

United Energy Information and Consultation Maximum Demand & Reinforcement Expenditure Forecasts (2016 – 2020)

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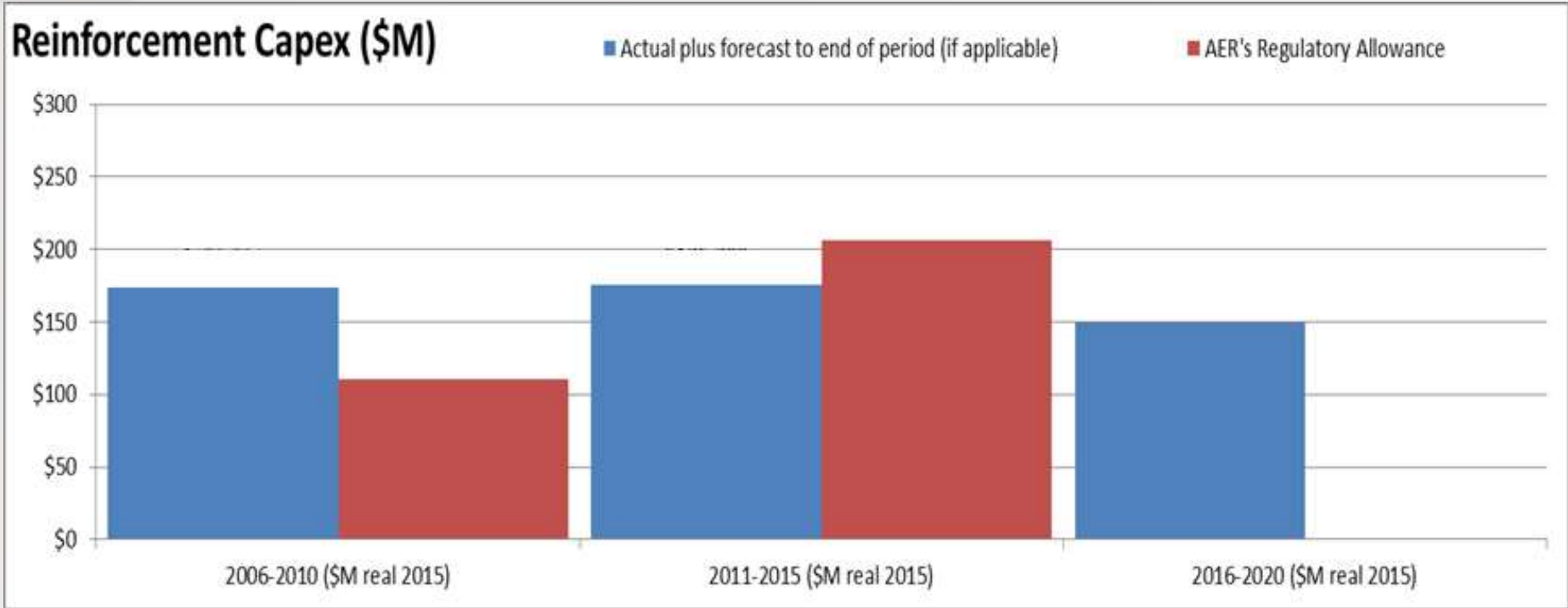
Agenda

- Summary of Reinforcement Capital Expenditure Requirements
- Influence of Maximum Demand Growth on Reinforcement Capital Expenditure
- NIEIR & Acil Allen Disruptive Technologies Post Model Adjustments (Base Case, Low and High)
- UE's Maximum Demand Forecasts
- Influence of Disruptive Technologies on Reinforcement Capital Expenditure Requirements
- Major Projects
- Non-Network Capital Deferral Opportunities

UE Reinforcement Capex Forecast



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Draft Forecast Reinforcement Capex for next period (in real terms) is:

- 27% lower than current period regulatory allowance
- 15% lower than current period actual spend
- 14% lower than previous period actual spend

MD Growth & Reinforcement Capex



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Drivers of MD Growth

Economy

Population

(Price)

Air-Conditioning

Disruptive Technologies

- (Solar / Generation)
- (Storage)
- Electric Vehicles
- (Demand Management)
- (Energy Efficiency)

UE Maximum Demand Forecast

Drivers of Reinforcement Capex

Asset Level "Spatial" Maximum Demand Forecasts

Probabilistic Planning

Asset Capacity Ratings & Voltage Compliance

Annual Load Profiles

Asset Failure Rates & Repair Times

Expected Energy at Risk Calculation



Value of Customer Reliability (VCR)



Annualised Cost of Augmentation



Maximum Demand Adjustments

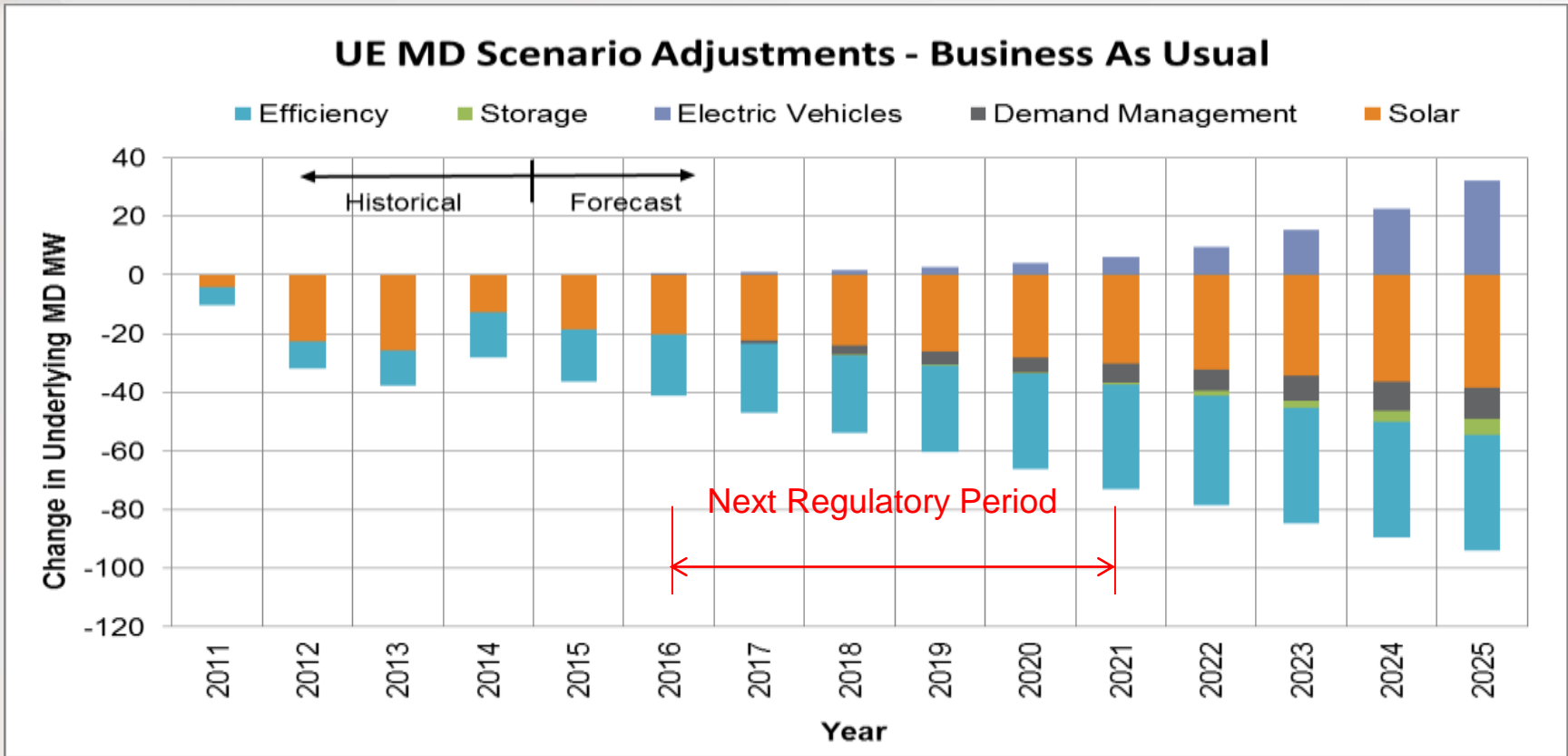
- NIEIR and Acil Allen engaged to provide independent views of interrupting technologies (adjustments)
- 3 maximum demand growth scenarios developed for 2016-2020 period (base, low and high)

Maximum Demand Scenario	Economic Growth	Solar PV Uptake	EV Uptake	Storage Uptake	Demand Response	Energy Efficiency
Base	NIEIR	Average of Acil and NIEIR	NIEIR Base	DMIS only	DMIS only	VEET, LED & MEPS
Low	NIEIR	Acil	Acil or NIEIR Low	DMIS only	DMIS & Non-network	VEET, LED & MEPS
High	NIEIR	NIEIR	NIEIR High	Zero	Zero	VEET & LED only

UE MD Forecast Adjustments (Base)



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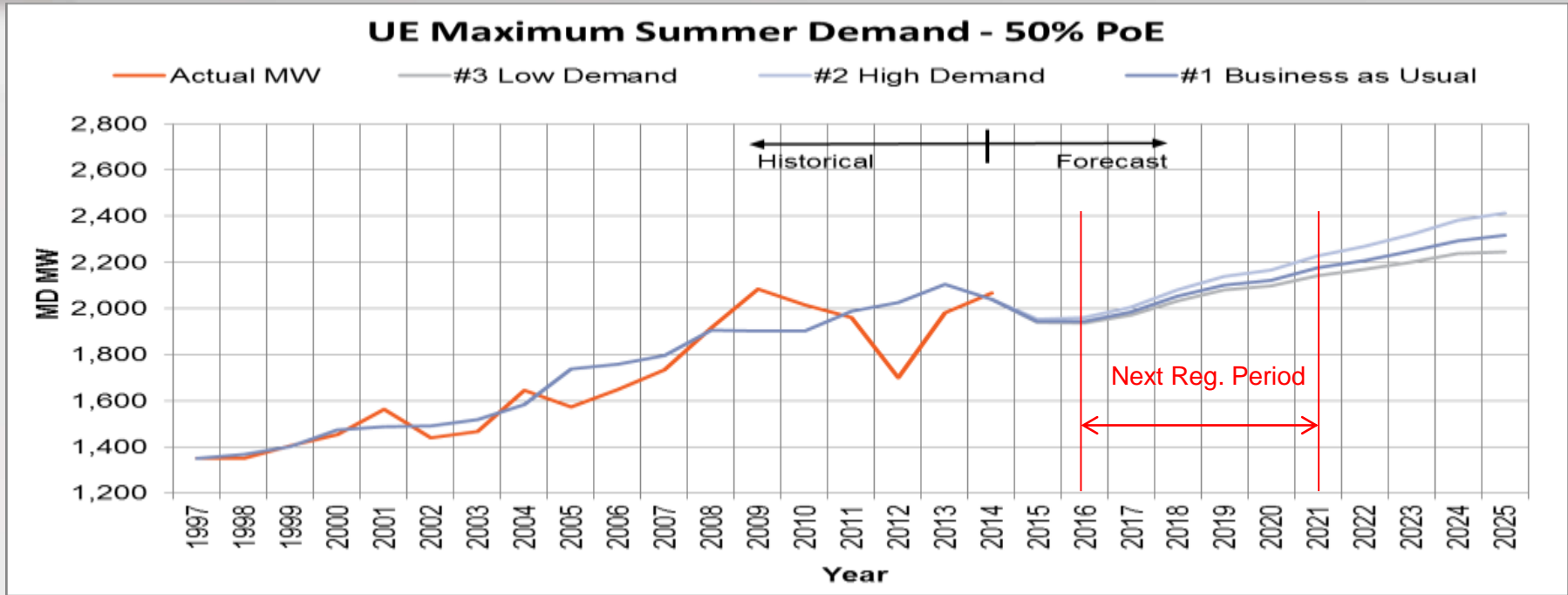


- Solar PV and Energy Efficiency impacts on MD continue to grow during next period.
- Some demand management & non-network options are economically identified
- Interrupting technologies (adjustments) net impact small but not insignificant

UE MD Forecast with Adjustments



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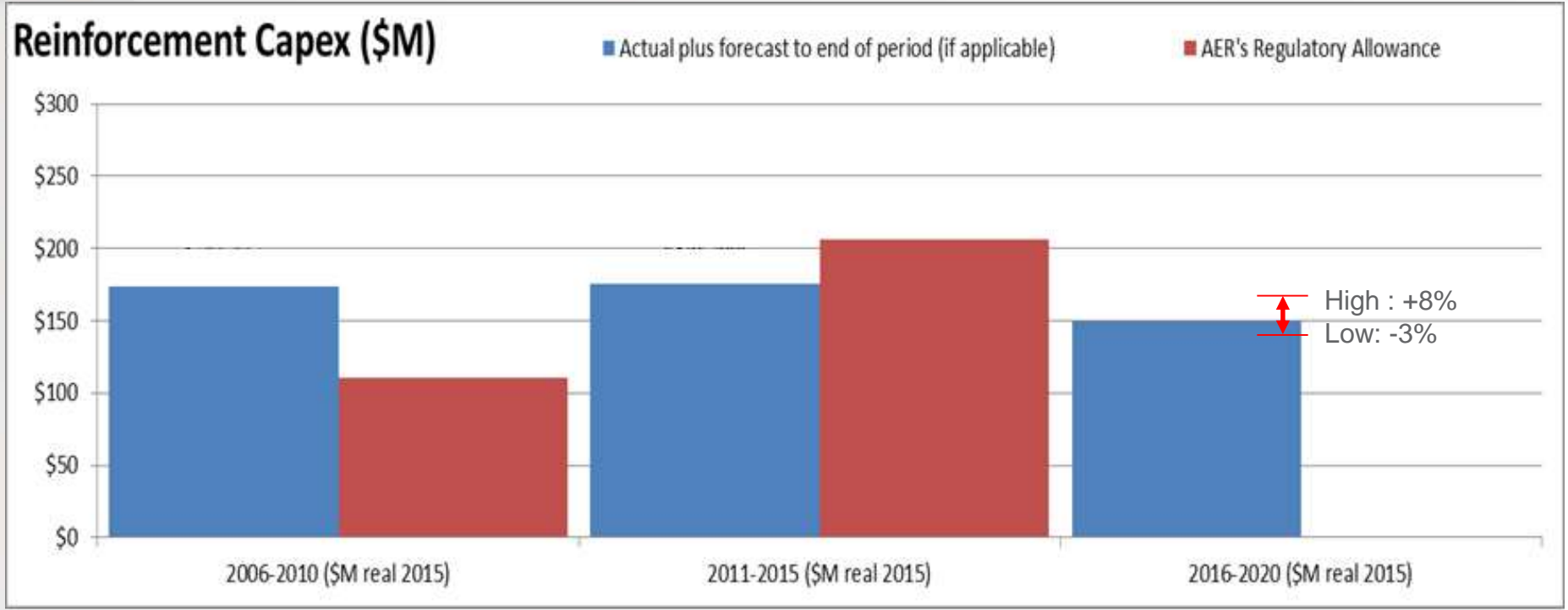


- Stagnant growth now due to the economy, prices & interrupting technologies.
- Residential areas within UE's service area still growing – air-con, housing.
- Growth in maximum demand expected to occur during next regulatory period.
- Growth in next period averages 1.4% pa, about half the previous period.
- Interrupting technologies insufficient to stifle growth in next period.
- Assumes: population growth, economy expected to improve, prices stabilise

UE Reinforcement Capex Forecast



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Forecast Reinforcement Capex for next period (in real terms) is:

- 3% lower for “Low scenario” adjustments
- 8% higher for “High scenario” adjustments
- Influence of disruptive technologies (adjustments) on capex remains small



Major Projects

- 2017/18 Notting Hill transformer \$6M
 - Data center expansions and commercial growth in Mt Waverley area
 - Currently working with non-network solution providers
- 2017/18 Mornington Peninsula new line \$22M
 - Increase air-conditioning usage, holiday-makers, retirees
 - Currently working with non-network solution providers
- 2019/20 Skye / Carrum Downs transformer \$23M
 - New residential estates in the urban fringes – currently rural
- 2019/20 Doncaster transformer and lines \$16M
 - Urban infill to high density residential and commercial developments
 - Currently working with Manningham Council

Non-Network Capital Deferral Opportunities



- In the 2011-2015 period
 - Economic Case: Non-network support (demand management) agreement with 3rd-party aggregator is deferring \$298k of capex by 2 years in Chelsea Heights.
 - DMIS: Incentivised demand response trials undertaken last summer in Bulleen area to test residential customer participation in demand management.
 - DMIS: Incentivised demand response trials planned this summer to avoid localised overload outages where network augmentations were deemed uneconomic due to high cost.
 - DMIS: VPP stage 1 to test future viability of solar / storage at household level.
 - DMIS: Commercially viable district energy services scheme identified through a feasibility study in Doncaster Hill with Cofely Australia appointed as preferred developer of the scheme under UE/MCC MoU.

Non-Network Capital Deferral Opportunities



- In the 2016-2020 period
 - DMIS: VPP Stage 2 to test deferral of at least \$900k of capex by 5 years
 - DMIS: Bring Demand Response capabilities to business-as-usual
 - Economic Case: Proactively work with non-network service providers to develop economically viable non-network solutions to defer augmentation. Five joint planning MoUs already signed with demand aggregators and generators.
 - Economic Case: Possibly defer \$22M of capex by 1-2 years for Mornington Peninsula through aggregated demand management
 - Economic Case: Possibly defer up to \$16M of capex by 2-4 years for Doncaster / Templestowe / Bulleen through combined District Energy Services Scheme & Demand Response
 - Demand Side Engagement Register: www.uemg.com.au
 - Feedback: planning@ue.com.au