



2 0 2 5

SMACNA ANNUAL CONVENTION

Maui, Hawaii

OCTOBER 26-29

New A2L Refrigerants



Presented by:



Russell Kimball
Owner,
Evergreen State Sheet
Metal, Inc.

About this Presentation

What to Expect Today:

- **Residential Contractor Perspective**
 - Russ is a year ahead of many in converting to A2L systems.
- **Rules are Constantly Changing**
 - Refrigerant regulations are in flux at both Federal and State levels. By early next year, some of this information may already be outdated.
- **Shared Expertise in the Room**
 - The presenter may not have all the answers, especially on chiller and VRF topics. Please feel free to raise your hand and share your insights.

Types of Refrigerants

R410A

GWP: 2088

In phase-out.
Replaced R22, but costs are rising (\$230/jug) as supply shrinks.

R32

GWP: 675

Used by Carrier, Daiken, Mitsubishi.
Above 2028 limit, \$300–350/jug.

R454B

GWP: 467

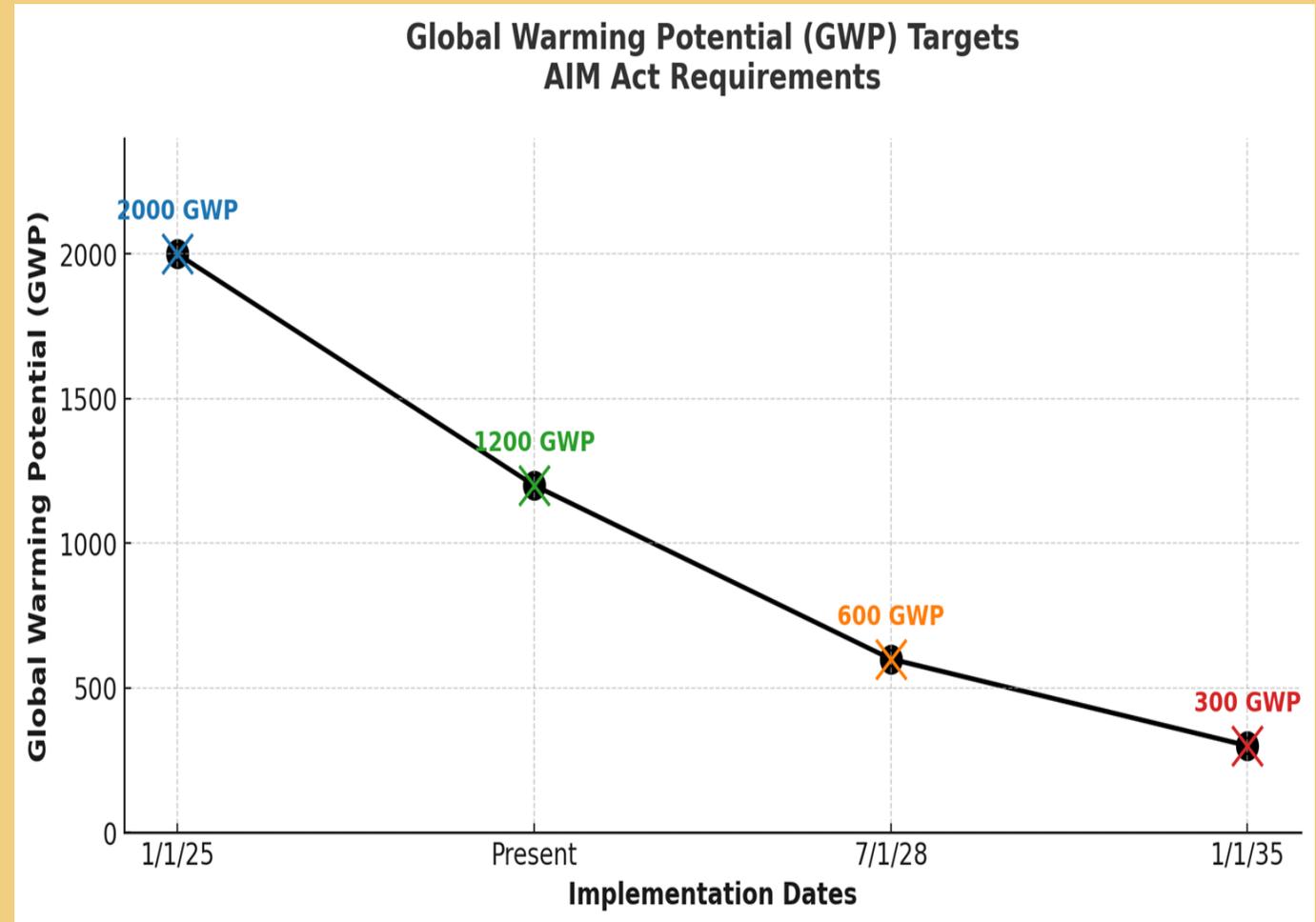
Most common interim replacement.
Prices \$600–650/jug, trending lower.

State Variations: CA, WA, and NY phasing down faster; stricter emissions states will likely move ahead of federal schedule.

Why the Transition?

Global Warming Potential (GWP) Federal targets are happening based on American Innovation & Manufacturing (AIM) Act requirements:

- Up until 1/1/25 – 2000 GWP (R410A @ 90% of total production)
- Present – 1200 GWP (60% of production)
- 7/1/28 – 600 GWP (30% of production)
- 1/1/35 – 300 GWP (15% of production)



R410A Phasedown

R410A Phasedown - Key Dates and Impacts



- *Failures of evaporators/compressors = usually full equipment change.*
- *Wet Side (chilled water) also faces limited repair options.*

A2L Containers (Jugs and Cylinders)

- **Supply Issues**

- Early 2025 shortages due to defective relief valves from a major supplier; situation now improving.

- **Design and Safety**

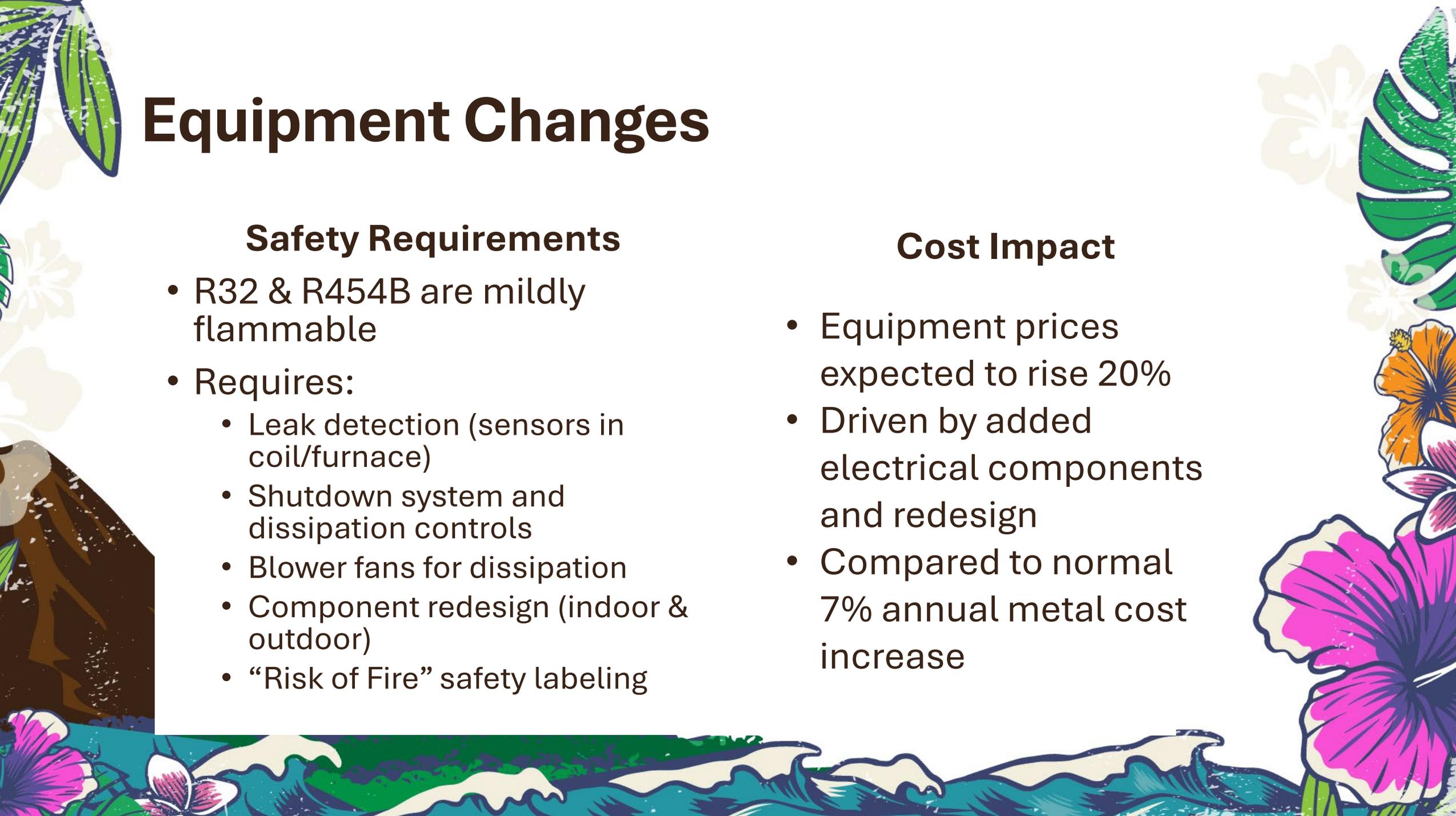
- Jugs must be purpose-built for A2L refrigerants, factoring in flammability risks.

- **Cylinder Features**

- Red band or stripe to identify A2L
- Reverse-thread adapters for safe handling

- **Capacity Change**

- R454B & R32 cylinders hold 20 lbs., compared to 25 lbs. for R410A.



Equipment Changes

Safety Requirements

- R32 & R454B are mildly flammable
- Requires:
 - Leak detection (sensors in coil/furnace)
 - Shutdown system and dissipation controls
 - Blower fans for dissipation
 - Component redesign (indoor & outdoor)
 - “Risk of Fire” safety labeling

Cost Impact

- Equipment prices expected to rise 20%
- Driven by added electrical components and redesign
- Compared to normal 7% annual metal cost increase

Tooling, Training, and Job Time

Tooling

- recovery machines
- vacuum pumps
- leak detection
- keep manifolds, scales and hoses

Training

- EPA license still valid (no A2L certifications yet)
- Continuing education strongly encouraged (EPA 608)

Job Time

- Fire-off and testing required
- Nitrogen sweeps and pressure testing
- Leaks = bigger setbacks

Flammability and Building Requirements



- **Complex topic** – highly technical and evolving beyond my core expertise
- **Flammability concern** – leaks in occupied spaces create safety risks
- **System categories:**
 - Low Probability systems
 - High Probability systems (e.g., chillers)
- **Code requirements to review:**
 - Ventilation for mechanical and machinery rooms
 - Refrigerant detection and alarm systems (non-HVAC equipment)
- **Key note:** Chillers are generally classified as high probability systems

Other Important Changes

- **Truck limitations**
 - Maximum 225 lbs. of A2L refrigerant per vehicle
- **Storage Rule**
 - Cylinders must be kept outside office and shop
- **Recordkeeping**
 - Usage thresholds lowered to 15 lbs. (from 50 lbs.) starting 2028
- **Labeling and Safety**
 - Updated protocols required across all equipment

QUESTIONS?

2025 SMACNA ANNUAL CONVENTION



Please take a moment to complete the session survey provided to you.

2025 SMACNA ANNUAL CONVENTION

A decorative illustration at the bottom of the slide. On the left, there are dark brown mountains with some green foliage. In the center, there are stylized waves in shades of blue and white. On the right, there is a large, vibrant pink and purple hibiscus flower. The background of the illustration is a light yellowish-gold color.