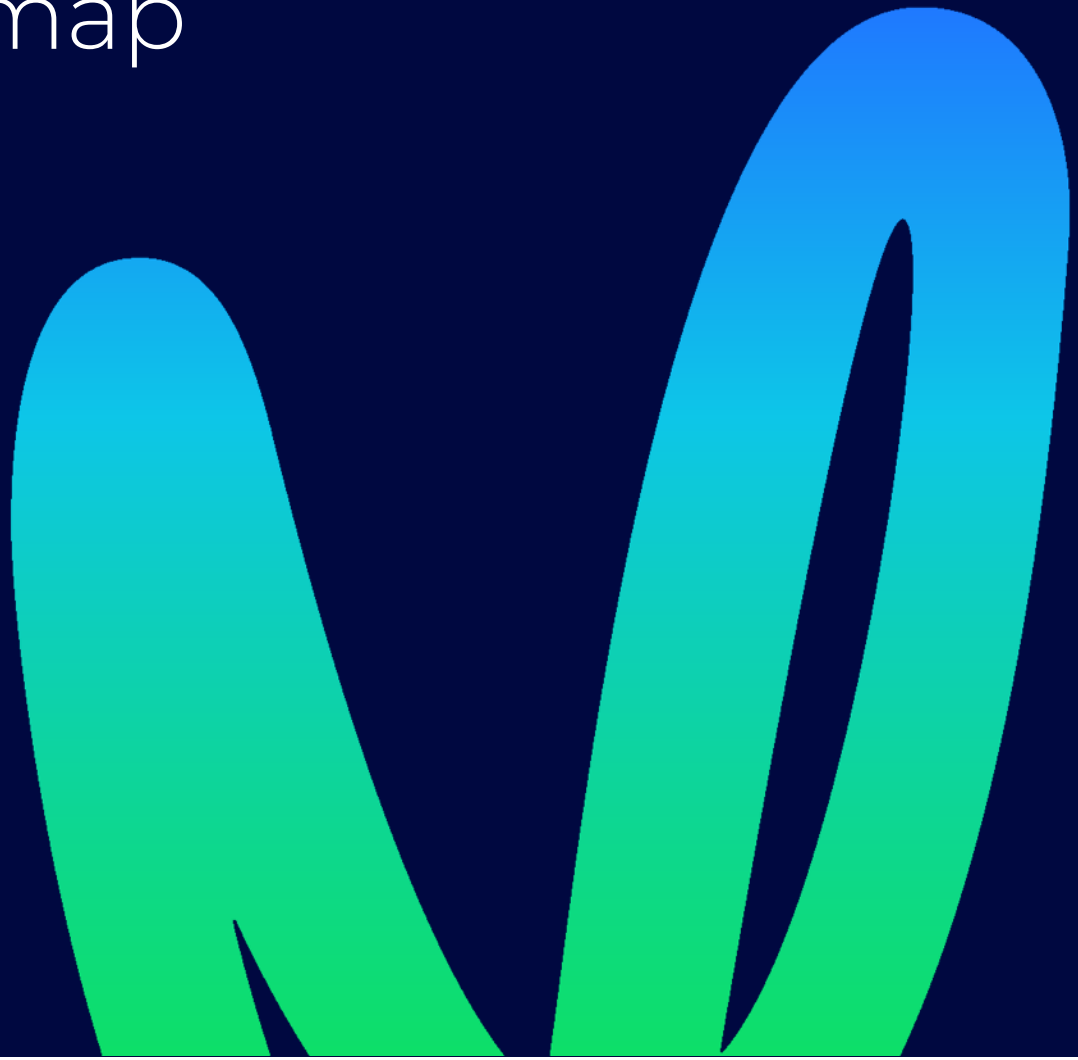
October 2019

Distribution Pricing Roadmap



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Customer led new energy future

New breed of customer:

- New behaviours
- Demand for new options/choice
- Demand for increased resilience, lower costs and a reduction in carbon
- Support for new technologies

Vector is enabling this new future:

- Data analytics
- Battery storage
- Peer-to-peer trading
- Integration of distributed generation (DG)
- Managed smart electric vehicle (EV) charging
- Smart load control
- New pricing

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Customer-centric pricing

Pricing structures need to satisfy customers rather than textbook economic theory:

- Explain prices simply
- Get input
- Design around what customers value
- Test / trial
- Manage impacts

For pricing to be sustainable it must be acceptable to consumers

What our customers tell us they value

SIMPLICITY

CHOICE

SUSTAINABILITY

IMMEDIACY

RESILIENCE

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Pricing is an important part of Vector's overall network strategy

Future network scenarios consider:

- Traditional assets
- New technology
- Digital assets
- Customer integration/choice and experiences
- Delivering value from data analytics
- Pricing

Stakeholders support pricing reform

Regulators, policy-makers and industry are aligned on need for pricing reform – but customer impacts must be carefully managed

"Substantial changes to distribution pricing will be needed in coming years to exploit emerging technology, lower carbon emissions and get prices more in line with true costs. These changes, as desirable as they are, will hurt some consumers in the short term."

EPR Final Report, May 2019

"Distributors run primarily fixed-cost businesses, but still recover most of their costs using flat per kWh charges… This is inefficient, and creates poor outcomes"

Electricity Authority, Oct 2018

"Participants in the electricity sector have been highlighting their ongoing concerns on the [low user] regulations and the review is an opportunity to assess their role in the wider context of supporting New Zealanders to afford their energy bills."

Megan Woods, Mar 2018

"Pricing reform… will play an important role in delivering optimal outcomes to consumers in the context of ongoing technological development… analysis strongly indicates that careful transitioning is essential if reform to distribution pricing is to be successful."

ENA, Feb 2019

"Right now, distribution pricing is not structured to encourage individual consumers to make decisions about investing in… emerging technologies in the best interests of all consumers."

EPR Final Report, May 2019

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Vector’s approach to reviewing its prices

Vector reviews its pricing annually:

- Data driven analysis
- Meet regulatory requirements including Electricity Authority Pricing Principles
- Assessment of evolving technologies
- Consumer insights
- Leverage international best practice
- Industry engagement
- Retailer consultation
- Publish prices and methodology

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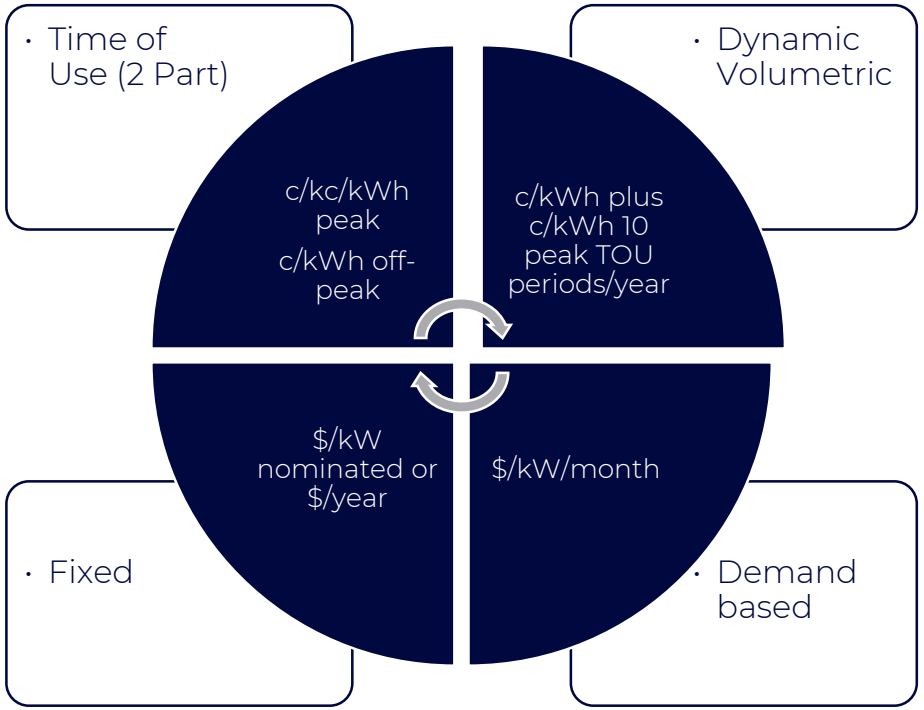
We are introducing new pricing in 2020

Primary distribution investment driver is peak load or capacity:

- Pricing components are differentiated by time or duration of measurement
- Peak load/capacity signaling increases as the measurement duration declines

Five structures were considered:

- Existing pricing – no time differentiation
- Time of Use (ToU) - Peak and off-peak, all year
- Dynamic Volumetric – 10 peak days
- Demand based – Monthly peak half-hour
- Fixed – Capacity or fully fixed



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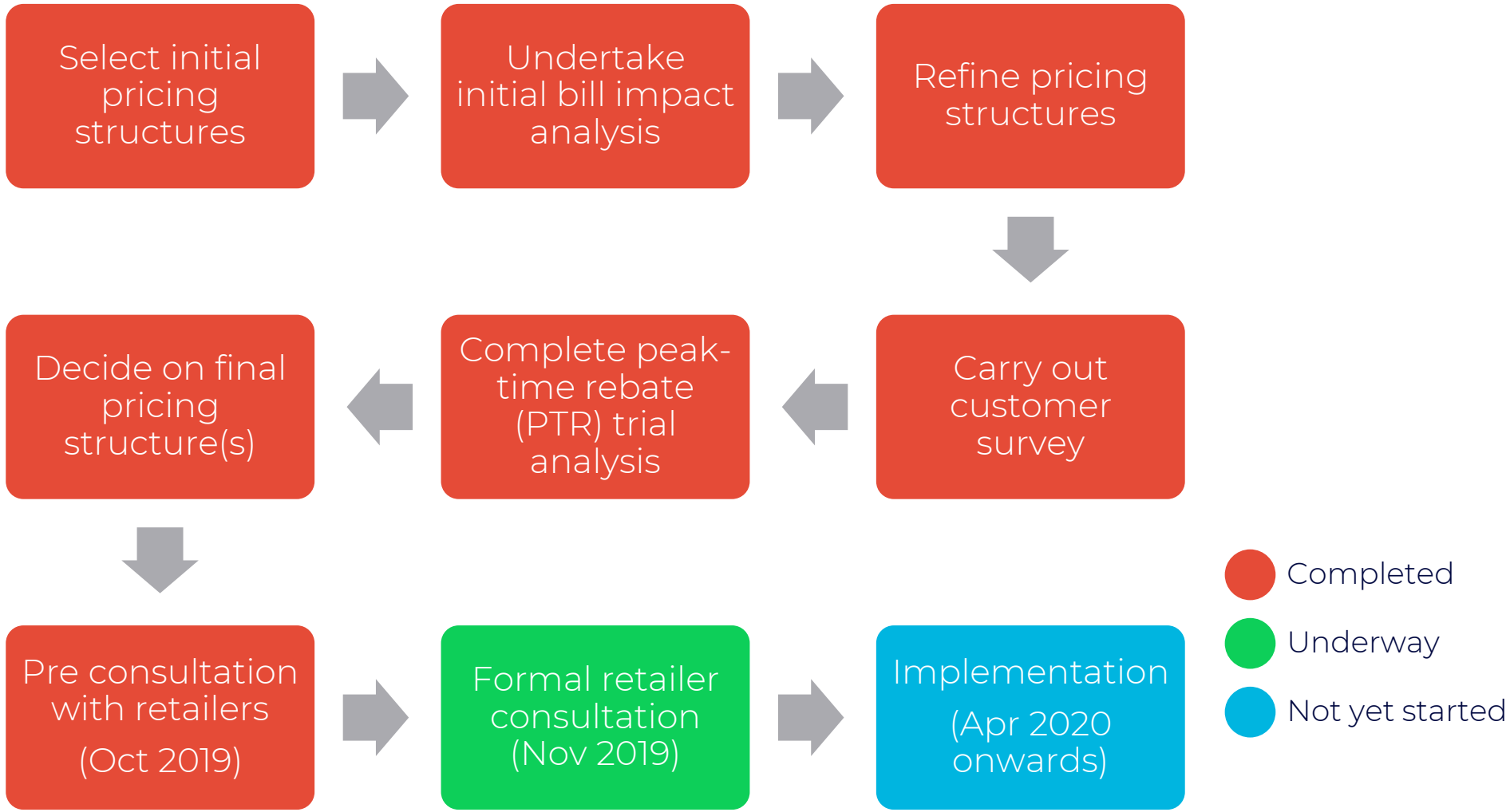
Development of new prices is nearing completion



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Pricing assessment involves tradeoffs

Trade-offs between competing goals:

- Service based/cost reflectivity – what is the consumer purchasing, what drives Vector and consumer investment?
- Simplicity/acceptability – could the consumer understand the pricing, is it sufficiently predictable to be actionable?
- Bill impact – what are the consumer-level drivers of their cost changes?

Underpinned by consideration of:

- Regulatory requirements, including EA Pricing Principles
- Economic theory
- Practical implementation aspects
- Regulatory and public perceptions
- Consumer effects and expectations
- Revenue risk implications
- Low User Fixed Charge Regulations

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Assessment against objectives (1)

Dynamic Volumetric	• Significant monthly variation in prices • Strong cost-reflective signal but low predictability for customers • Less intuitive/simple than status quo or static TOU
Static ToU	· Relatively small bill impacts vs status quo · Less cost-reflective than dynamic pricing but high level of predictability · Adding seasonal shape would increase cost-reflectivity but add complexity
Demand based	• Reduces winter bills on average as volume effect reduced • Charging unit (kW) not intuitive and would require customer education • AMD not necessarily connected to system peaks/investment costs • Requires active management to manage costs
Fixed	• Significant bill impacts on low volume / low load factor customers • Reduces winter bills on average as volume effect removed • Fully-fixed bill simple to understand and similar to many other products (broadband, Netflix etc) but not LFC compliant • Capacity-based more complex • Not cost reflective on its own but could be combined with PTR or excess demand charge

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Assessment against objectives (2)

Criteria	Components	Dynamic Volumetric	TOU (2 part)	Fixed (Nominated Capacity)	Monthly AMD
Simplicity/Acceptability	Consumer simplicity	X	√√	√	X
	Consumer predictability	<>	√√√	√√	√√
Bill Impact	Impact on consumer's winter costs	XXX	X	X	X
	Incentive for peak load shifting	√√√	√	√√	√
Service-based	Encourage off-peak EV charging	X	√√	√√	X
	Encourage consistent load shifting	√	√√√	√√	<>
	Probability of pass-through	X	√√√	√√√	√
	Ease of implementation	X	√√√	X	X

- Assessments are qualitative
- Some options are excluded by Low User Fixed Charge (LFC) – fully fixed
- Some may be retailer system constrained if you want pass through to some degree
- Pricing is not a one-time decision – it can evolve through time

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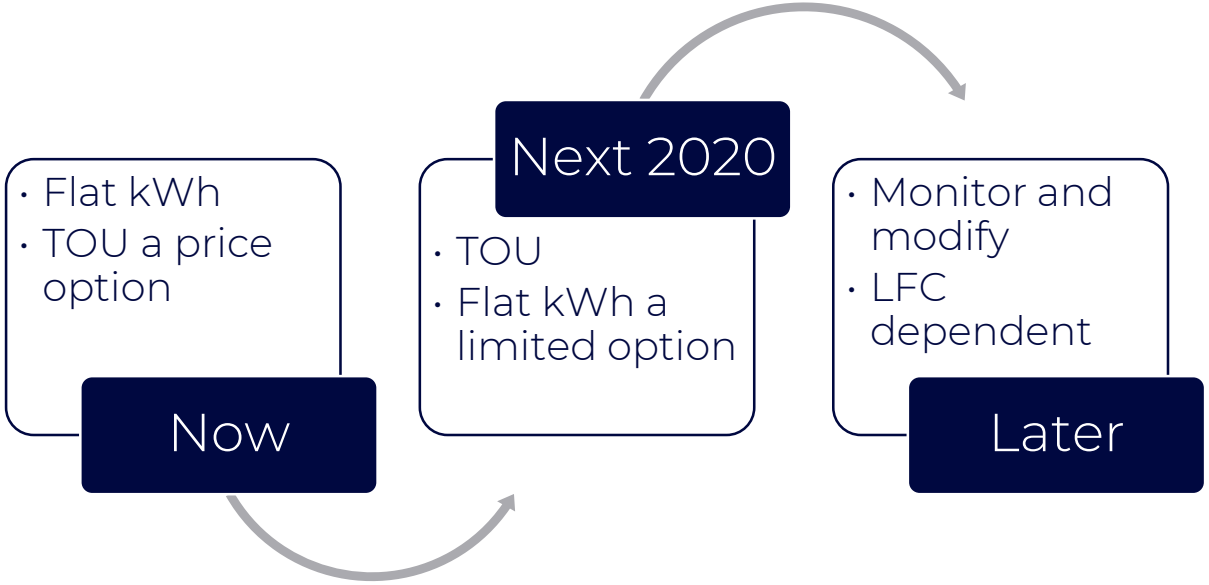
Where Vector is heading

- Two-part ToU best overall candidate for standard price structure for now – balancing a range of trade-offs
- ToU is a transitional step
- LFC is an impediment to pricing choices
- We will monitor any LFC changes that arise from the Electricity Pricing Review
- If/when LFC removed we will proceed with further pricing reform



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