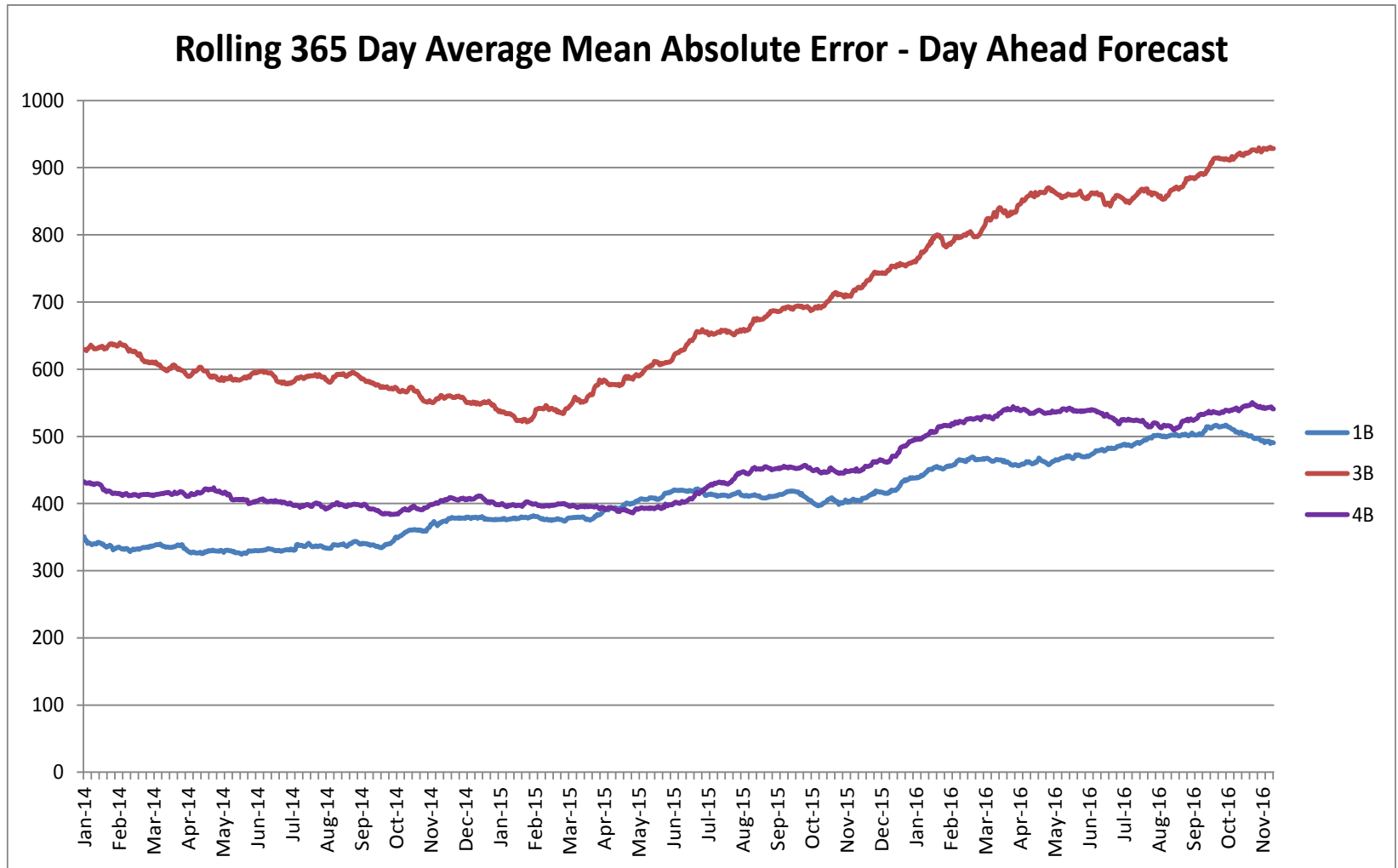# Demand forecasting

Jeremy Caplin
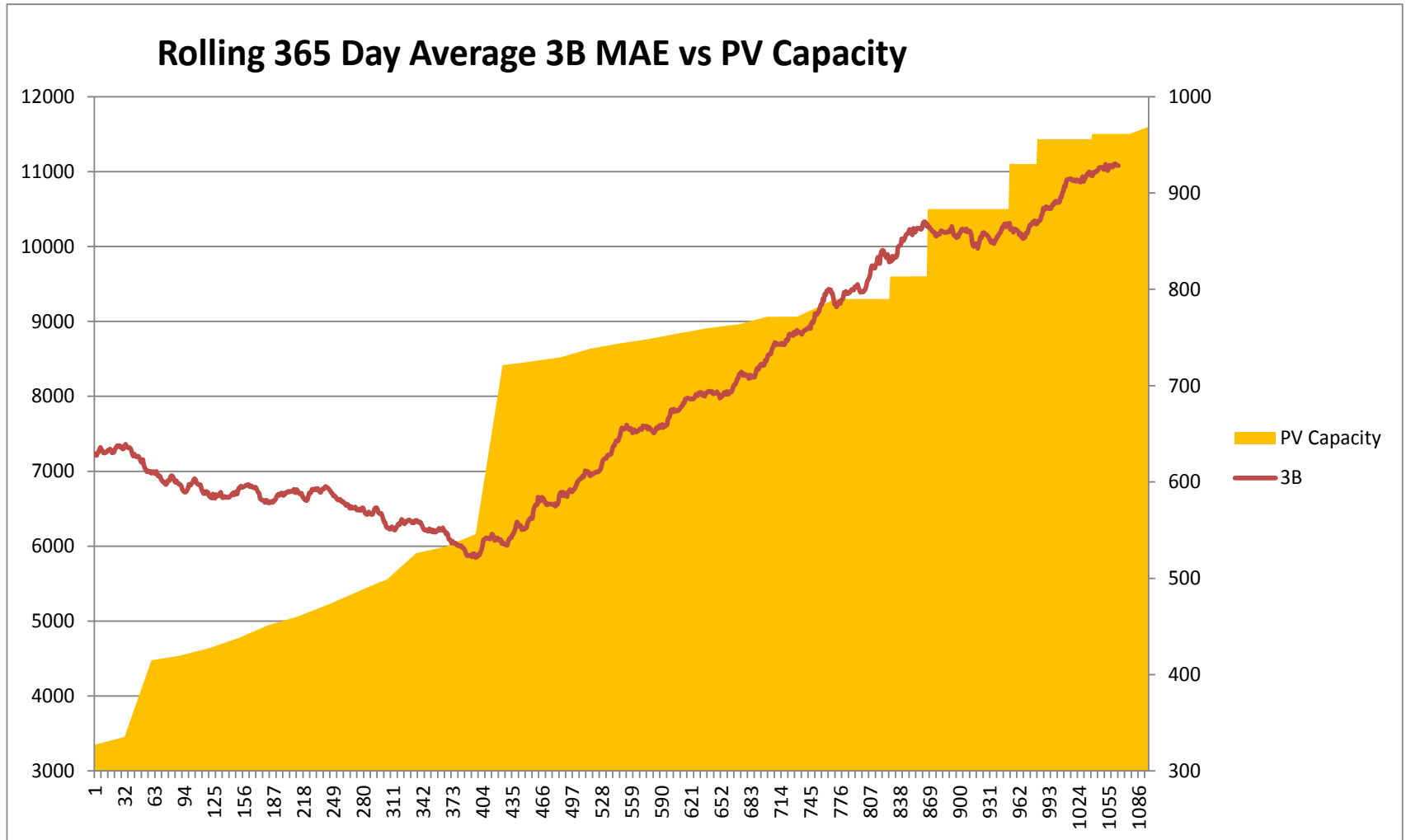Energy Forecasting Manager

Introduction

- ■ Review of recent forecasting performance

- ■ Initiatives currently underway to improve forecasts

- ■ Overview of Demand Forecasting Incentive

Recent Forecasting Performance

Demand Forecast Error – day ahead

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Rolling 365 Day Average Mean Absolute Error - Day Ahead Forecast

Legend: 1B, 3B, 4B

Impact of growth in PV

Rolling 365 Day Average 3B MAE vs PV Capacity

Current Innovations

*national*grid

Current initiatives in flight

- NIA project with Sheffield Solar
    - Estimated PV at National Level
    - Estimated PV at Grid Supply Point Level
- NIA project with Met Office
    - Improved Solar Radiation Forecasts
    - Hourly updated solar radiation forecasts
    - Physics of clouds
- NIA project with Reading University
    - Probabilities of wind / solar combinations
    - PV models

nationalgrid

Current initiatives in development

- Enhanced models for PV and embedded wind

- Models for non-weather variable embedded generation

- Hourly weather updates

- Five minute updates to PV estimates

Incentive Scheme

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Demand forecasting incentive scheme

- Four separate schemes, each ± £1m

- Wind forecast as this year, except by half hour rather than by hour. Publish by 5 am for Day Ahead

- Day Ahead Demand Forecast, publish by 9am

- Two Day Ahead Demand Forecast, publish by 5pm

- Seven Day Ahead Demand Forecast, publish by 5pm

- 25% of each scheme on forecast bias

Demand Forecasting Incentive Scheme

- Incentives to publish forecasts for Cardinal Points

- Timings move through the year
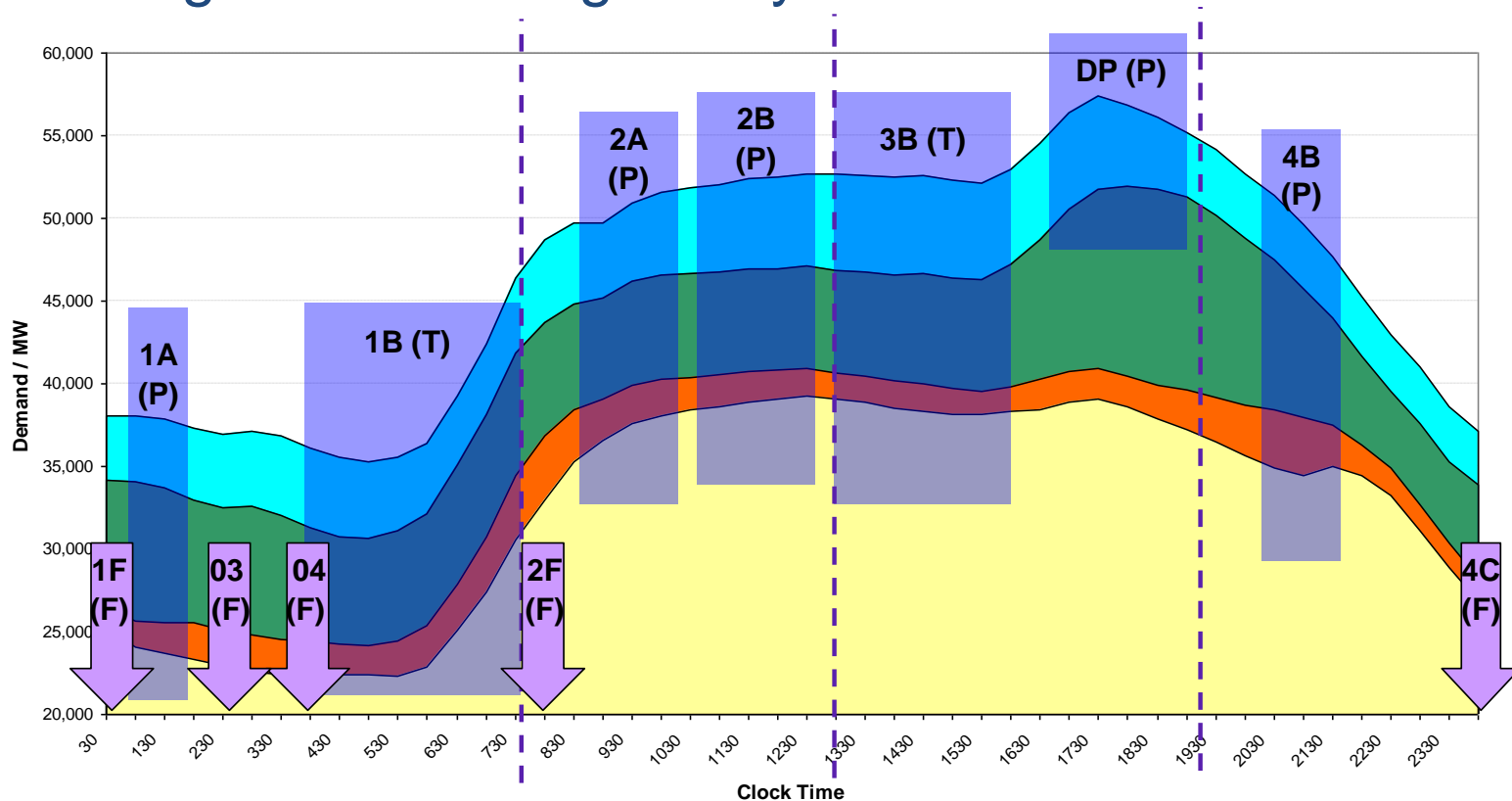
Cardinal points: peaks (P), troughs (T) and fixed points (F)
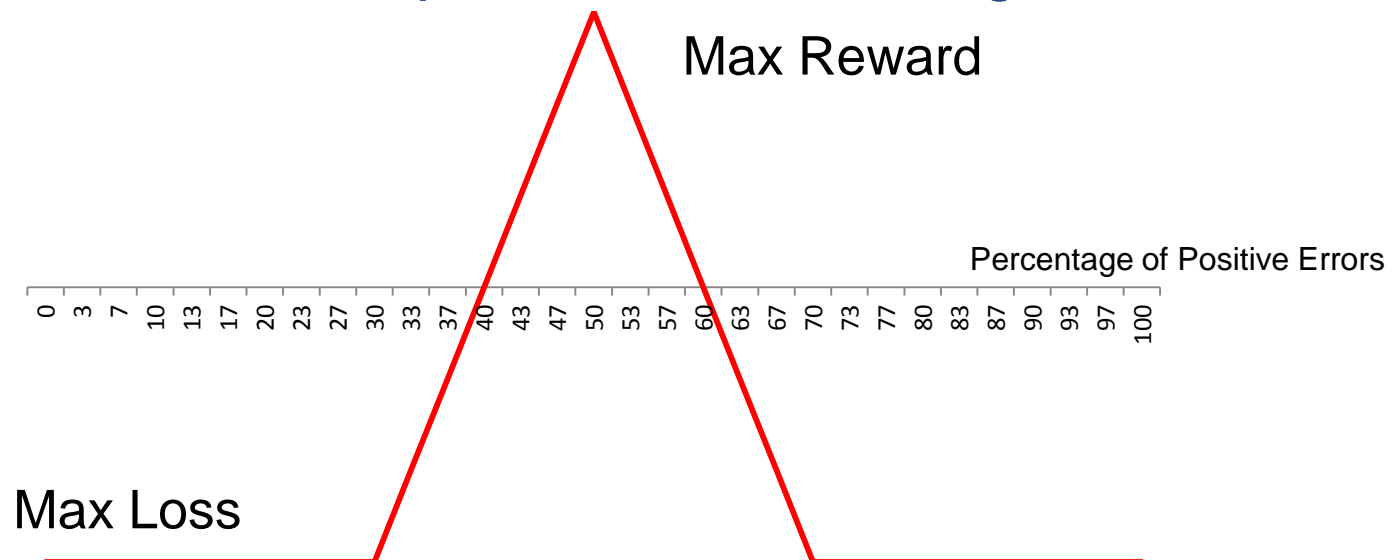
Demand Forecasting Incentive Scheme

- Profit / Loss calculated for each cardinal point for each horizon for each day

- Cap / collar on each point and on each day

- Targets set per cardinal point per quarter per horizon

- Each target is mean absolute error over last three years

- Monthly Bias Component
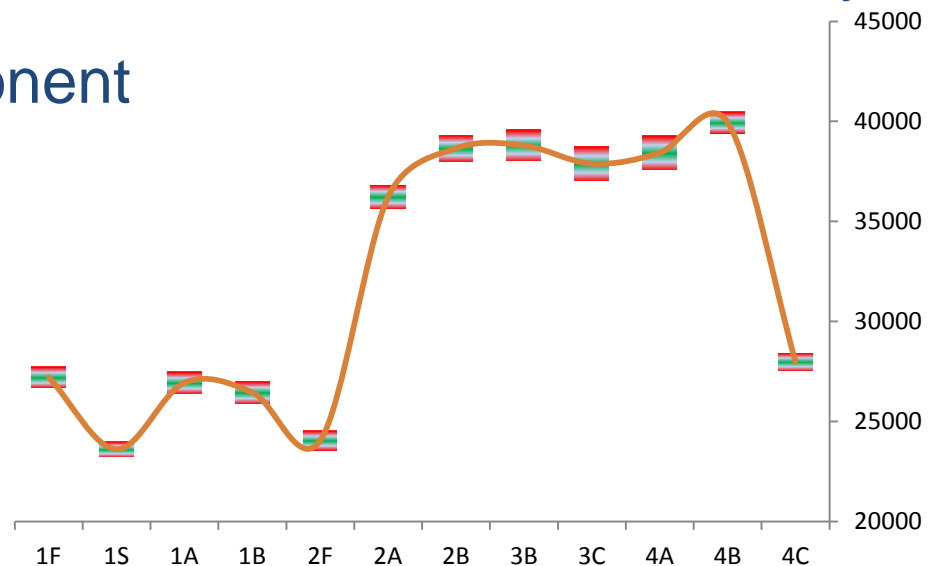
Bias component

- 25% of each scheme, ±£21k per incentive per month

- Max reward if 50% positive and negative errors

- Max loss if 70% of all errors have same sign

- Max loss for whole month if 70% of errors for two individual cardinal points have same sign

Max Reward

Percentage of Positive Errors

0 3 7 10 13 17 20 23 27 30 33 37 40 43 47 50 53 57 60 63 67 70 73 77 80 83 87 90 93 97 100

Max Loss

Impact

- Incentives allow us to invest and innovate, which helps us to forecast more accurately and efficiently, driving errors down

- More accurate and efficient forecasts will reduce/stabilise BSUoS

Forecast publication

- Forecasts will be sent out by email

- To subscribe, email Sumit.Gumber@NationalGrid.com

- Forecasts and background information will be published on National Grid's website, under Data Explorer

  - http://www2.nationalgrid.com/UK/Industry-information/Electricity-transmission-operational-data/Data-Explorer/

  - Scroll down to Demand Forecasting Incentive Area

Q&A

Please provide feedback via www.sli.do #5800

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