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Advanced Metering Infrastructure (AMI) Challenges

Lessons Learnt in Australia

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Introduction

- Background to the Victorian AMI Program
- Key challenges faced by the Victorian AMI Program
  - Alignment of legislative and regulatory instruments
  - Sustaining business as usual through a prolonged industry transformation
  - The disruptive impact of AMI on business value
- Current status of the Victorian AMI Program
- The future for the Victorian AMI Program
- Key lessons from the Victorian AMI Program

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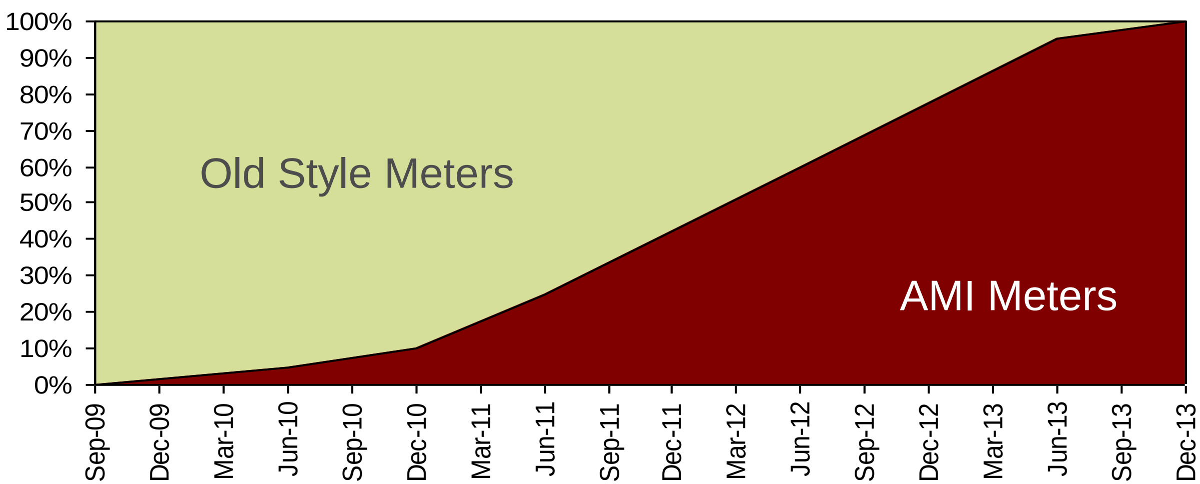
Background to the Victorian AMI Program (1)

- In early 2006, the Victorian Government formally endorsed the deployment of AMI to all Victorian electricity customers
- Objective to establish the technical, business and regulatory infrastructure for deployment of AMI and AMI Services
- 2.6 million analogue meters replaced with digital smart meters - 4,000 meter replacements per day
- 4 year transition period to digital AMI meters



Core AMI Services include:
- Half Hourly Interval Data
- Remote Data Collection
- Remote Energisation
- Remote De-Energisation

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Background to the Victorian AMI Program (2)

- Two-way communications network between the Distributor systems and the AMI Meter – 3 separate systems
- A ‘distributor-led’ roll-out to ensure scale, with full regulatory recovery of costs
- Consumers charged from 1st Jan 2011, regardless of whether they have a meter or not
- One of the first jurisdictions, worldwide, to mandate deployment of high functionality smart meters with two way communications in a fully contestable retail market

Victorian AMI Program Participants			
Distribution Businesses	Retailers	Market Operator	Government Departments and Consumer Groups
Jemena CitiPower Powercor Australia SP AusNet United Energy Distribution	AGL Energy in action countryenergy We live here too. TRU energy red energy dodo momentum energy origin simply energy Victoria Electricity	AEMO	Department of Primary Industries Essential Services Commission CUAC Australian Government Department of Resources, Energy and Tourism

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Challenge 1: Alignment of legislative and regulatory instruments (1)

Today

- Retail competition:
  - Is not ‘deregulation’, is more like ‘re-regulation’
  - Codified relationships between distributors and retailers for meter data exchange
  - Mandatory consumer protection legislation and regulation for standing contracts, and
  - Voluntary codes of practice for industry wide retailing practices and market contracts
- End customer considered a ‘consumer’ rather than a ‘customer’, with electricity a low interest commodity purchase for vast majority

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Challenge 1: Alignment of legislative and regulatory instruments (2)

Operating with AMI

- Consumer protection legislation and regulatory instruments:
  - Potential to create material misalignment with the drivers of the benefits sought from AMI
- Advent of customer awareness and empowerment:
  - Potential to change aspects of the legislative and regulatory instruments
- Distributors are not capable of managing legislation and regulatory instruments, nor potential changes in customer requirements

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Challenge 2: Sustaining business as usual through a prolonged industry transformation (1)

Operating with AMI

- Deployment of AMI is a huge transition with success contingent on:
  - Collaboration between all industry participants
  - Extraction of economies of scale
  - Availability of meters, and
  - Availability of labour force

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Challenge 2: Sustaining business as usual through a prolonged industry transformation (2)

- Throughout the AMI deployment:
  - **Governments** and **consumers** demand realisation of benefits
  - **Distributors** demand cost recovery to enable AMI operations
  - **Retailers** demand easiest and lowest cost deployment, and
  - **Consumer advocates** demand maintenance of consumer protection

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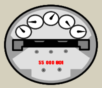
Challenge 2: Sustaining business as usual through a prolonged industry transformation (3)

	Basic Meter 'Analogue'	1 quarterly meter read (1 data item per quarter) 100,000 customers: 1,100 data items / day
	AMI MRIM Meter 'Digital'	1 half hourly meter read (49 data items per day) 100,000 customers: 4,900,000 data items / day

- Conversion from analogue to digital has several implications:
  - Bigger systems to manage the increased volume of metering data and transactions
  - Increased data validation and exception management, and
  - Increased data analysis to realise operations and demand management opportunities

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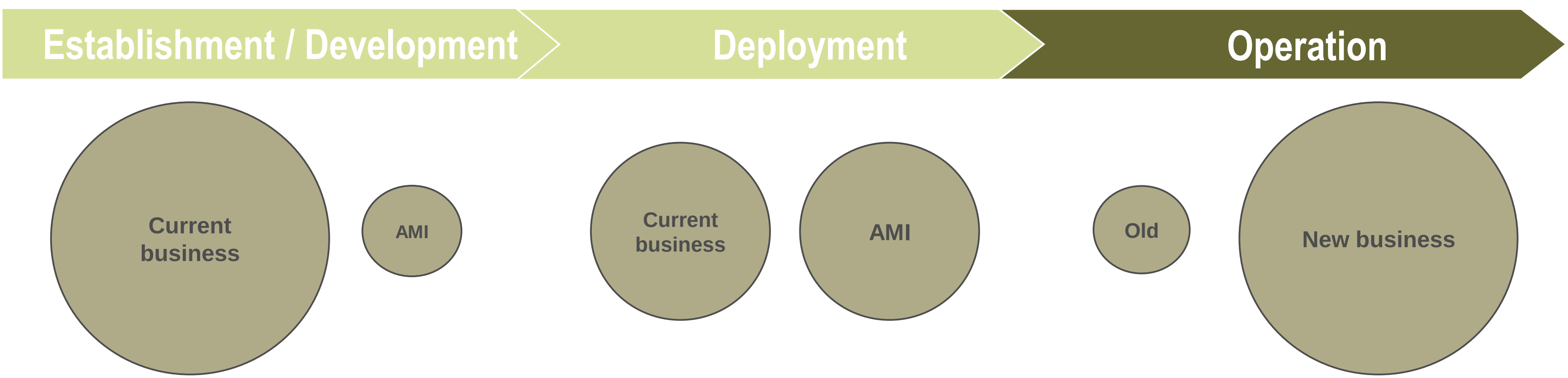
Challenge 2: Sustaining business as usual through a prolonged industry transformation (4)

- Gradual transition from the ‘old’ to the ‘new’:
  - Management and documentation of current business knowledge, and
  - Embedding ‘new’ workforce, processes and systems
- Regulated entities such as distributors are not incentivised to provide innovative solutions during the transition process



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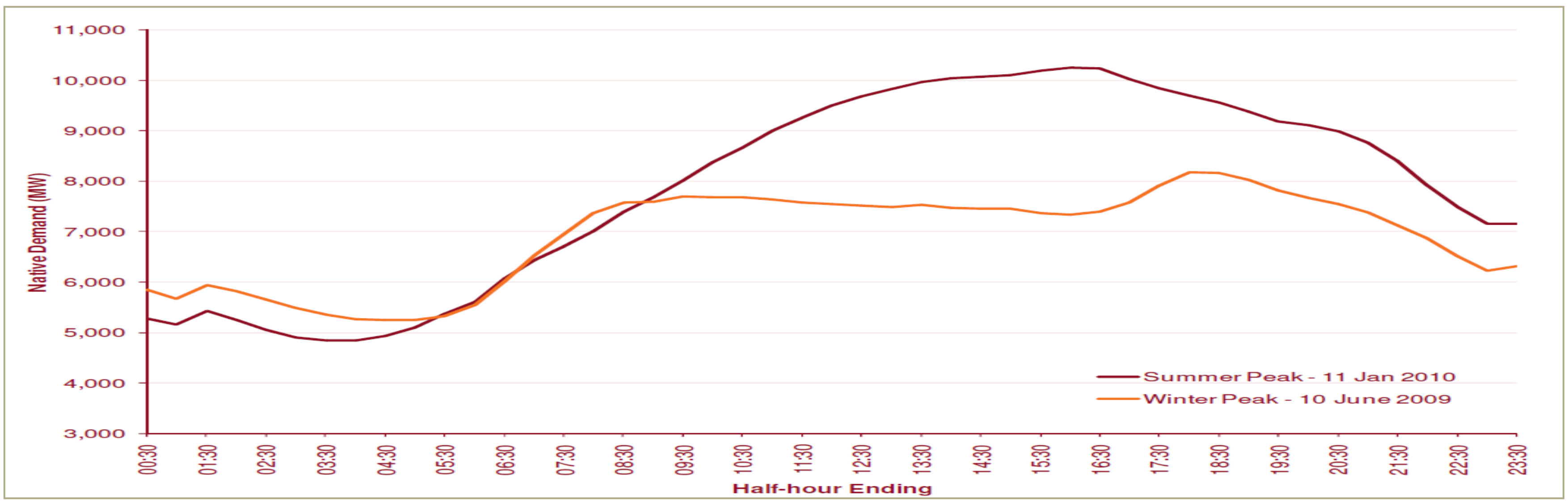
Challenge 3: The disruptive impact of AMI on business value (1)

Today

- Increases in demand through economic growth and lifestyle increase revenue
- Similar Net System Load Profiles (NSLPs) mean 'flat' profile consumers subsidise 'peaky' profile consumers:
  - Retailers target customers with high usage and size, rather than load profile



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Challenge 3: The disruptive impact of AMI on business value (2)

Operating with AMI

- Potential to reduce, or even eliminate, growth in peak electricity demand
- Distributor and retailer revenues potentially negatively impacted
- Distributors:
  - continue to focus on cost recovery
  - potential for limited innovation

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Challenge 3: The disruptive impact of AMI on business value (3)

- Retailers:
  - target customers based on their load profile
  - formulate customer segmentation, acquisition and retention strategies to align with shifting profitability of different customer classes
  - have highest risk of loss of business value yet do not have carriage of the rollout program

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Challenge 3: The disruptive impact of AMI on business value (4)

- Potential for new value creation model:

Regulated (Distributors)	Unregulated (Retailers)
• Maintenance of ROA • Incentives for shifting consumption to more favourable times • Revised tariffs which account for changes in demand • Greater emphasis on fixed charges	• Continuity of consumer protection for ‘qualifying’ consumers • Greater complexity of offers (akin to telecommunications market) • Increased variety of customer offers based on customer segmentation and risk

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Current status of the Victorian AMI Program (1)

- Over 270,000 AMI meters installed
- New industry-wide processes have been developed and industry testing is complete
- Emphasis on ‘compliance’ rather than providing customers with something ‘new’
- Separation of the AMI program into two separate streams:
  - ‘AMI Rollout’ to be an immediate technology upgrade
  - ‘AMI Program’ which allows benefits to be realised over time

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Current status of the Victorian AMI Program (2)

- Regulatory model fails to acknowledge potential destructive impact of demand shifts arising from changes in consumption:
  - Distributors face uncertain future regarding the integration of AMI costs
  - Incumbent retailers adopt strategies that will defer consumer impact as long as possible
  - Gentailers are not acting pro-actively to benefit from AMI
  - Difficult for government to drive a different approach
- Moratorium on the introduction of new tariffs

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The future for the Victorian AMI Program (1)

- The Victorian Government and electricity industry is developing and implementing Benefit Realisation Strategies for the AMI Program:
  - better **managing outages** and **quality of supply**
  - improving **energy efficiency** through load management
  - improving **supply restoration** (following a major outage)
  - smooth transition to **TOU pricing**
  - improving the **customer transfer process**
  - improved **energy use information** for policy and planning, and
  - enabling ‘consumers’ to become ‘**customers**’ and **make informed energy use decisions**

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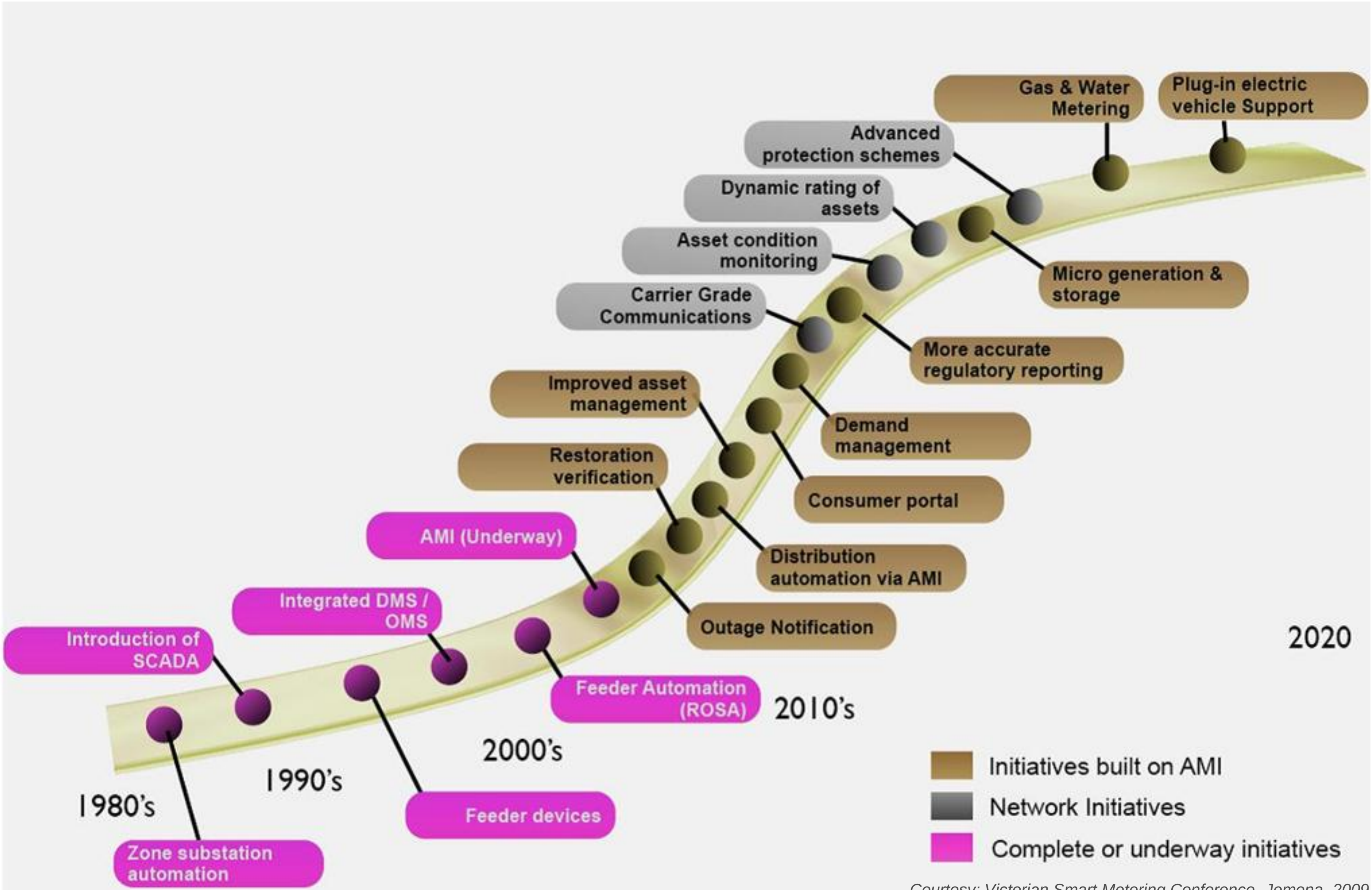
The future for the Victorian AMI Program (2)



Courtesy: Victorian Smart Metering Conference, Jemena, 2009

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Key lessons from the Victorian AMI Program (1)

- Customer communication:
  - Failure to recognise program success contingent on consumer awareness and education
  - Lack of coordinated public awareness / education program created negative media
- Legislative and regulatory instruments:
  - Policy and regulatory outcomes are best achieved when affected government bodies are aligned through policy and regulatory vehicles
  - Alignment to new value creation model
  - Need to promote innovation

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Key lessons from the Victorian AMI Program (2)

- Industry transformation:
  - Current B2B and transaction capabilities put industry in a good position to deliver process
  - Potential to deliver highly specified, functionally ‘rich’ meter capability
  - Requires industry collaboration to define and agree on business requirements and industry-wide processes from the beginning
  - ‘Transformation’ versus ‘compliance’ is key differentiator in program outcomes

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Key lessons from the Victorian AMI Program (3)

- Business value identification:
  - AMI trials for consumer products and services hampered by existing market processes, regulatory instruments and participant sponsorship
  - Spirited competition among participants creates more innovative and robust solutions
  - Delayed value identification compromises integrity of current program

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Questions

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