

# Activating the Market: Turning Vision Into Reality

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H<sub>2</sub>



THE CALIFORNIA  
Fuel Cell Revolution

*A Vision for Advancing Economic, Social,  
and Environmental Priorities*

BY THE California Fuel Cell Partnership

JULY | 2018

## CaFCP 2030 Vision Target

**Consumer Demand Exceeds 1,000 H2 Stations and 1,000,000 Fuel Cell Vehicles by 2030**

### Strategic Pathways

#### Enable the Market

Foster large-scale infrastructure development

#### Objectives

- Leverage market-based policy to attract private capital
- Activate economies of scale for large-scale infrastructure development

➤ **Enable H<sub>2</sub> & FCV Sales**

#### Establish the Market

Improve customer value proposition for H2 and FCV

#### Objectives

- Motivate consumers to buy FCVs
- Establish a statewide fueling network
- Develop a dedicated hydrogen supply

➤ **Better Than Gasoline**

#### Expand the Market

Amplify innovations in fuel cell technologies

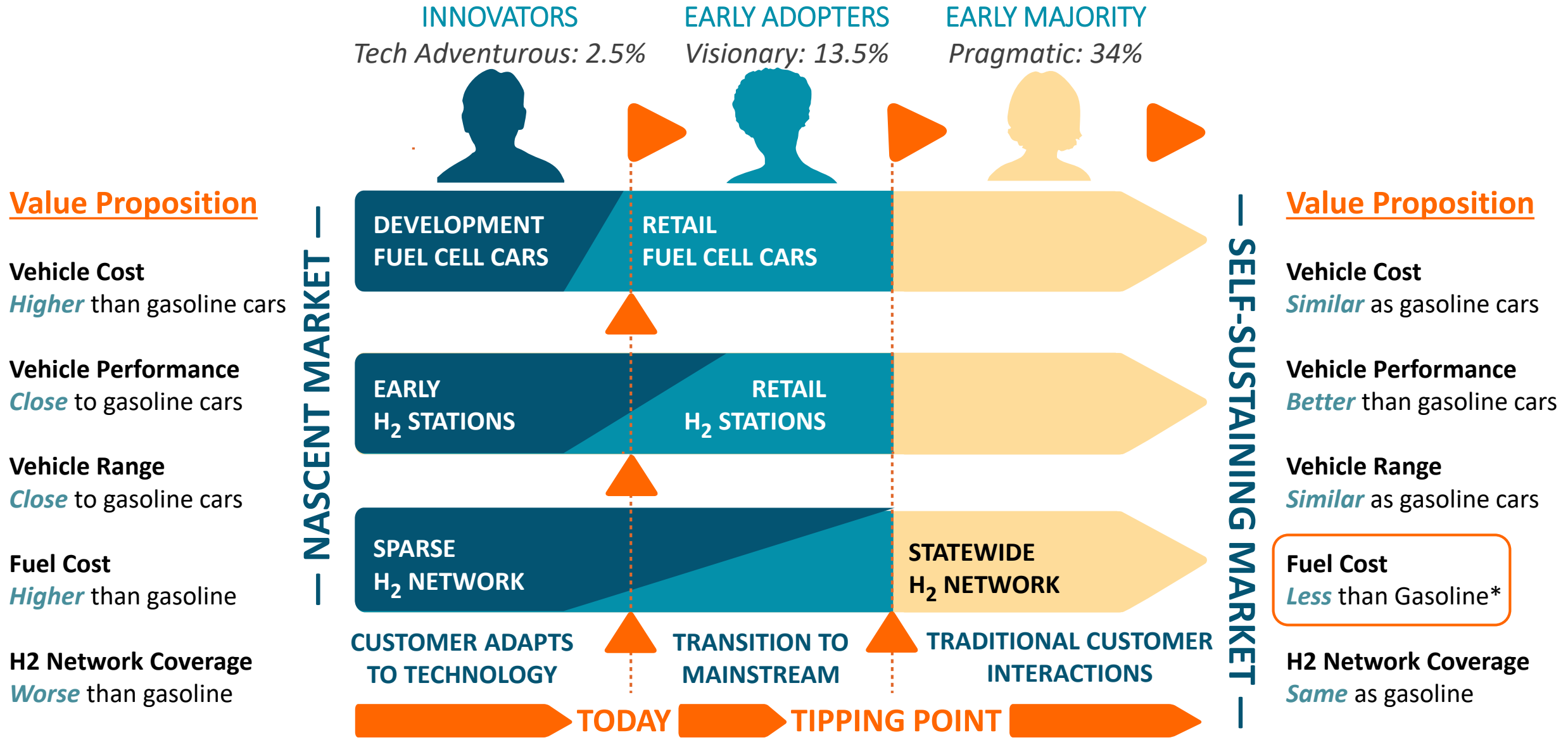
#### Objectives

- Diversify the portfolio of FC products
- Deploy heavy-duty hydrogen infrastructure in California's freight corridors
- Connect hydrogen and electricity as energy carriers

➤ **Ubiquity**

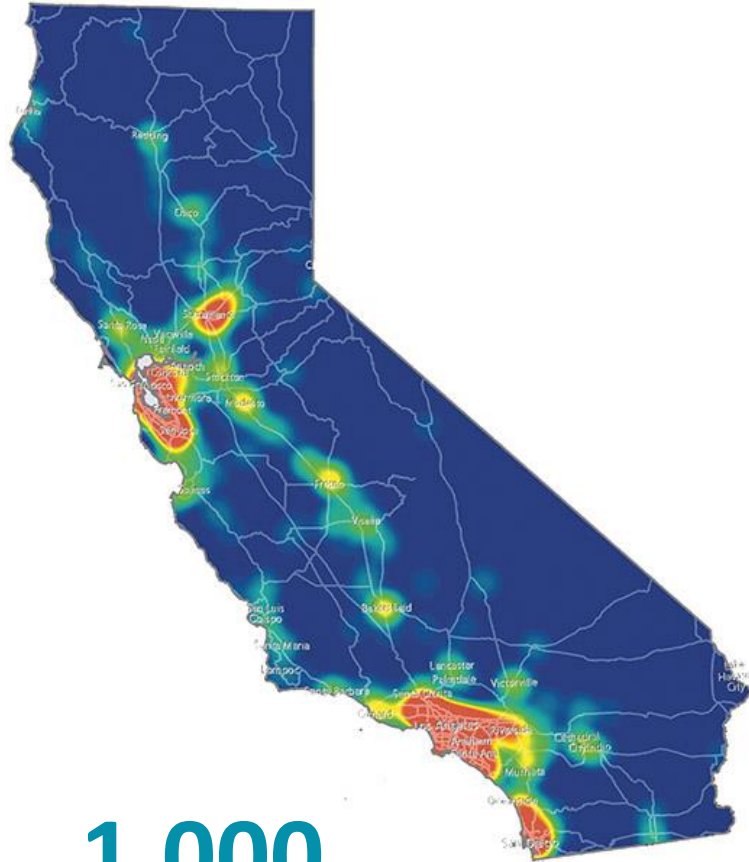
**Build Self-Sustaining Market**

# The Evolution of Customer Adoption



\* Note: Fuel price parity with gasoline needs to occur before the tipping point

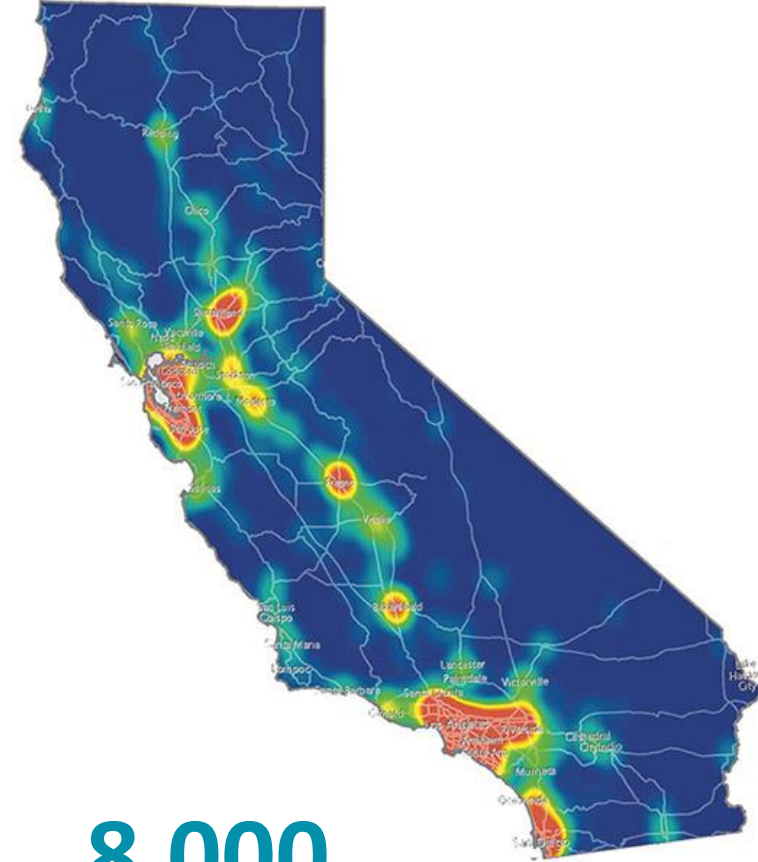
# Matching the Convenience of Gas Stations



**1,000**

retail H2 stations

=



**8,000**

retail gas stations

# Benefits by the Numbers

SOURCE | CARB & SCAQMD, 2018

**1,000**  
Hydrogen Stations

AND

**1,000,000**  
Fuel Cell Cars

=

BY 2030

**693.5 million gallons**  
per year of gasoline displaced

**2.7 million metric tons**  
per year GHG avoided\*

**3,900 metric tons**  
per year NO<sub>x</sub> avoided

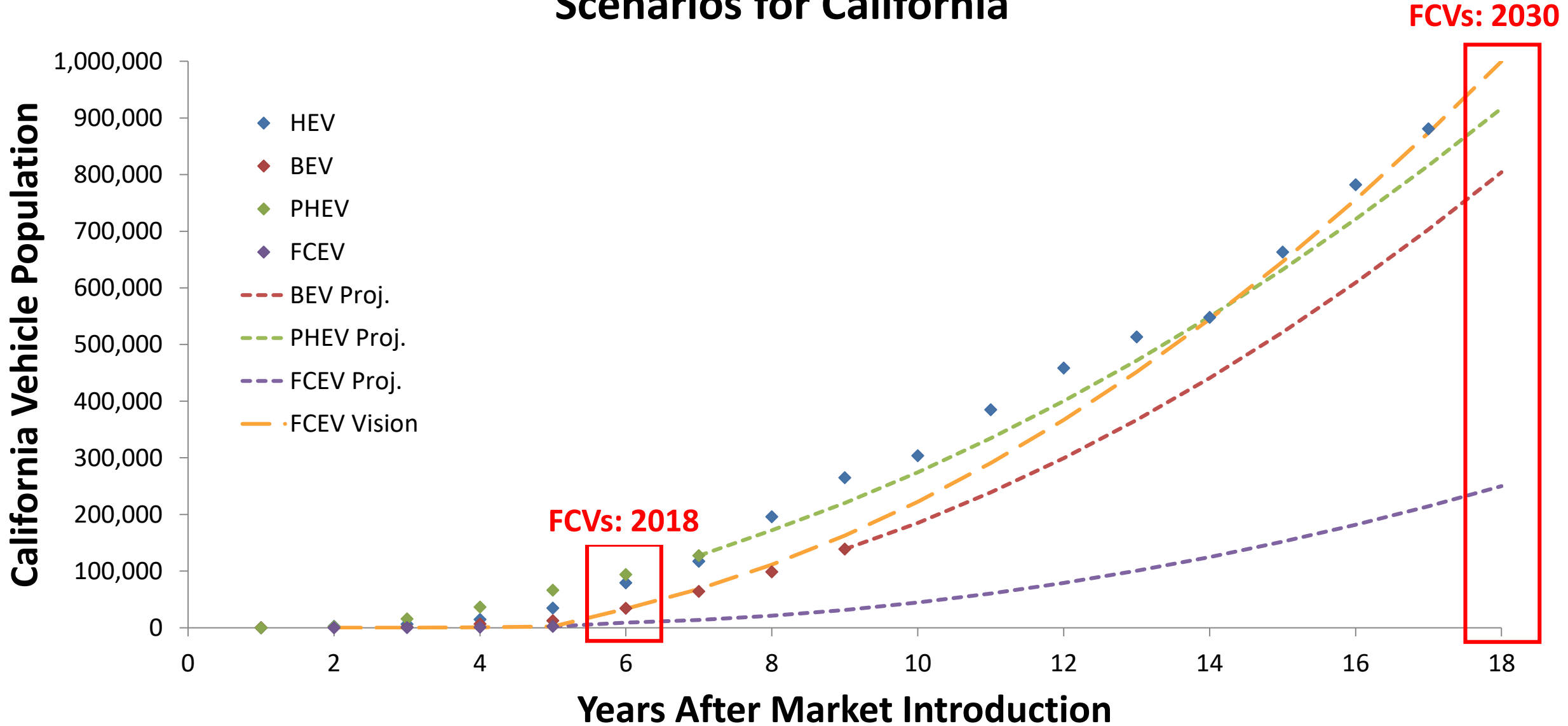
**97%** of disadvantaged communities within  
the station network coverage

*\* with today's energy mix of 33 percent renewable hydrogen*

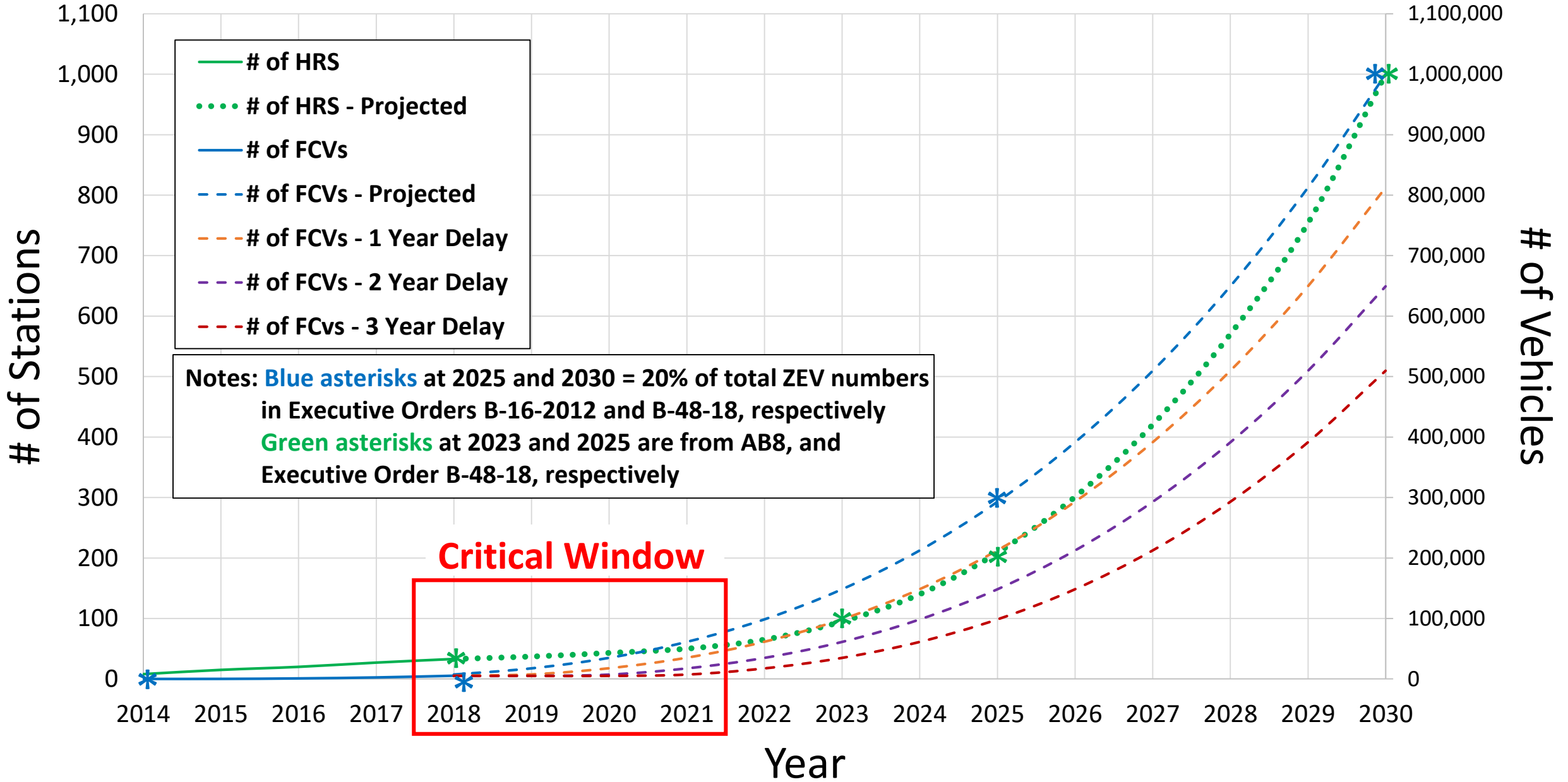


# June 2018 AB8 Report –

## Figure 52: Electrified Vehicle Adoption Histories, Projections, and Speculative Scenarios for California

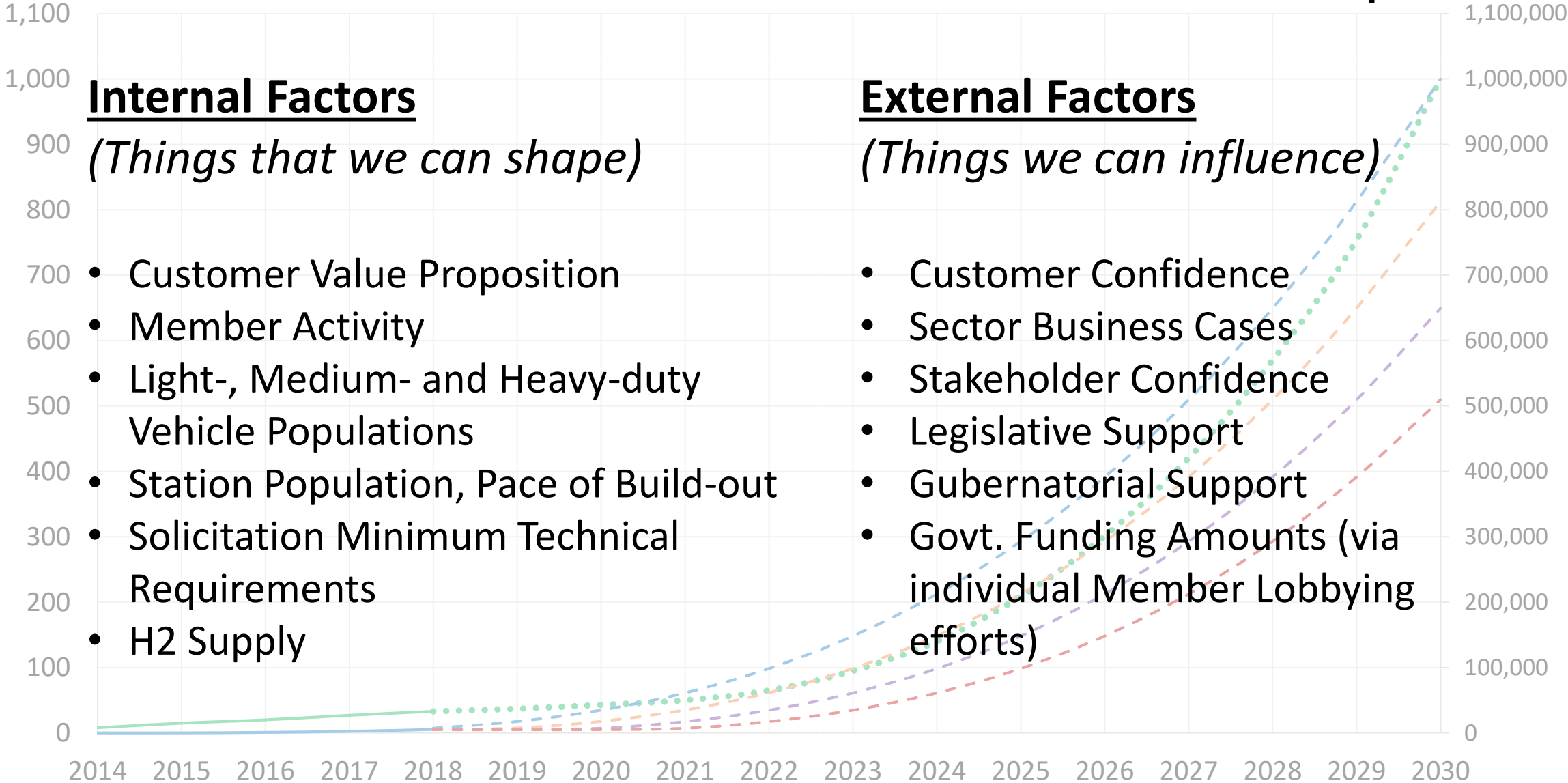


# Hypothetical Scenario: H2 Station and FCV Deployments





# Factors that Determine the Pace of Market Development:



## What Happens If We Do Nothing?

- \$20M per year AB8 funds
- LCFS Credits from fuel sales
- LCFS Credits from capacity credits

## What Happens If We Get It Right?

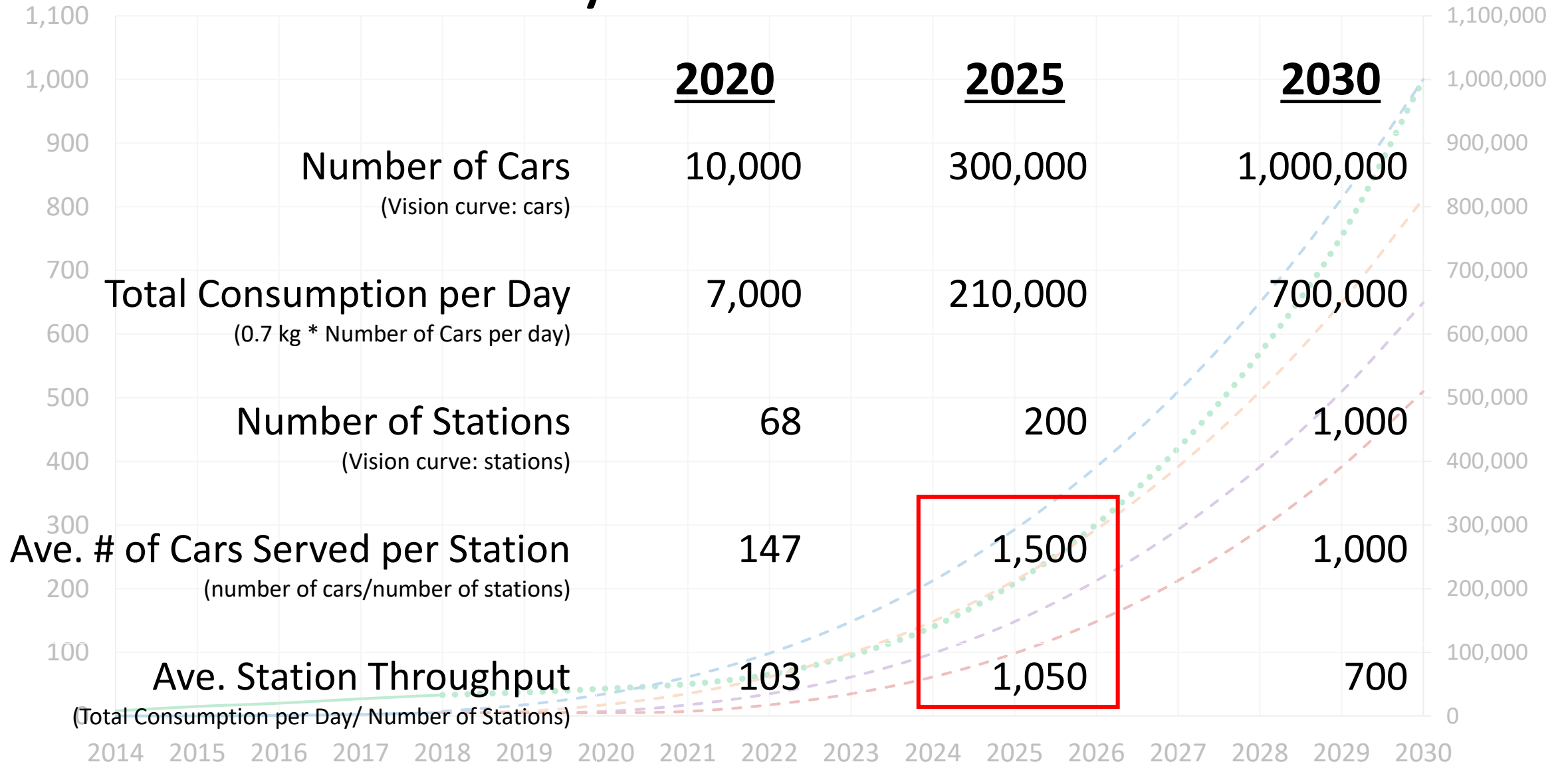
- \$20M per year AB8 funds
- LCFS Credits from fuel sales
- LCFS Credits from capacity credits
- Other mechanisms that help improve the customer value proposition

Year	Stations	Fuel Cell Cars
2018:	35	~5,000
2020:	68	~10,000
2025:	100	~100,000
2030:	???	~250,000

Year	Stations	Fuel Cell Cars
2018:	35	~5,000
2020:	68	~10,000
2025:	200	~300,000
2030:	1,000	~ 1,000,000

Observation: From a growth trajectory perspective, It looks like Business-as Usual begins to plateau after around 2025

# The Reality of the FCV Vision Curve

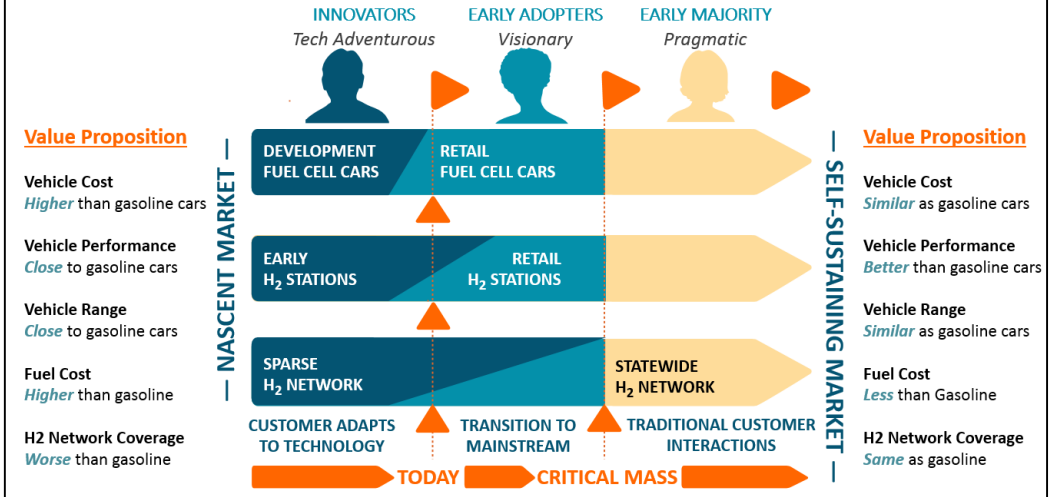


# Our Success List

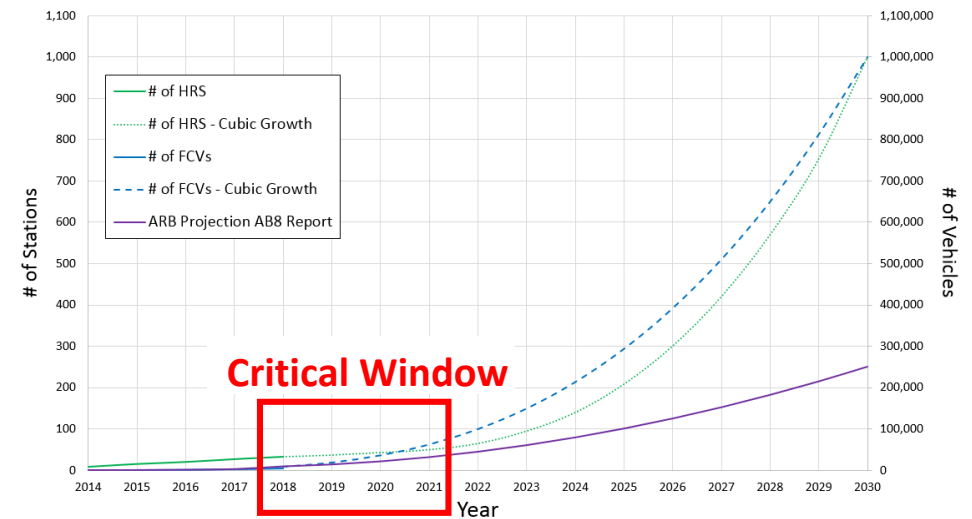
1. Improve the Value Proposition for Fuel Cell Vehicle Customers

Strawman Proposal

## The Evolution of Customer Adoption



## Market Growth Scenarios: Vision vs Business-as-Usual



## Organization Goal

***Build the Value Proposition for FCV Customers***

### Objective I

Jumpstart Stakeholder Support  
for Hydrogen Infrastructure

### Objective II

Accelerate H2 Infrastructure  
Build-out

### Objective III

Secure H2 Supply for Growing  
Vehicle Population

## Proposed CaFCP Activities

### Strategic Comms

- **Develop Outreach Strategy**
- **Develop Outreach Content**
- Work Item #3
- Work Item #4

➤ ***Sufficient Funding for  
H2 Infrastructure***

### H2 Infrastructure

- **Develop an financial “Ask”  
for the Legislature**
- **Develop Plan for Multi-use  
station network**
- **Couple H2 stations network  
and H2 supply topics**

➤ ***Support a Statewide H2  
Infrastructure Network***

### Strategy #3

- Work Item #1
- Work Item #2
- Work Item #3
- Work Item #4

➤ ***Desired Outcome #3***

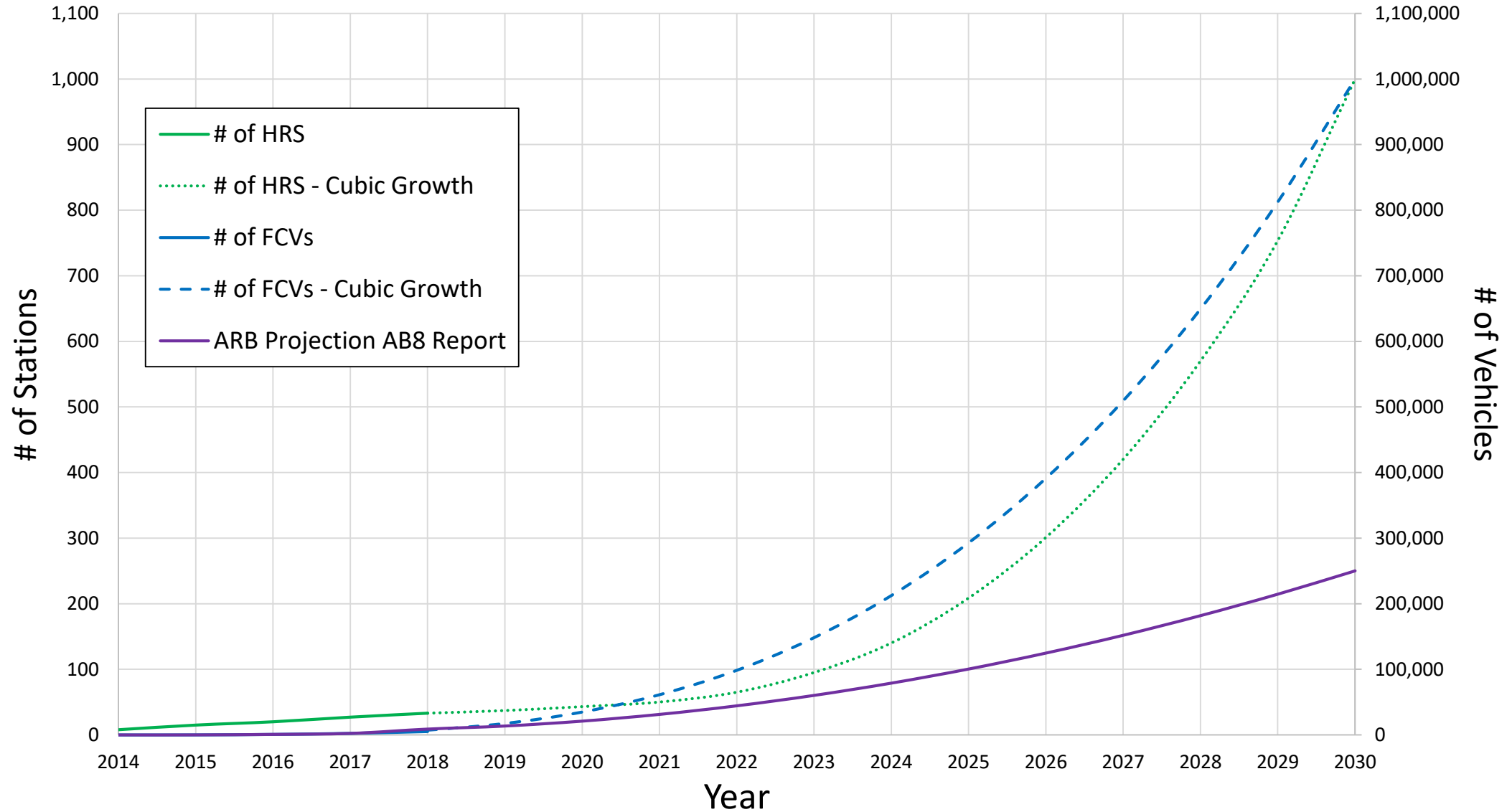
**Desired Outcome: Shorten the Time Needed to Reach a Self-Sustaining Market**



Back-up



# Market Growth Scenarios: Vision vs Business-as-Usual



## Organization Goal

### Statement of Organizational Goal

#### Objective I

Statement of Objective #1

#### Objective II

Statement of Objective # 2

#### Objective III

Statement of Objective #3

### CaFCP Activities

#### Work Area #1

- Work Item #1
- Work Item #2
- Work Item #3
- Work Item #4

➤ **Desired Outcome #1**

#### Work Area #2

- Work Item #1
- Work Item #2
- Work Item #3
- Work Item #4

➤ **Desired Outcome #2**

#### Work Area #3

- Work Item #1
- Work Item #2
- Work Item #3
- Work Item #4

➤ **Desired Outcome #3**

**Desired Outcome: Statement of Overarching Goal**