



WHY HYDROGEN WILL BECOME GOOD BUSINESS

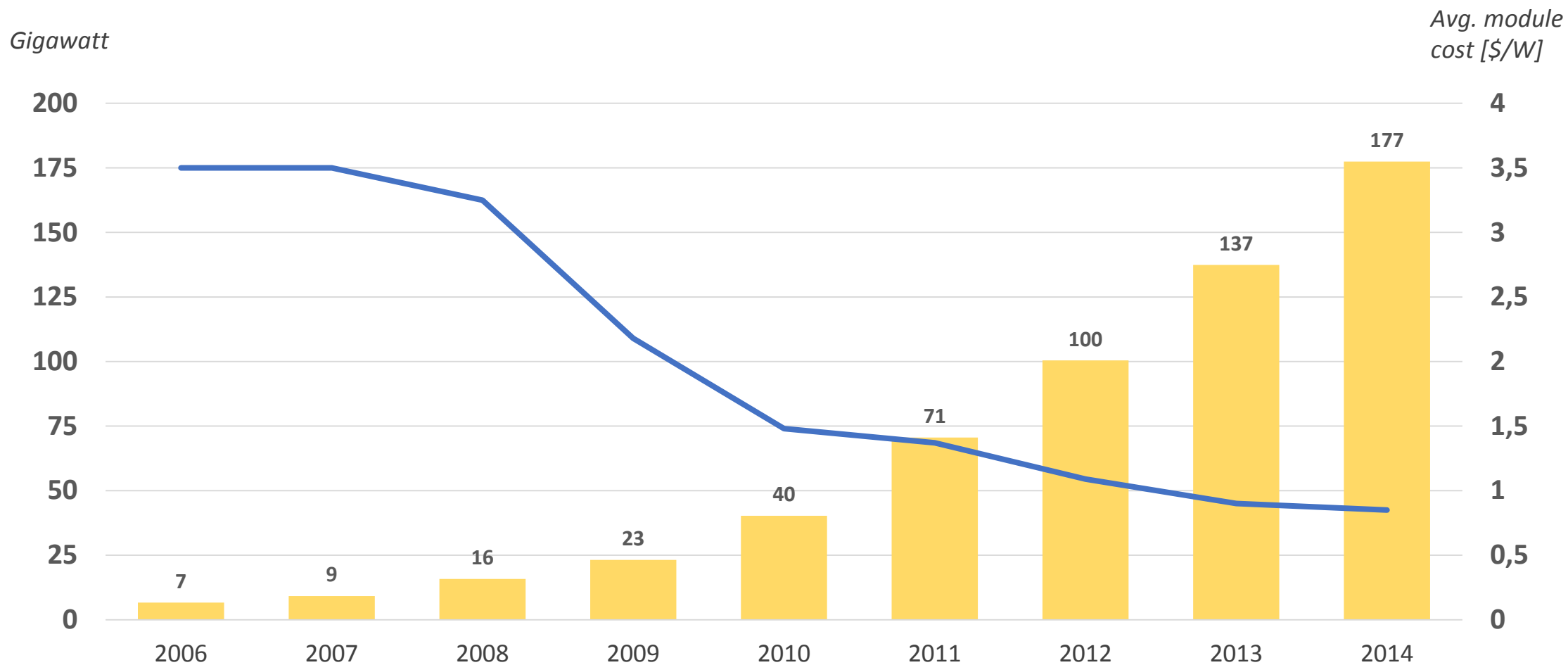
Øystein Stray Spetalen
Investor and Member of the Board

THE MARKET FOR FUEL IS **MASSIVE**



\$ 8 BILLION
PER DAY

SOLAR ENERGY IS GROWING RAPIDLY



Source: Solar Power Europe, IRENA

ELECTRICITY IS BECOMING CHEAP. VERY CHEAP.



German Electricity Slump

Year-ahead German power contract



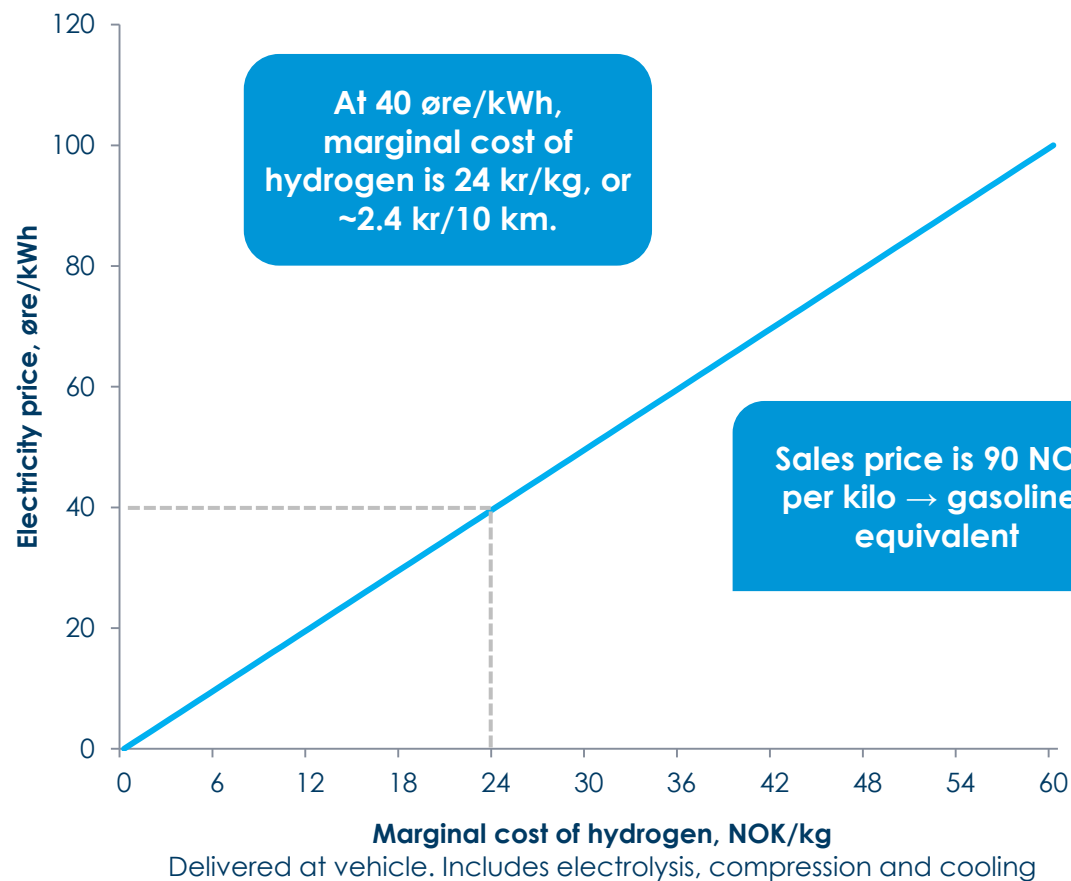
Source: EEX

Bloomberg

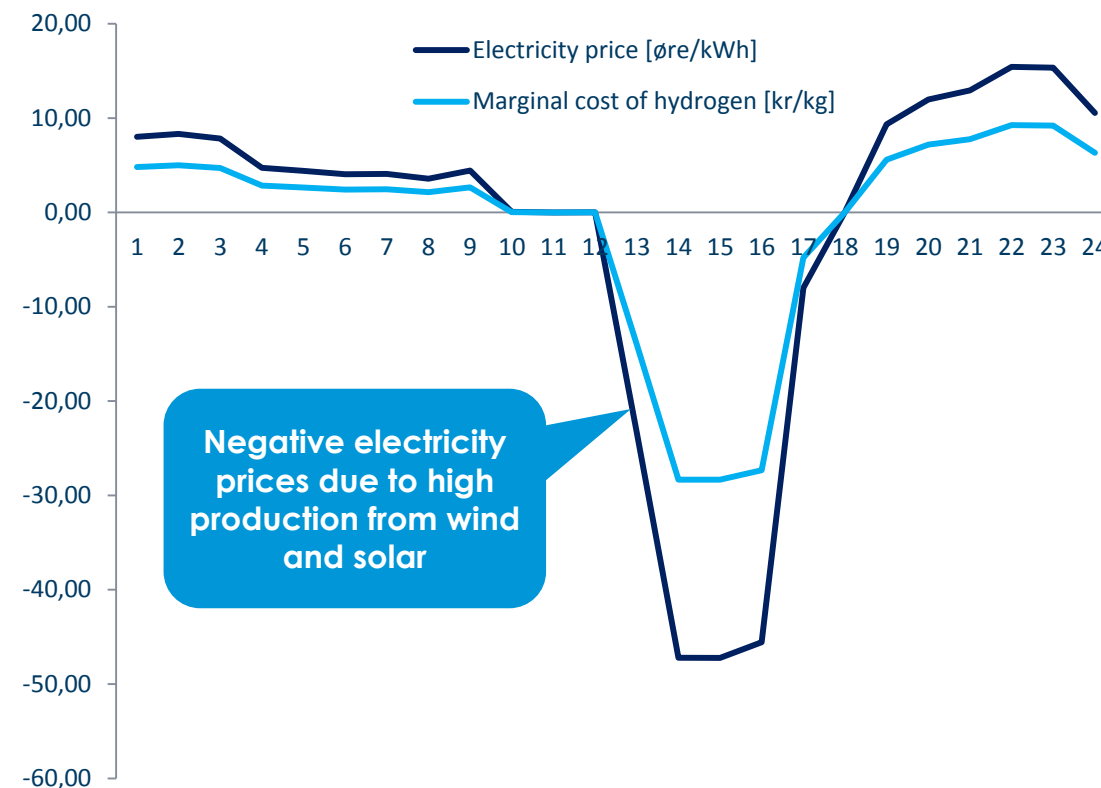
CHEAP ELECTRICITY = CHEAP HYDROGEN



Production cost versus electricity price



Example: 24hr period in Germany (excess)



HYDROGEN VEHICLES ARE ENTERING THE MARKET

Formidable cost reductions enable introduction: *“The Toyota Mirai’s powertrain is 95% cheaper to build than the fuel-cell system in the 2008 Highlander fuel cell SUV”¹*

499.000 NOK



TOYOTA



HONDA



2014

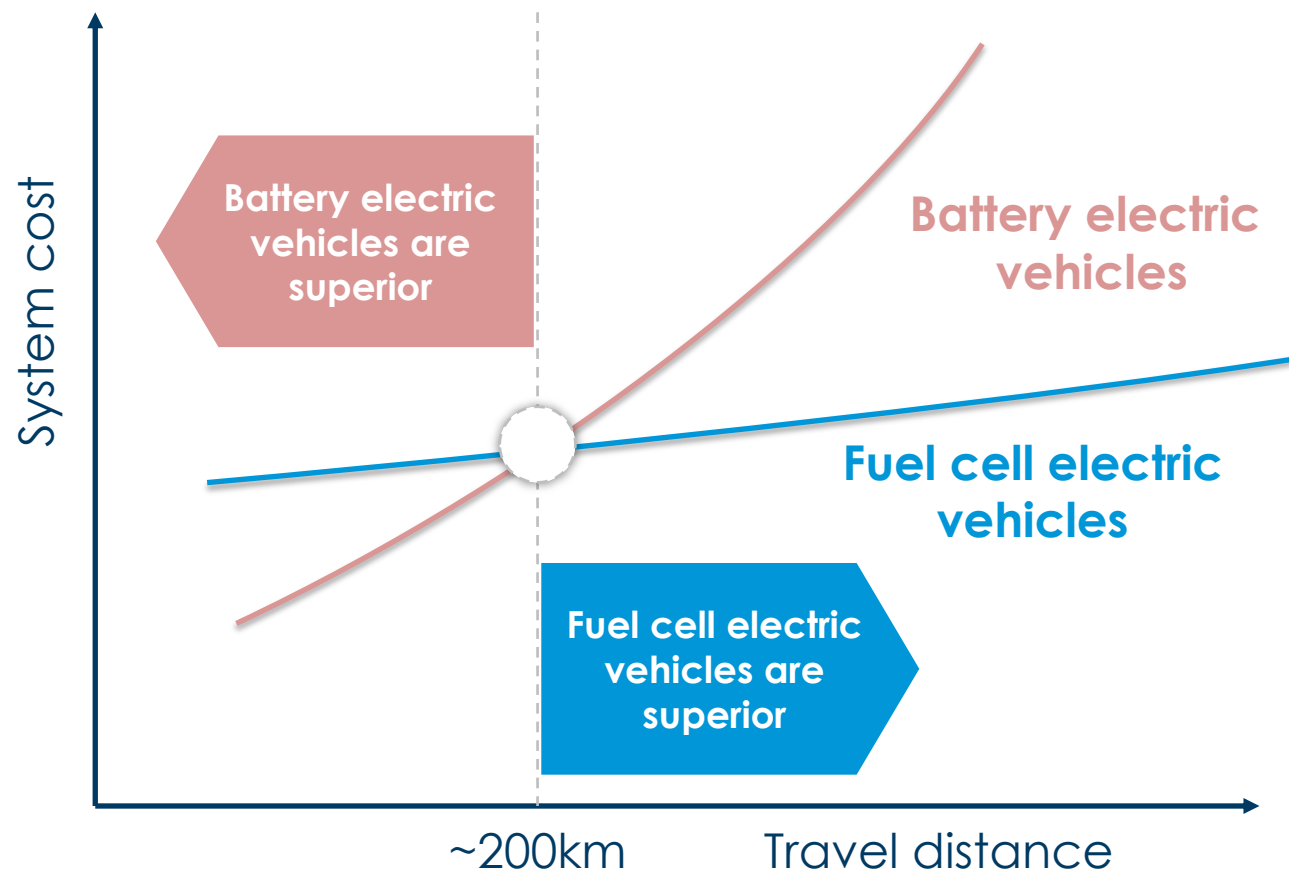
2015

2016

2017 - 2020

¹Source: Satoshi Ogiso, Toyota managing officer at the L.A. auto show (November 2014)

BEST COMPROMISE BETWEEN RANGE & COST



POWER CONTROL UNIT
Manages the fuel cell stack and battery.

MOTOR
Runs on electricity from the fuel stack and the battery.

FUEL CELL STACK
Generates electricity from hydrogen fuel.

HYDROGEN TANK
Stores hydrogen fuel under high pressure.

BATTERY
Stores energy from deceleration.



THE HYDROGEN VALUE CHAIN



Addressing all end markets for hydrogen gas

Electricity production



Renewable energy

Hydrogen production



+

H₂O

Water
electrolysers



Hydrogen production from
water and electricity

Energy storage



Hydrogen as a “battery”
for renewable energy

Distribution methods



Onsite



Trucked in



Pipeline

End markets

Hydrogen Refuelling Stations



Industrial end markets

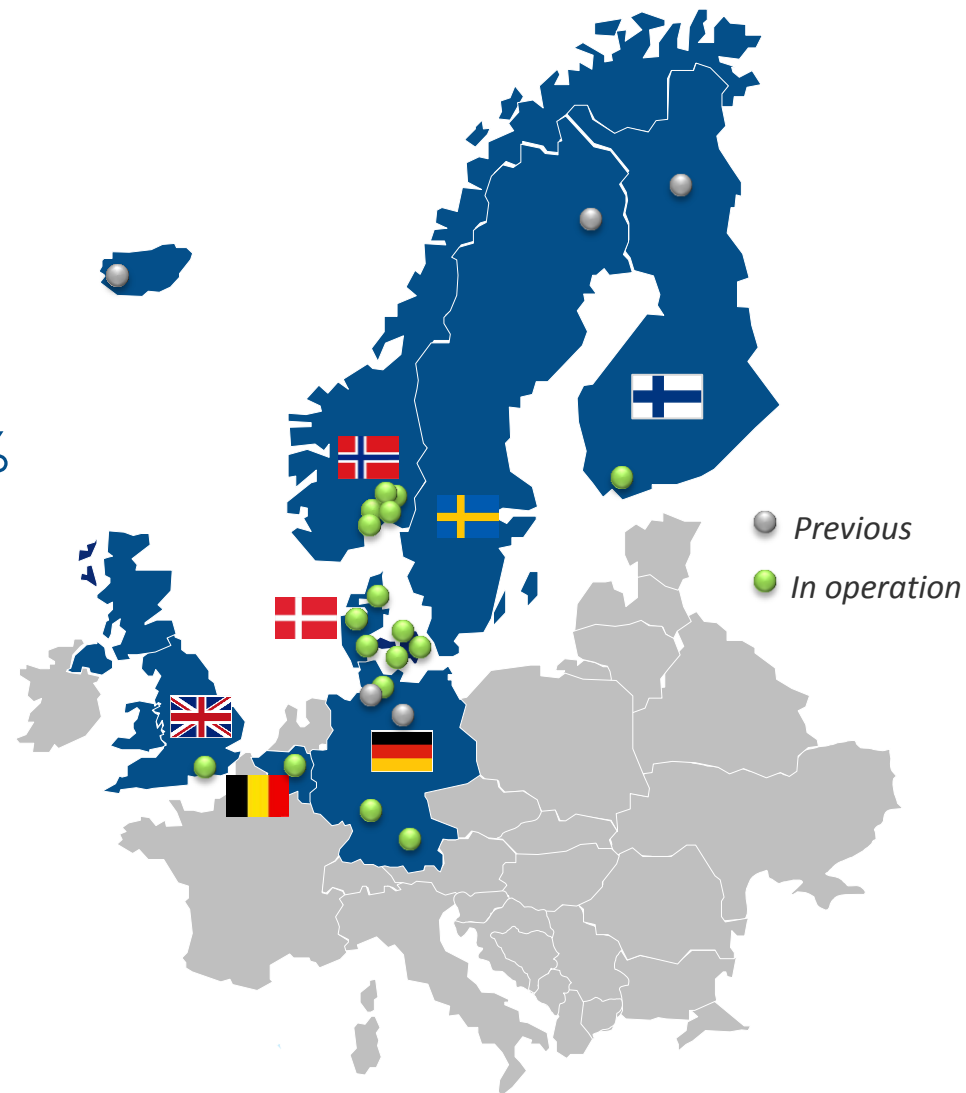




THE WORLD'S MOST EFFICIENT ELECTROLYSERS

FAST HRS EXPERIENCE IN THE NEL GROUP

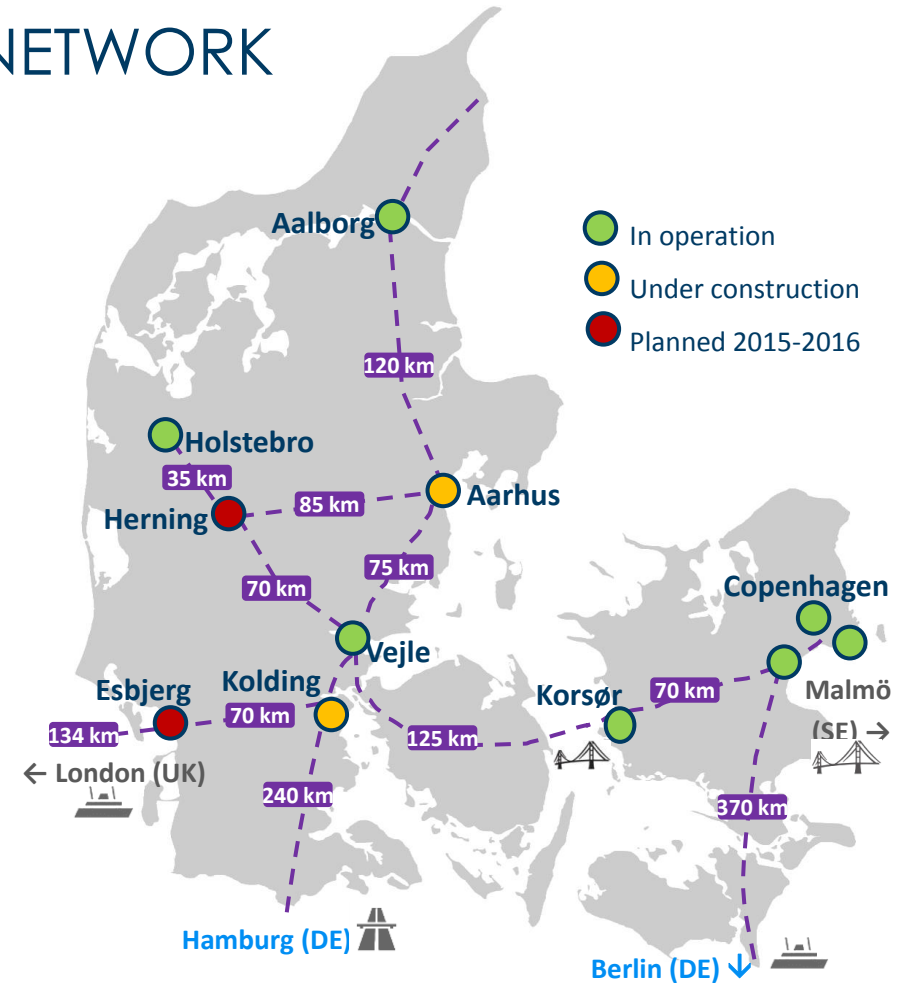
- 27 HRS to 8 countries since 2003:
 - Statoil, Hydro, H2 Logic
- Since 2008, H2 Logic stations have provided more than 12,000 safe refuellings and 21 tons of hydrogen
- Stations with highest reported availability: 98%



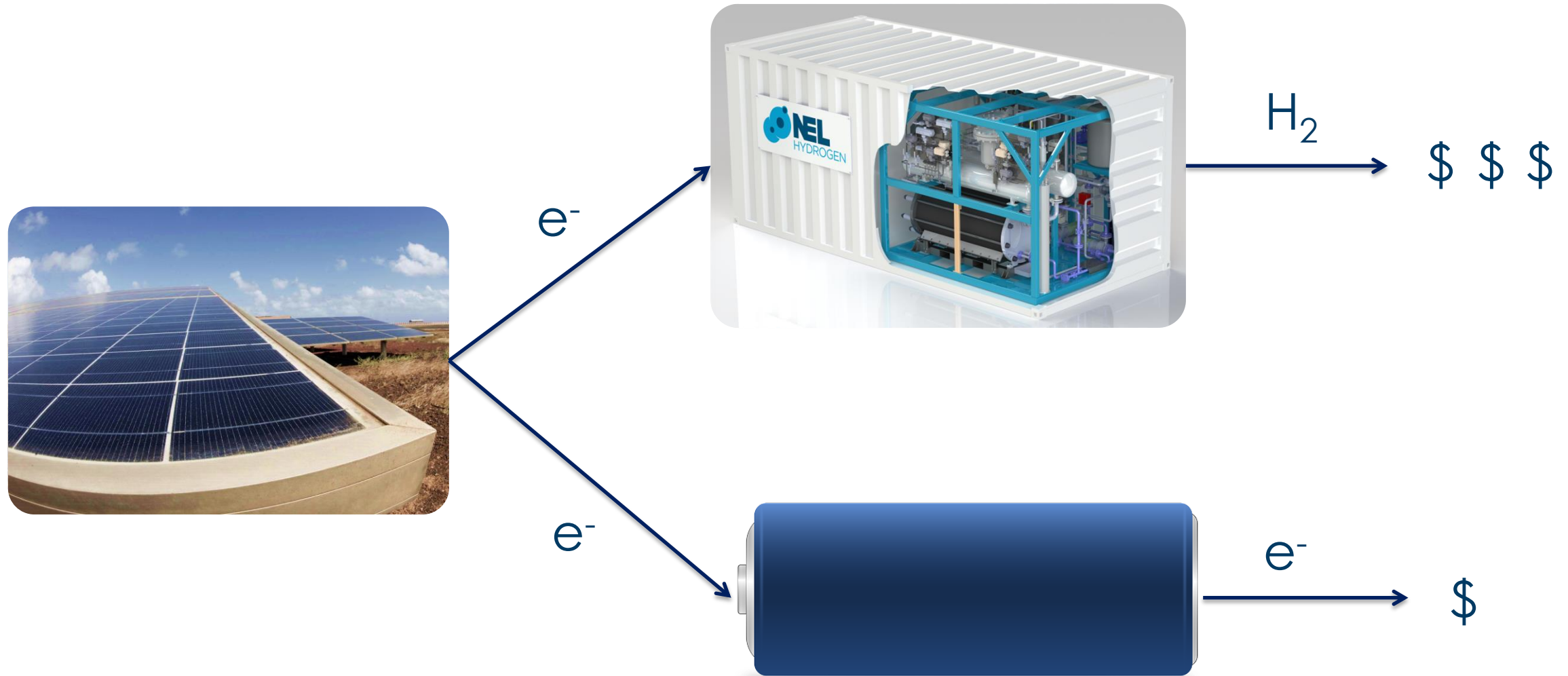
WORLD'S FIRST COUNTRY WIDE NETWORK

DENMARK HAS THE FIRST COUNTRY-WIDE NETWORK OF HYDROGEN REFUELLING STATIONS

- H2 Logic services and operates the entire network
- Joint venture(s) with oil, energy & gas companies for building and operating stations
- 100 % renewable



ENERGY STORAGE OPTIONS

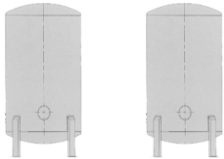


H₂ FUELLING COMBINED WITH ENERGY STORAGE



- Shell Hamburg station demonstrates integration of refuelling with the electrical grid.
- Hydrogen provided alongside other fuels

Hydrogen storage
for grid balancing

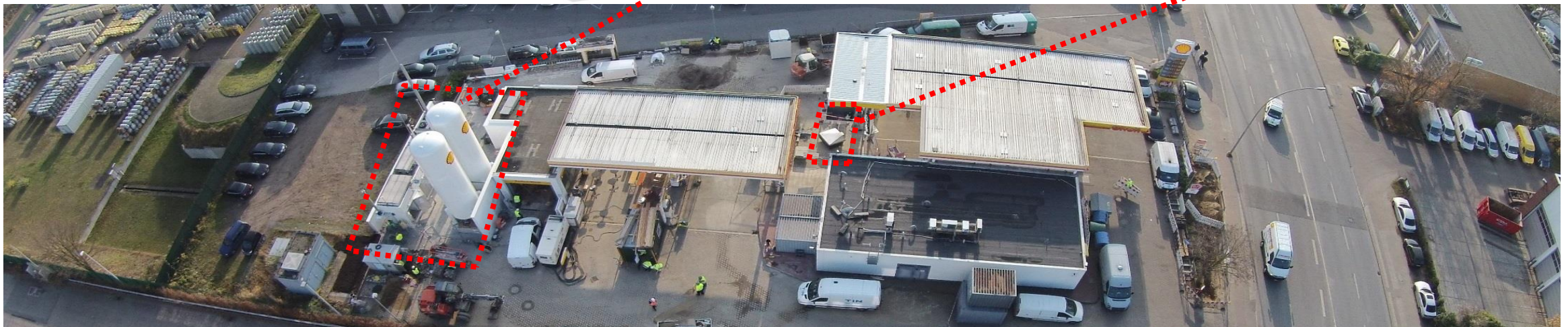


H2Station® CAR-100
Integrated PEM Electrolyser



50 meter
hydrogen pipeline

Stand-alone
Dispenser



CURRENT SYSTEM IS WASTING ENERGY



Norwegian transportation sector: ~60 TWh (90%+ fossil fuels)

Norwegian electricity production: ~130 TWh (95%+ renewable)

50/50 hydrogen and battery electric vehicles: ~13 TWh

Societal benefits are clear, but infrastructure is needed:
Enova will play an important role for realization

SUMMARY:



1. RENEWABLE ELECTRICITY IS BECOMING CHEAP
2. THERE IS A GROWING NEED FOR ENERGY STORAGE SOLUTIONS
3. HYDROGEN CARS ARE BECOMING CHEAP

