Session 3: AEMC position on optionality and metering

Public forum: Five minute settlement – 4 May 2017

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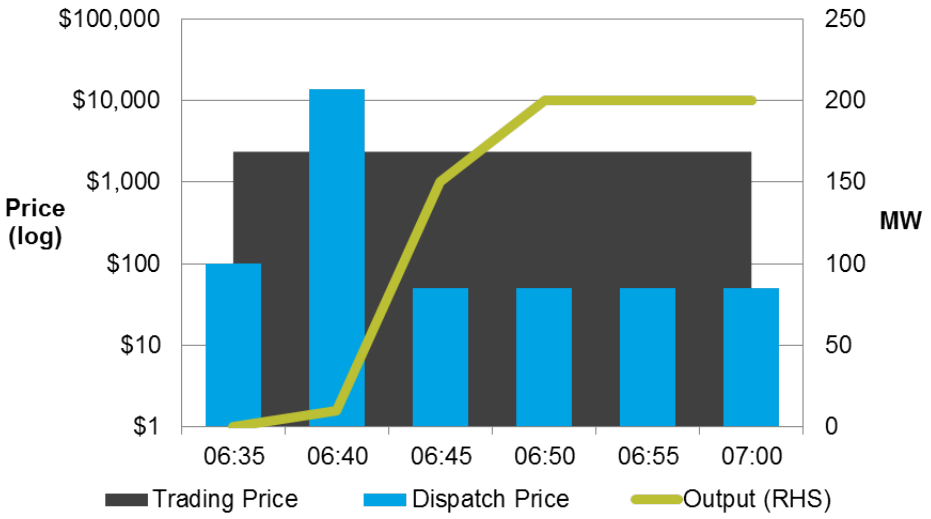
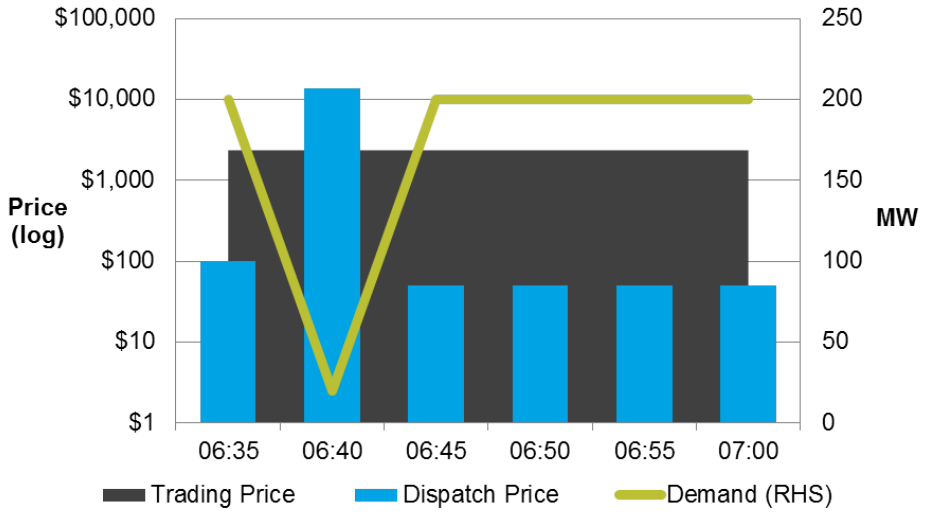
INTRODUCTION: OPTIONALITY

- Question: Should five minute settlement by optional or compulsory for demand-side participants?
- Rule request proposed compulsory five minute settlement for generators, MNSPs and scheduled loads; optional for demand-side
- Optionality would be afforded to Market Customers (i.e. retailers and large users)
- Retailer may be settled on five minute basis, but customer billing is at retailer's discretion

CONCEPT: SETTLEMENT RESIDUE

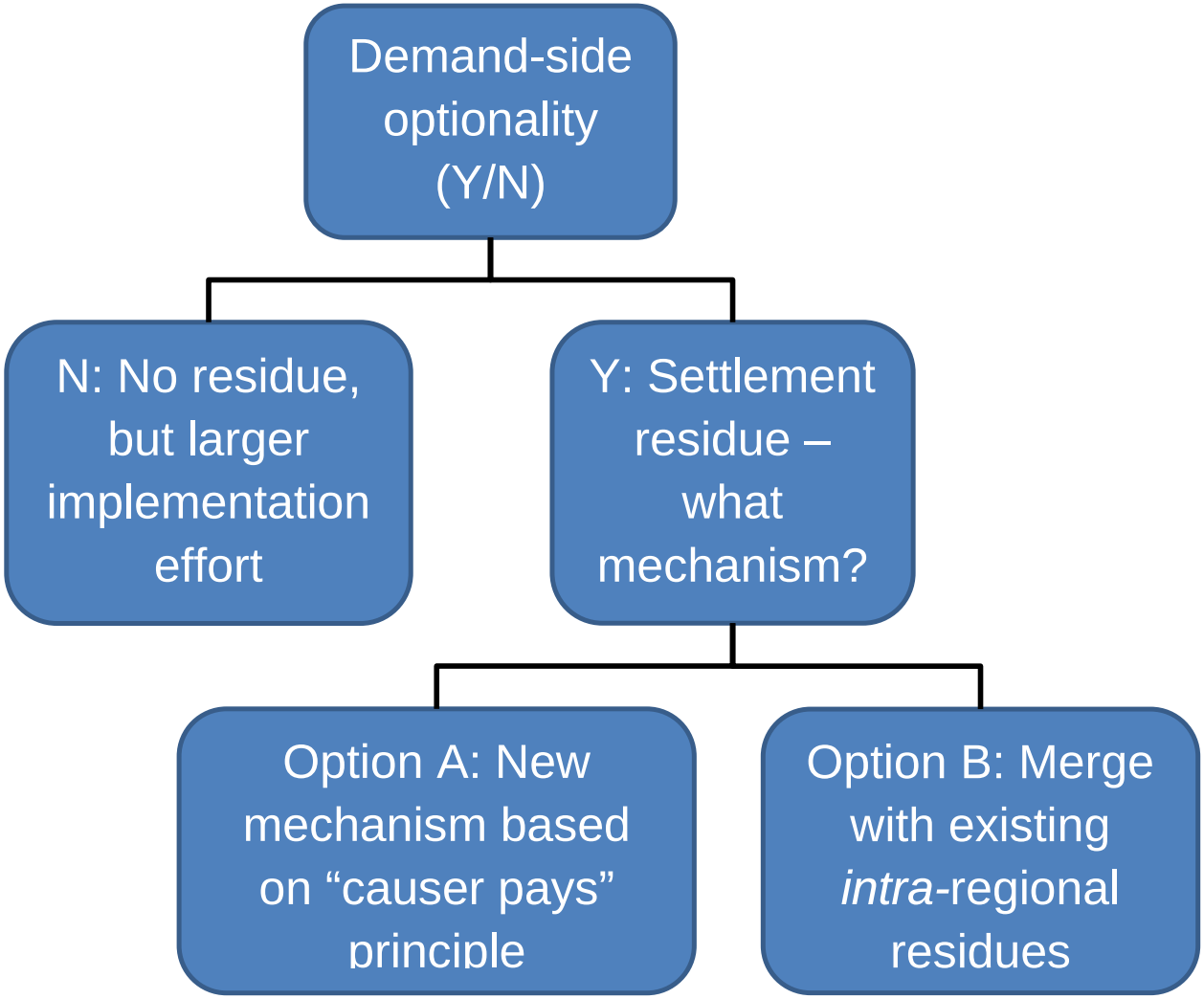
- Optionality results in regional imbalances in money earned versus money paid





- Historically, AEMO in deficit, i.e. shortfall money owed to generators
- From 2000 to 2016, net difference of ~0.1%

OPTIONALITY DECISION TREE



OPTIONALITY: PROS AND CONS

Pro:

- Much lower implementation costs

Cons:

- Less efficient price signal for those remaining on 30-minute settlement
- Some on-going complexity for AEMO and participants
- Additional risk for buyers or sellers of cap and floor contracts

AEMC POSITION: OPTIONALITY

- Five minute settlement for all market participants is preferred
- Would provide more accurate price signal to:
  - invest in flexible demand-side technologies
  - operate flexible technologies in ways that better align with physical requirement of power system
- More conducive for existing and new entrants selling cap contracts
- Higher cost than optional implementation, but net benefit more likely
- Residues during transition period best dealt with by merging with *intra*-regional residues

INTRODUCTION: METERING

- Question: Which data source most appropriate if all market participants to be settled on five minute basis?
- Considered SCADA (telemetry) and revenue metering options
- SCADA/telemetry: AEMO would use existing operational data to ‘profile’ 30-minute data to five minute periods
- Metering: existing revenue meters that provide 30-minute data for settlement would be reconfigured or replaced to record five minute data

SCADA IMPLEMENTATION

- Pro: low cost for AEMO to implement with existing data
- Cons:
  - Lesser quality
  - Different basis of measurement (“sent-out” versus “as-generated). May affect ~75% of generators
- Unacceptable if absolute values used for settlement, but likely adequate for profiling
- SCADA profiling common in US markets with five minute settlement
- SCADA implementation likely workable for generator settlement

AVAILABILITY OF SCADA DATA

- SCADA required for >30 MW generators, MSNPs, scheduled loads
- Missing: ~100 <30 MW generators (~1 GW capacity); all non-scheduled loads
- Options for <30 MW generators and ~3.2m consumers with interval metering:
  a) install telemetry device
  b) reconfigure or replace existing meter for five minute recording
- Option (b) preferred for consumer settlement
  - telemetry option overly complicated and presents potential for gaming
  - large proportion of interval meters can likely be remotely reconfigured to record five minute data

METERING IMPLEMENTATION

Meter class	Type 1 >1,000 GWh	Type 2 100-1,000 GWh	Type 3 0.75-100 GWh	Type 4 <750 MWh	Type 5	Type 6
Generation	130	276	148	138	0	0
Load	12	323	15,152	318,673	3,527,257	9,782,357
Network	44	1,139	706	87	0	0

- Types 1 to 5: interval meters
- Types 1 to 4: remotely read
- Type 6: accumulation meters, manually read
- ~2.8m Type 5 meters are Victorian AMI that are remotely read

INTERVAL METERS

- Need to be reconfigured, replaced or receive an exemption from providing five minute data
- Large logistical challenge: ~700 generation meters, ~2,000 network meters, ~3.2m consumer meters
- Creates 6x more data. Internal memory may be inadequate for 35 day (Types 1-4) and 200 day (Type 5) requirements
- Potential to address via relaxing 35 day requirement, or exemption from providing five minute data
- Key questions:
  - What proportion can be remotely reconfigured?
  - Is internal memory sufficient?

ACCUMULATION METERS (TYPE 6)

- ~9.8m in the NEM
- Read quarterly, but settled on 30-minute basis using Net System Load Profiles (NSLP)
- NSLP process requires interval meter data from:
  - transmission connection points
  - all Types 1 to 5 customer meters

- Five minute NSLPs would avoid changes to 9.8m meters, but require five minute data from all Types 1-5 customer meters and most transmission network metering

TRANSITION PERIOD

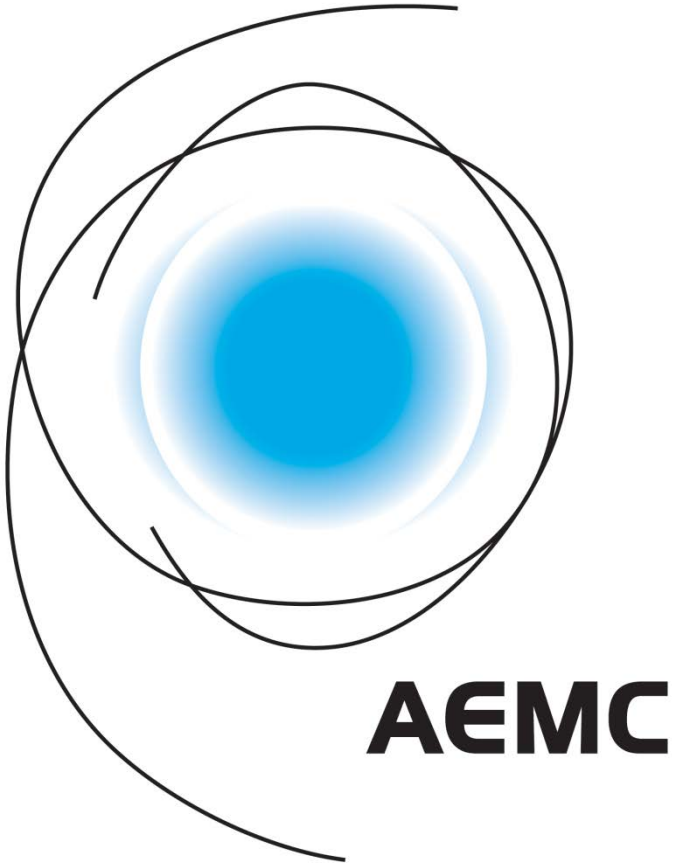
- Proposing transition period for interval meters to be reconfigured or replaced
- 3 years for Type 1-3 (~18,000 meters), aligned with NER testing and inspection regime
- Longer period for Type 4-5 as many more meters (~320,000 + ~2.8m Victorian AMI = 3.1m)
- Proposing that five minute settlement could commence so long as bulk of energy transfers are captured
- Indicative analysis: Types 1-3 meters capture 85-90% of generation and transmission network transfers, but only 22% of consumer load. Type 6 profiled (~26% of energy outside Victoria). So Type 1-3 = 46% of customer load

SUMMARY: METERING

- Generation >30MW, MSNPs, scheduled loads: SCADA feasible, but limited participant appetite to do this
- Generation < 30MW, all loads: metering more appropriate
- Where would five minute data be required?
  - All market generators, MNSPs, scheduled loads
  - Consumers:
    - Types 1-5 – yes, needed for NSLP calculation
    - Type 6 – no, but profiling requires five minute data from most transmission connection points
  - Transmission network metering – yes, all that contribute to NSLP (90% of NMIs). May not be required for Victoria

QUESTIONS AND DISCUSSION

- Is compulsory five minute settlement more likely to produce net benefit than optional implementation?
- Is residue recovery via *intra*-regional residues suitable during a transition period?
- What proportion of existing meters that can be remotely reconfigured for five minute recording?
- What proportion have sufficient internal memory?
- In which cases should an exemption from providing five minute data be considered?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