

Our electricity system is changing – what this means to you

Ashley Wall
Principal Consultant
Electricity Risk Solutions Ltd

Our electricity system is changing

“...we are now in the early stages of a period of profound change. We are not yet in a position to forecast where this will ultimately lead or predict all the problems that will emerge...”

Dr Harrison chair of the Institution of Engineering and Technology UK, House of Lords select committee report “The Resilience of the Electricity System March 2015”

Our electricity system is changing

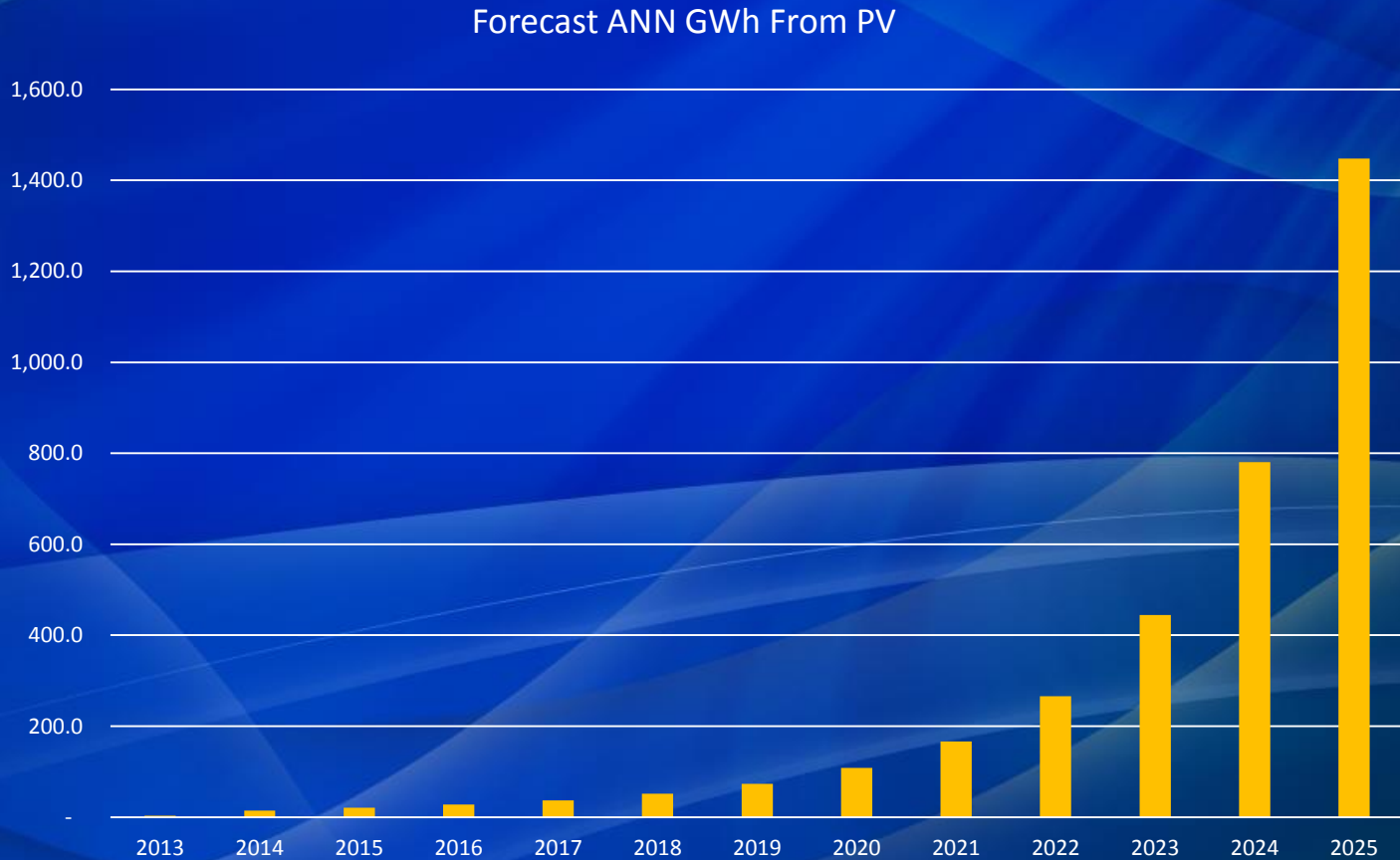
Disruptive Technologies

- Electric Vehicles. How many, how quickly and when will they charge?
- Battery Storage. How quickly will the costs come down and what about those EV batteries?
- PV uptake. Exceptional growth over recent time where could it go to by 2025?

Our electricity system is changing

Change will not be linear

When does a technology tip?



Our electricity system is changing

Physical change

- The continued reduction of system inertia as base load generation assets move from larger thermal assets to renewable assets,
- FK controller binding the two Islands frequencies to a single control point via the HVDC.
- Reduction in the volume of load following generation performing the frequency keeping operation.

Our electricity system is changing

Regulatory change

- Changes to the normal frequency standard, what flow on effects will they generate?
- Frequency Keeping role as we presently know it (national multiple frequency keepers) will it disappear?

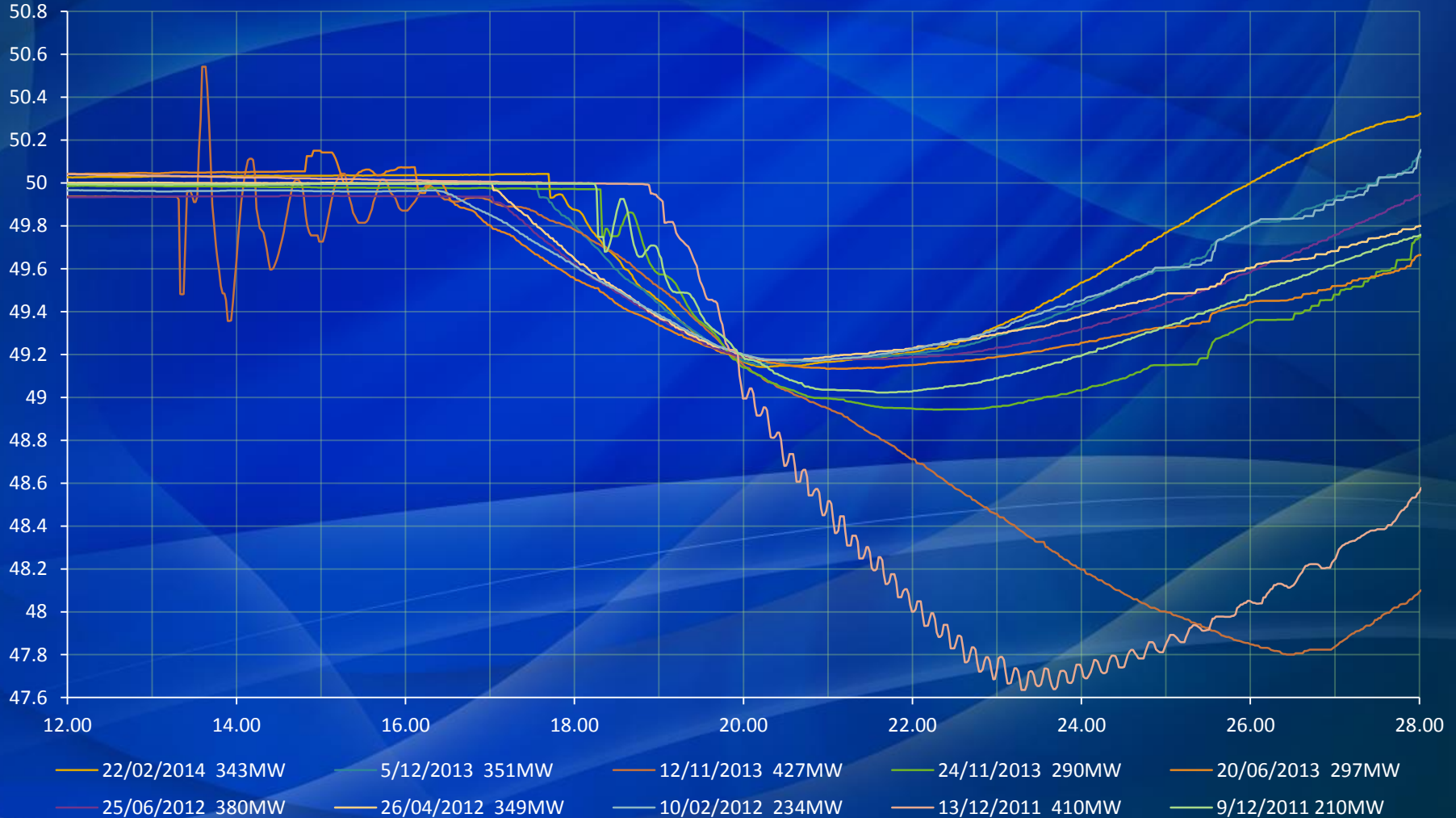
Our electricity system is changing

Regulatory change continued

- National Reserves Market,
- Review of Reserve products,
- Review of reserve cost allocation,
- Event fee payments.

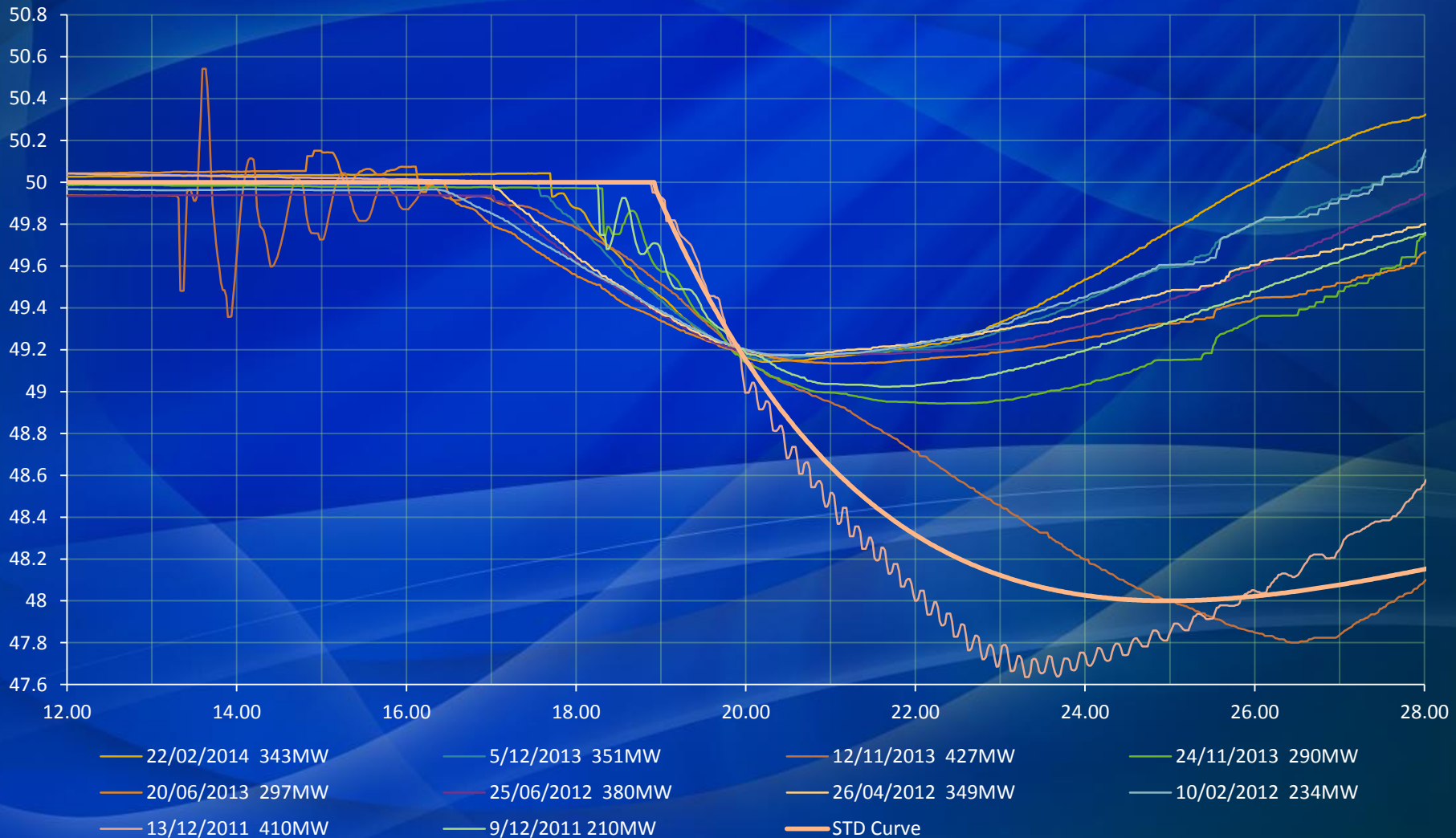
Who is doing most of the work now

North Island Under Frequency Events



Who is doing most of the work now

North Island Under Frequency Events



What's this all mean for You

- Will more fast reserve be required in the future as the grid moves towards 100% renewables?
- What could you contribute here

What's this all mean for You

- The frequency standard will be tightened and the frequency keeping market will change
- The reserve market is going to go through a fundamental changes in product type, event fee rebate and cost allocation all in the context of a national market

What's this all mean for You

The generation sector has a an important role to play here as these:

- Technological,
- Physical Grid and
- Regulatory changes

Will impact on the path that New Zealand takes as it moves to 100% Renewables.