

California H2 Update



NASEO Call – 8/31/15



Air Agency Leadership/Imperative

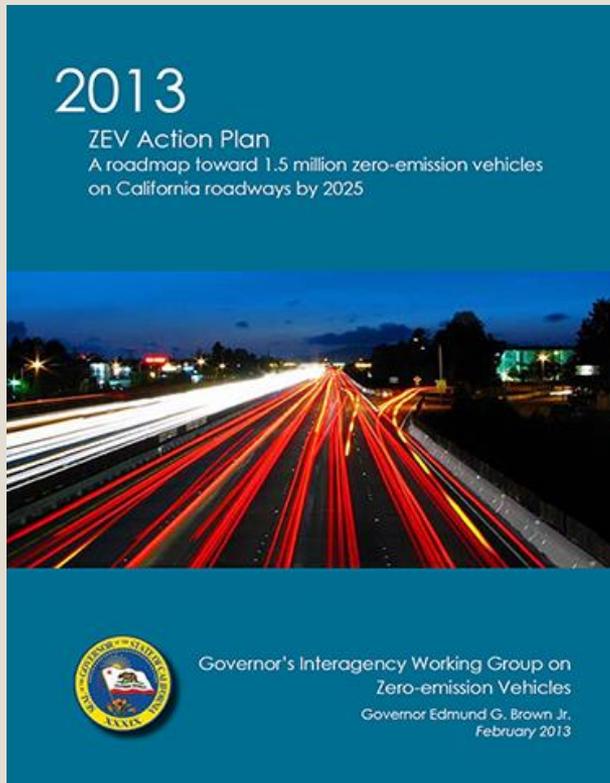


Context: CA – some of the worst air quality in the nation – challenge to meet NAAQS

- Transportation is biggest emitter
- To meet NAAQS in California by 2050 need 100% of new light duty vehicles to be ZEV by 2040 (2025 in South Coast)
- CARB ZEV Program Leadership



Governor's Support



Executive Order (B-16-2012)

- Directed California to work towards :
 - 1 million ZEVs by 2020
 - 1.5 million ZEVs by 2025
 - Transport related GHG's 80% below 1990 by 2050
- **118,505 ZEV sold in CA in 2014**
- 2015 Inaugural Address: 50% Petroleum reduction by 2030
- Reduce GHGs 80% by 2050 (Executive Order S-3-05)

Legislative Support

4

AB118 (2007) : Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP), Extended by AB 8 (2013):

Up to \$150 Million in Annual State Funding

- California Energy Commission = \$100 million/year
 - \$20M/year for H2
- CARB = \$50 million/year

AB 32 (2006) – Reduce emissions to 1990 levels by 2020
(about 15% compared to BAU)

- defended by voters in 2010

CEC's Strong Solicitation



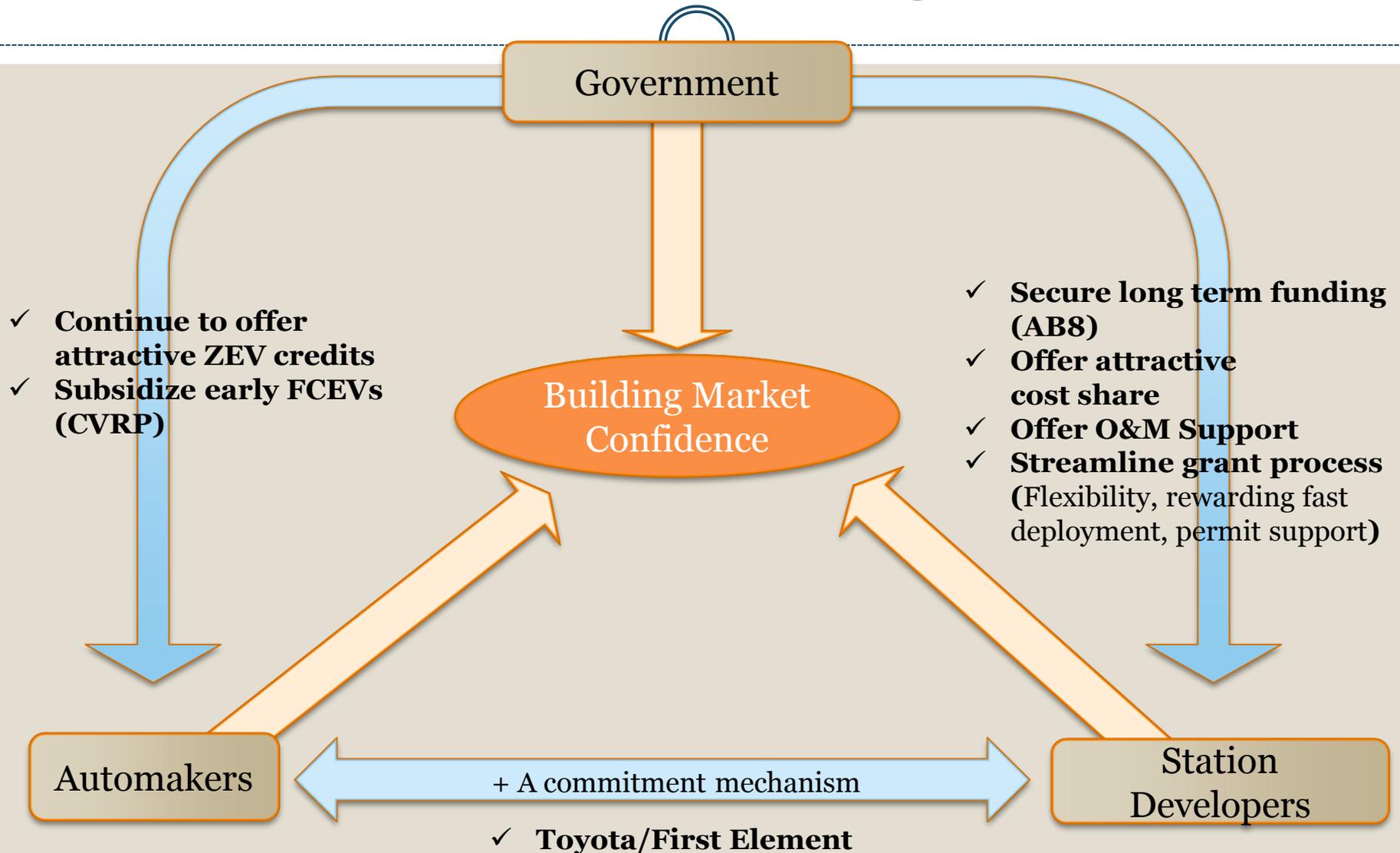
Offer (PON 13-607):

- Up to 85% of Capital Cost (90% for Renewable)
- Up to \$100K/year for 3 years for O&M
 - Funding contingent on station operational date

Response:

- 28 Stations & 1 Mobile Fueler Awarded
- 32 other stations with passing scores
 - \$46.6M awarded, \$103M requested

A to do list from 2013 (EIN):



Translating to Other States



- California has gone to great lengths to start the market - our goal is for everyone to benefit from this
 - Sharing lessons learned, driving down costs, building supply chain/experience
- Ingredients for FCEV success outside CA
 - Strong Leadership/Champions – from Govt. and/or Industry
 - Strong Support – from Govt. and Industry
 - Funding (public and/or private) to enable stations to succeed until H2 sales take over

California H2 – still work to do



- High Level Attention – monthly H2 Policy Meetings
- Working closely with DOE – C&S, station commissioning, H2USA, etc.
- Every step uncovers new challenges – we hope to help other jurisdictions plan/learn from our efforts

Supporting Station Permitting



- Community Outreach & Response
- Tracking & Troubleshooting

Last Updated	Permit Status	Station & Task Name	Who has the ball?	Project Capacity (kg/day)	Stn. Developer	Address	Start Date	Estimate/ Operation Date	Station Deadline	Progress Status	Pie Visual	Comments	Commissioning
		Permit Report Card:											
Permitted to Build*		14										pre-funding/contracting	
Permit apps submitted		7										Funding/contracting/site control complete	
Permit app to be submitted		37										Permitting Complete	
												Construction Complete*	
												Commissioned and open	
		*Includes one bus-only station (Oakland). All others = light duty											
												Commissioned and open	
10/28/14		Diamond Bar - SCAQMD	Station Developer	180	Air Products	21865 E. Copley Drive, Diamond Bar, CA 91765	06/02/10	12/01/14		Commissioning		Commissioning process has resumed in earnest. Assuming all proceeds as expected, commissioning expected to be complete in November.	63%
10/28/14		Irvine - UCI (upgrade)	Station Developer	180	Air Products	19172 Jamboree Rd., Irvine CA 92612	06/02/10	01/30/15		Permit - Submitted		Addressing final comments. Key challenge remaining = power supply approach. UCI has changed its requirements - both parties working toward a resolution.	
10/28/14		Irvine - Walnut Ave.	Station Developer	180	Air Products	5410 Walnut Ave., Irvine CA 92604	06/02/10		12/31/14	Permit Submitted		Received full comment package back from City on 10/7/14. Developer working the response, expect to re-submit early November. Review uncovered a planning issue - the project will require a CUP. This is a 3-4 month process.	
10/28/14		Lawndale - Inglewood Ave.	Station Developer	180	Air Products	15606 Inglewood Ave., Lawndale, CA 90260	06/02/10		12/31/14	Design		Detailed Site Plan in process. On target for early November submittal to City.	
10/20/14		Los Angeles - Beverly Blvd	City/County	180	Air Products	7751 Beverly Blvd., Los Angeles, CA 90036	06/02/10	12/31/14	12/31/14	Permit Submitted		Fire, Electrical have been approved. Building is ready to issue once real estate documentation is buttoned up (the site's old documentation needs to be updated - a minor issue).	
10/28/14		Los Angeles - West LA 2	Station Developer	180	Air Products	11261 Santa Monica Blvd., Los Angeles, CA 90025	06/02/10	01/20/15	12/31/14	Under Construction		Construction has begun (Contractor on-site October 20th). Temporary taking place this week (10/27/14).	

Codes & Standards



- **California Fire Code**
 - Adopted NFPA 2 (2011 Version) in 2014 (effective 2015)
 - Being put to use in the field now
- **CA Permitting Guidebook**
 - Incorporating Public Comments
 - Next draft by March 2015 (living document)
 - Feed into H2USA and other State efforts

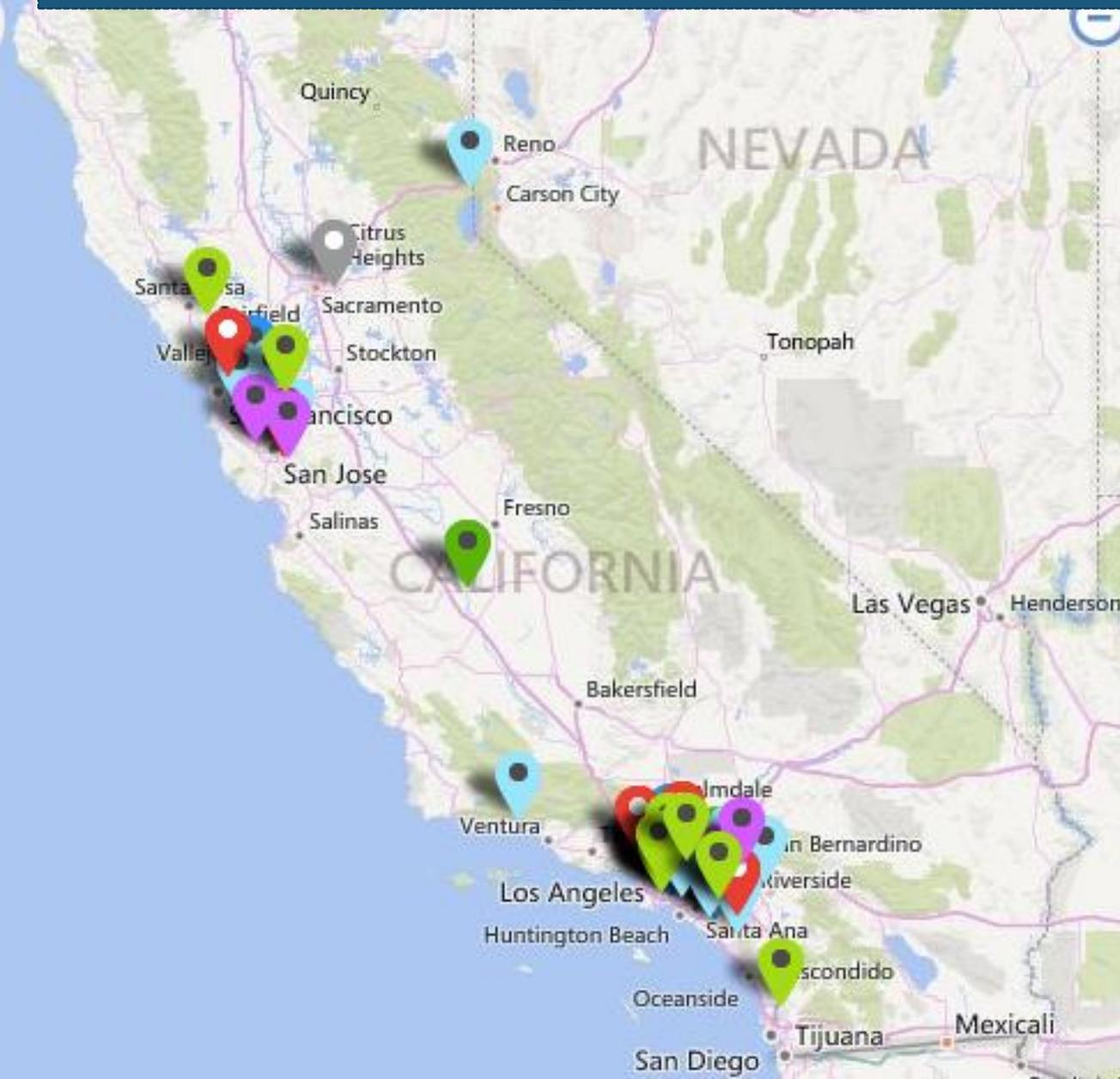
California's New 2014 Accuracy Classes* and Tolerances for Hydrogen Fuel



Accuracy Class	Acceptance Tolerance	Maintenance Tolerance
2.0	1.5%	2.0%
3.0 installed before 2020*	2.0%	3.0%
5.0 installed before 2020*	4.0%	5.0%
10.0 installed before 2018*	5.0%	10.0%

* No new installations after the end of the designated calendar year unless regulations are further amended. Existing installations allowed to operate until decommissioned.

Snapshot as of 8/25/15



- 1. Open - Retail (1)
- 1.1 Open - Demonstration (6)
- 2. Commissioning (4)
- 3. Under Construction (14)
- 4.1. Approval to Build (5)
- 4.2 Planning Approval (4)
- 4.3. Permit In-Process (9)
- 4.4. Pre-Permitting (10)
- Upgrade (4)

Thank You



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