AEMO - Draft 2017 Planning and Forecasting scenarios

High level description (PEST)

	Weak sensitivity (Proposed for 2017 NEFR)	Neutral (most probable) scenario (Proposed for 2017 NEFR & NTNDP)	Strong sensitivity (Proposed for 2017 NEFR)	Low grid demand scenario (Proposed for 2017 NTNDP)	50% Renewable Energy scenario (Proposed for 2017 NTNDP)
Environmental policy (P)	Significant reduction in carbon emissions sought, partly through improved energy productivity. Electricity sector to meet same reduction target as country overall. No targets set for emissions from domestic gas use.	Significant reduction in carbon emissions sought, partly through improved energy productivity. Electricity sector to meet same reduction target as country overall. No targets set for emissions from domestic gas use.	Significant reduction in carbon emissions sought, partly through improved energy productivity. Electricity sector to meet same reduction target as country overall. No targets set for emissions from domestic gas use.	Very significant reduction in carbon emissions sought, partly through improved energy productivity. Electricity sector to meet same reduction target as country overall. No targets set for emissions from domestic gas use.	Significant reduction in carbon emissions sought, through 50% NEM-wide uptake of renewable generation by 2030, driven by state based policies. Emissions reduction is also partly sought through improved energy productivity. Electricity sector to meet same reduction target as country overall. No targets set for emissions from domestic gas use.
Economy (E)	Lower than expected economic growth - partly driven by lower immigration, but also slower economic growth internationally affecting commodity exports.	Economy transition to an average economic growth over the next 5 years. Population growth average.	Higher than expected economic growth - partly driven by higher immigration, but also a more international oriented scenario focusing more on free trade and international co-operation (e.g. around emission trading)	Lower than expected economic growth partly due to stronger emission reduction targets globally and partly driven by lower immigration.	Economy transition to an average economic growth over the next 5 years. Population growth average. Neutral level of grid demand.
Consumer behaviour/ societal (S)	Status quo: no growth in engagement compared to now. Small proportion of highly engaged consumers. Most others seek stability (fixed tariffs).	Engaged consumers: Retailer/aggregator led “smart future” with major product innovation pushed by industry. Gradual move towards cost-reflective pricing following smart meter roll-out to all households by 2030. Moderate uptake of cost reflective tariffs.	Engaged prosumers: Consumer led “smart future” with a majority of consumers ultimately buying and selling electricity based on short term price signals. Strong move towards cost-reflective pricing following smart meter roll-out to all households by 2025. High uptake of cost reflective tariffs.	Engaged prosumers: Consumer led “smart future” with a majority of consumers ultimately buying and selling electricity based on short term price signals. Strong move towards cost-reflective pricing following smart meter roll-out to all households by 2025. High uptake of cost reflective tariffs.	Engaged consumers: Retailer/aggregator led “smart future” with major product innovation pushed by industry. Gradual move towards cost-reflective pricing following smart meter roll-out to all households by 2030. Moderate uptake of cost reflective tariffs.
Consumer behaviour/ societal (S)	Technology uptake characterised by a hesitant consumer in a weak economy. Consumers seek high returns before investing in PV, storage and energy efficiency.	Technology uptake characterised by a neutral consumer in a neutral economy. Consumers seek moderate returns trigger investments in PV, storage and energy efficiency.	Technology uptake characterised by a confident consumer in a strong economy. Consumers accept lower returns when investing in PV, storage and energy efficiency.	Technology uptake characterised by a confident consumer in a strong economy. Consumers accept lower returns when investing in PV, storage and energy efficiency.	Technology uptake characterised by a neutral consumer in a neutral economy. Consumers seek moderate returns trigger investments in PV, storage and energy efficiency.
Technology (T)	Slower improvement in generation and demand side technology costs	Expected improvement in generation and demand side technology costs	Faster improvement in generation and demand side technology costs	Faster improvement in generation and demand side technology costs	Expected improvement in generation and demand side technology costs

Scenario drivers

	Dimension	Impact area	Weak sensitivity	Neutral (most probable) scenario	Strong sensitivity	Low grid demand scenario	Neutral (most probable) scenario
Economy	Economy	Aus Business Conditions	Weak	Neutral	Strong	Weak	Neutral
Commodity prices (excl. oil)	Economy	Aus Business Conditions	Weak	Neutral	Strong	Weak - assume full closure of all smelters by 2030	Neutral
Exchange rate	Energy prices	Gas/Oil Price, business conditions for trade exposed businesses, and cost of imported generation technology	AUD/USD 0.65 Five-year linear glide-path from current value	AUD/USD 0.75 Five-year linear glide-path from current value	AUD/USD 0.95 Five-year linear glide-path from current value	AUD/USD 0.65 Five-year linear glide-path from current value	AUD/USD 0.75 Five-year linear glide-path from current value
Oil Prices	Energy prices	Gas/Oil Price	USD30/bbl (BR) Five-year linear glide-path from current value	USD60/bbl (BR) Five-year linear glide-path from current value	USD90/bbl (BR) Five-year linear glide-path from current value	USD30/bbl (BR) Five-year linear glide-path from current value	USD60/bbl (BR) Five-year linear glide-path from current value
Population/Population Growth	Economy	Aus Business Conditions	ABS Population trajectory low	ABS Population trajectory med	ABS Population trajectory high	ABS Population trajectory low	ABS Population trajectory med
Elec Network Charges - short term	Energy prices	Electricity Prices	Current AER determinations	Current AER determinations	Current AER determinations	Current AER determinations	Current AER determinations
Gas Network Charges - short term	Energy prices	Gas Prices	Current AER determinations	Current AER determinations	Current AER determinations	Current AER determinations	Current AER determinations
Elec Network Charges - long run	Energy prices	Electricity Prices	Dynamic - based on revenue requirements in light of demand per customer (both transmission and distribution)	Dynamic - based on revenue requirements in light of demand per customer (both transmission and distribution)	Dynamic -based on revenue requirements in light of demand per customer (both transmission and distribution)	Dynamic - based on revenue requirements in light of demand per customer (both transmission and distribution)	Dynamic - based on revenue requirements in light of demand per customer (both transmission and distribution)
Gas Network Charges - long run	Energy prices	Gas Prices	Dynamic - based on revenue requirements in light of demand per customer (both transmission and distribution)	Dynamic - based on revenue requirements in light of demand per customer (both transmission and distribution)	Dynamic -based on revenue requirements in light of demand per customer (both transmission and distribution)	Dynamic - based on revenue requirements in light of demand per customer (both transmission and distribution)	Dynamic - based on revenue requirements in light of demand per customer (both transmission and distribution)
Retail costs and margins	Energy prices	Electricity Prices	Assume current margins throughout	Assume current margins throughout	Assume current margins throughout	Assume current margins throughout	Assume current margins throughout
Tariff structure	Energy prices	Electricity Prices	Little change in the medium term, but after 5-10 years start increasing fixed-cost component to counter drop in volume sold.	Little change in the medium term, but after 5-10 years start increasing fixed-cost component to counter drop in volume. Moderate transition to capacity, TOU and CPP type tariffs	Little change in the medium term, but after 5-10 years start increasing fixed-cost component to counter drop in volume. Fast transition to capacity, TOU and CPP type tariffs	Little change in the medium term, but after 5-10 years start increasing fixed-cost component to counter drop in volume. Fast transition to capacity, TOU and CPP type tariffs	Little change in the medium term, but after 5-10 years start increasing fixed-cost component to counter drop in volume. Moderate transition to capacity, TOU and CPP type tariffs
LREC/SRES	Energy prices	Electricity Prices	Assume current to 2020, with LGCs/SSTC deemable to 2030	Assume current to 2020, with LGCs/SSTC deemable to 2030	Assume current to 2020, with LGCs/SSTC deemable to 2030	Assume current to 2020 where SRES phased out. LRET then grows linearly to a national target of 50% renewables by 2030 (including small scale) replacing state based schemes.	Assume current to 2020, with LGCs/SSTC deemable to 2030
Weather	Energy prices	Electricity Prices	Average estimate of warming affecting consumption forecasts, probabilistic weather settings for peak demand	Average estimate of warming affecting consumption forecasts, probabilistic weather settings for peak demand	Average estimate of warming affecting consumption forecasts, probabilistic weather settings for peak demand	Average estimate of warming affecting consumption forecasts, probabilistic weather settings for peak demand	Average estimate of warming affecting consumption forecasts, probabilistic weather settings for peak demand
Rainfall - Hydro gen	Energy prices	Electricity Prices	Medium value for water availability (last 15 years)	Medium value for water availability (last 15 years)	Medium value for water availability (last 15 years)	Drier - use 5 driest years (of last 15) as proxy moving linearly from medium value to this level by 2037	Medium value for water availability (last 15 years)
LNG growth	Energy prices	Gas Prices	Australian LNG export growth per oil price and exchange rate projections	Australian LNG export growth per oil price and exchange rate projections	Australian LNG export growth per oil price and exchange rate projections	LNG Export as in Neutral scenario assuming less oil-price linkage (oil demand slows, but gas demand remains strong).	Australian LNG export growth per oil price and exchange rate projections
Restrictions on onshore (incl. CSG) gas exploration	Energy prices	Gas Prices	Maintained moratoriums on onshore CSG exploration in VIC, NSW and NT	Moratoriums lifted in 2030	Moratoriums lifted in 2024	Maintained moratoriums on onshore CSG exploration in VIC, NSW and NT	Moratoriums lifted in 2030
Cost of gas supply	Energy prices	Gas Prices	Higher cost of new gas supply (lower output per well)	Neutral cost of new gas supply (expected output per well)	Lower cost of new gas supply (higher output per well)	Higher cost of new gas supply (lower output per well)	Neutral cost of new gas supply (expected output per well)
Elec Wholesale Price	Energy prices	Electricity Prices	As per the supply-side impact of this scenario.	As per the supply-side impact of this scenario.	As per the supply-side impact of this scenario.	As per the supply-side impact of this scenario.	As per the supply-side impact of this scenario.
Gas Wholesale Price	Energy prices	Gas Prices	As per the supply-side impact of this scenario with pricing affecting the industry as existing contracts expire	As per the supply-side impact of this scenario with pricing affecting the industry as existing contracts expire	As per the supply-side impact of this scenario with pricing affecting the industry as existing contracts expire	As per the supply-side impact of this scenario with pricing affecting the industry as existing contracts expire	As per the supply-side impact of this scenario with pricing affecting the industry as existing contracts expire
Other policy and regulatory settings affecting electricity prices	Energy prices	Electricity Prices	Status quo	Status quo	Status quo	Status quo	Status quo
Technology uptake curve	Technology adoption	End use and energy efficiency measures/technologies	Technology uptake curve consistent with weak economy, low consumer confidence/engagement.	Technology uptake curve consistent with neutral economy, neutral consumer confidence/engagement.	Technology uptake curve consistent with strong economy, high consumer confidence/engagement.	Technology uptake curve consistent with strong economy, high consumer confidence/engagement.	Technology uptake curve consistent with neutral economy, neutral consumer confidence/engagement.
Energy Efficiency	Technology adoption	End use and energy efficiency measures/technologies	Policy measures deliver lower uptake of EE. Little voluntary investments	Policy measures deliver moderate uptake of EE. Moderate voluntary investments	Policy measures deliver higher uptake of EE. Higher voluntary investments	Policy measures deliver higher uptake of EE. Higher voluntary investments	Policy measures deliver moderate uptake of EE. Moderate voluntary investments
Rooftop PV	Technology adoption	End use and energy efficiency measures/technologies	Consumers seeks high returns (short payback period) before investing in PV	Consumers seeks moderate returns (moderate payback period) before investing in PV	Consumers accepts lower returns (relatively long payback period) before investing in PV	Consumers accepts lower returns (relatively long payback period) before investing in PV	Consumers seeks moderate returns (moderate payback period) before investing in PV
Battery storage	Technology adoption	End use and energy efficiency measures/technologies	Consumers seeks high returns (short payback period) before investing in battery storage.	Consumers seeks moderate returns (moderate payback period) before investing in battery storage.	Consumers accepts lower returns (relatively long payback period) before investing in battery storage.	Consumers accepts lower returns (relatively long payback period) before investing in battery storage.	Consumers seeks moderate returns (moderate payback period) before investing in battery storage.
Fuel switching	Technology adoption	End use and energy efficiency measures/technologies	Based on price differentials for gas to electricity, hesitant consumer uptake of solar hot water	Based on price differentials for gas to electricity, neutral consumer uptake of solar hot water	Based on price differentials for gas to electricity, confident consumer uptake of solar hot water	Based on price differentials for gas to electricity, confident consumer uptake of solar hot water	Based on price differentials for gas to electricity, neutral consumer uptake of solar hot water
DSP	Technology adoption	End use and energy efficiency measures/technologies	Unchanged from today	Moderate growth in residential DSP driven by uptake of CPP tariffs. Similar growth assumed for commercial	Stronger growth in residential DSP driven by uptake of CPP tariffs. Similar growth assumed for commercial	Stronger growth in residential DSP driven by uptake of CPP tariffs. Similar growth assumed for commercial	Moderate growth in residential DSP driven by uptake of CPP tariffs. Similar growth assumed for commercial
EV	Technology adoption	End use and energy efficiency measures/technologies	Consumers seeks high returns (short payback period) before investing in EV.	Consumers seeks moderate returns (moderate payback period) before investing in EV.	Consumers accepts lower returns (relatively long payback period) before investing in EV.	Consumers seeks moderate returns (moderate payback period) before investing in EV.	Consumers seeks moderate returns (moderate payback period) before investing in EV.
Technology cost improvements	Technology	Technology cost (both generation and demand side)	Slower improvement in technology costs	Expected improvement in technology costs	Faster improvement in technology costs	Faster improvement in technology costs	Expected improvement in technology costs
Climate Policy up to 2030	Climate Policy	Prices, plant-shut-downs, renewables and energy efficiency	Assume Australia's Paris commitment is achieved. 28% reduction target applied pro-rate to electricity. No target applied for gas sector	Assume Australia's Paris commitment is achieved. 28% reduction target applied pro-rate to electricity. No target applied for gas sector	Assume Australia's Paris commitment is achieved. 28% reduction target applied pro-rate to electricity. No target applied for gas sector	Assume Australia's Paris commitment is achieved, but electricity have to deliver more than the overall 28% reduction target. A sector target of 45% by 2030 has been applied to electricity. No target applied for gas sector	Assume Australia's Paris commitment is achieved. 28% reduction target applied pro-rate to electricity, although this is likely to be exceeded as state based renewable energy targets are met. No target applied for gas sector
Climate Policy post 2030	Climate Policy	Prices, plant-shut-downs, renewables and energy efficiency	Same annual trajectory of reduction target as before 2030	Same annual trajectory of reduction target as before 2030	Same annual trajectory of reduction target as before 2030	Same annual trajectory of reduction target as before 2030	Same annual trajectory of reduction target as before 2030
Climate Policy impacts	Climate Policy	Energy prices	**Scenario assumes most abatement cost will be passed on to consumers longer term** Carbon costs to be determined by modelling based on the targets assumed above. Emissions Intensive Trade Exposed Industry pays only 20% of this cost in 2020, rising to 100% in 2030.	**Scenario assumes most abatement cost will be passed on to consumers longer term** Carbon costs to be determined by modelling based on the targets assumed above. Emissions Intensive Trade Exposed Industry pays only 20% of this cost in 2020, rising to 100% in 2030.	**Scenario assumes most abatement cost will be passed on to consumers longer term** Carbon costs to be determined by modelling based on the targets assumed above. Emissions Intensive Trade Exposed Industry pays only 20% of this cost in 2020, rising to 100% in 2030.	**Scenario assumes most abatement cost will be passed on to consumers longer term** Carbon costs to be determined by modelling based on the targets assumed above. Emissions Intensive Trade Exposed Industry pays only 20% of this cost in 2020, rising to 100% in 2030.	**Scenario assumes most abatement cost will be passed on to consumers longer term** Carbon costs to be determined by modelling based on the targets assumed above. Emissions Intensive Trade Exposed Industry pays only 20% of this cost in 2020, rising to 100% in 2030.
Climate Policy impacts	Climate Policy	Plant-shut-downs and generation replacement.	Thermal plant retirements as announced, but can be postponed if economic to extend life (minor refurbishment cost) or retire early if economic (savings in fixed costs). No new coal plants allowed.	Thermal plant retirements as announced, but can be postponed if economic to extend life (minor refurbishment cost) or retire early if economic (savings in fixed costs). No new coal plants allowed.	Thermal plant retirements as announced, but can be postponed if economic to extend life (minor refurbishment cost) or retire early if economic (savings in fixed costs). No new coal plants allowed.	Thermal plant retirements as announced, but can be postponed if economic to extend life (minor refurbishment cost) or retire early if economic (savings in fixed costs). No new coal plants allowed.	Thermal plant retirements as announced, but can be postponed if economic to extend life (minor refurbishment cost) or retire early if economic (savings in fixed costs). No new coal plants allowed.
Climate Policy impacts	Climate Policy	State-based renewables schemes	Include ACT and VRET. Add any further state-based renewable developments driven by PPAs and CfD tenders as these are announced.	Include ACT and VRET. Add any further state-based renewable developments driven by PPAs and CfD tenders as these are announced.	Include ACT and VRET. Add any further state-based renewable developments driven by PPAs and CfD tenders as these are announced.	Include ACT and VRET. Add any further state-based renewable developments driven by PPAs and CfD tenders as these are announced. From 2020 these schemes are replaced with a national target of 50% renewables by 2030.	Include all state based renewable generation and emission based targets - both proposed and legislated.
Climate Policy impacts	Climate Policy	Energy efficiency	Energy efficiency initiatives consistent with National Energy Productivity Plan	Energy efficiency initiatives consistent with National Energy Productivity Plan	Energy efficiency initiatives consistent with National Energy Productivity Plan	Energy efficiency initiatives consistent with National Energy Productivity Plan	Energy efficiency initiatives consistent with National Energy Productivity Plan
Climate Policy impacts	Climate Policy	Vehicle emissions	Light vehicle emissions standard introduced in 2030	Light vehicle emissions standard introduced in 2026	Light vehicle emissions standard introduced in 2022	Light vehicle emissions standard introduced in 2026	Light vehicle emissions standard introduced in 2026