Data driven diagnostics

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Introduction

• More than 44,000 sites
• Genuine solar veterans
• 20+ years R&D
• 10x growth per annum
• 38 staff and 9PhDs
• 4 countries
• 900 Resellers
• 1 Wholesaler
• 4 energy utilities
• 2 university partnerships
• 1 amazing team
Monitoring solutions

- Via our highly flexible 4G hardware
- Via inverter modbus to 4G
- Via inverter wireless to API
- Via NMI meter modbus to 4G or API
No one expects things to go wrong, but….
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Problems With Solar PV Systems & Frequency Of Checking System

- **31%** weekly or more often (n=457)
- **27%** every few weeks (n=277)
- **21%** every few months (n=247)
- **22%** annually (n=67)
- **24%** if my bill is high (n=105)
- **17%** never (n=181)

- **Yes - my inverter has stopped working**
- **Yes - my panels have stopped working**
- **Yes - either my inverter or panels have stopped working**
Within our fleet....

Overview of system status

- Good, 69%
- Unknown fault, 22%
- Comms fault, 7%
- System fault, 1%
Using data for warranty

- is it really a problem?
- how do I get evidence?
- how big is the problem?
Dive deeper

- severity rating
- performance or fault
- dynamic
Performance

- what is normal?
- more than twenty key variables
- complex sum with algorithmic smoothing
Trends

- Long term trends improve reliability
- Site specifics come into play
- Data granularity matters
Tools

- circuit level monitoring
- 5SecondLive
- rule causes in or out
Testing solar modules

- equipment tolerances
- equipment accuracy & calibration
- external factors