

Hydrogen Station Cash Flows

Understanding the impact of location
on the bottom line

Quick Project Background

- EIN Developed the Model that was used to estimate funding needs for CaFCP Roadmap Plan.
 - Collaborated with multiple parties
 - Analysis focused on stations built in 2014-15

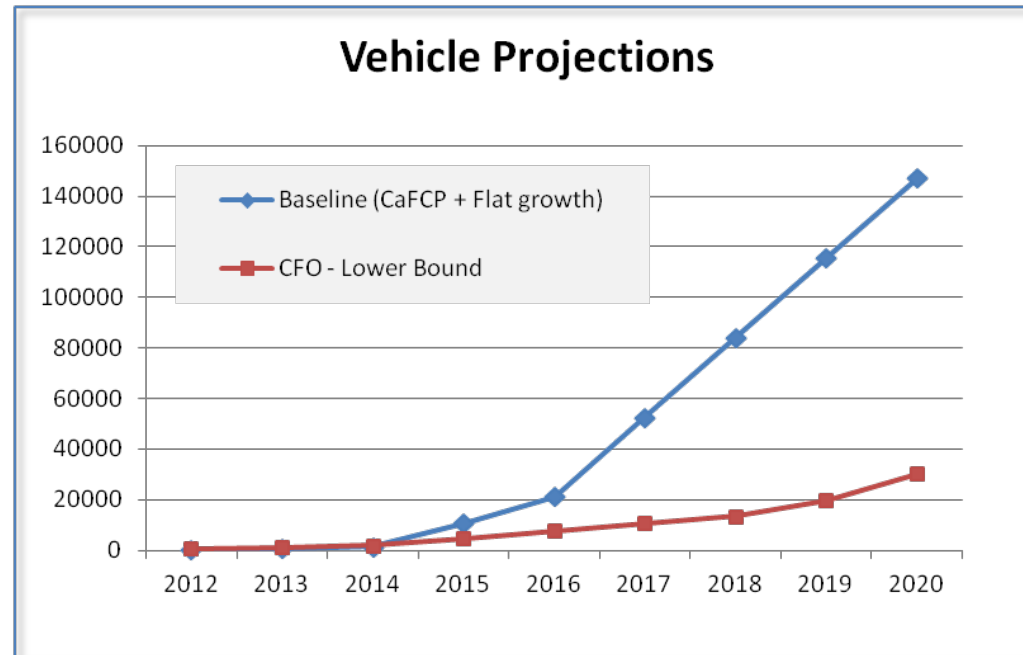
Report available here:

<http://www.einow.org/resources/reports.html>

Today's Focus: Individual Station Economics based on location.

Cluster & Connector Stations face different circumstance

How many FCEVs will be on the Road?



Baseline Growth Assumption

52,000 FCEVs by 2017, then Flat Growth (31,500 FCEVs added/year).

Lower Bound

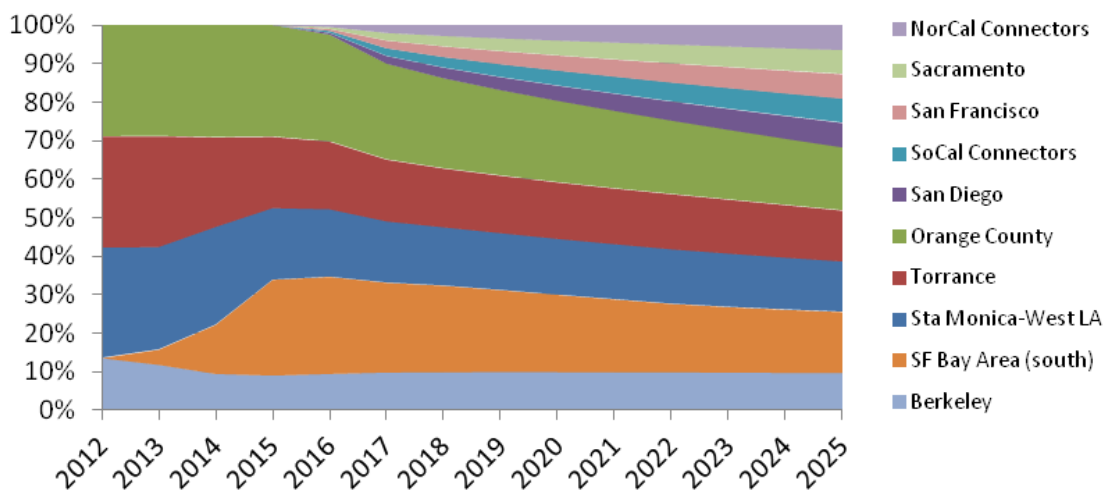
CFO Regulation Scenarios, Lower Bound. Reaches 52,000 in early 2020's.

Where will FCEVs fuel?

Where will FCEVs be sold?

CaFCP
Roadmap
Early Cluster
Communities

FCEVs on the Road, by Market

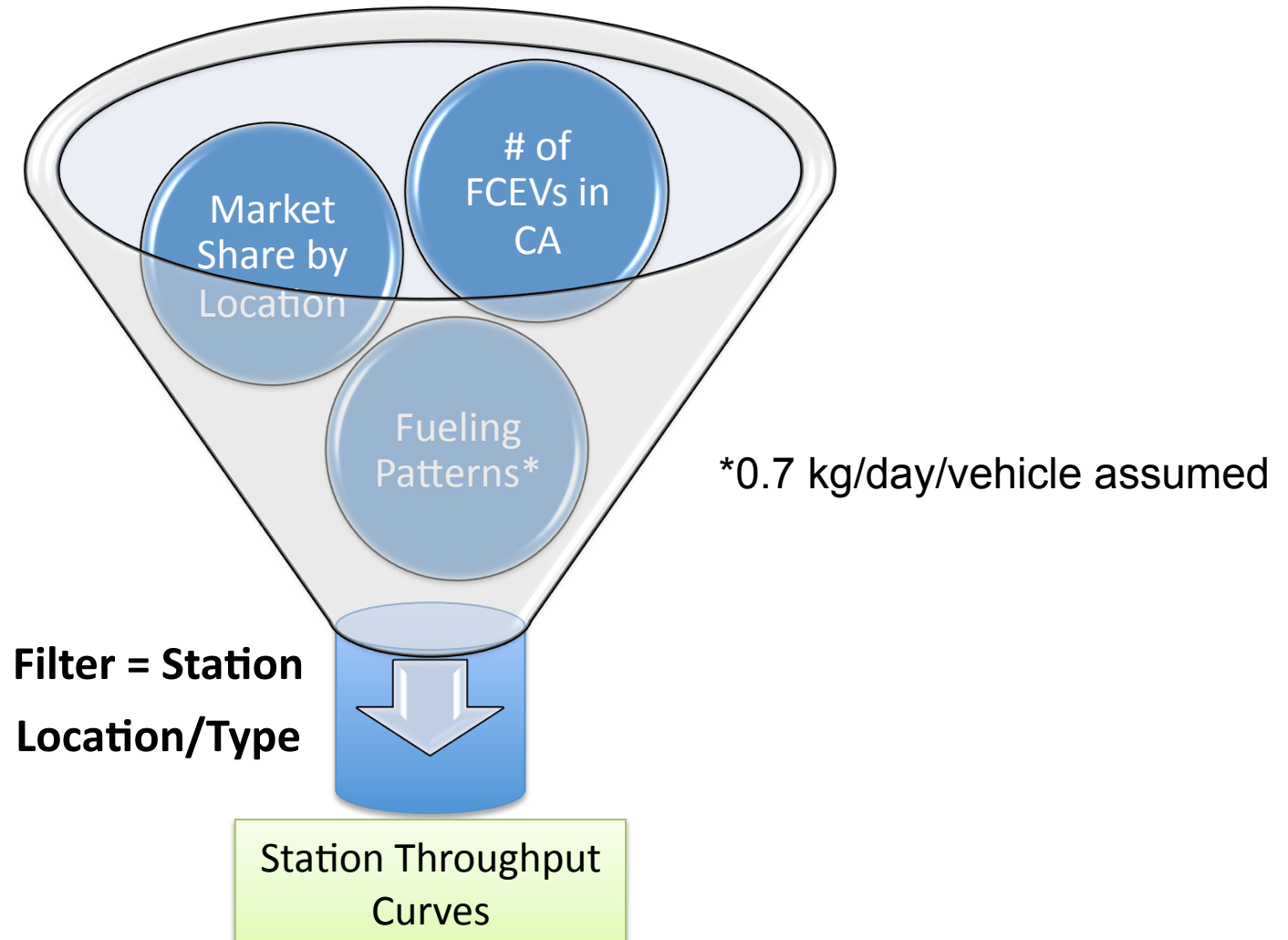


Where will FCEVs Fuel?*

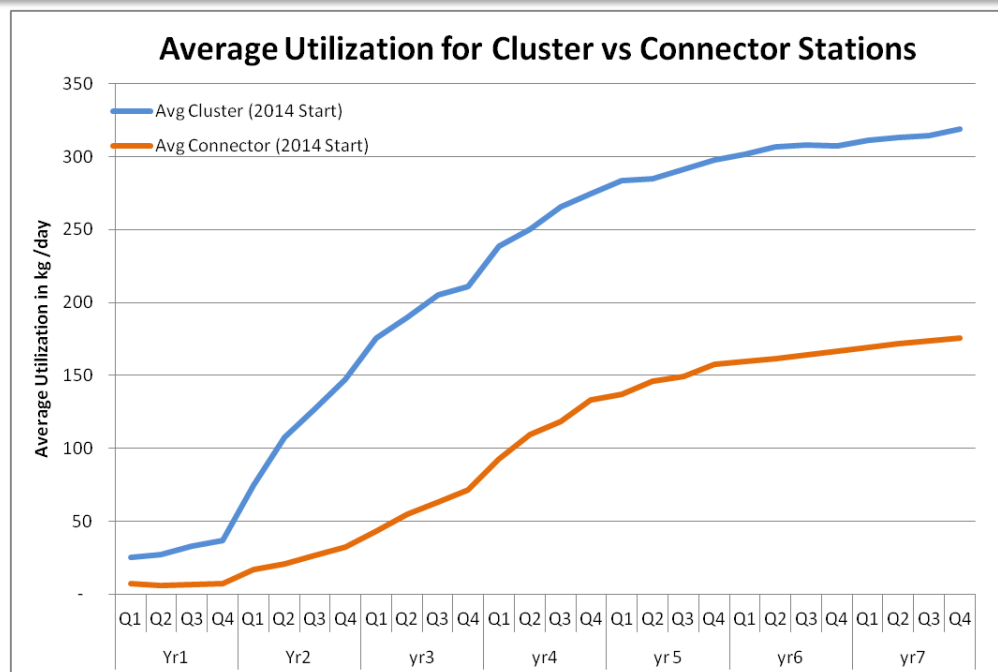
Buys its fuel from:	A vehicle based in:				
	Santa Monica-West LA	Torrance	Orange County	San Diego	So-Cal Connectors
Santa Monica-West LA	80%	6%	6%	2%	10%
Torrance	6%	80%	6%	3%	10%
Orange County	6%	6%	80%	4%	10%
San Diego	2%	2%	2%	90%	5%
So-Cal Connectors	6%	6%	6%	6%	65%

*Done for Nor. Cal as well

How does this affect my station?



Average Station Demand Curves



Average **Cluster** Station:

- 500 kg/day capacity example
- Baseline Growth Scenario
- Construct in 2013, Open in 2014
- 150kg/d by end of year 2**

Average **Connector** Station:

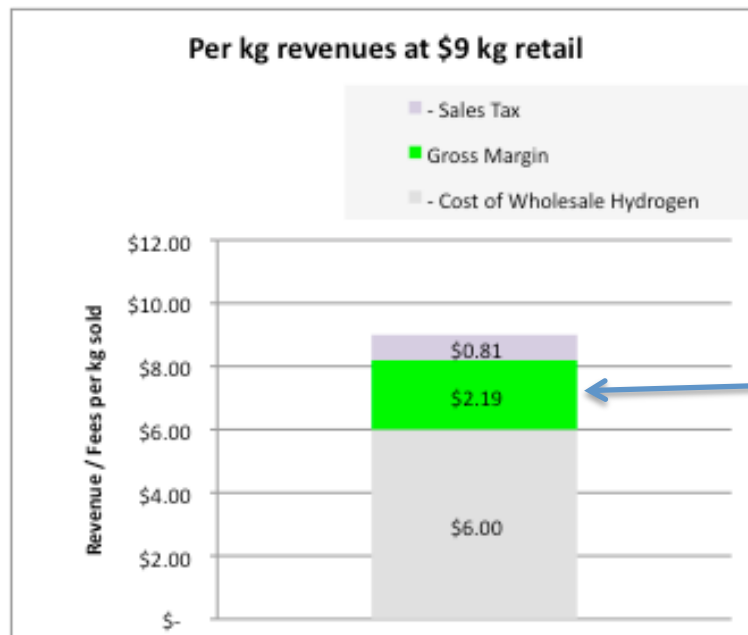
- 250 kg/day capacity example
- Baseline Growth Scenario
- Construct in 2013, Open in 2014
- 150 kg/day by end of year 5**

What are the Financial Implications of this Demand?

Station Timing and Size	Capital Cost	Annual Operating & Business Expenses	
Station Built in 2014		No Load	Max load
100-170 kg/day	\$0.9M	\$57k	\$82k
250 kg/day	\$1.4M	\$62k	\$99k
Stations Built 2015-2017			
250 kg/day	\$0.9M	\$57k	\$94k
400-500 kg/day	\$1.5M-\$2.0M	\$68k	\$149k

Includes:

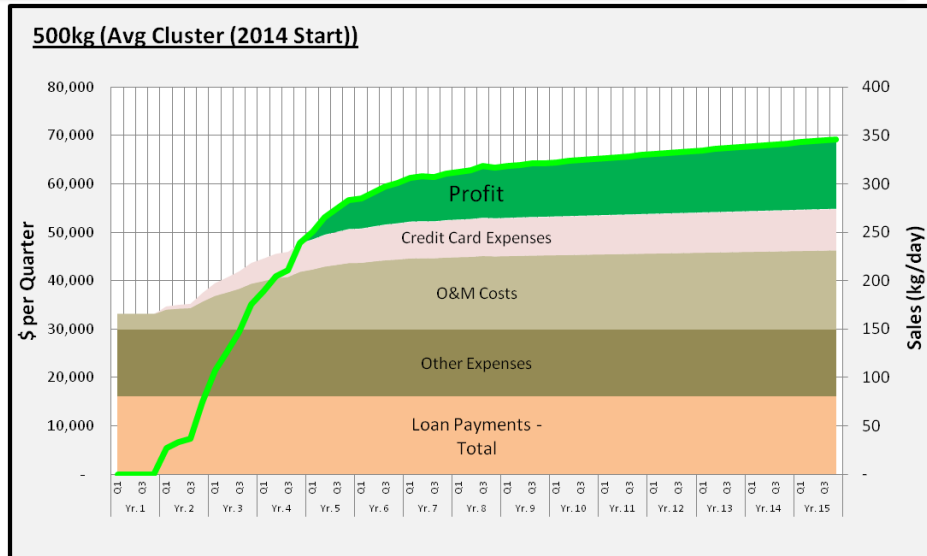
- \$12K/yr baseline maintenance, plus
- 6% increase in maintenance for every 25 kg/day increase in daily load
- Electricity: \$1,200/year + \$0.30/kg
- Property tax: 1% of capital cost
- Rent: \$1,000/month
- Permit fees: \$3,680



Gross margin must cover O&M, other business expenses, credit card fees and financing costs

A Cluster Station Has Early Potential

Baseline FCEV Growth (CaFCP + Flat Growth)

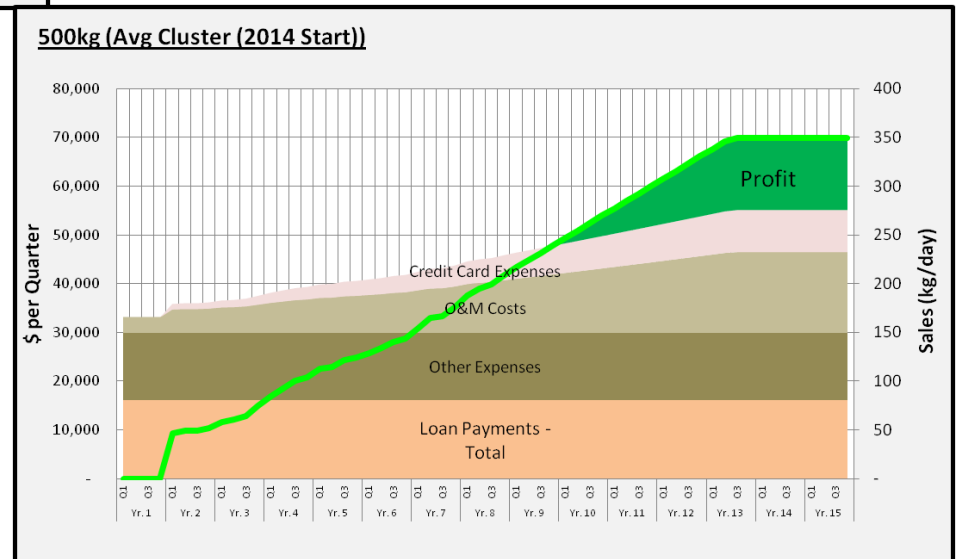


Both assume:

- \$2m Capex
- 70% capital cost share
- 15yr, 5.5% loan for remainder
- Capped at 70% capacity utilization

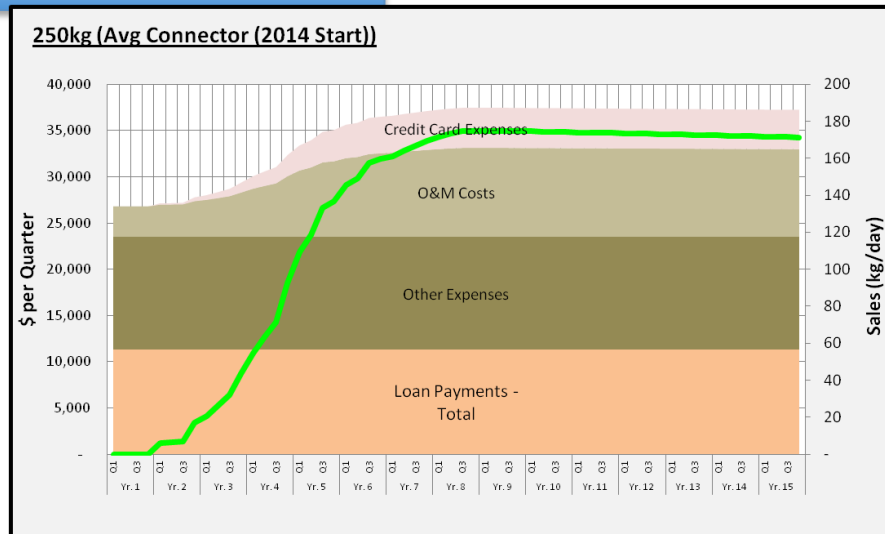
CFO Lower Bound Growth

If cars come slower, profits delayed, but still achievable.



A Connector Station has bigger challenge

Baseline Growth

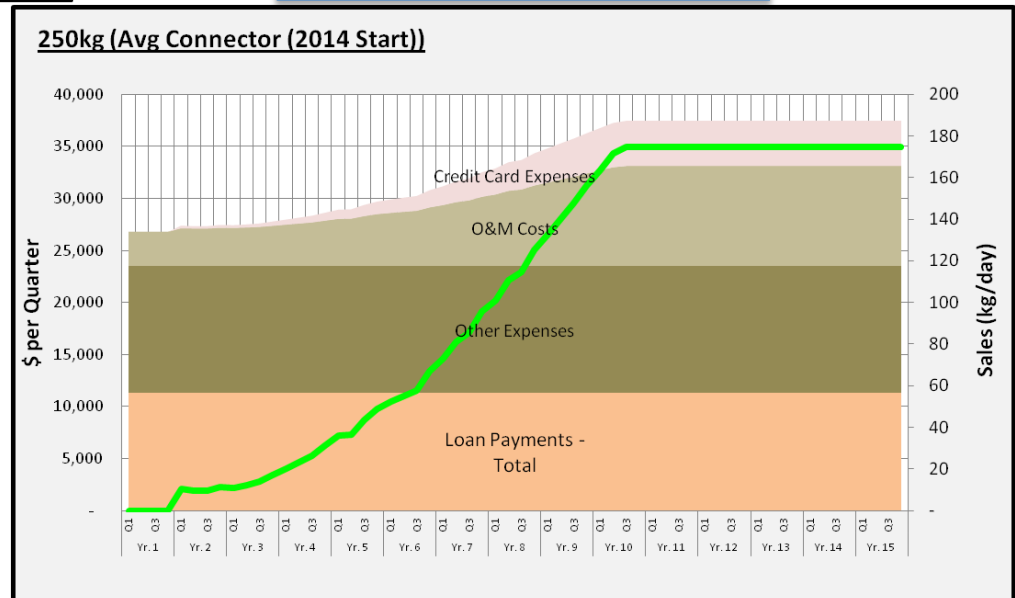


Both assume:

- \$1.4m Capex
- 70% capital cost share
- 15yr, 5.5% loan for remainder
- Capped at 70% capacity utilization

CFO Lower Growth

Given the cost of the station, at \$9/kg it is difficult to make money under either deployment scenario.



Take Aways

- Connector and Cluster stations face very different scenarios. We need to plan accordingly.
- A different incentive structure may be required to motivate investors in connector locations
 - EIN is analyzing potential strategies
 - We want to work with CEC on this issue.

Discussion/Questions

Thank You.

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