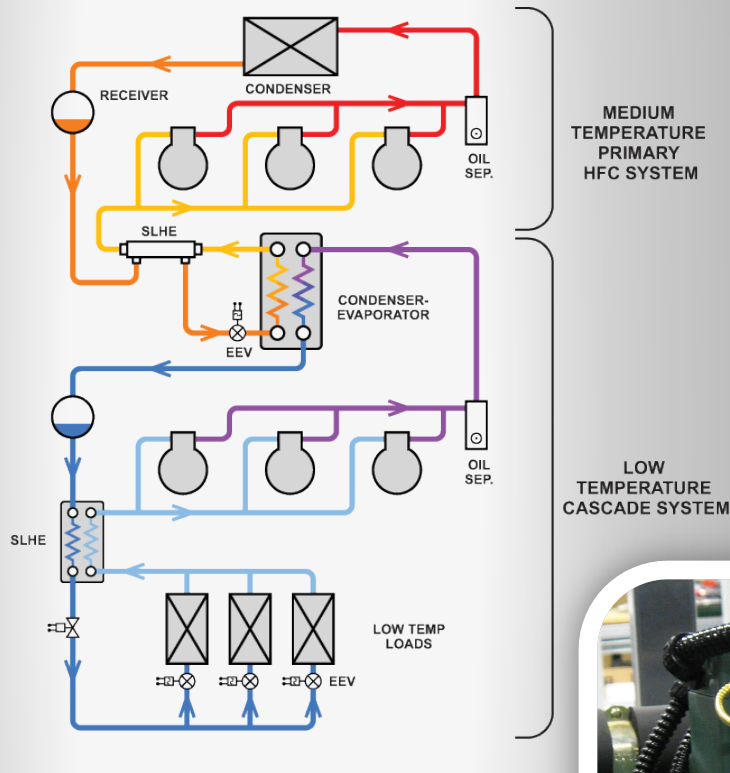




● **50+**  
**Secondary**  
**Installations**  
**since 2006**



# LTX2 – CO<sub>2</sub> Cascade

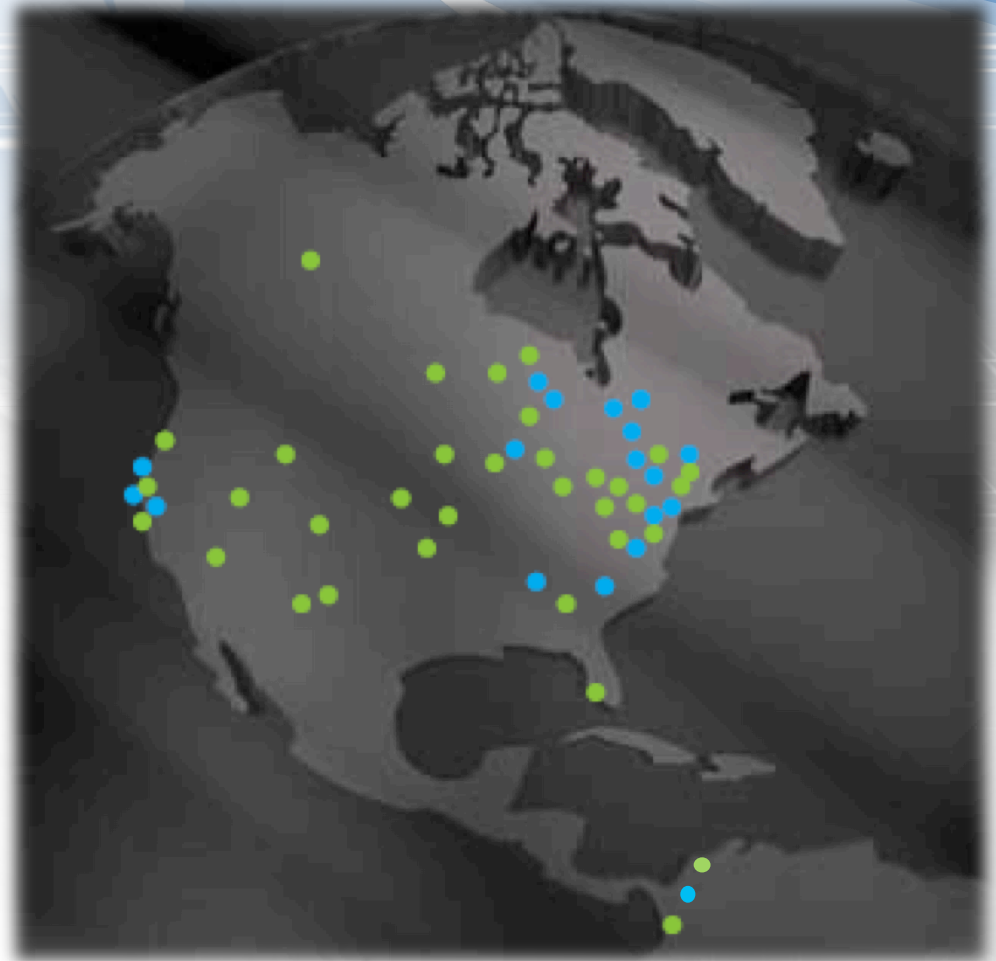


- Utilizes DX CO<sub>2</sub> on the lower cascade and an HFC-based DX system on the upper cascade.
- Eliminates all LT HFC's. Significantly reduces carbon emissions over traditional DX technology.

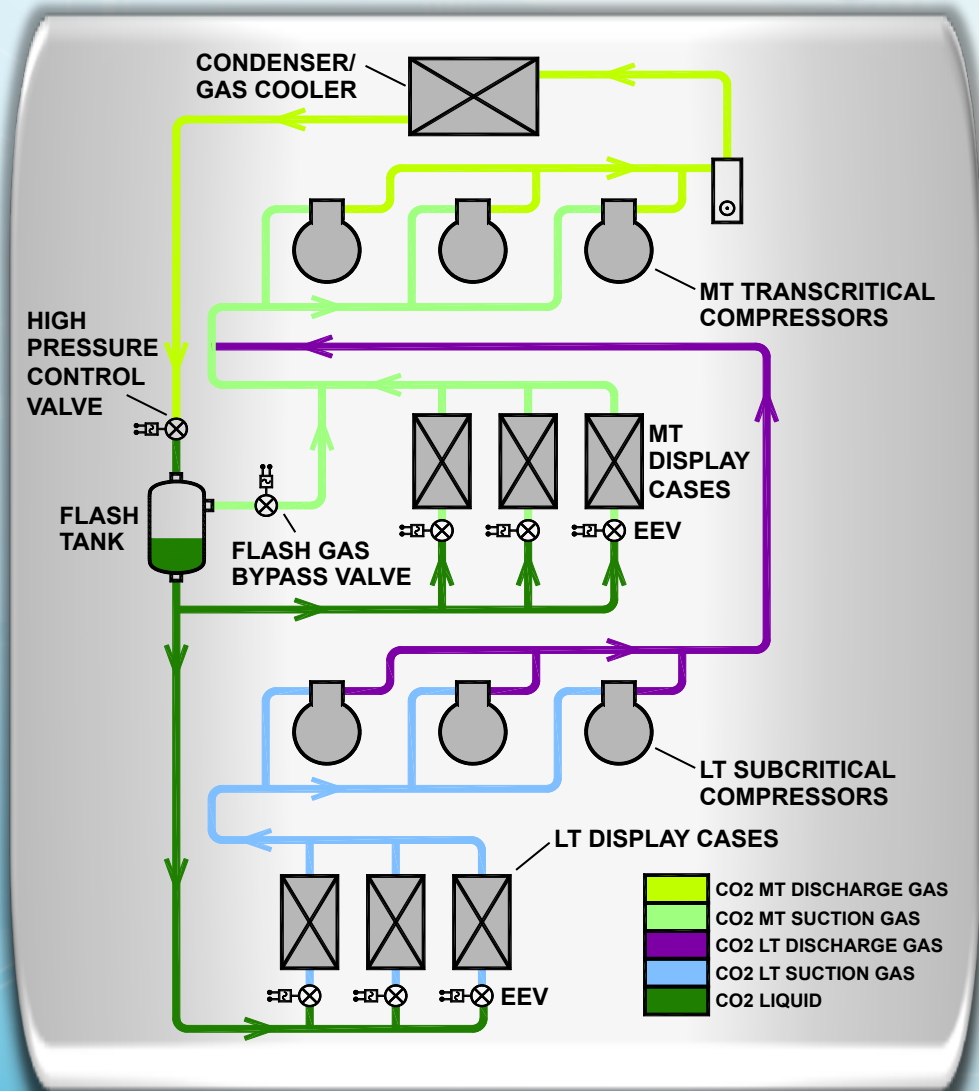


# CO<sub>2</sub> Systems in the Americas

- 50+ Secondary Installations – Since 2006
- 25+ Cascade Installations - Since 2008
  - Combined with MT pumped system - 2010

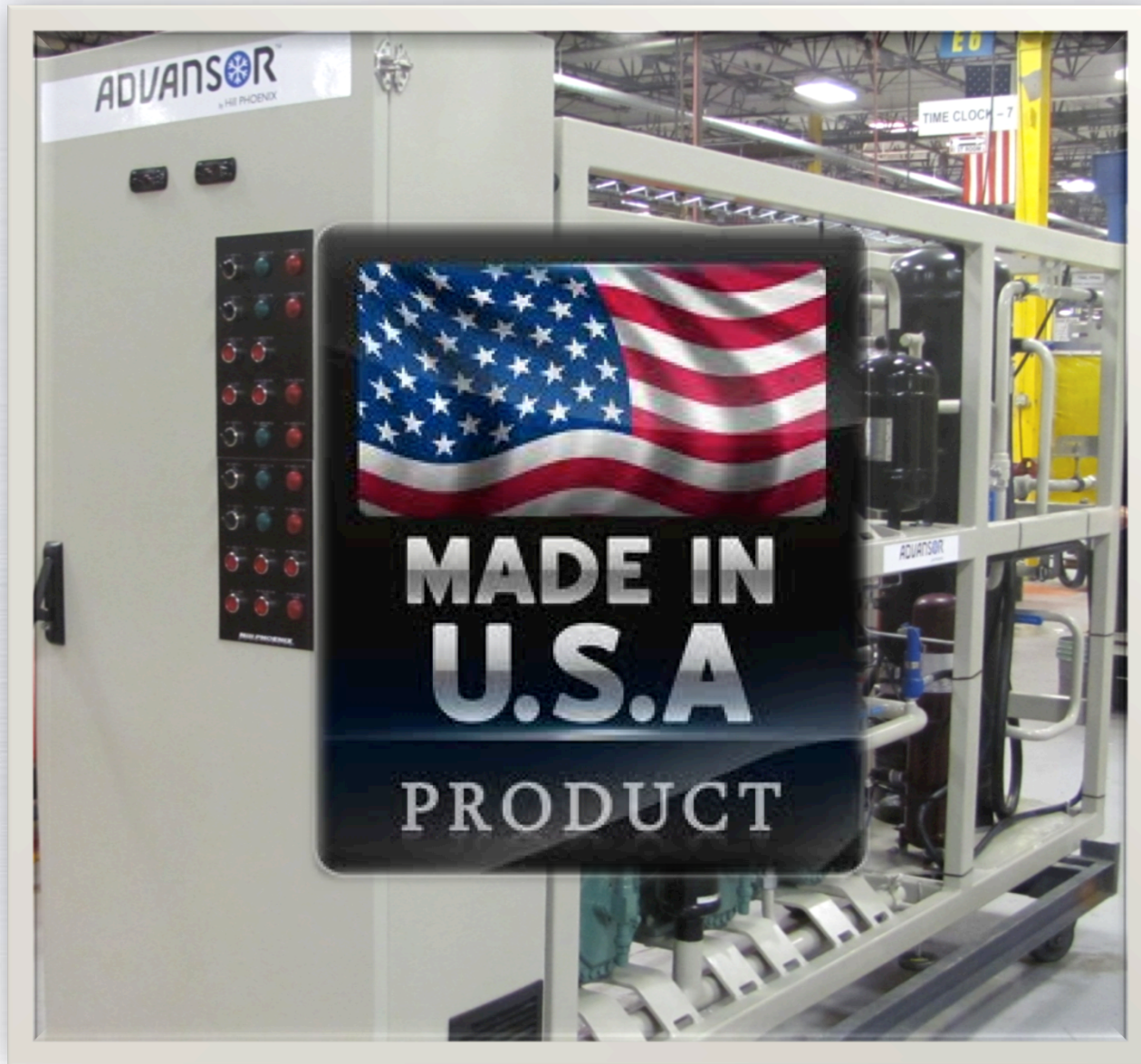


# CO<sub>2</sub> Booster System



- HFC-Free System, CO<sub>2</sub>-Only
- Design proven in 600+ installations
- High quality Heat Reclaim opportunities
- Familiar design to HFC DX systems







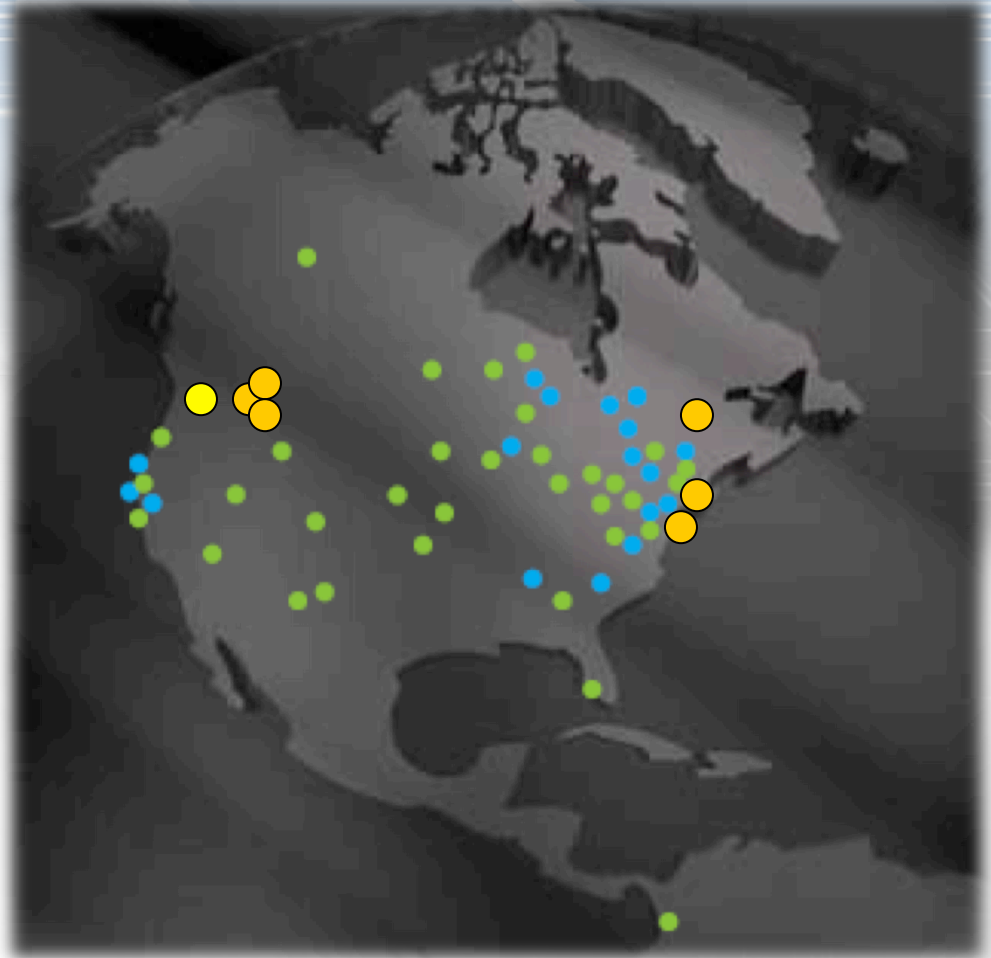
● Secondary Installations

● Cascade Installations

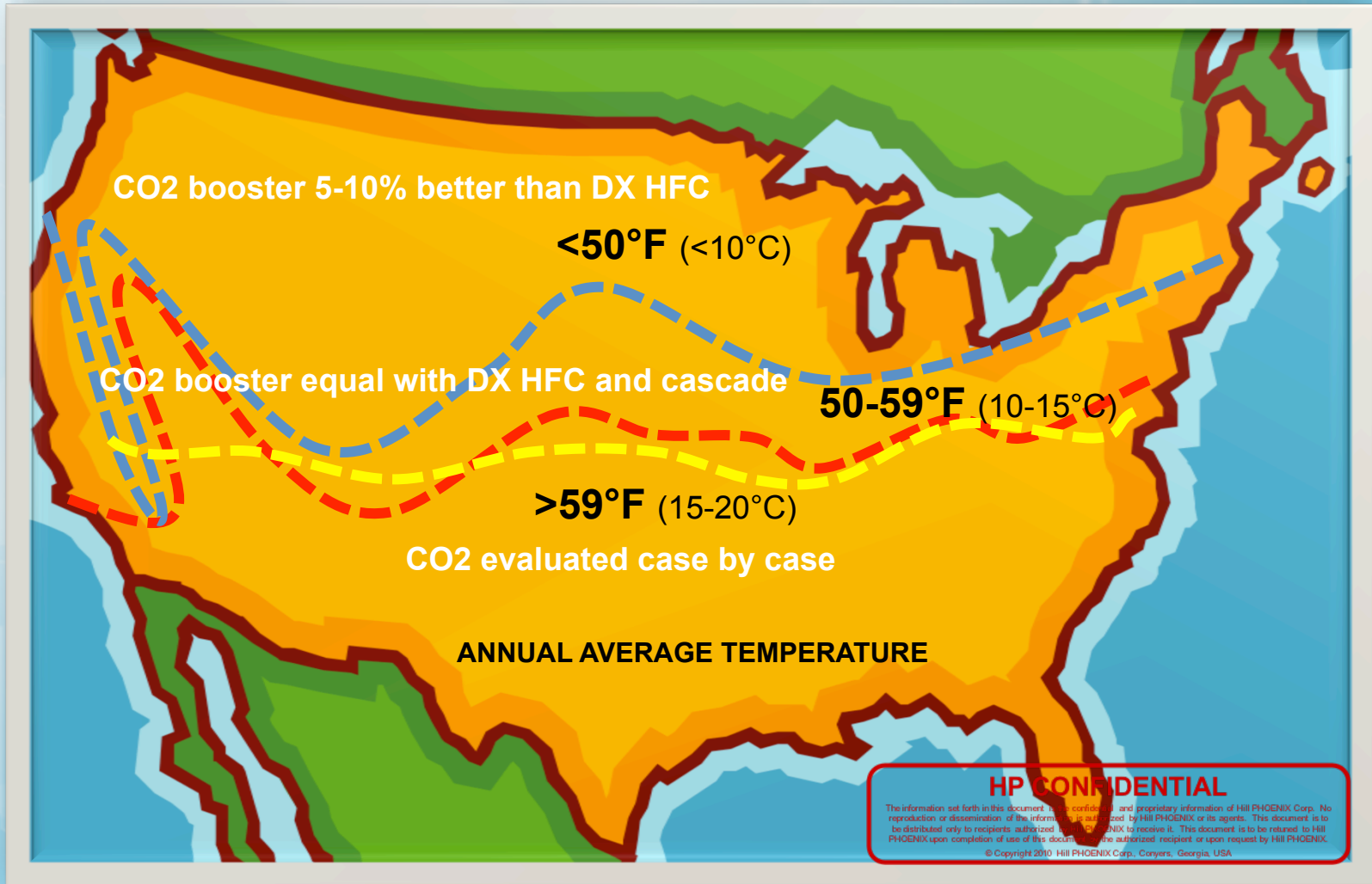
**ADVANSOR**<sup>™</sup>  
by Hill PHOENIX

● 1<sup>st</sup> System Installation

● More planned projects



# CO2 Booster System "Sweet Spots"





**ATMO**  
**sphere**

the Business Case

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**natural refrigerants**

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Thank you very much!