

<b>DOCKETED</b>	
<b>Docket Number:</b>	22-DECARB-01
<b>Project Title:</b>	Heat Pump and Decarbonization Goals
<b>TN #:</b>	242598
<b>Document Title:</b>	Presentation - to CEC Staff Workshop on Heat Pump Goals, Supply Chain, and Programs
<b>Description:</b>	Presentation from Jonathan Moscatello (Daikin)
<b>Filer:</b>	Gabriel Taylor
<b>Organization:</b>	Daikin
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	4/6/2022 3:17:18 PM
<b>Docketed Date:</b>	4/6/2022

# Presentation to the California Energy Commission Staff Workshop on Heat Pump Goals, Supply Chain, and Programs





## DAIKIN Includes Many Trusted Brands

---



Amana is a registered trademark of Maytag Corporation or its related companies and it used under license to Goodman Company, L.P., Houston, TX, USA. All rights reserved.

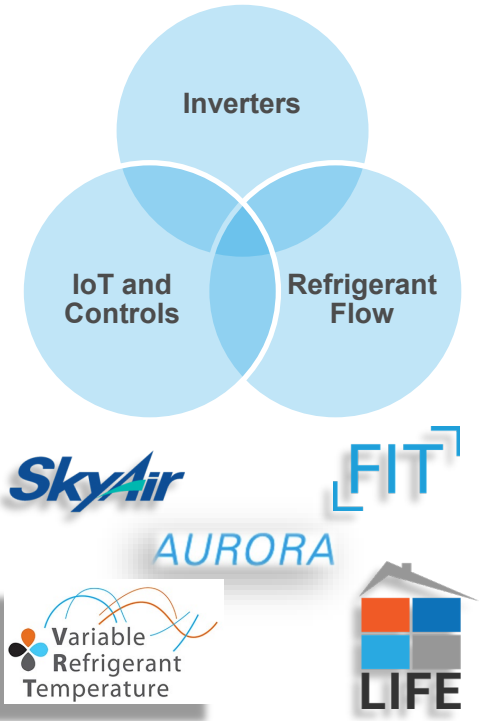
# CEC Question: Can the supply chain ramp up to meet California’s goals?

For our part, Daikin says—YES!

1

## HEAT PUMPS

DAIKIN CORE TECHNOLOGIES



2

## MANUFACTURING CAPABILITY

More than

**90**

global production bases for localized production

More than

**76,000+**

EMPLOYEES  
80% are outside Japan

Business development in more than

**150**

countries

76%

of our sales are from outside Japan

**Comprehensive AC Manufacturer**

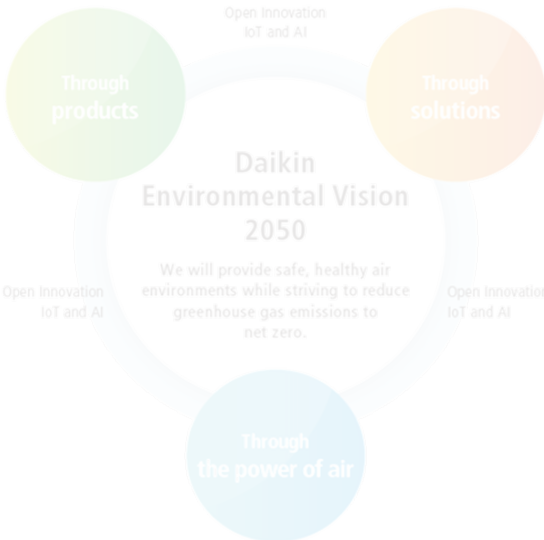
Handling both AC equipment and refrigerants

**AIR SPECIALISTS**

3

## MISSION

**Environmental Vision 2050**  
We will reduce the greenhouse gas emissions generated throughout the entire life cycle of our products.



# Daikin Heat Pump Innovations

## R32 Low-GWP Refrigerant

## IoT and Grid Flexibility

## Diverse Inverter Heat Pump Offering

**R32**

### PROVEN

In over 160 million units installed around the world.

### EFFICIENT

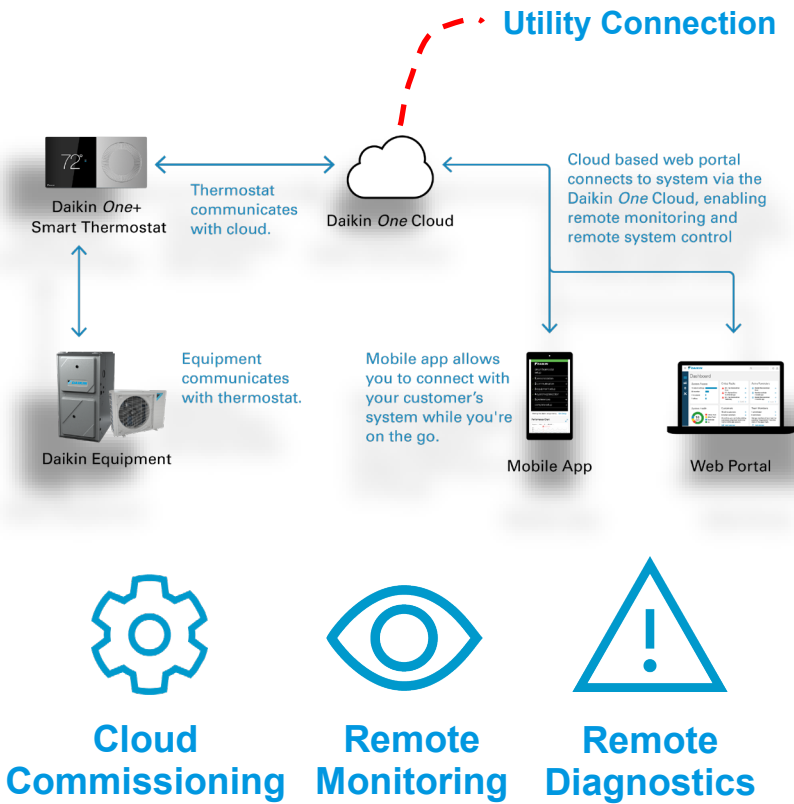
Up to 12% more efficient than comparable R-410A systems.

### EASY

Top off and recharge R-32 in the field.

### AVAILABLE

A commodity with no active patents on the refrigerant.



# CEC Question: Can the supply chain ramp up to meet California’s goals?

For our part, Daikin says—YES!

1

## HEAT PUMPS

DAIKIN CORE TECHNOLOGIES



2

## MANUFACTURING CAPABILITY

More than

**90**

global production bases for localized production

More than

**76,000+**

**EMPLOYEES**

80% are outside Japan

Business development in more than

**150**

countries

76%

of our sales are from outside Japan

**Comprehensive AC Manufacturer**

Handling both AC equipment and refrigerants

**AIR SPECIALISTS**

3

## MISSION

**Environmental Vision 2050**  
We will reduce the greenhouse gas emissions generated throughout the entire life cycle of our products.



## Europe

- Daikin Europe N.V. (Belgium: 1972)**
  - Commercial ACs, Heating products
- Daikin Industries (Czech Republic: 2003)**
  - Residential ACs
- Daikin Applied Europe S.p.A. (Italy: 2008)**
  - Screw and Centrifugal Chillers
- Daikin Turkey (2011)**
  - Residential ACs, Heaters

## U.S.

- Daikin Applied Americas INC. (Staunton, VA; Plymouth, MN: 2007)**
  - Large Screw Chillers, Centrifugal Chillers
- Goodman Global Group Inc. (Houston, TX: 2012)**
  - Residential & Commercial Unitary Systems

## Japan

- Shiga Plant (1970)**
  - Residential ACs
- Sakai Plant (Osaka: 1937)**
  - Commercial ACs

## India

- Daikin Air Conditioning India (2009)**
  - Residential and Commercial ACs

## China

- Daikin Air Conditioning (Shanghai) (1995)**
  - Commercial ACs, Heat Exchangers, Air Cooled Chillers
- Daikin Air Conditioning (Suzhou) (2011)**
  - Residential and Commercial ACs
- McQuay (Wuhan; acquired in 2007)**
  - Water Cooled Chillers, Centrifugal Chillers
- McQuay (Shenzhen; acquired in 2007)**
  - Air Cooled Chillers, Fan Coil Units

## Asia

- Daikin Air Conditioning Malaysia (2007)**
  - Residential and Commercial ACs
- Daikin Air Conditioning Thailand (1990)**
  - Residential and Commercial ACs
- Daikin Air Conditioning Vietnam (2018)**
  - Residential and Commercial ACs

## South America

- Daikin Ar Condicionado Amazonas Ltd (2012)**
  - Residential and Commercial ACs



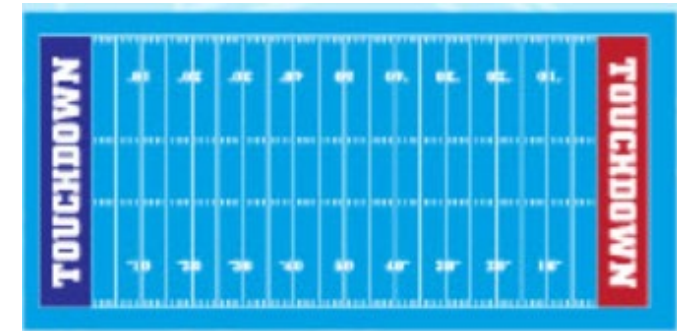
# Introducing the Daikin Texas Technology Park (DTTP)

- Located outside of Houston, TX
- Office interiors are LEED Gold certified
- 3<sup>rd</sup> largest single-level manufacturing facility in North America
- 253 loading docks and 700 trailer spaces
- Training center, R&D labs, marketing, engineering, and manufacturing – all under one roof



74 Football Fields, with End Zones

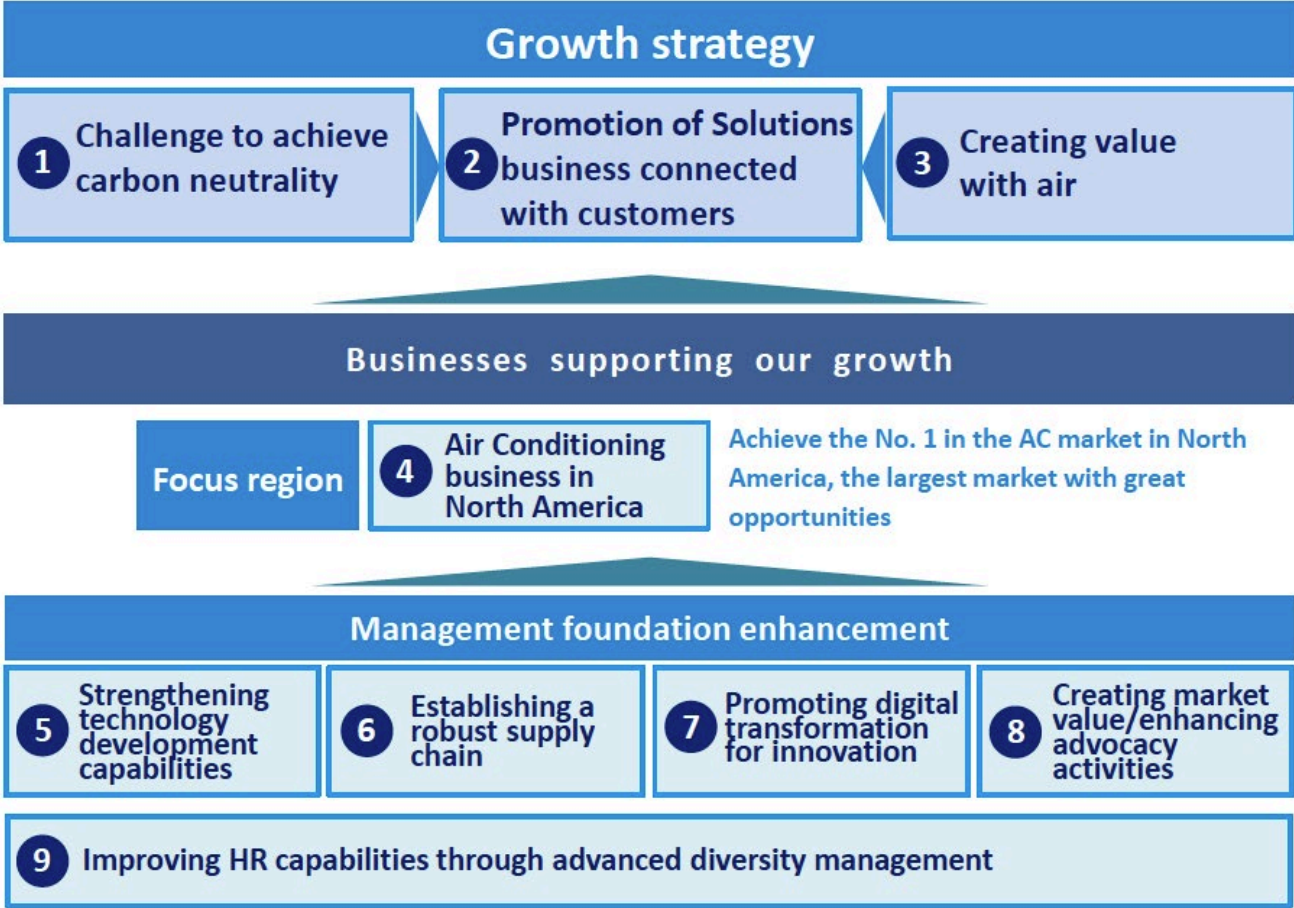
4 Million Square  
Feet Under One  
Roof







## 9 key strategy themes



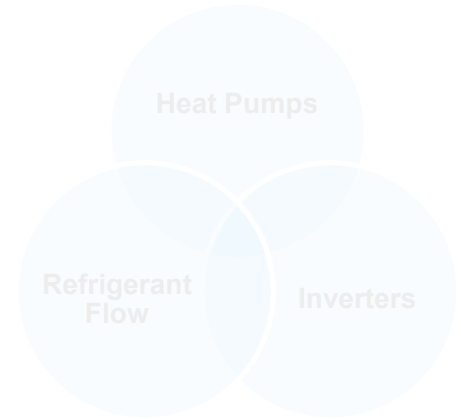
# CEC Question: Can the supply chain ramp up to meet California’s goals?

For our part, Daikin says—YES!

1

## HEAT PUMPS

DAIKIN CORE TECHNOLOGIES



2

## MANUFACTURING CAPABILITY

More than  
**90**  
global production bases  
for localized production

More than  
**76,000+**  
EMPLOYEES  
80% are outside Japan

Business development in more  
than  
**150**  
countries

**76%**  
of our sales are from outside  
Japan

**Comprehensive AC  
Manufacturer**  
Handling both AC equipment  
and refrigerants

**AIR  
SPECIALISTS**

3

## MISSION

### Environmental Vision 2050

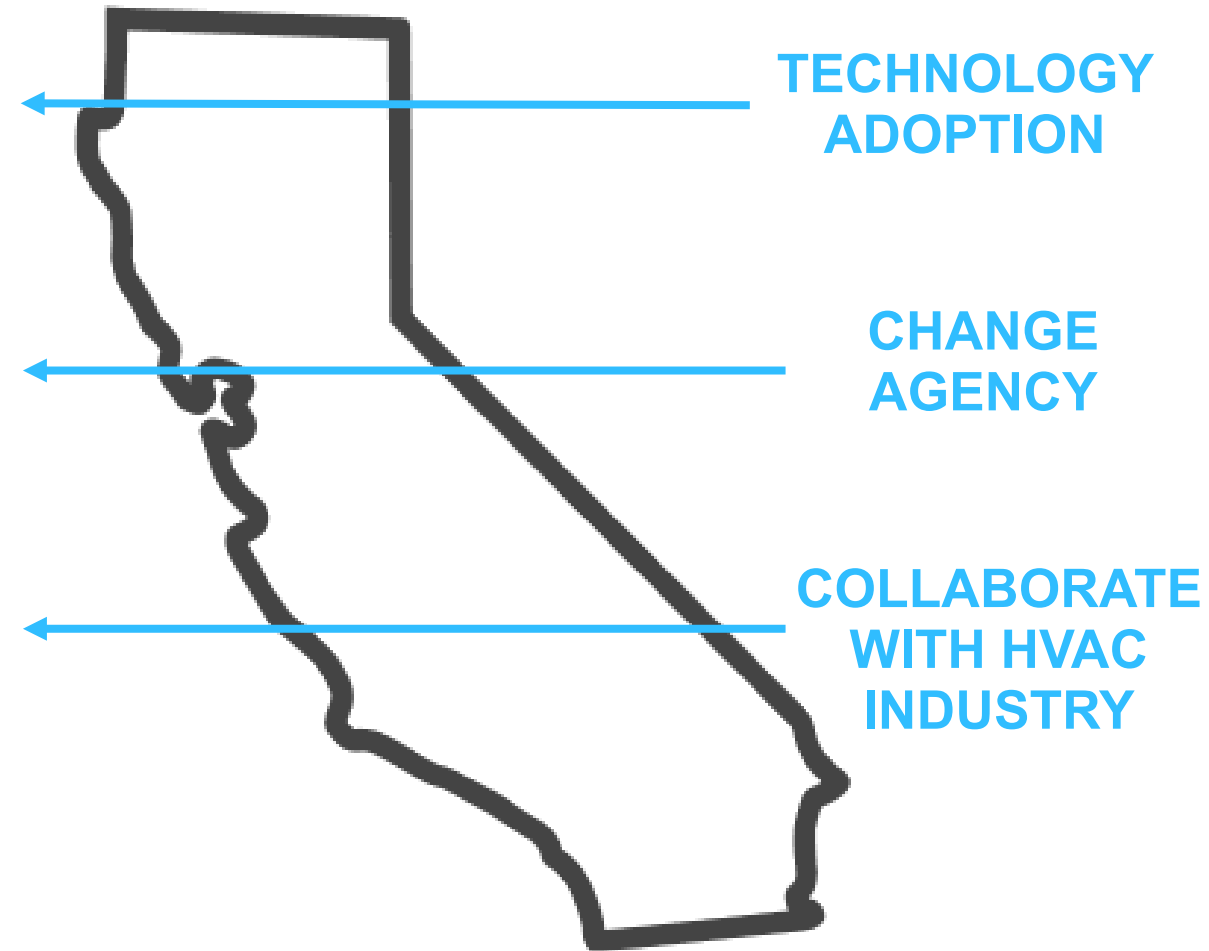
We will reduce the greenhouse gas emissions generated throughout the entire life cycle of our products.



## CEC Question: *What do manufacturers need from California to scale?*

### Observations to set the context for Daikin's answer...

1. Today, CA is not yet a so called “heat pump market”.
2. As a general practice, the HVAC contractors and distributors respond to what a customer asks for.
3. California's Heat Pump Goal could require 3X growth of the residential HVAC industry in the state.



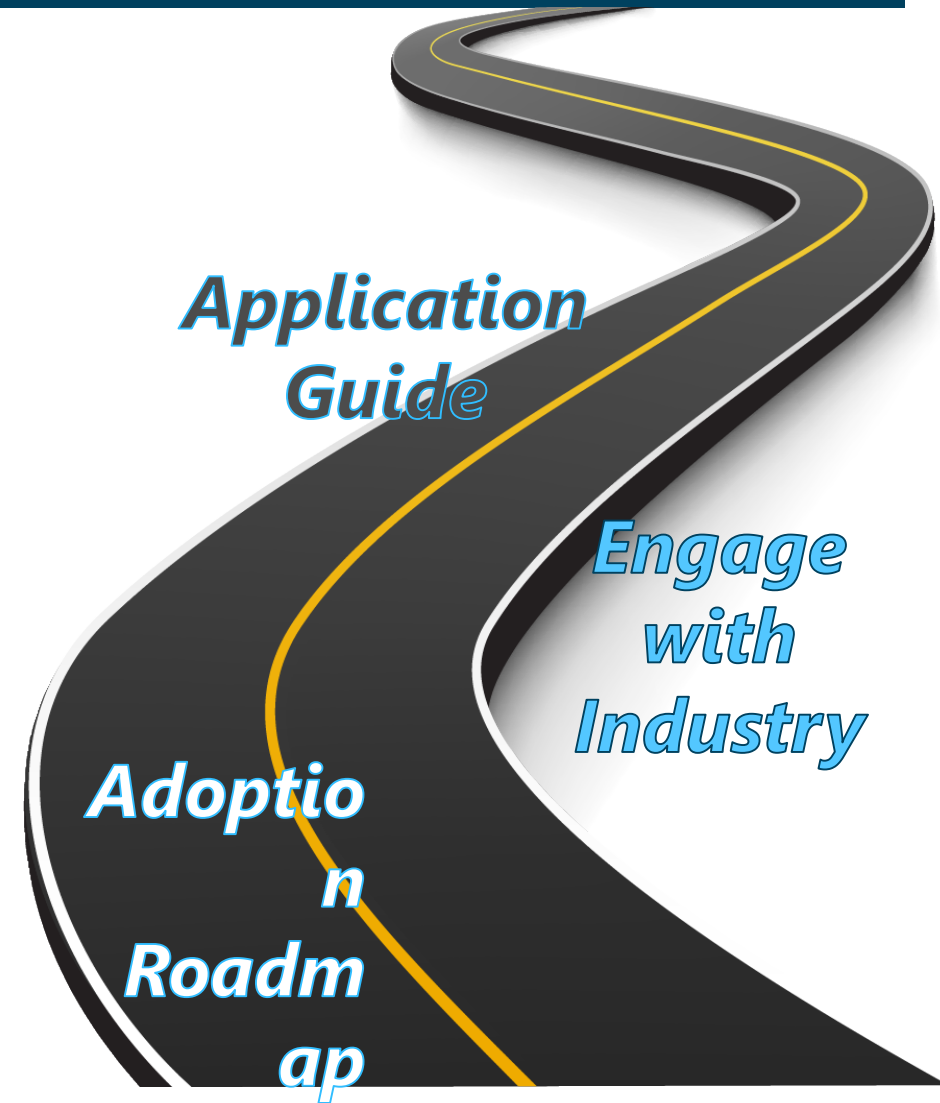


## CEC Question: *What do manufacturers need from California to scale?*

### Take steps to SPEED UP Heat Pump Technology Adoption

To prevent any lagging in contractor and distributor heat pump adoption:

- 1 Specify what types of heat pumps you hope to see in which applications.
- 2 Create an HVAC Industry Leadership Council to help create and implement any intervention.
- 3 Create a heat pump technology adoption roadmap and work with industry to implement it statewide.



## CEC Question: *What are barriers for distributors and retailers?*

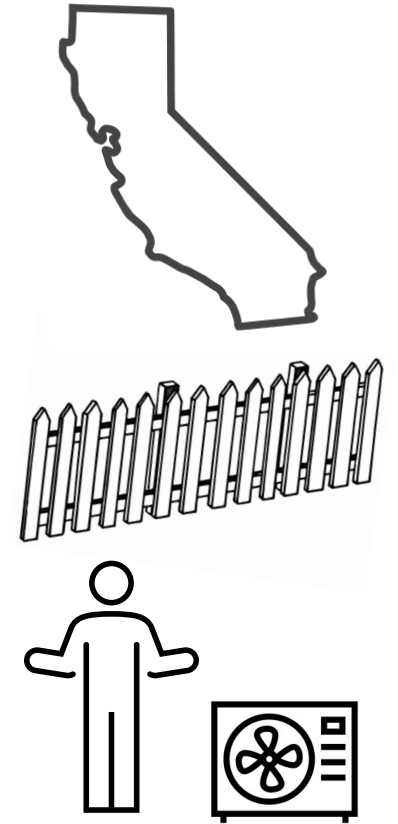
Two barriers exist which could delay heat pump adoption

**1** Not enough workers for both contractors and distributors

*New thinking is needed to help overcome over a decade of labor shortages.*

**2** Some homeowners will struggle to pay for a heat pump

*New methods of payment will increase heat pump adoption for all market actors!*



Daikin has new tools that can rapidly train heat pump installers. We need help getting the word out.

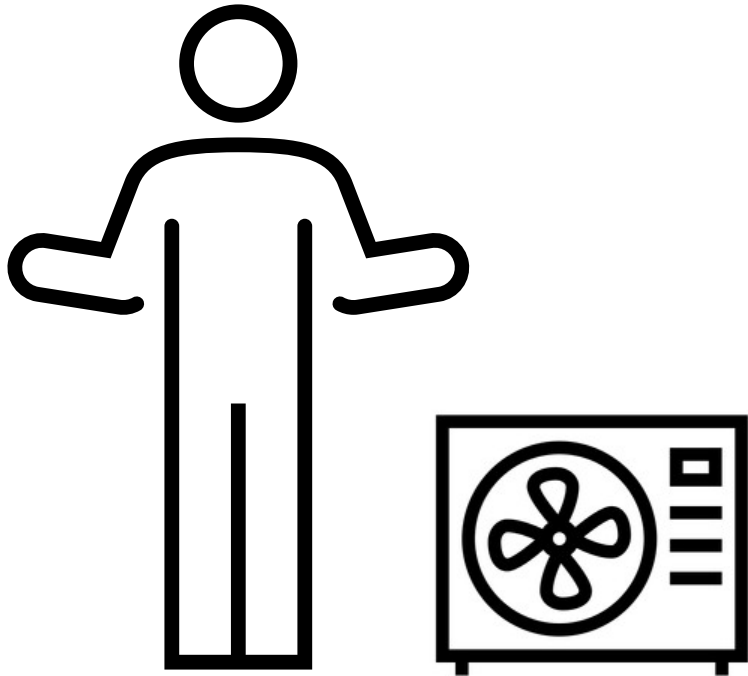
Using our Virtual Reality training curriculum, we can train BETTER, FASTER, and at a LOWER COST.

We need help scaling up to make meet the need.





# HEAT PUMP FINANCIAL PATHWAYS



## **Upper Income and/or Homeowners with Discretionary Income** will

respond to:

1. Retail financing
2. Large Cash Incentives
3. Large Government Tax Credits

## **Middle Income and/or Homeowners without Discretionary Income** that do

not qualify for retail financing will respond to:

1. On-Bill Financing
2. Group Buying Programs

**Low INCOME Homeowners** who typically qualify for public assistance programs will participate in:

Government funded "direct installation" programs that pay for heat pump installation and weatherization.

## CEC Question: *What are near term and long-term impacts from market forces and how can the state help?*

Resolve the current logistics and transportation disruption and prevent future ones.

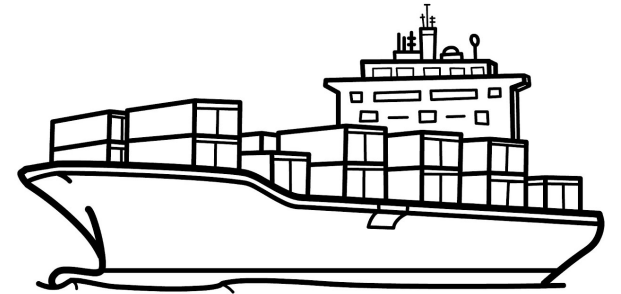
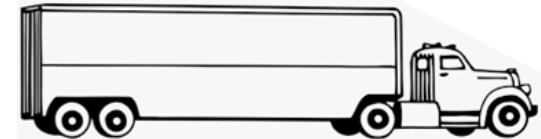
### TODAY

Daikin continues to experience challenges transporting our products into and through California.



### TOMORROW

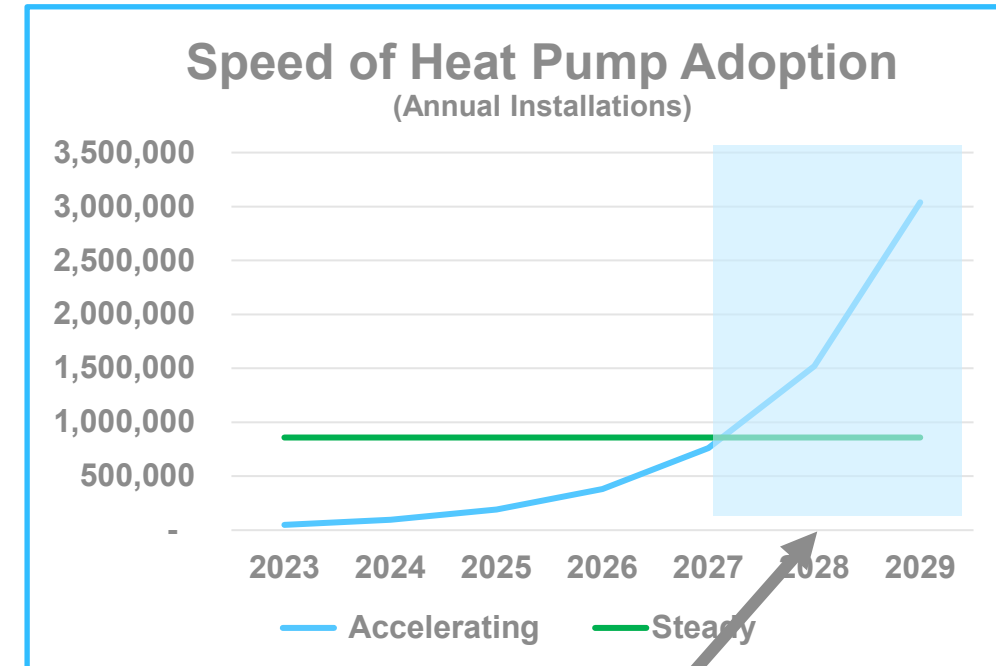
Looking ahead, we are concerned that a future transportation disruption could limit our ability to help California meet its heat pump goals.



# Closing Remarks

Daikin is ready to support California's heat pump goal; we want to work with others to fulfill it.

- 1 Our manufacturing base is ready**
  - Resolve current and future transportation problems.*
  - Greater specificity in the heat pump goal will help.*
- 2 Foster collaboration with the HVAC industry**
  - Ask supportive companies to participate in an HVAC Industry Leadership Council.*
- 3 Work with industry to speed heat pump adoption**
  - Any delay will create conflicting demand from other states that have heat pump goals.*
- 4 Ensure all Californians have access to heat pumps**
  - On-bill financing along with industry participation in direct install programs will be key.*



In later years, other state's heat pump programs will start-up.



# THANK YOU!



## My contact info:

**Jonathan Moscatello**

*Director of Electrification  
Business Development*

(503) 267-6425 m

Jonathan.Moscatello@daikin  
comfort.com

<https://www.daikincomfort.com>

## Other key staff working in California:

**Ryohei Hinokuma**

*Director, Market  
Transformation and  
Advocacy*



**Matt Baker**

*Business  
Development  
Manager for  
Electrification &  
Utility Programs*

