

# Disruptive or Non-Disruptive

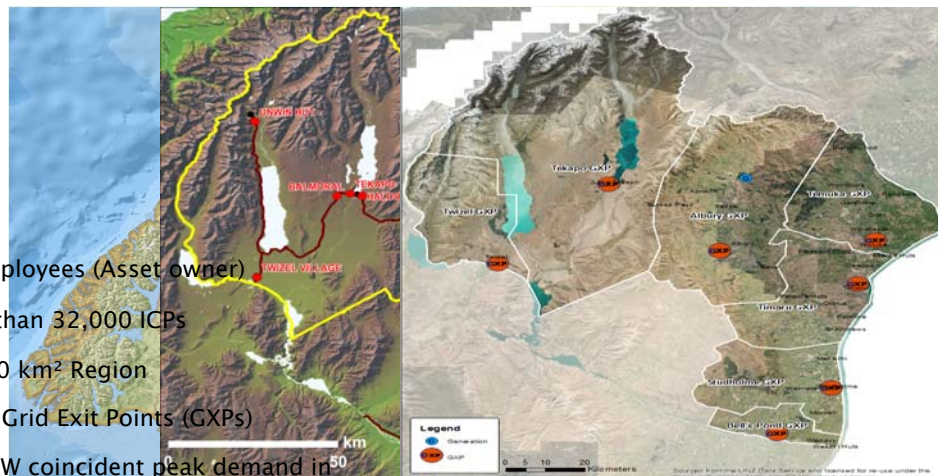


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Planning Engineer

17<sup>th</sup> August 2018

## Alpine Energy Ltd

- ▶ 80 Employees (Asset owner)
- ▶ More than 32,000 ICPS
- ▶ 10,000 km<sup>2</sup> Region
- ▶ Seven Grid Exit Points (GXPs)
- ▶ 147 MW coincident peak demand in FY2018





**"I'M NOT DOING THAT,  
I'LL PAY SOMEONE  
ELSE TO DO  
IT FOR ME"**

eea  
Electricity Engineers'  
Association

At APEX 2  
smarter so

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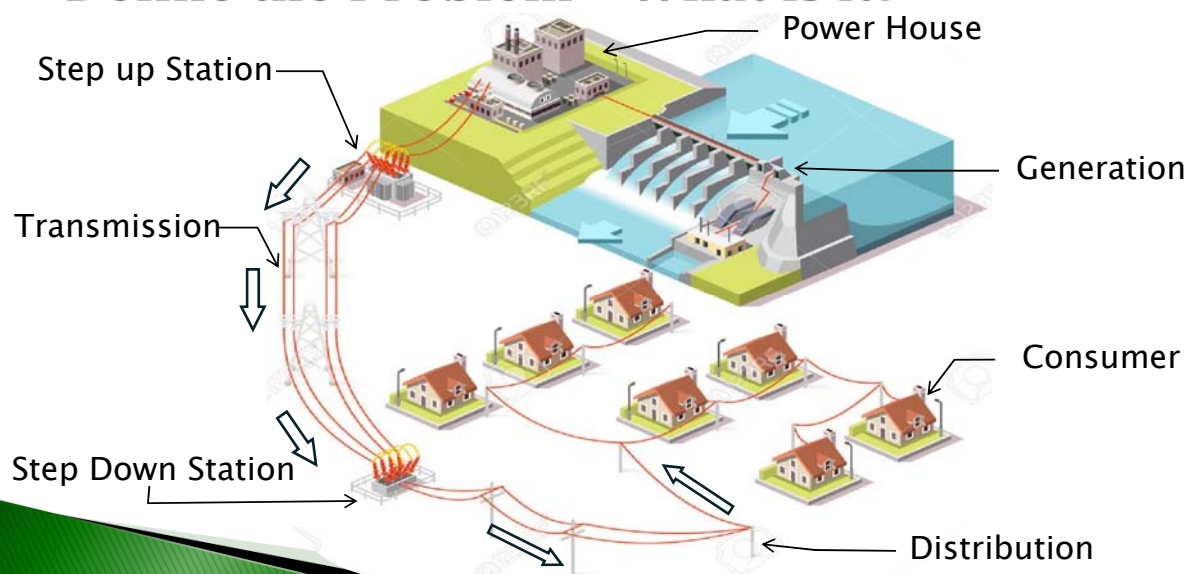
VIA DUBAIEMES.COM



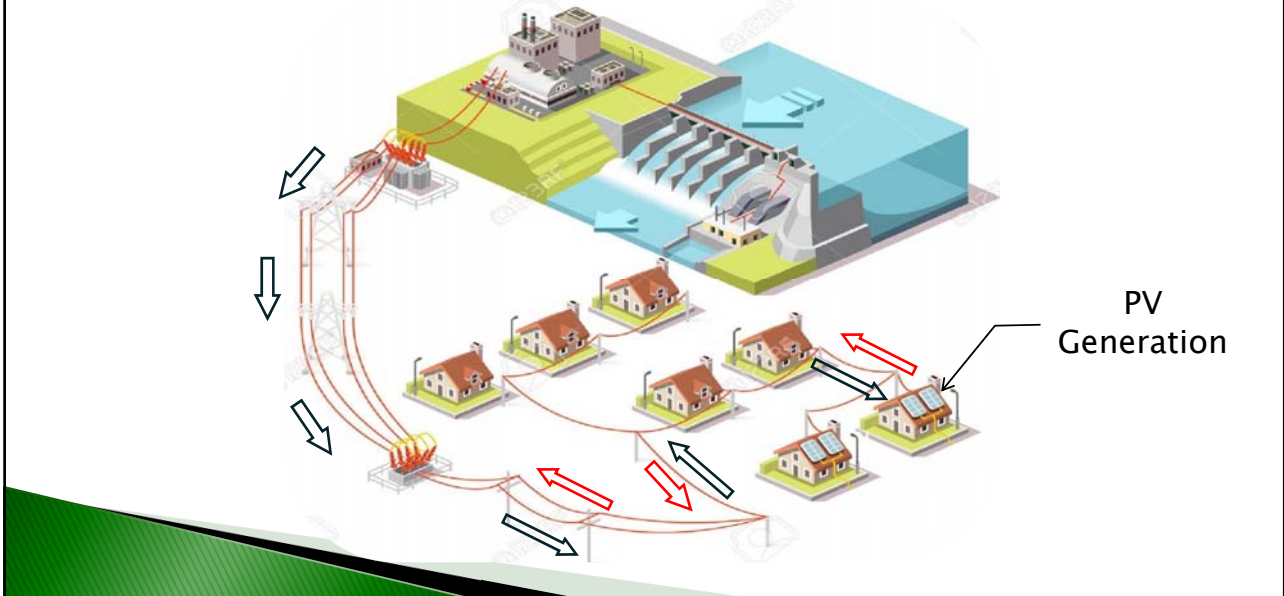
## Problem Solving Approach

1. Define the problem
  - a) What is it?
  - b) What is changing?
  - c) How fast is it changing?
  - d) How is it affecting us?
2. Propose a solution
3. Maintaining the solution

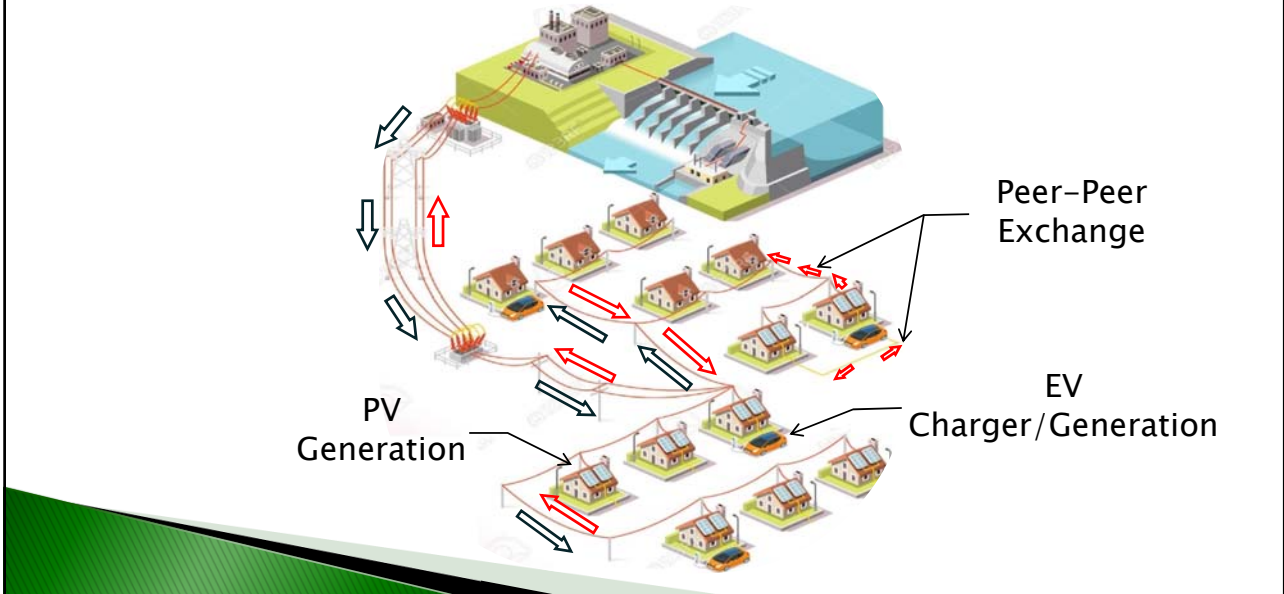
## Define the Problem - What is it?



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## **Problem Solving Approach**

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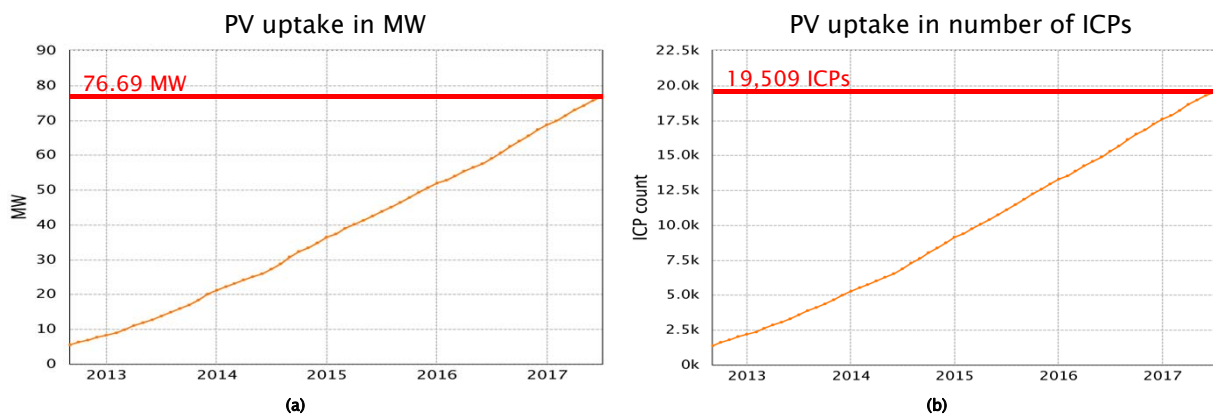
## **Define the Problem – What is Changing?**

- ▶ Consumers incentives and behaviour
- ▶ Environment awareness
- ▶ Technology availability and cost
- ▶ Tempting return on investment promises
- ▶ Digitalisation

## Problem Solving Approach

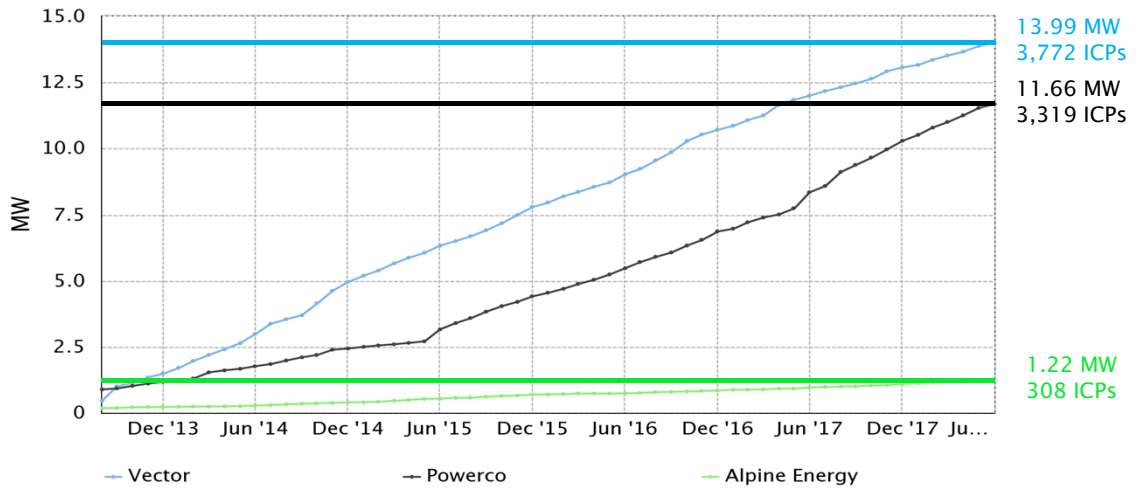
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## Define the Problem – How fast is it changing?



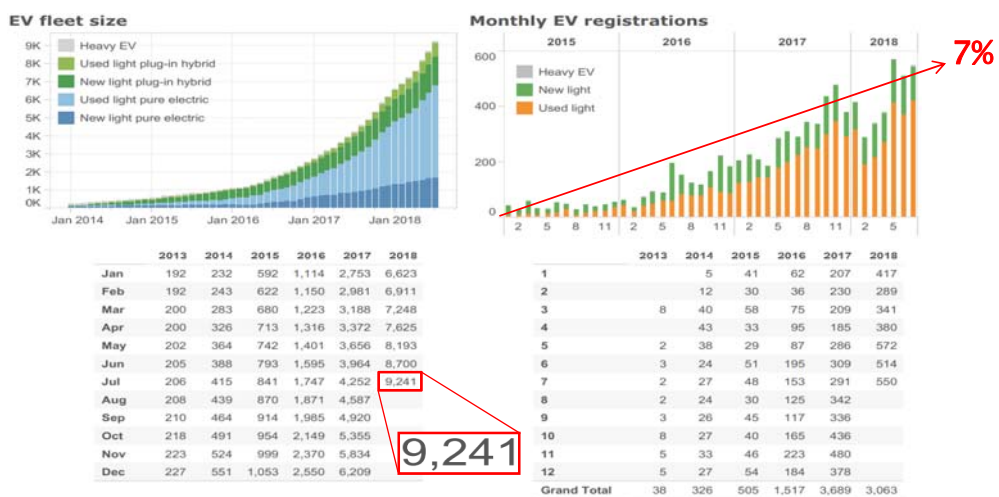
**Description:** New Zealand PV trend in MW (a) and number of ICPs (b) obtained from the EMI Electricity Authorities website  
**Source:** [https://www.emi.ea.govt.nz/Retail/Reports/GUEHMT?\\_si=v%7C3\\_tq%7Cgeneration](https://www.emi.ea.govt.nz/Retail/Reports/GUEHMT?_si=v%7C3_tq%7Cgeneration)

## Define the Problem – How fast is it changing?



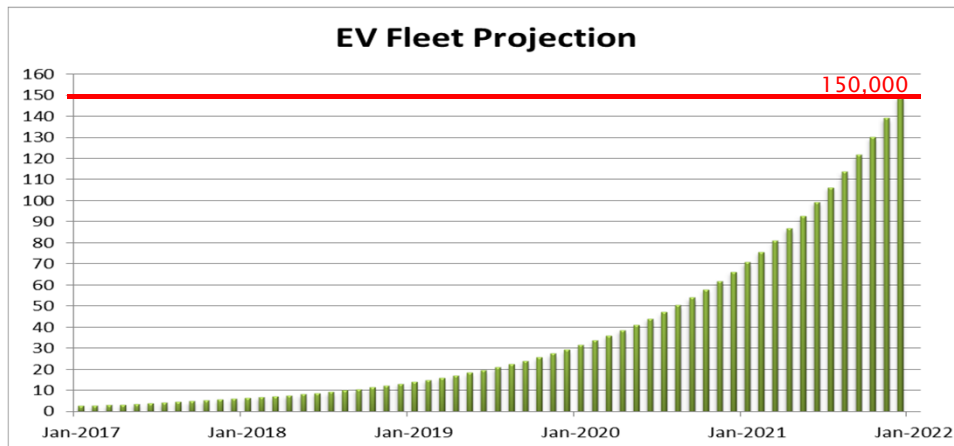
Description: New Zealand PV trend in MW per utilities company obtained from the EMI Electricity Authorities website  
 Source: [https://www.emi.ea.govt.nz/Retail/Reports/GUEHMT7\\_si=v%7C3,tg%7Cgeneration](https://www.emi.ea.govt.nz/Retail/Reports/GUEHMT7_si=v%7C3,tg%7Cgeneration)

## Define the Problem – How fast is it changing?



Description: EV fleet size and monthly registrations according to the Ministry of Transport statistics  
 Source: <https://www.transport.govt.nz/resources/vehicle-fleet-statistics/>

## Define the Problem – How fast is it changing?



**Description:** EV fleet projection based on 7% monthly growth  
**Source:** Self generated using data from the Ministry of Transport statistics

## Define the Problem – How fast is it changing?

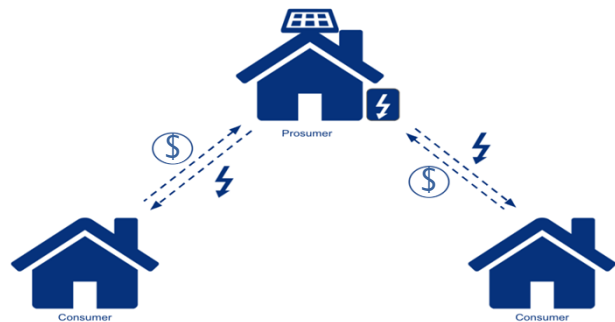
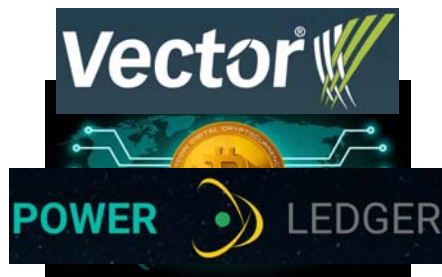
- ▶ Battery Energy Storage Systems (BESS)
  - Not very economic at present
  - Will pick up rapidly once prices drop





## Define the Problem – How fast is it changing?

- ▶ Block Chain/Peer–Peer Exchange
  - Still under trial in NZ
  - Could gain traction like Bitcoin

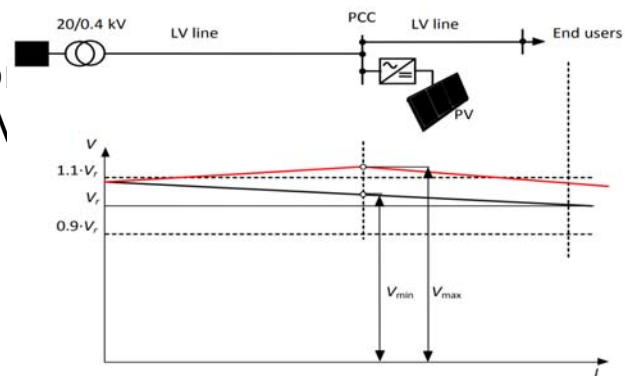


## Problem Solving Approach

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## Define the Problem – How is it affecting us?

- ▶ Network Possible Effects
  - Voltage congestion & fluctuation
  - Harmonics
  - Forcing LV reticulatio
  - High load demand (E\



Description: Power Quality Assessment in Small Scale Renewable Energy Sources Supplying Distribution Systems  
 Source: <http://www.mdpi.com/journal/energies> (Multidisciplinary Digital Publishing Institute)

## Define the Problem – How is it affecting us?

- ▶ Corporate Possible Effects
  - Reduction in income
  - Media attention
  - Strategic planning uncertainties

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2. Propose a solution

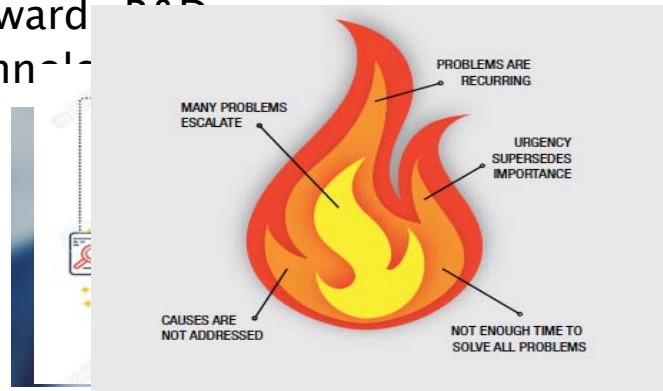
## Solution to the Problem (Non-Disruptive)

- ▶ Understand consumers' behaviours and motives
  - Break the distributor/consumer barrier
  - Engage communities
  - Provide training and education



## Solution to the Problem (Non-Disruptive)

- ▶ Establish a strong R&D front
  - Break free from “Fire fighting” mode
  - Direct funding toward R&D
  - Invest in new technologies



## Solution to the Problem (Non-Disruptive)

- ▶ Encourage Innovation & Smart Projects
  - Budget for innovation internally
  - Governing bodies allowance for innovation
  - UK implemented this since 2010 (Olivia Carpenter - EEA Conference)

**ELECTRICITY  
AUTHORITY**  
TE MANA HIKO

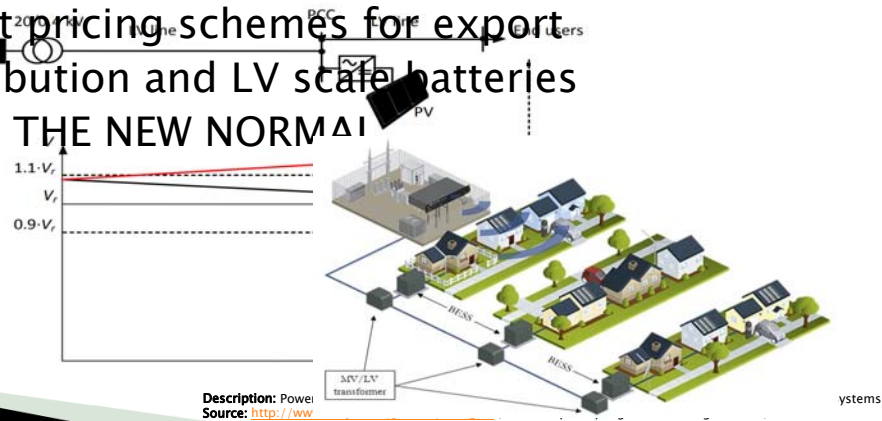
**COMMERCE  
COMMISSION**  
NEW ZEALAND  
*Te Komihana Tauhokohoko*



**MINISTRY OF BUSINESS,  
INNOVATION & EMPLOYMENT**  
HĪKINA WHAKATUTUKI

## Solution to the Problem (Non-Disruptive)

- ▶ Make disruptive technology non-disruptive
  - Allow & fund PV in strategic location
  - Use smart pricing schemes for export
  - Use distribution and LV scale batteries
  - EMBRACE THE NEW NORMAL



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## Challenge

- ▶ Discussion paper to include:
  1. What future challenges are facing your company?
  2. How is your company positioned to face them?
  3. How should the company prepare for them?
  4. Recommend investment in future generation
  5. Share findings with industry peers

**YOU are the Smart Solution for the FUTURE  
problem**

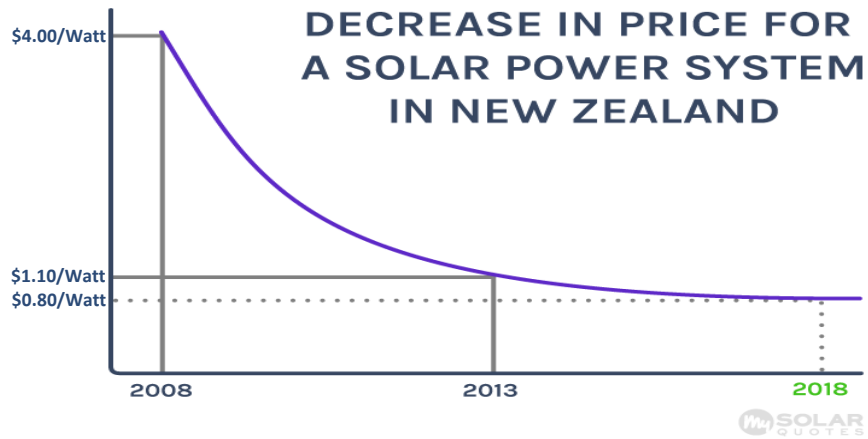
**Thank you for your attention**

**Questions**

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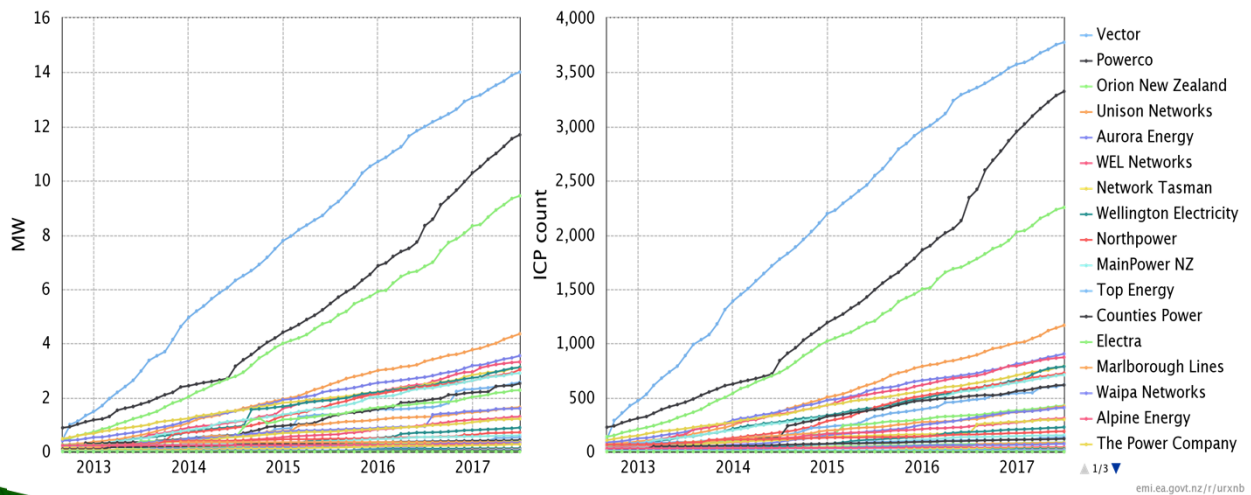


## Define the Problem – How fast is it changing?



Description: Solar price decline as per my solar quotes company 2018  
 Source: <https://www.mysolarquotes.co.nz/about-solar-power/residential/how-much-does-a-solar-power-system-cost/>

## PV Uptake Utilities





# Define the Problem – How fast is it changing?



**Beehive.govt.nz**  
The official website of the New Zealand Government

6 MAY 2016

## Govt driving the switch to electric vehicles

Simon Bridges

The Government's package includes:

- A target of doubling the number of electric vehicles in New Zealand every year to reach approximately 64,000 by 2021
  - Extending the Road User Charges exemption on light electric vehicles until they make up two percent of the light vehicle fleet
  - A new Road User Charges exemption for heavy electric vehicles until they make up two percent of the heavy vehicle fleet
  - Work across Government and private sector to investigate the bulk purchase of electric vehicles
  - Government agencies coordinating activities to support the development and roll-out of public charging infrastructure including providing information and guidance
  - \$1 million annually for a nation-wide electric vehicle information and promotion campaign over five years
  - A contestable fund of up to \$6 million per year to encourage and support innovative low emission vehicle projects
  - Allowing electric vehicles in bus lanes and high-occupancy vehicle lanes on the State Highway network and local roads
  - Review of tax depreciation rates and the method for calculating fringe benefit tax to ensure electric vehicles are not being unfairly disadvantaged
  - Establishing an electric vehicles leadership group across business, local and central government.

**Description:** Electric vehicles government programme Minister's media release May 2016  
**Source:** <https://www.beehive.govt.nz/release/govt-driving-switch-electric-vehicles>