

Asset revaluations, price gouging, and barriers to entry: the state of play in electricity sector non- regulation

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Regulatory risk overhangs the value of electricity company shares

- The shareholders' equity in the five big gentailers rests on the book valuation of their fixed assets (mainly generation plant and equipment – dams, turbines, control gear etc)
- The assets are
 - **specific** (no or limited alternative uses)
 - **lumpy** (not readily broken into smaller chunks – though windfarms a potential exception)
 - pre-emptively occupying the prime generation sites (new entry is at the Ricardian extensive margin)
- The value at which those fixed assets are carried is completely divorced from their cost – most were built long ago and their investment costs are sunk
- The book valuations are “fair value” i.e. the discounted present value of expected future earnings
- Future earnings depend on whether pricing behaviour will be regulated
- The opposition parties' “New Zealand Power” policy will, if implemented, drastically reduce the asset values and the average price of electricity

The key plank in the Labour policy is bringing asset values back down to historic cost – that is, to the sums that the companies have actually spent to acquire or install the physical capital assets

“NZ Power will act as a single buyer of wholesale electricity. **Each generator will be paid a fair return for their actual costs. The fair return will be calculated by NZ Power on the basis of their historic capital costs, possibly adjusted by inflation, plus operating costs like fuel, depreciation and maintenance**”

Energising New Zealand: Policy Document, NZ Labour Party, April 2013. pp.9-10.

Outline of the paper

1. Quantify the regulatory risk company by company if North-American-style historic-cost-based regulation is implemented
2. Apply the simple economic theory of rent to show how excess profits have been secured, and why the “functionless rents” that underpin the asset revaluations are not defensible in principle
3. Ask whether any “regulatory compact” could provide a defence for the companies

Three sets of headline numbers from this paper

Change in Book Values Under Historic-Cost Regulation

	Book Value (\$mill)	Historic Cost (\$mill)	Write-down required (\$mill)	Percentage Reduction
Mighty River	5,064	2,225	2,839	56
Genesis	2,581	1,703	878	34
Meridian	7,964	3,552	4,412	55
Contact	5,164	3,156	2,007	39
Trustpower (2013)	2,717	1,425	1,291	48
Total	23,489	12,061	11,428	49

Source for book value and historic cost: Companies' Annual Reports

The book value of the industry's fixed assets would be halved

Change in Revenues Under Historic-Cost Regulation

	2012 Electricity Revenue (\$mill)	Revenue Reduction (\$mill, @13%)	Revenue Reduction (%)
Mighty River	1,521	369	24
Genesis	1,929	114	6
Meridian	2,570	574	22
Contact	2,451	261	11
Trustpower (2013)	765	168	22
Total	9,236	1,486	16

Source for electricity revenue: Companies' Annual Reports

Regulation would knock \$1.5 billion per year off the cost of electricity for consumers

Percentage of shareholders' equity eliminated

	2012 Shareholder equity (\$mill)	Write-down (\$mill)	Equity remaining after write- down (\$mill)	Reduction (%)
Mighty River	3,014	2,839	175	94
Genesis	1,800	878	922	49
Meridian	4,826	4,412	414	91
Contact	3,418	2,007	1,410	59
Trustpower (2013)	1,552	1,291	261	83
Total	14,610	11,428	3,182	78

Source for shareholders' equity: Companies' Annual Reports

Three-quarters of shareholder equity is exposed

Note following the seminar:

The assumption in the preceding slide, that 100% of a write-down in fixed asset values would fall on shareholder equity, overlooked the extent to which deferred tax liability would soften the impact on equity. This is to be addressed in future work - GB

Comment

With three-quarters of their equity depending on so-called “fair value” revaluations, and consequently exposed to adoption of a standard, internationally-common form of price regulation, New Zealand electricity generator-retailers are quite unlike “utilities” as commonly understood.

They are more reminiscent of pre-2008 finance companies (Hanover, Blue Chip, South Canterbury...) or pre-1987 “investment” vehicles (BIL, Ariadne, Robert Jones Investments...).

Inflated US and European financial-sector balance sheets based on “fair value” were central to the Global Financial Crisis

The downside risk on the shares of electricity generator-retailers is of similar type and magnitude

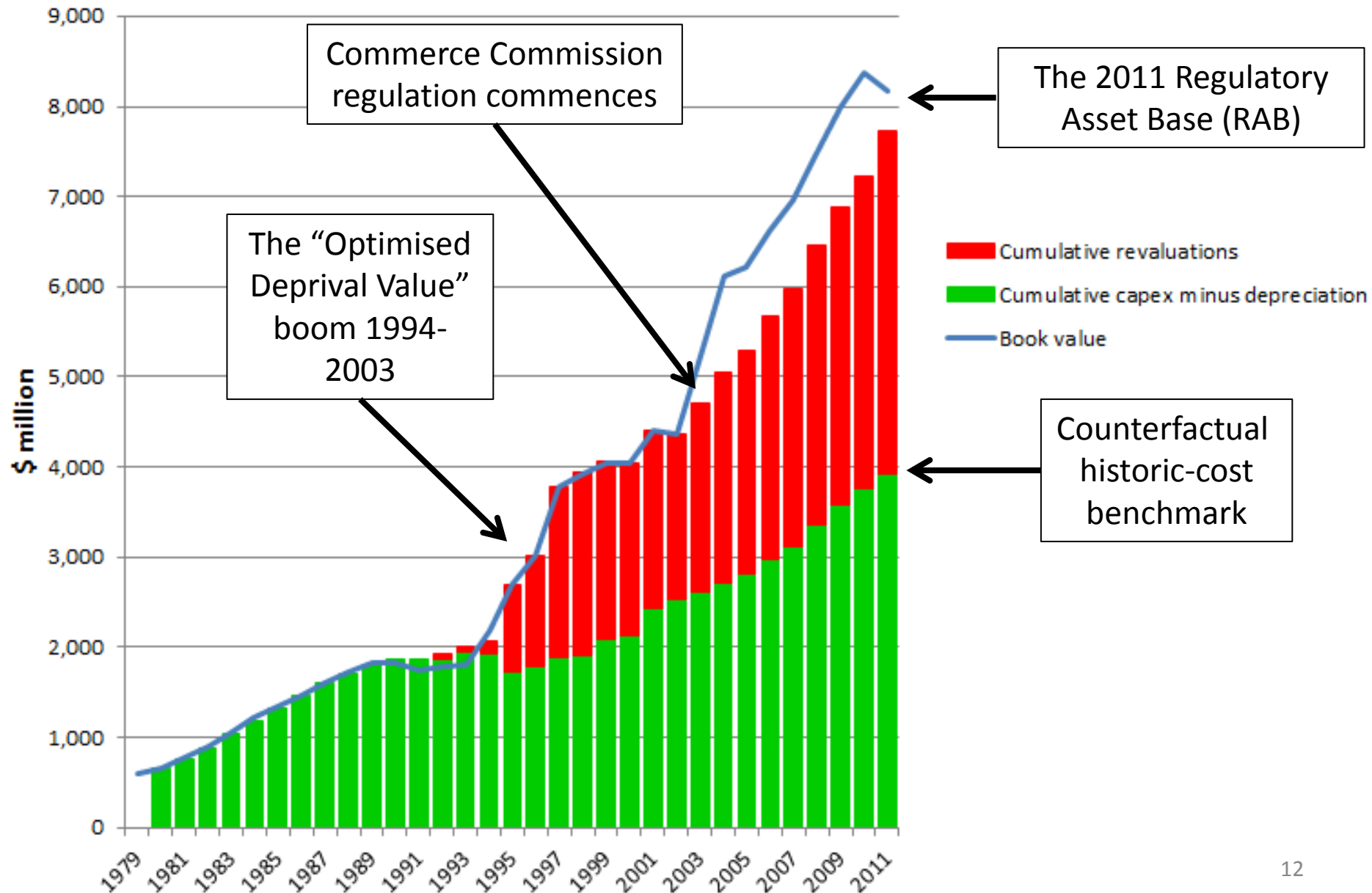
Methodology for estimating that regulatory risk

- This work repeats what Dan Twaddle and I did to measure lines company excess profits in our 2006 *Journal of Regulatory Economics* paper
- I compare actual financial performance against what a US-type public-utility regulator would have allowed:
 - An assured fair return on (profits) and of (depreciation) all cash prudently spent on investment in useful new capacity
 - Full recovery of all legitimate operating costs
 - Regulatory support of the resulting prices as the tradeoff for limiting the exercise of market power
- The extent of “fair value” revaluation of fixed assets provides the key indicator of excess profits relative to that regulatory benchmark
- This is because the revaluations are simply the discounted present value of the amount by which revenues (hence prices) are in excess of what would have been allowable under an historic-cost pricing ratebase (assuming that company vesting values are accepted as establishing initial historic cost)

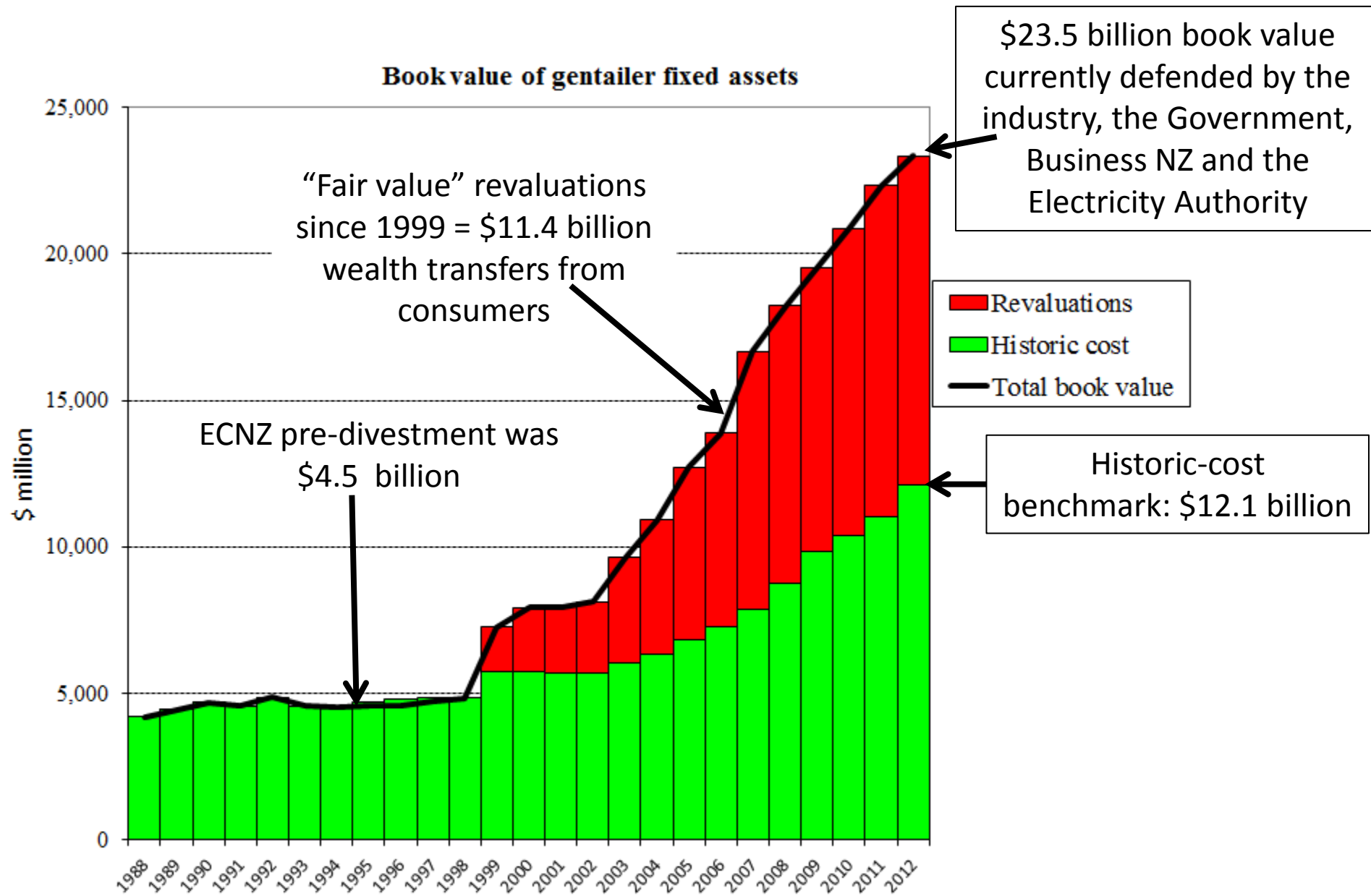
Aide-memoire: how NZ lines company profits were successfully gold-plated

- Our 2006 paper showed that electricity lines companies had revalued their fixed assets upward by \$2 billion 1994-2004, laying the basis for the unnecessary (functionless) charging of over \$200 million per year to consumers, relative to the regulatory counterfactual
- Those revaluations remain in place and have been indexed to inflation, raising the continuing excess charges well over the \$200 million p.a. level
- It is likely to be decades before the lines industry can claim a genuine historic-cost basis for its asset values
- But in 2004 the Commerce Commission, having been given the job of regulating - with no clear mandate or guidance from Parliament to protect consumers - opted to rubberstamp the revaluations, effectively locking-in the excess profit-taking
- The lines industry, thus, succeeded in getting itself political cover against consumer protest by capturing the regulator
- New Zealand consumers are substantially poorer as a result, but lines company revenues are safe with a regulatory and political underwrite

Supply authorities/distribution company fixed assets book value decomposed between capital expenditure and revaluations



The path of asset values in generation and retail



Company-by-company detail

- First I constructed my own estimate of “historic cost”, starting from the amount paid to acquire the fixed assets at the time each of the companies was set up in the 1990s.
- That meant adopting a starting value generally far higher than the true historic cost of the plant and equipment if one were to start from the time those assets were actually constructed
- Going back to the original construction cost and allowing for depreciation would often mean assigning a zero historic-cost value at the late 1990s
- The rationale for the “vesting date” start is twofold:
 1. the government of the day explicitly signed off on those values when ECNZ was broken up
 2. the companies have based their own calculations of historic cost on their vesting values
- That means there is some (admittedly pretty thin!) basis for claiming a “regulatory compact” underpinning those values – but they’re only “deemed historic cost”, not truly the real thing

“Vesting values” for Meridian, Mighty River and Genesis

- The fixed assets “sold” to the three new SOEs in 1999 fetched \$3,444 million (*ECNZ Annual Report 1999* p.20) which corresponded to their book value at that time (no gains or losses on these sales appeared in ECNZ’s P&L account)
- [Coleridge, Highbank and Matahina were sold to other buyers for \$235 million, a gain of \$137 million on book value (*ECNZ Annual Report 1999* pp.11, 18, 20 and 37).]
- The amounts paid by the three new SOEs were:

ECNZ sales of fixed assets to Genesis, Meridian and MRP, April 1999

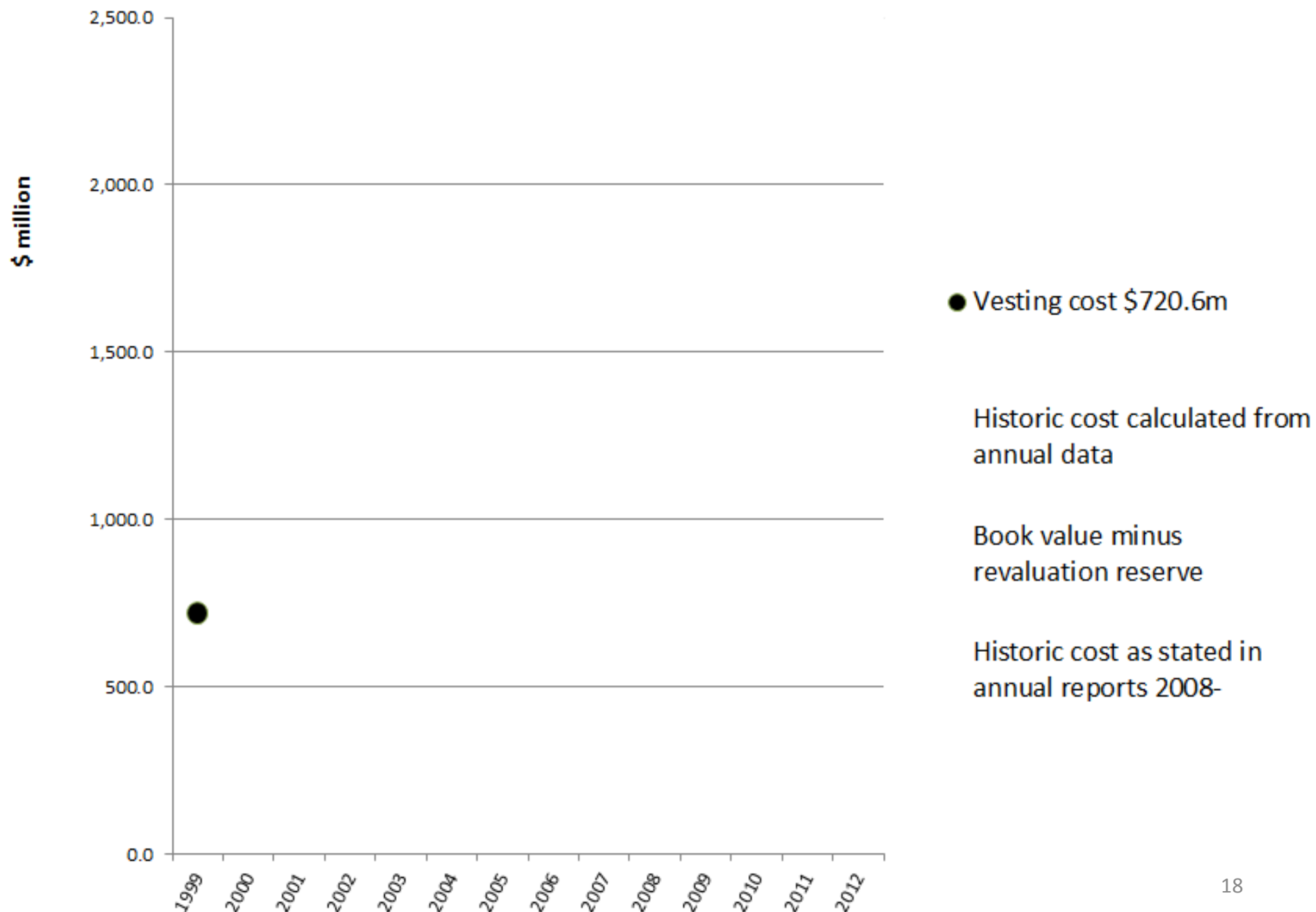
	\$ million
Genesis purchase of fixed assets	632
Meridian purchase of fixed assets	2,075
Mighty River purchase of fixed assets	721
<i>Residual (unaccounted for)</i>	<i>16</i>
Total ECNZ cash from disposal of fixed assets to new SOEs	3,444

Sources: SOE 1999 Annual Reports

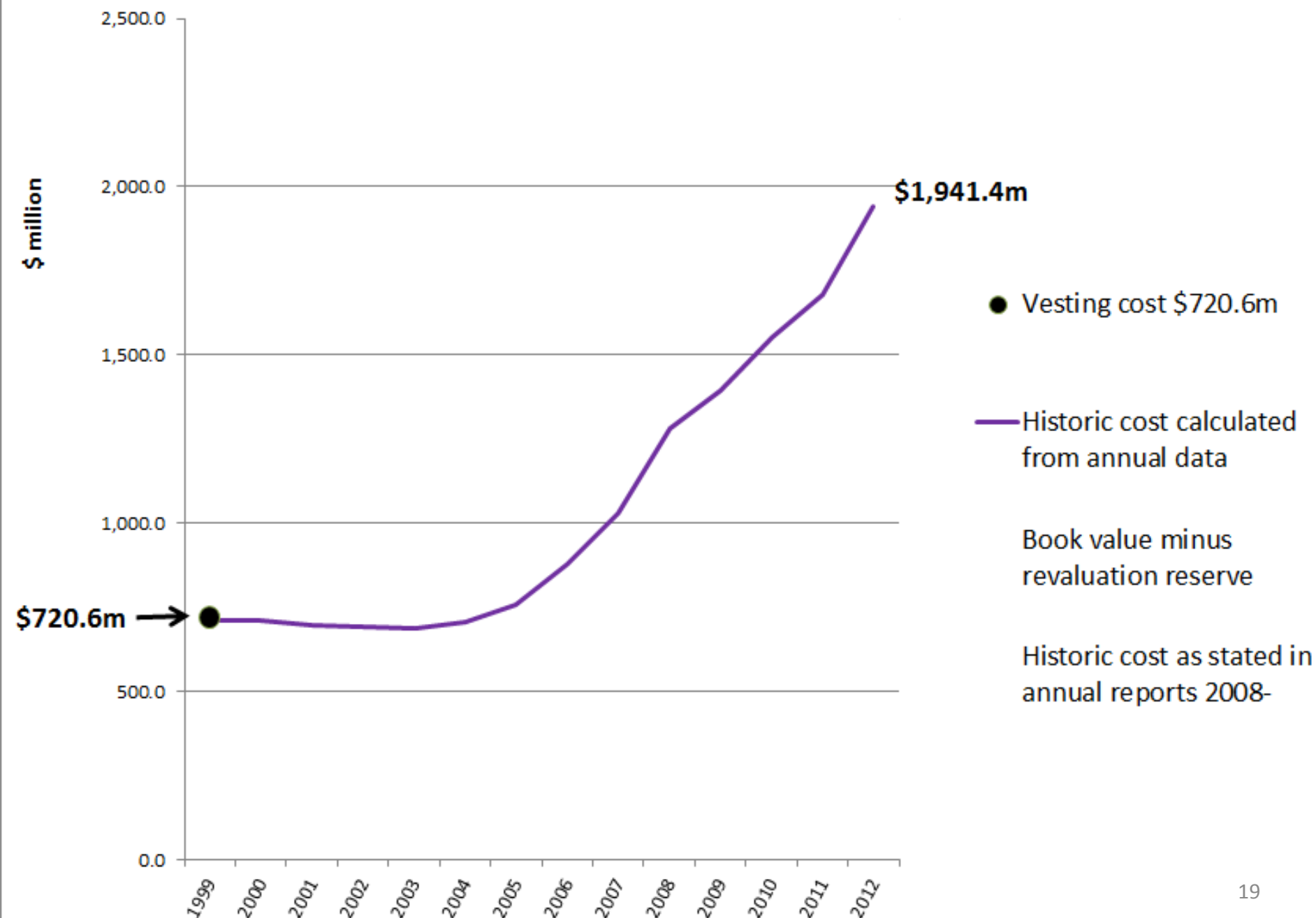
Take first Mighty River Power

- Starting from the \$720.6 million vesting price, I have added for each year the recorded new acquisitions of fixed assets, subtracted disposals of fixed assets, and allowed for depreciation
- Depreciation has been charged at the company's actual average rate of depreciation
- I made no allowance for impairments other than depreciation [what is sometimes called asset stranding]

Reconstructing Mighty River Power's historic cost of fixed assets

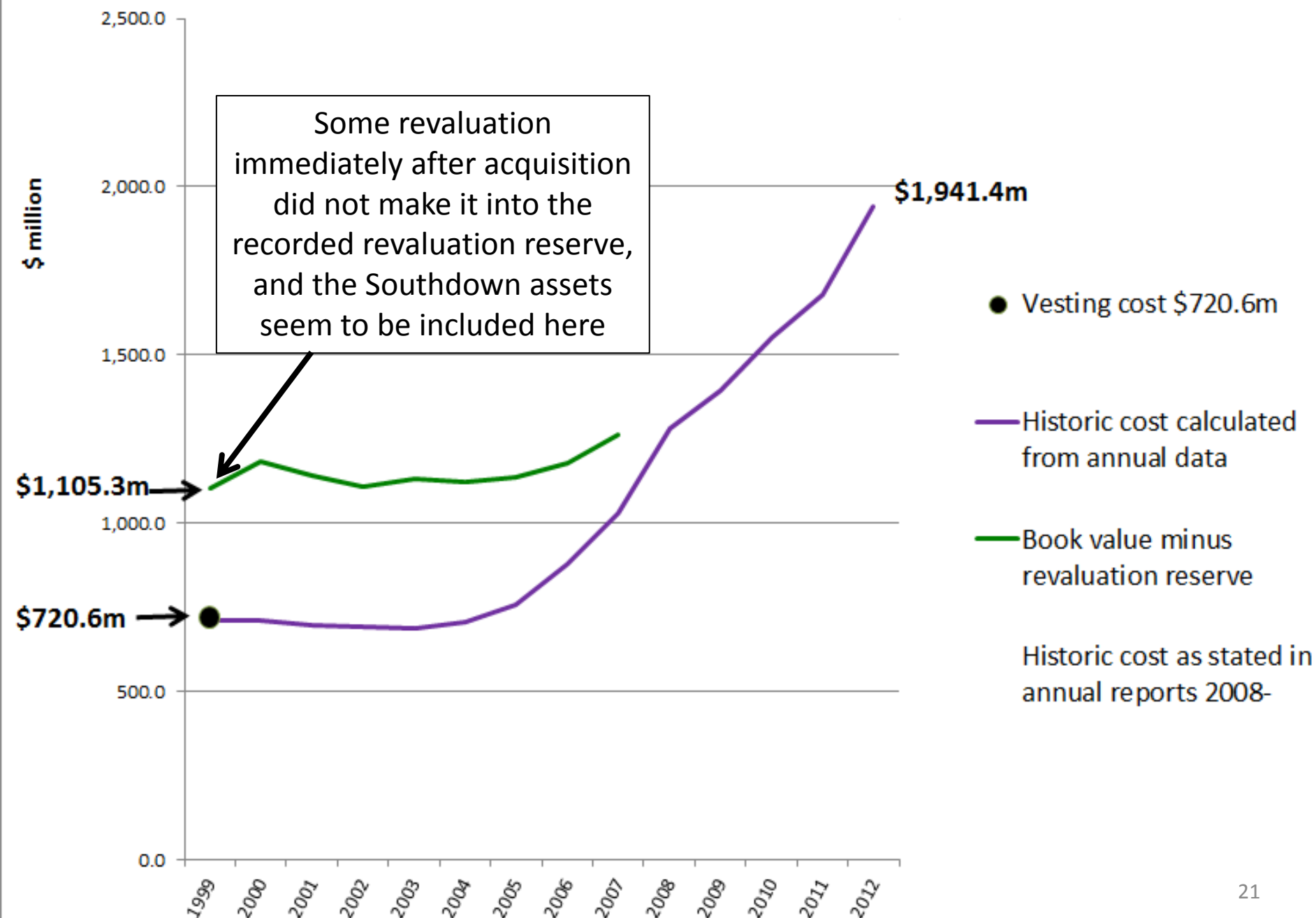


Reconstructing Mighty River Power's historic cost of fixed assets

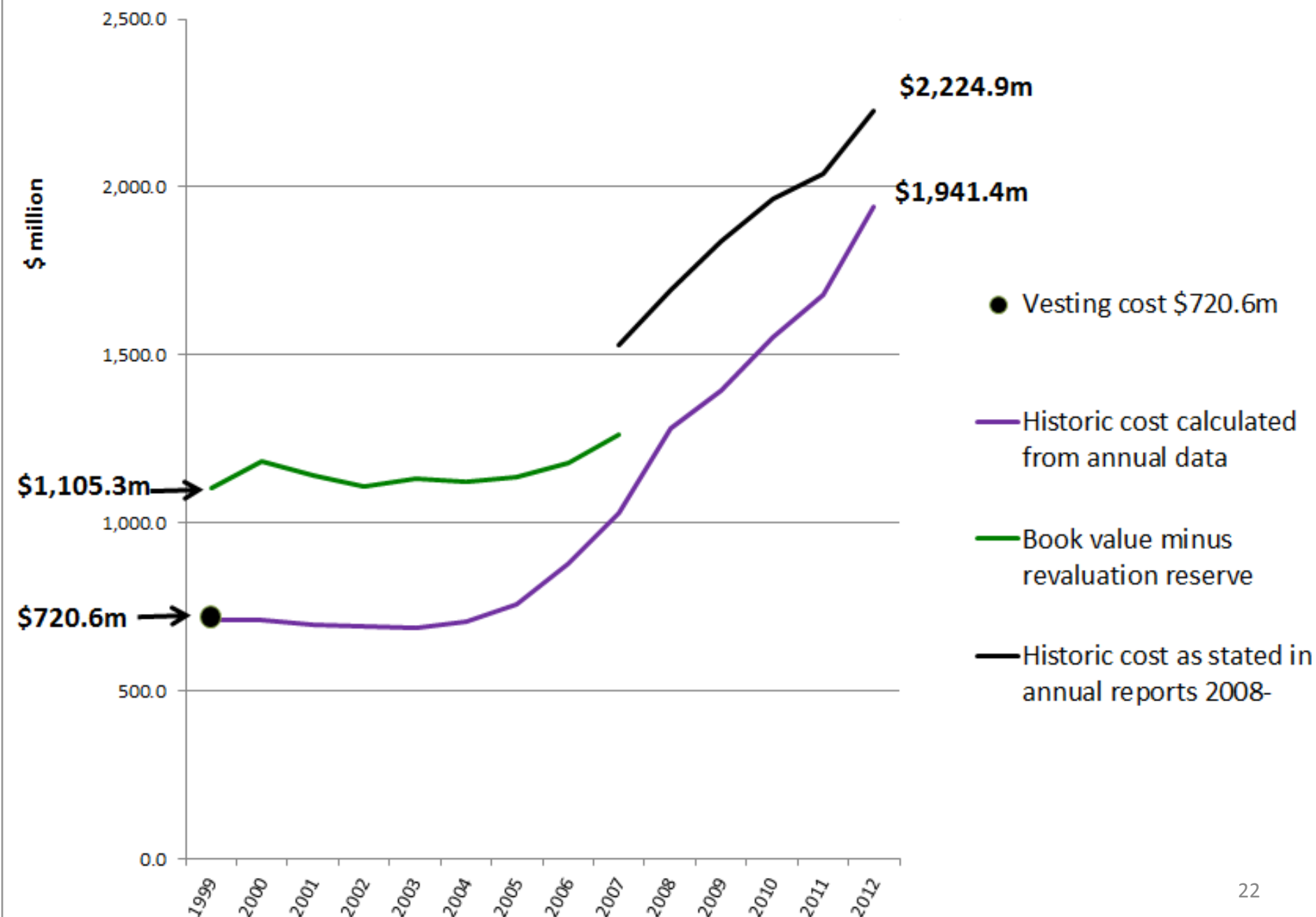


- To check the order of magnitude, I compared my historic cost series with
 - Book value minus the revaluation reserve from annual financial statements prepared under pre-NZ IFRS GAAP (under NZ IFRS the revaluation reserve is no longer cumulative actual revaluations because of inclusion of tax adjustments and other accounting innovations)
 - Historic cost as disclosed in annual financial statements under NZ IFRS

Reconstructing Mighty River Power's historic cost of fixed assets

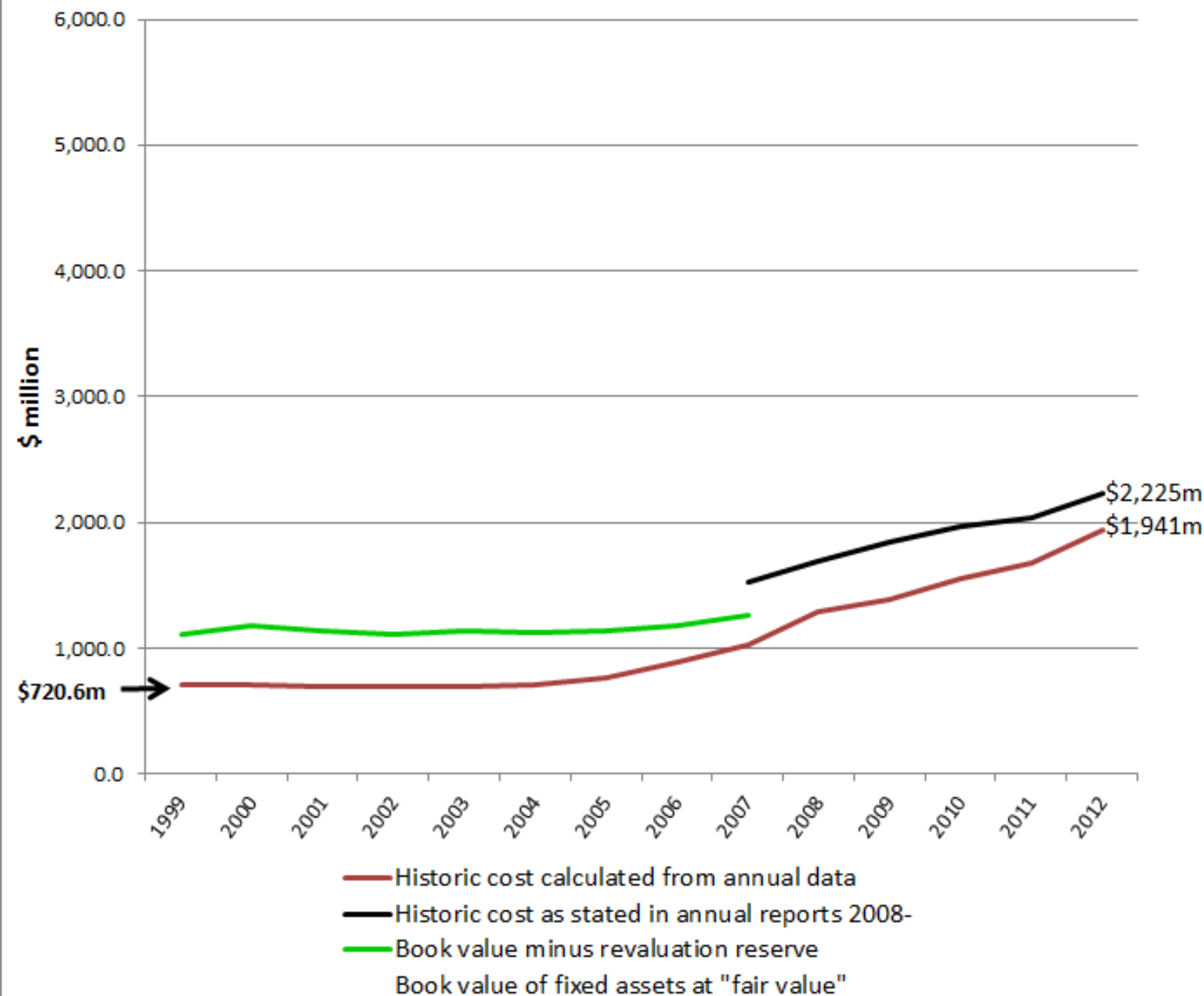


Reconstructing Mighty River Power's historic cost of fixed assets

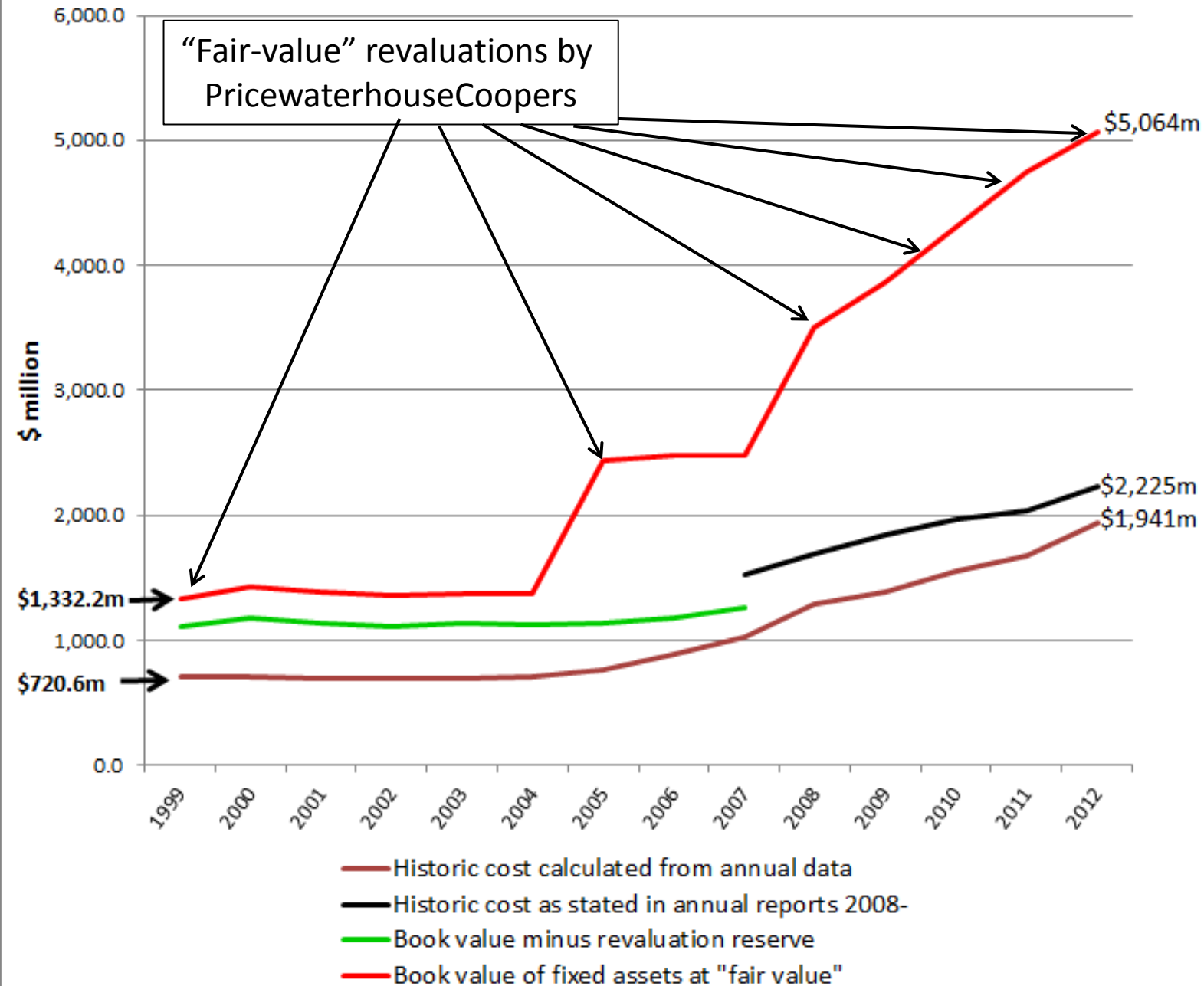


- So the series don't match perfectly, but the ballpark is clear
- I opted to proceed by using the company's own declared historic-cost rather than my lower figure
- The next step was to compare historic cost with the path of actual book value inclusive of revaluations

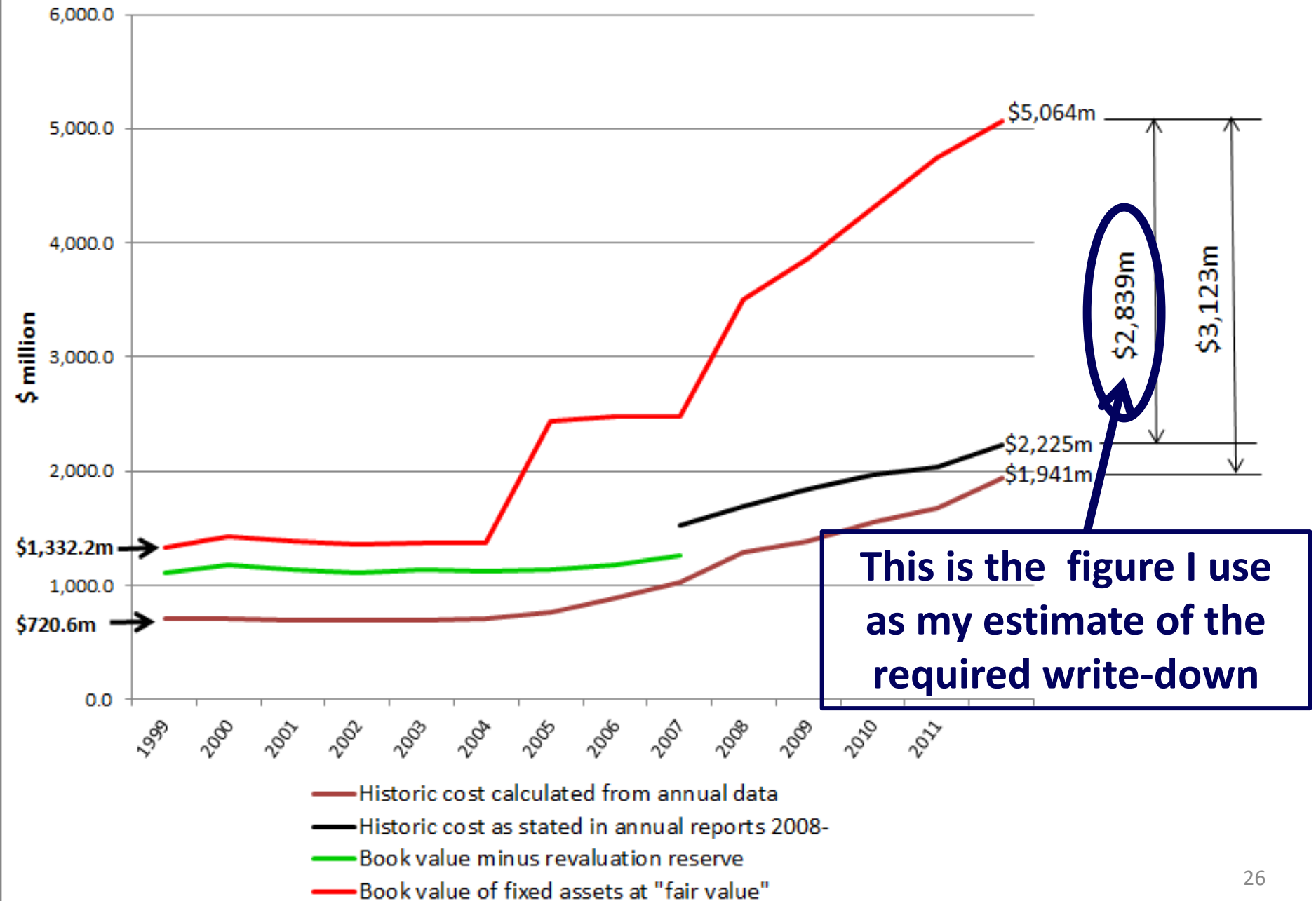
Mighty River Power Fixed Assets



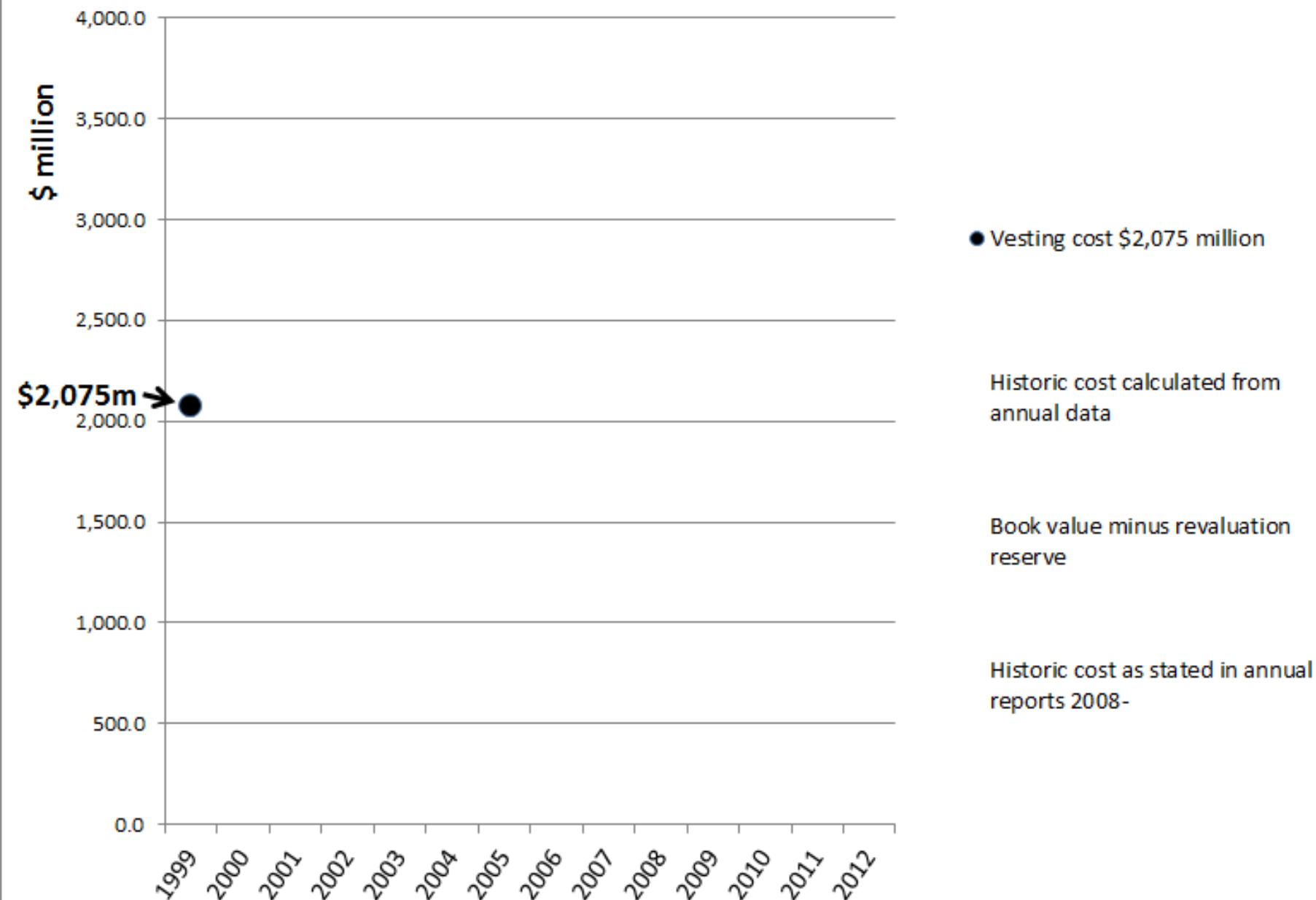
Mighty River Power Fixed Assets



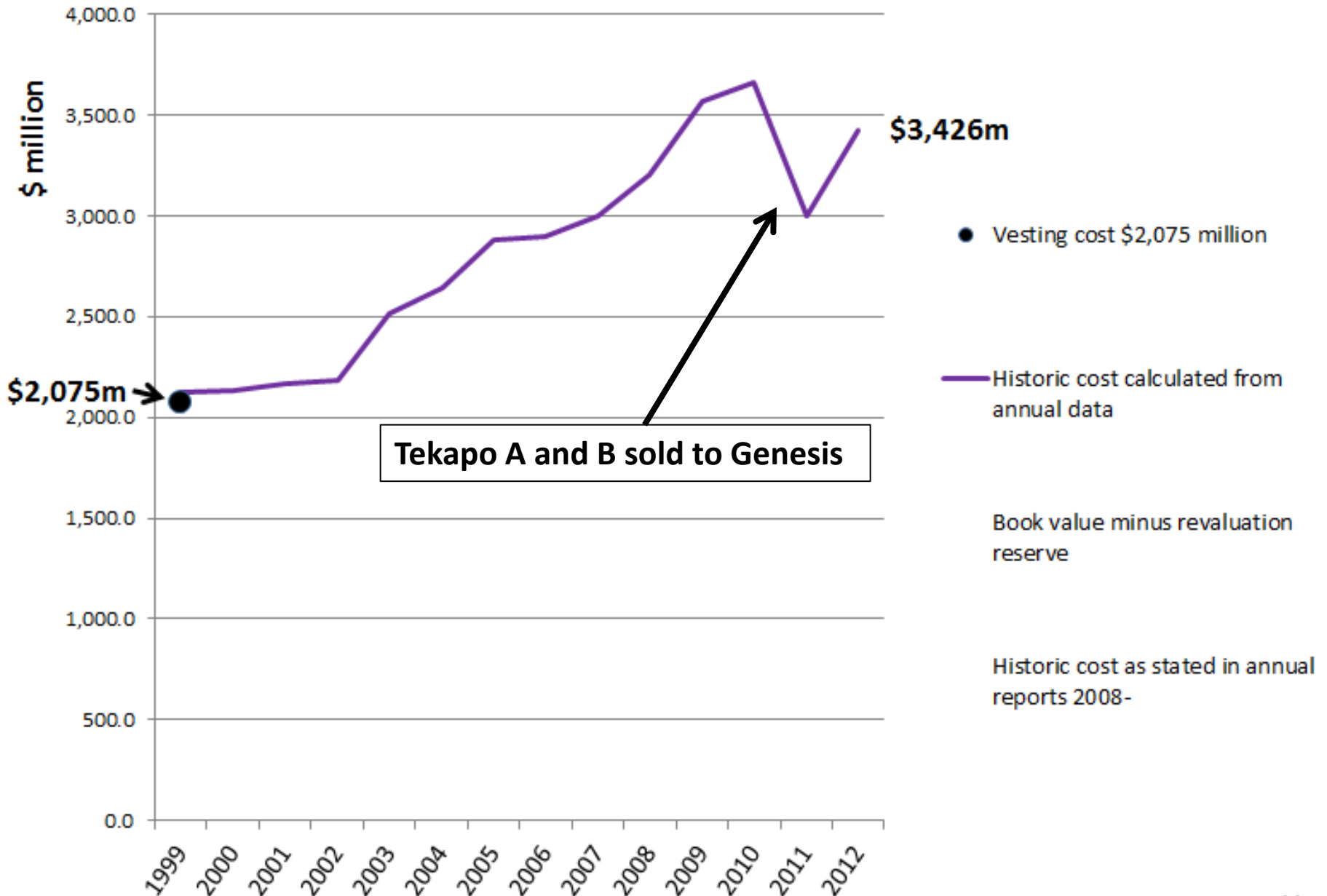
Mighty River Power Fixed Assets



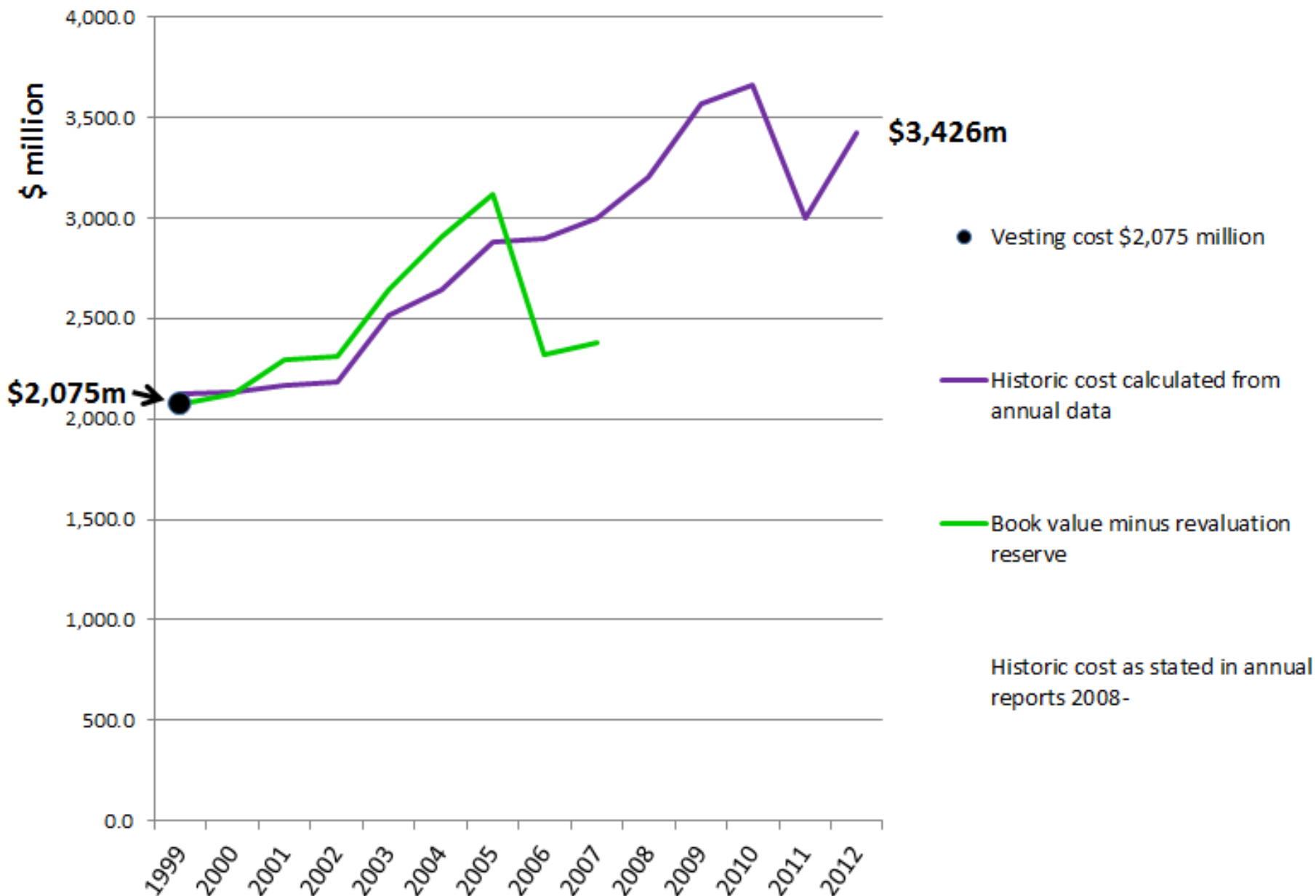
Reconstructing Meridian's historic cost of fixed assets



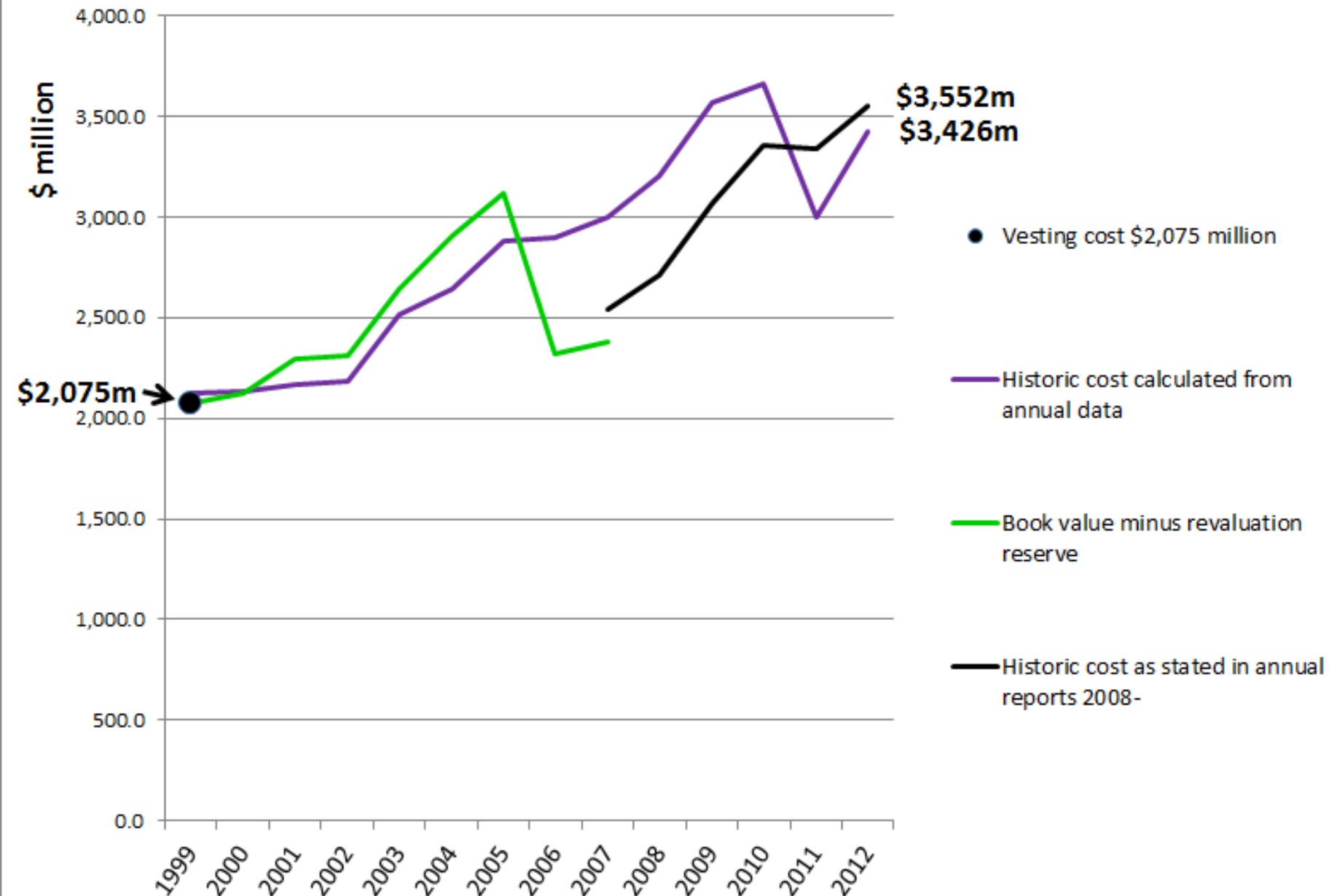
Reconstructing Meridian's historic cost of fixed assets



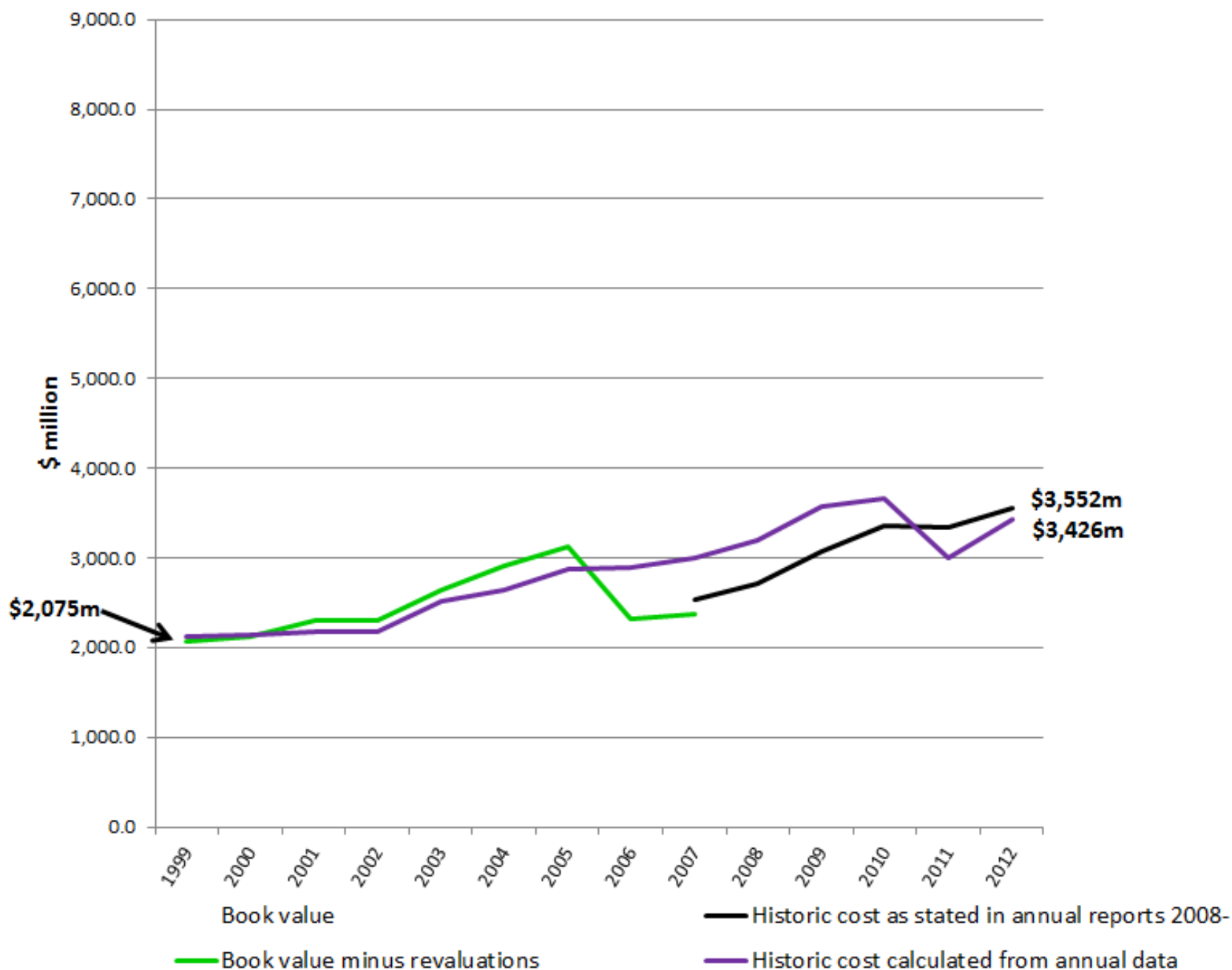
Reconstructing Meridian's historic cost of fixed assets



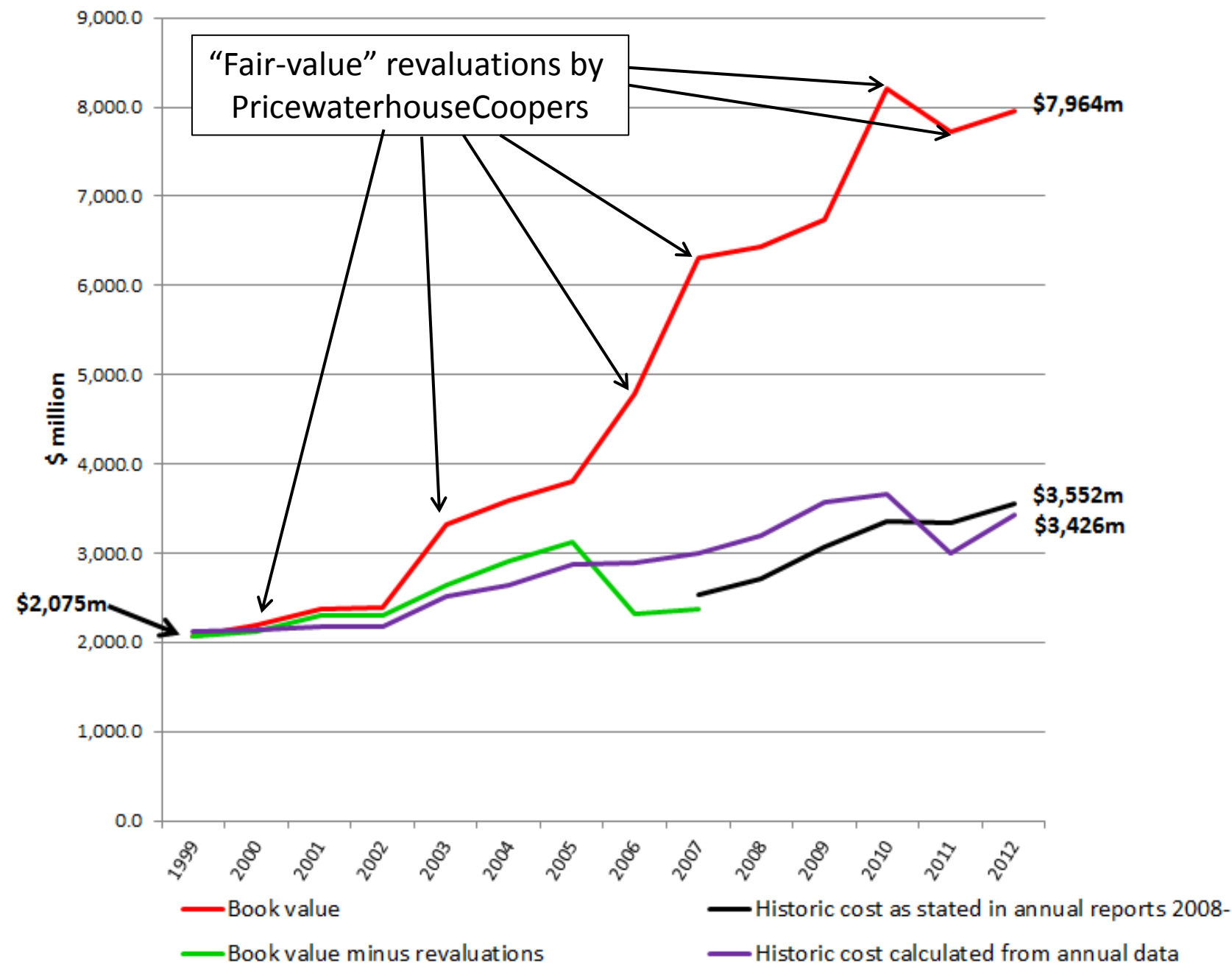
Reconstructing Meridian's historic cost of fixed assets



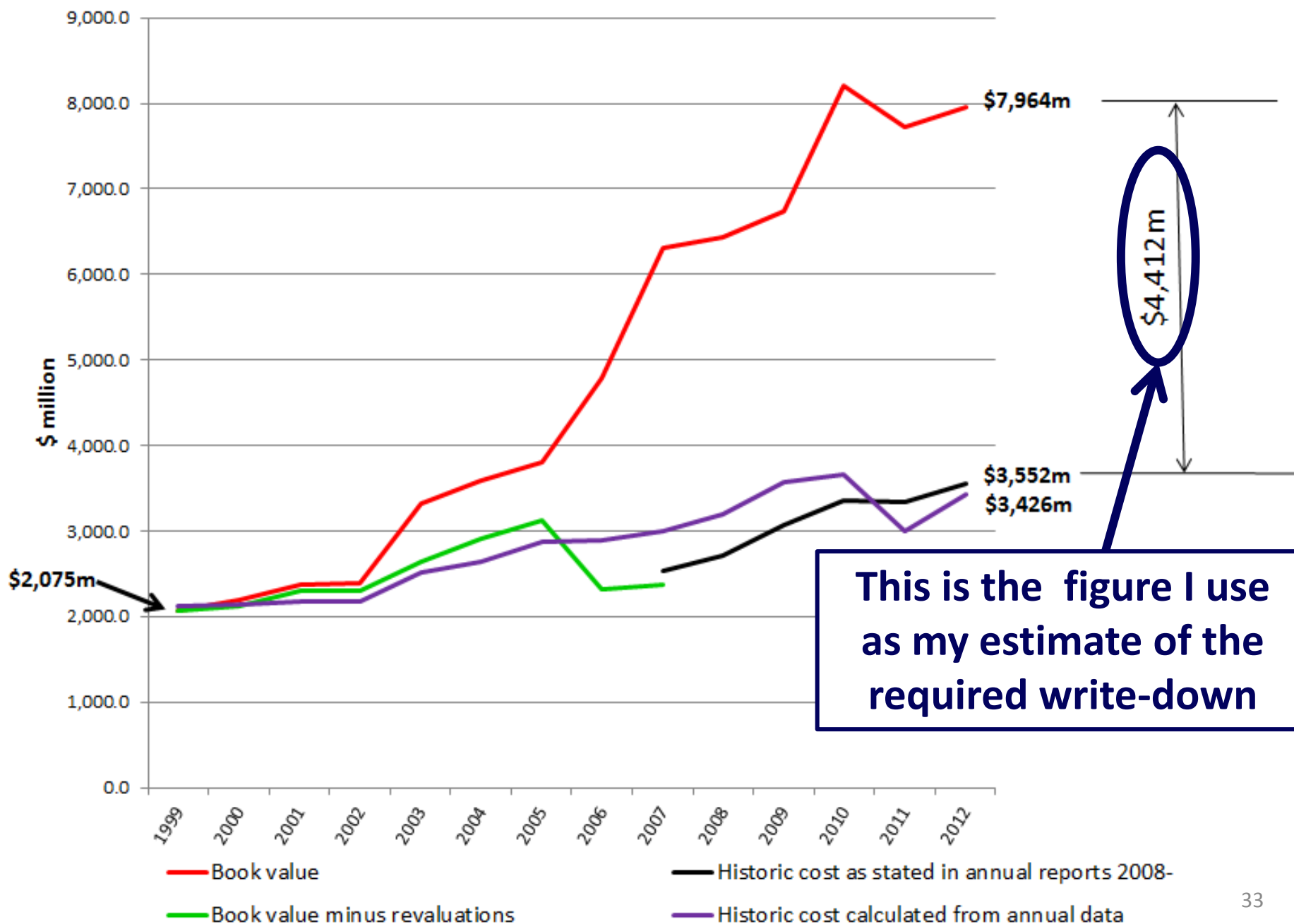
Meridian Energy Fixed Assets: "Fair Value" v Historic Cost



Meridian Energy Fixed Assets: "Fair Value" v Historic Cost



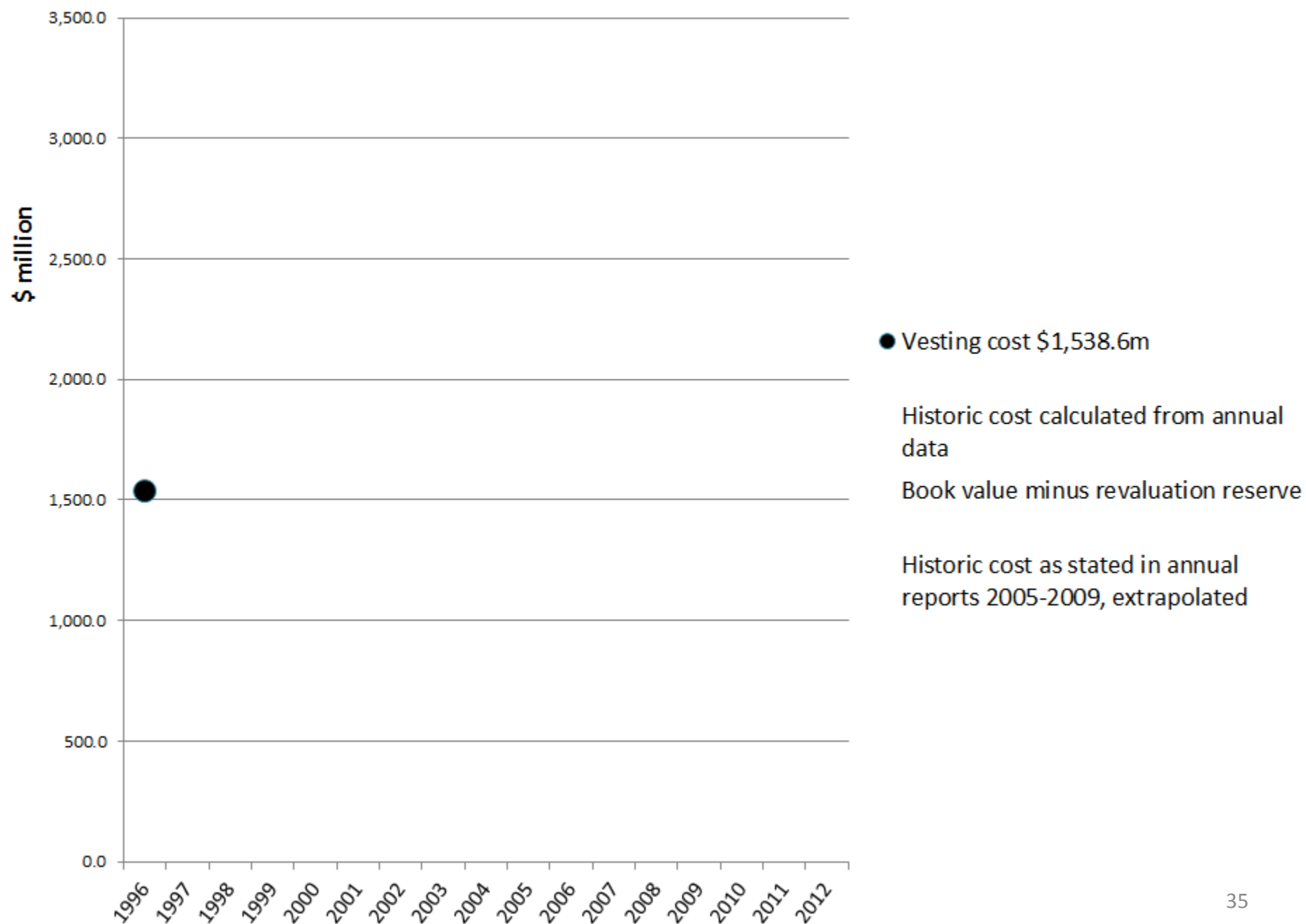
Meridian Energy Fixed Assets: "Fair Value" v Historic Cost



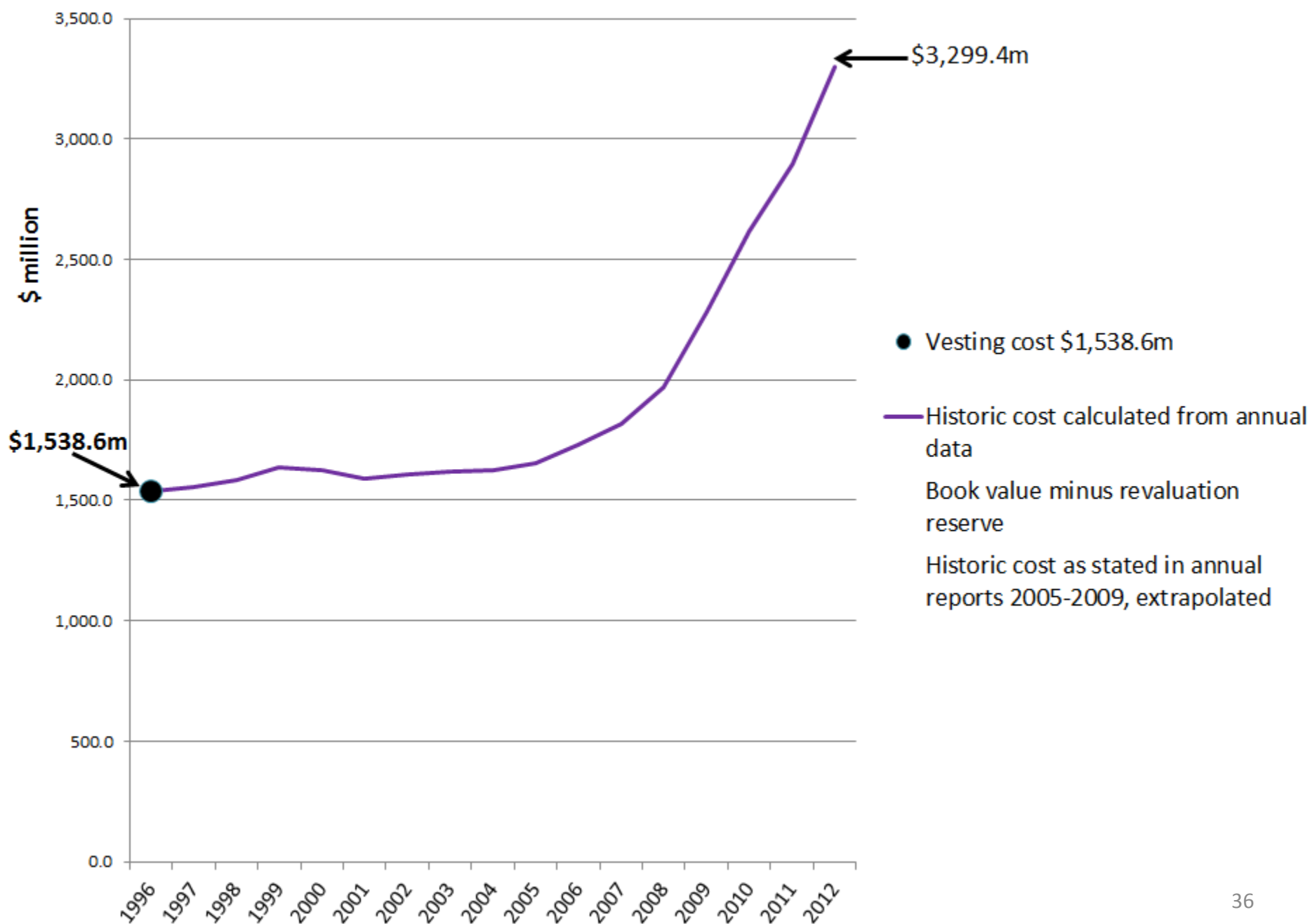
Contact Energy Ltd

- Contact was the first SOE to be carved out of ECNZ, in February 1996, and the first to be privatised, in April 1999
- Its first “fair value” exercise, in 1996, actually produced a write-down of \$204 million, reflecting the widespread expectation in the industry at that time that Government would not allow price gouging to run unchecked
- By 2004, however, no regulation had materialised and Contact had added \$2 billion of “fair-value” capital gains to its books - and had raised its prices to recover capital charges on this
- [Recall that the ability to raise prices was the basis on which the fair-value exercise rested, so the process was circular]
- Again our first step is to trace the historic-cost path that a US-style regulated ratebase would have followed.

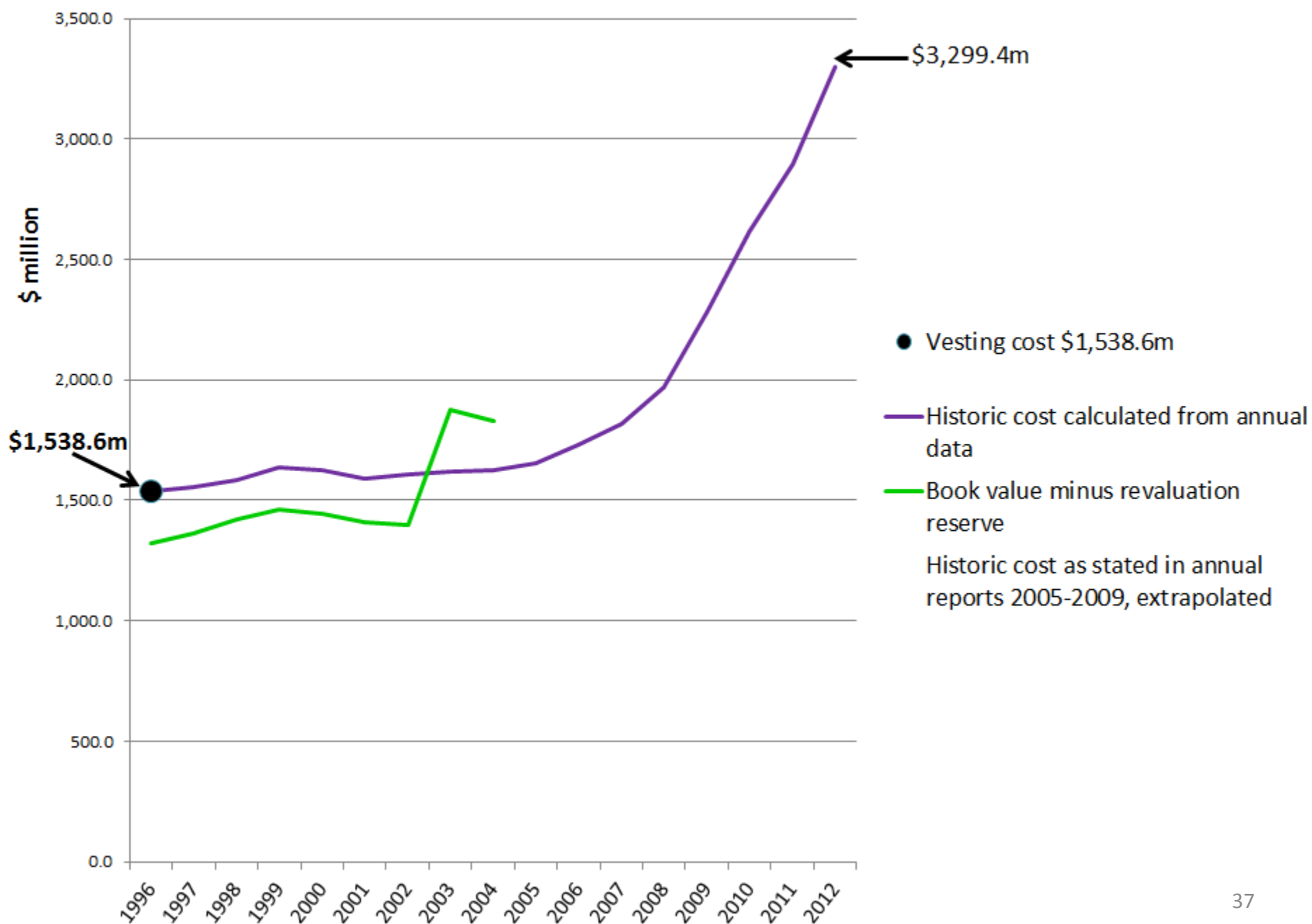
Reconstructing Contact Energy's historic cost of fixed assets



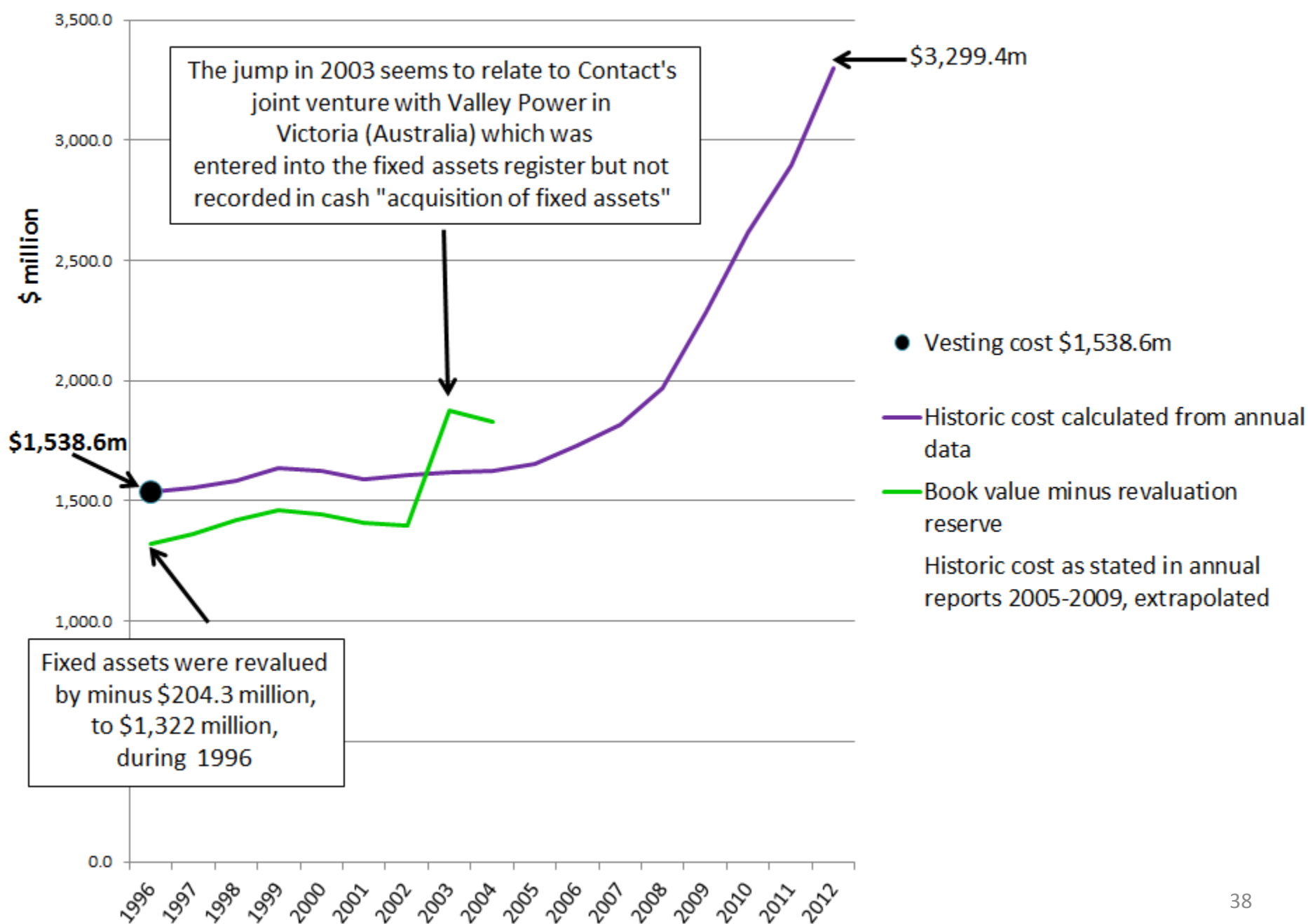
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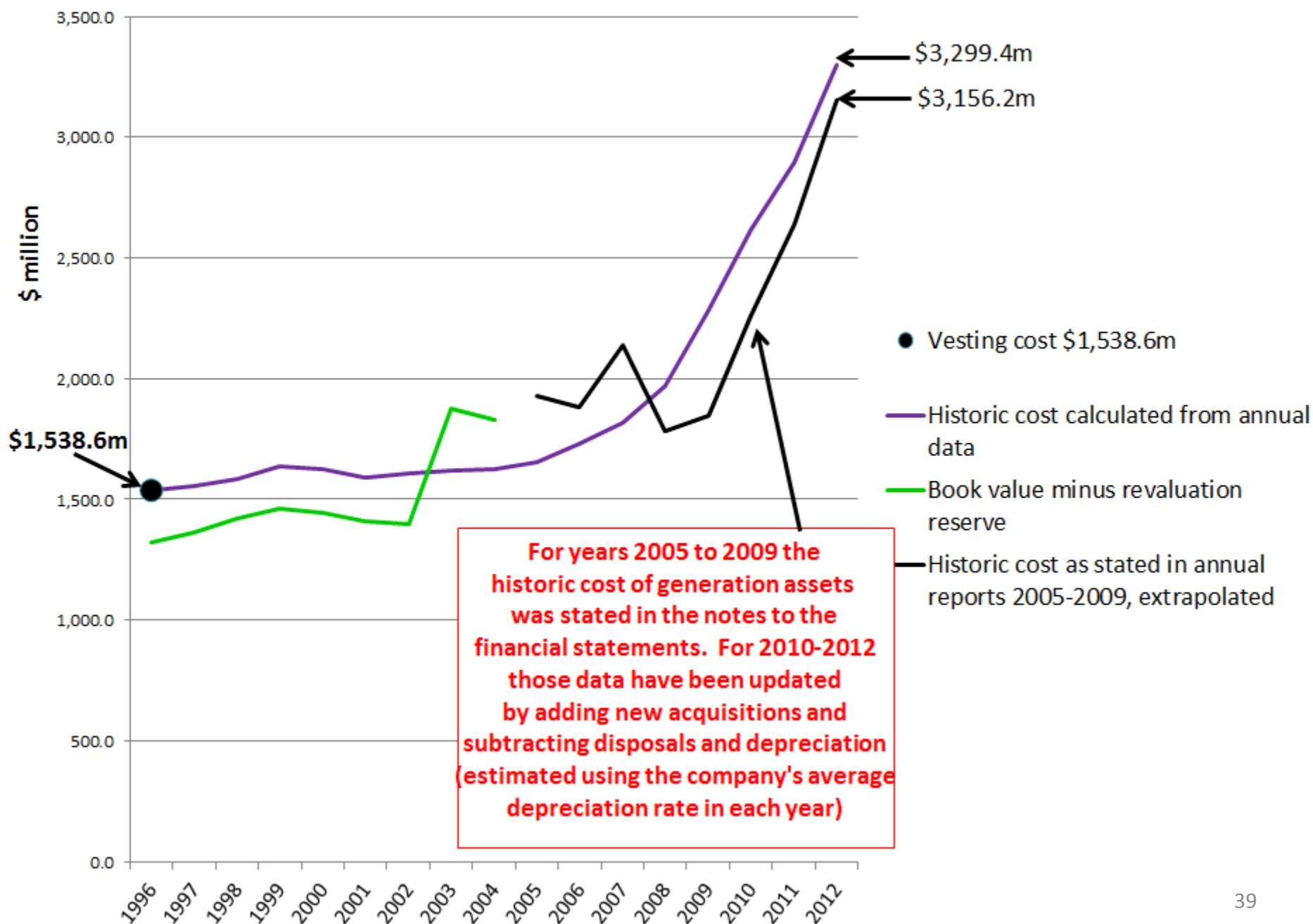
Reconstructing Contact Energy's historic cost of fixed assets



Reconstructing Contact Energy's historic cost of fixed assets



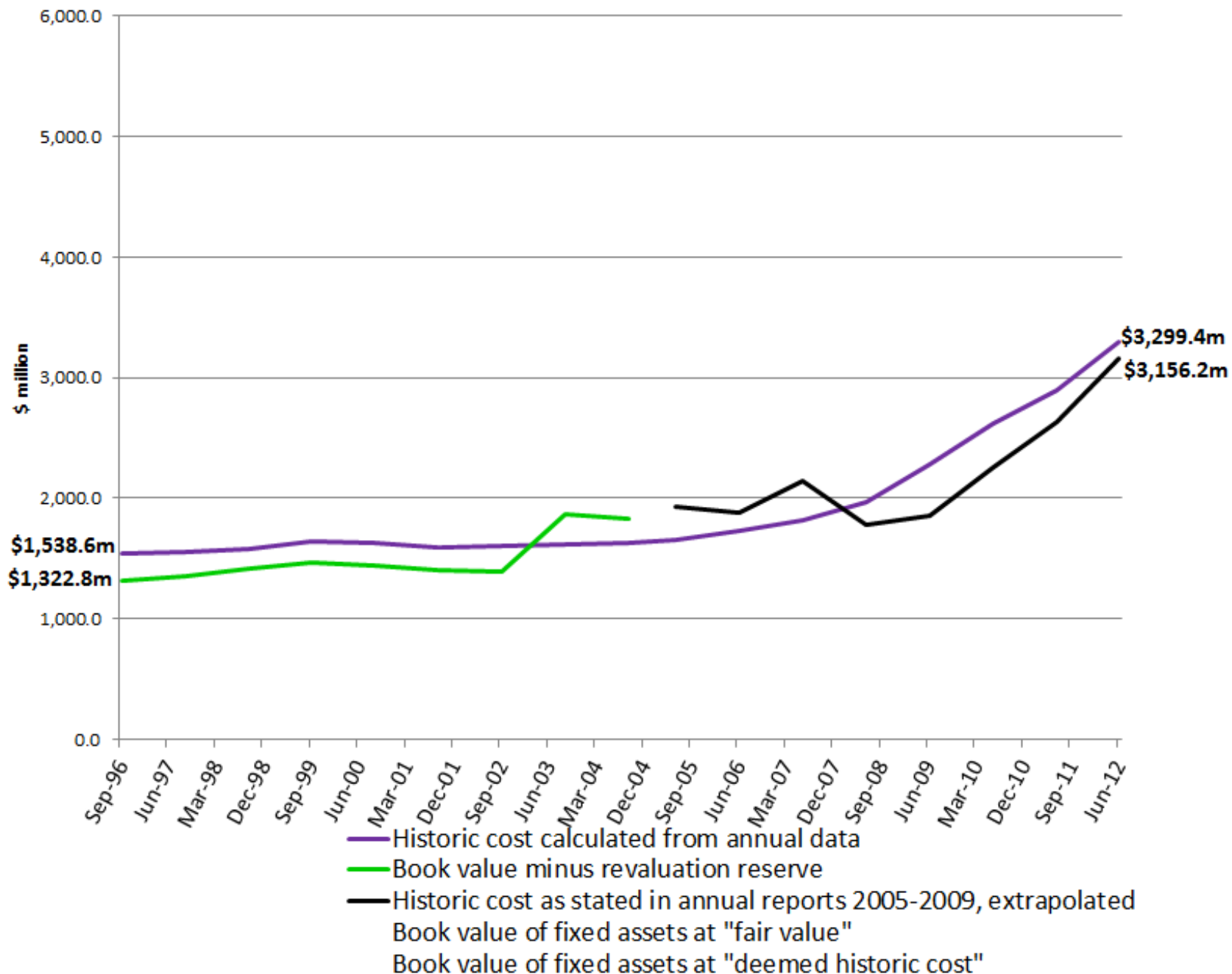
Reconstructing Contact Energy's historic cost of fixed assets



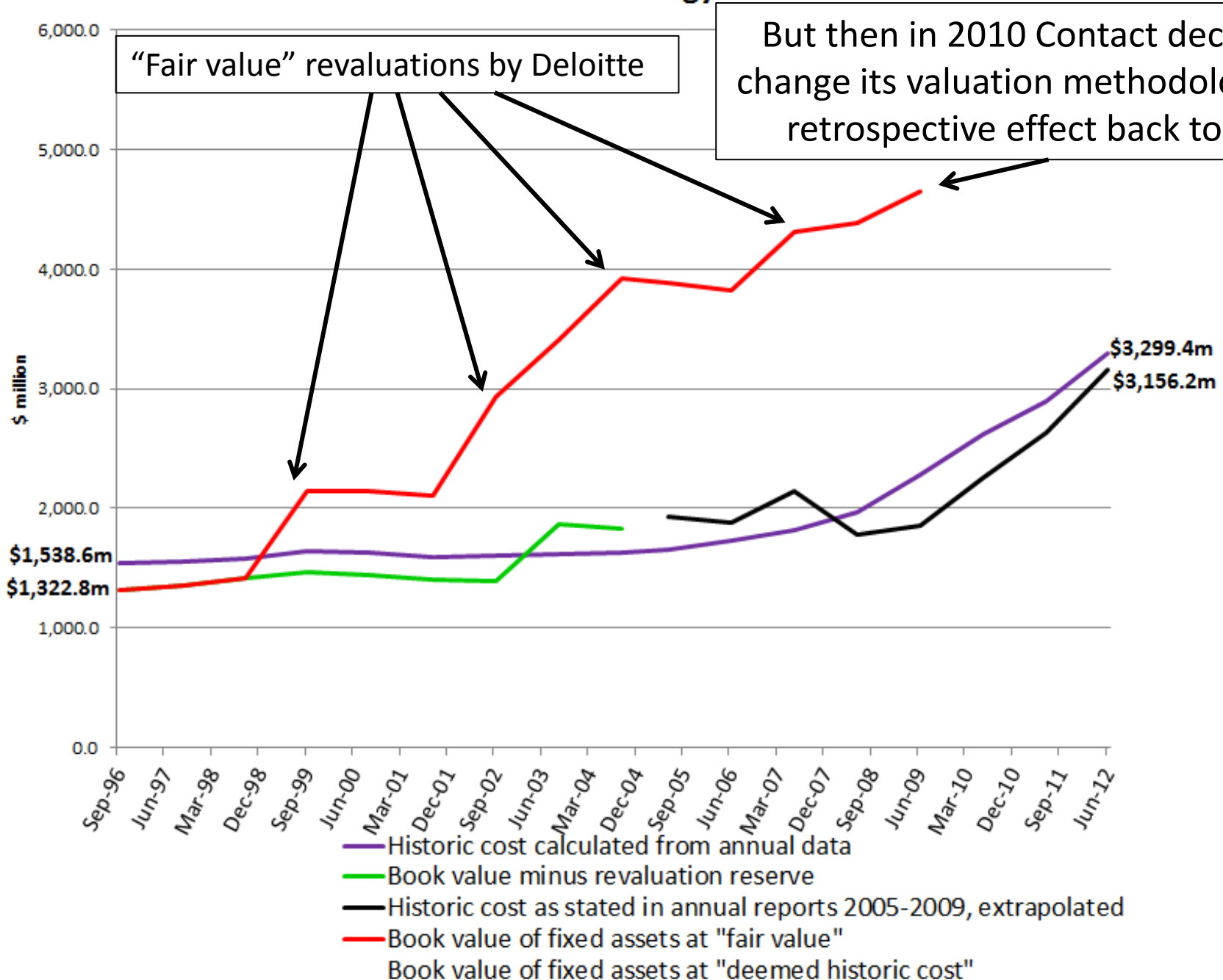
Key conclusion: a consistent series for historic cost can be constructed, and replicated using various methodologies, right back to February 1996, using Contact's own financial statements.

This will be important shortly.

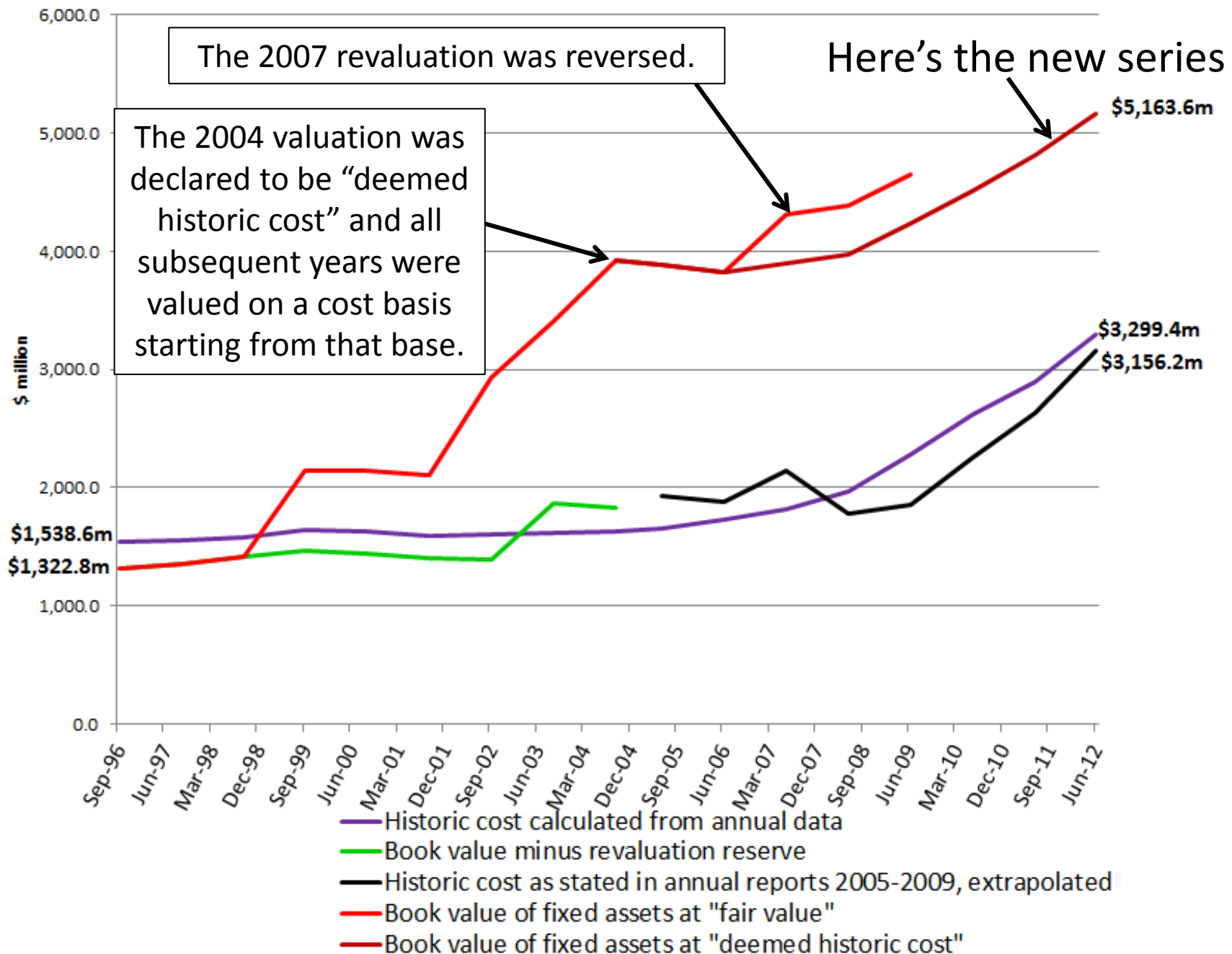
Contact Energy Fixed Assets



Contact Energy Fixed Assets



Contact Energy Fixed Assets



Contact's stated reason for making the switch from fair value to historic cost:

“The cost valuation basis is considered a reliable basis for measurement of generation plant and equipment. Cost also provides relevant information about the long-term cash-generating performance of the core generation plant and equipment, which is the primary objective for Contact in owning the plant and equipment. For example, core metrics such as return on capital invested in plant and equipment can be calculated without adjustment to the return, or the investment, for the impact of asset revaluations. Cost aligns with global industry practice for similar long life core operating assets. Cost also aligns with the policy of Contact's ultimate parent Origin Energy Limited (Origin).”

Contact Energy Annual Report 2010 p.60 Note 1

So why did Contact start its “cost-based” calculation from 2004 rather than 1996?

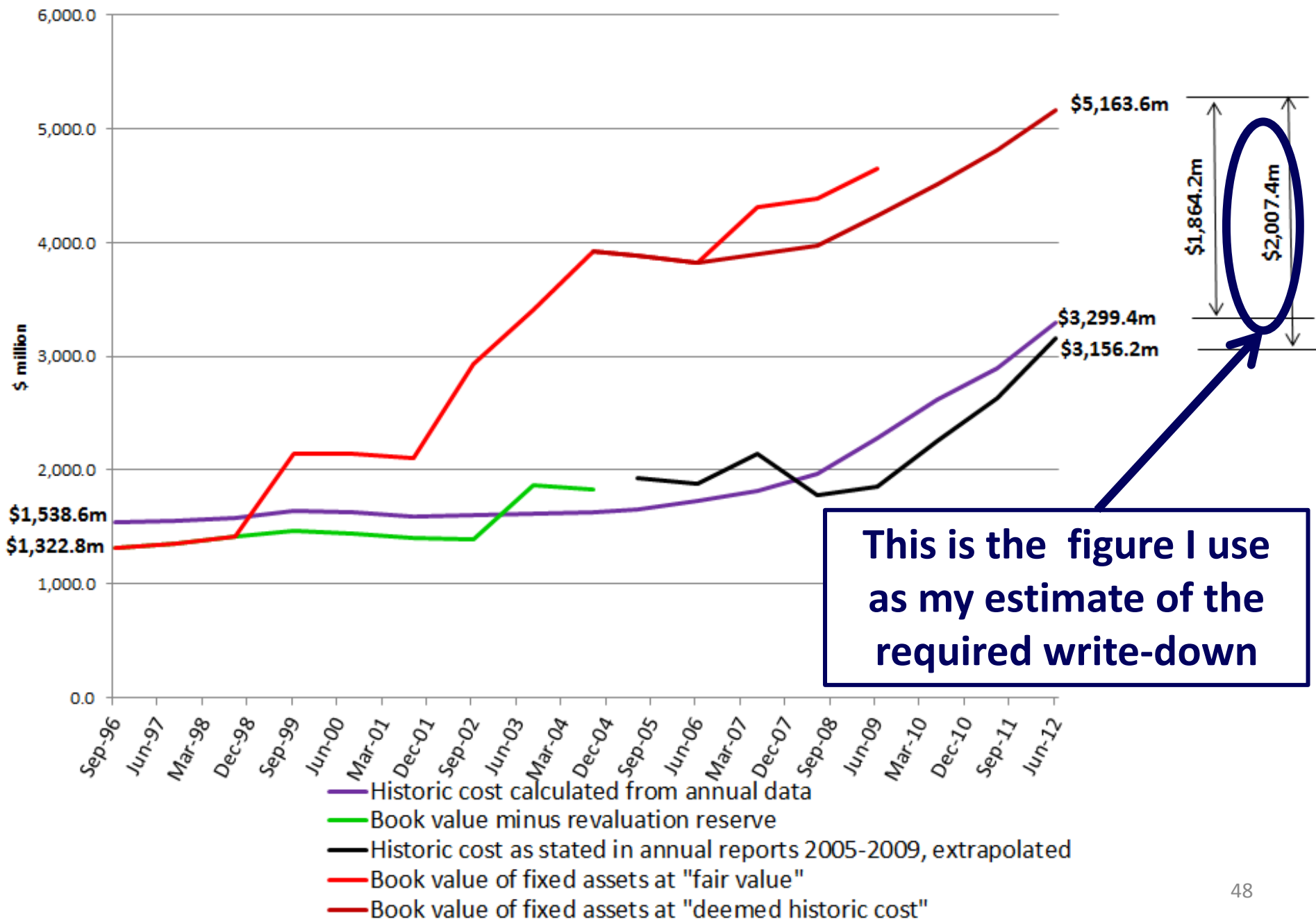
Contact Energy Ltd *Annual Report 2010* p.60 Note 1 to the accounts [emphasis added]:

“Contact has elected to make a voluntary change in accounting policy in relation to the measurement basis for generation plant and equipment and move to a cost basis as it is reliable and more relevant. The change in accounting policy has been applied retrospectively to 1 October 2004, the date of Contact’s transition to NZ IFRS and the date of acquisition of 51.4 per cent of the shares in Contact by Origin. **Fair value at 1 October 2004 is considered deemed historical cost owing to the impracticability of determining actual cost back to the original asset purchase date.**”

The decision to use the 2004 valuations as “deemed historic cost” was transparent opportunism

- By 2004 Contact had carried through its major revaluations, bringing book value to \$3.9 billion against actual historic cost of \$1.6 billion.
- By switching (in its 2010 financial statements) to the so-called “cost basis”, Contact basically sought the same outcome that the lines companies had secured from the Commerce Commission in 2004
- But we have just seen that historic cost can be consistently calculated right back to vesting date in February 1996.
- The alleged “impracticability” of doing this was nothing of the sort – it was simple unwillingness to give up the big revaluation gains.
- Reversing the 2007 revaluation of \$400 million was a small price to pay for being ready to capture any regulator that might appear
- The Commerce Commission’s 2004 surrender to lines companies’ lobbying would have served as a vital precedent
- Prediction: this will be the basis on which Contact will be lobbying Labour and the Greens to keep their hands off its “deemed historic cost” of fixed assets

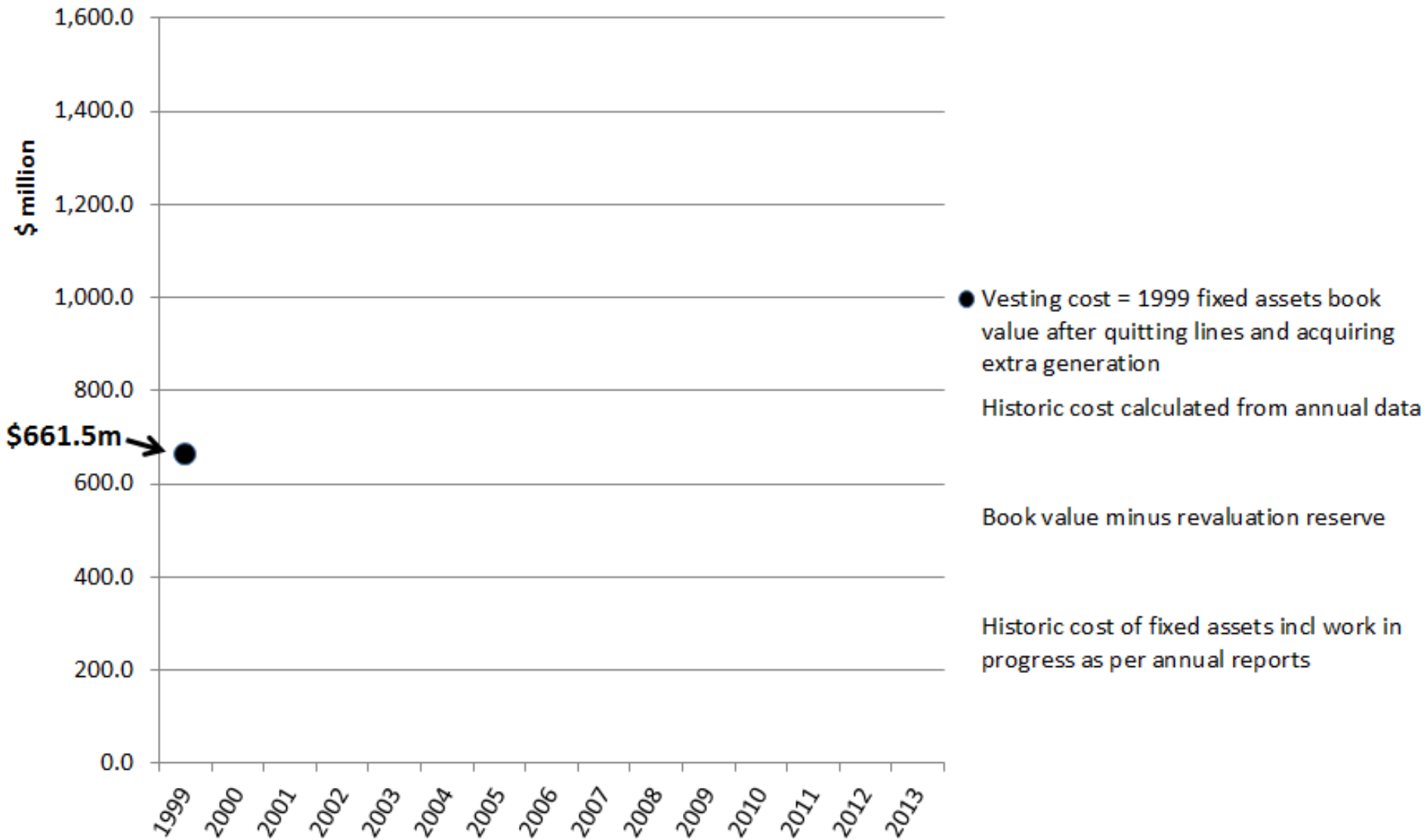
Contact Energy Fixed Assets



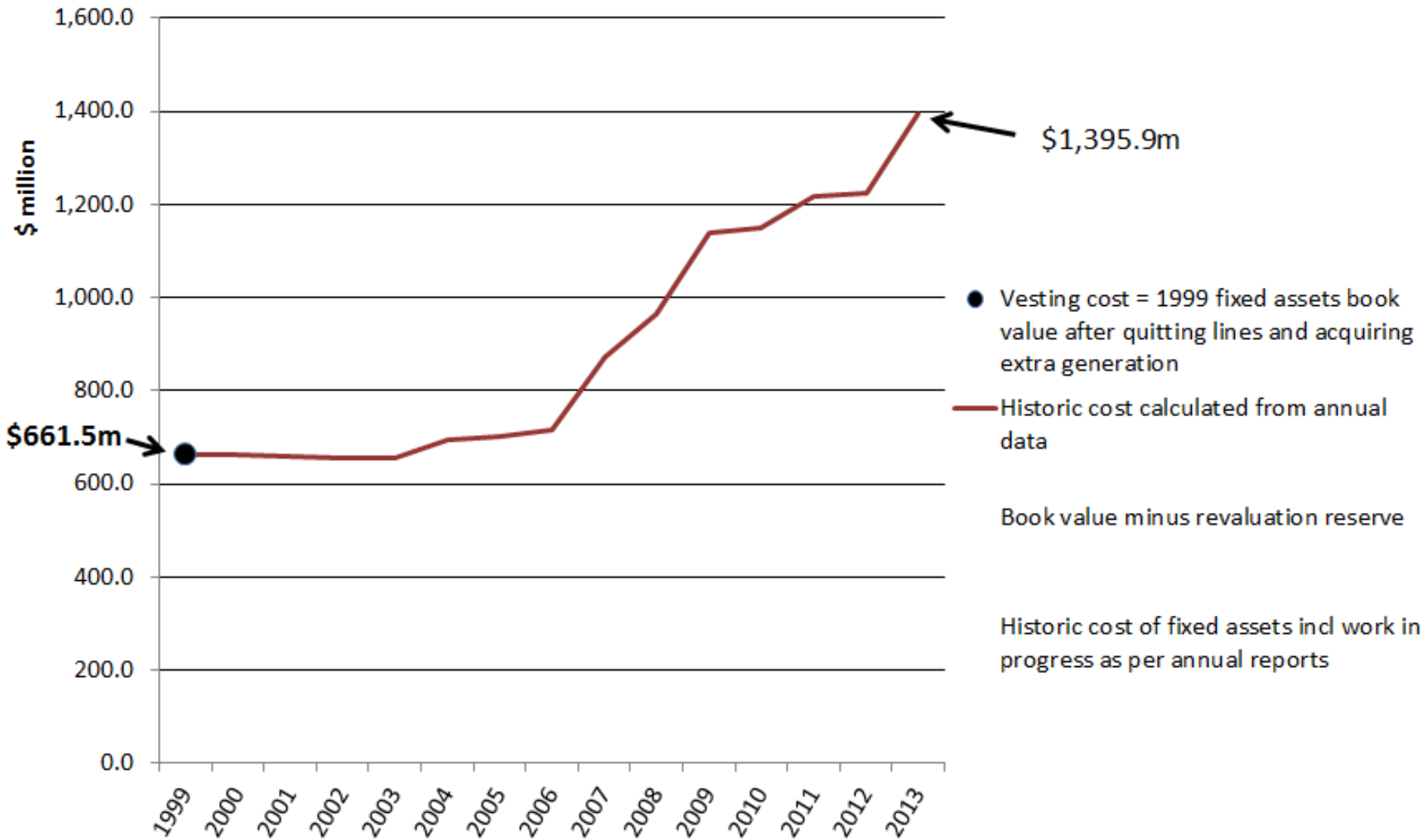
Trustpower

- Trustpower started out as a distributor and shifted into the gentailer camp only in 1999 when it opted to divest its lines business, retain its generation, and expand by buying-up a number of smaller-scale generation assets
- As at March 1999, the lines had been divested and the \$621 million of generation assets were carried at acquisition cost (apart from \$6 million of residual revaluations from the company's 1998 market-value exercise on the limited generation it had then owned).
- So my analysis treats March 1999 as the start date

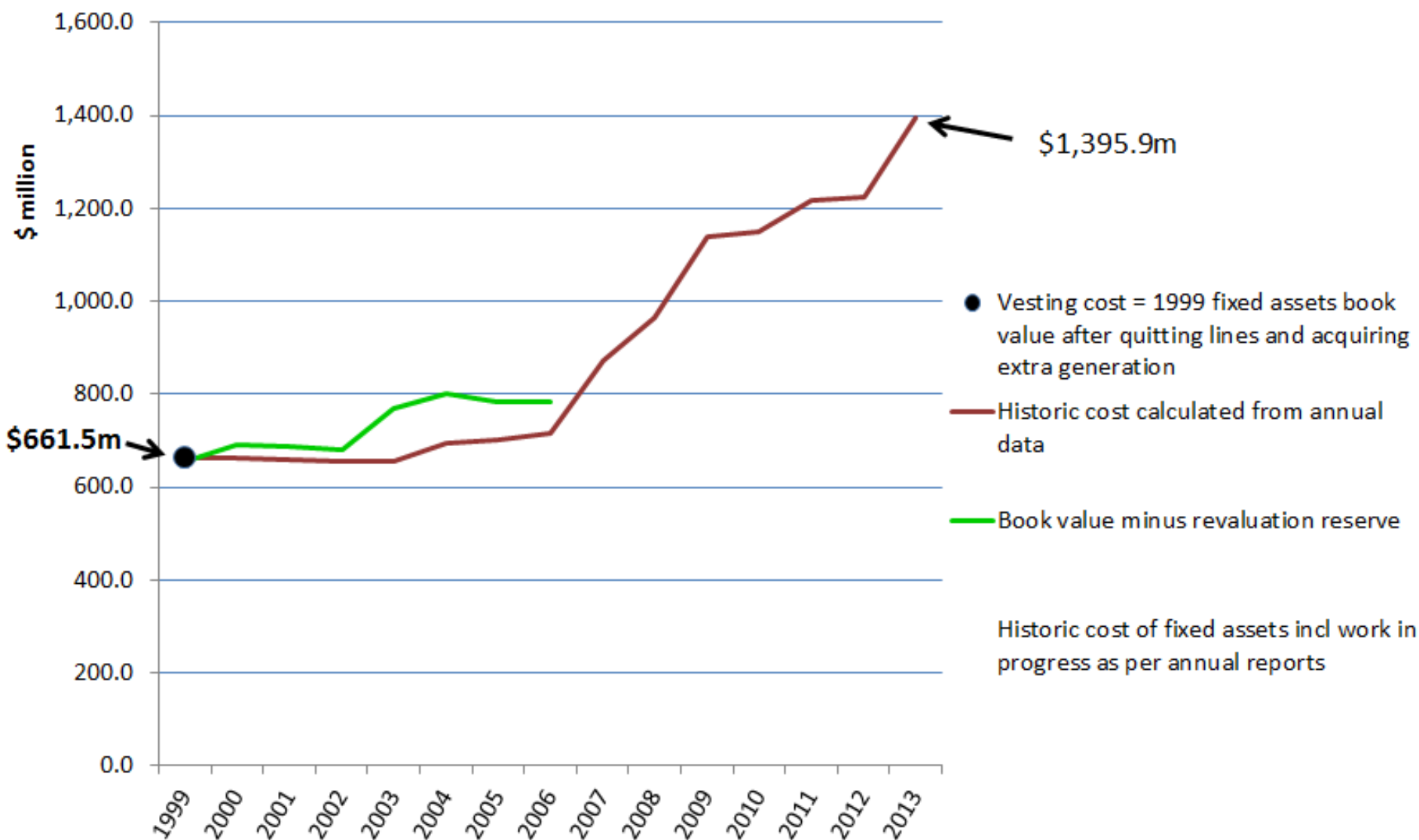
Reconstructing Trustpower's historic cost of fixed assets



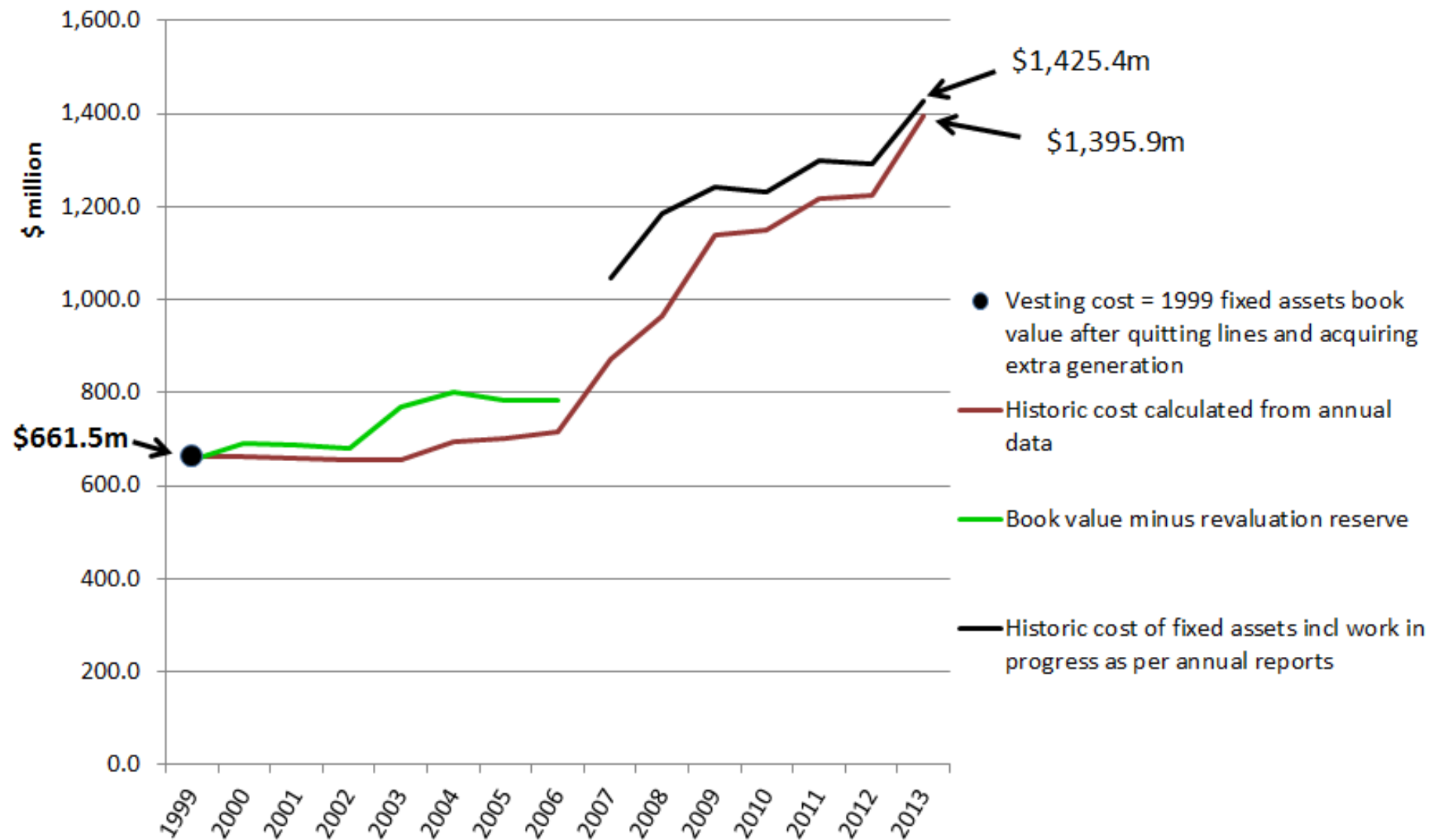
Reconstructing Trustpower's historic cost of fixed assets



Reconstructing Trustpower's historic cost of fixed assets



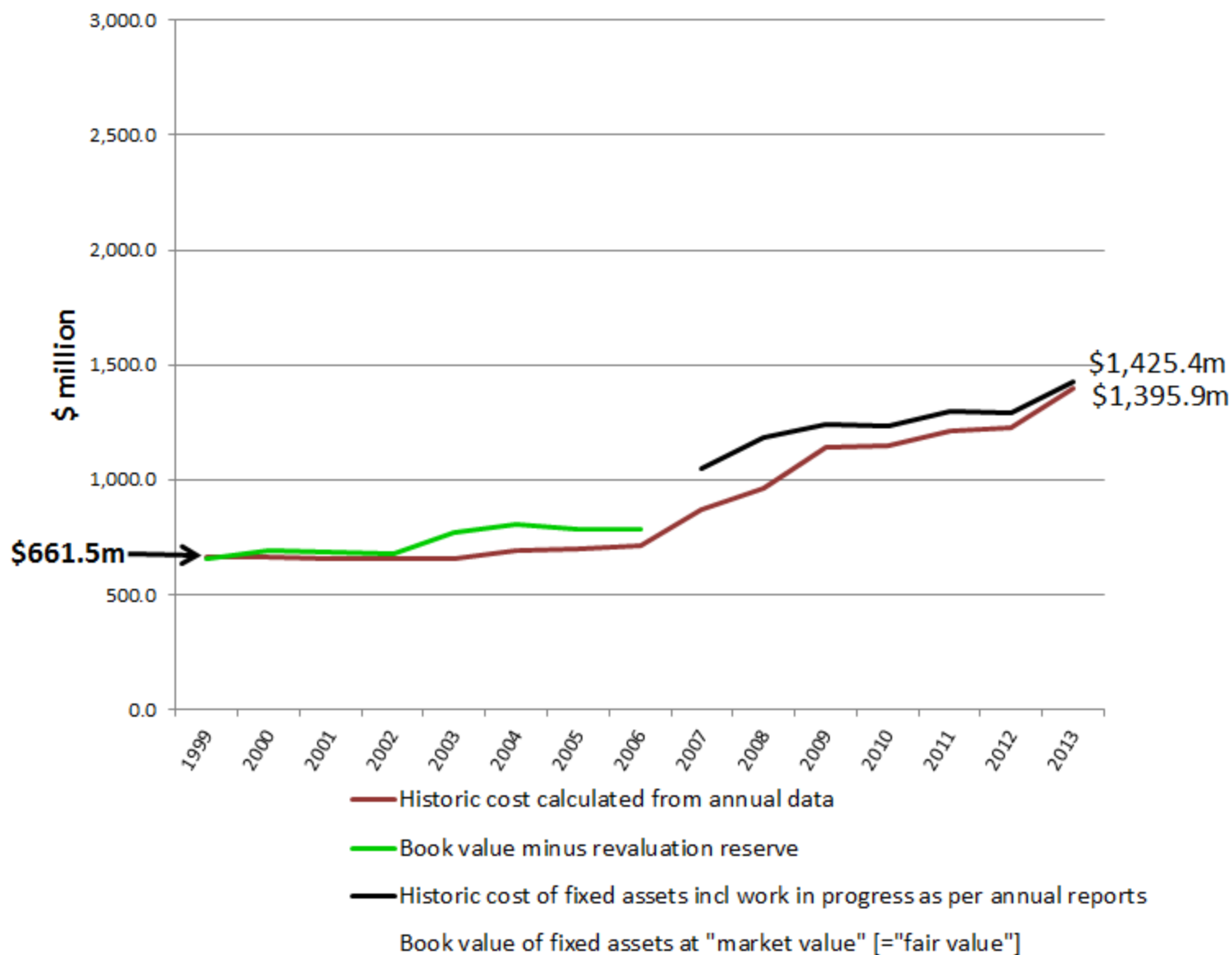
Reconstructing Trustpower's historic cost of fixed assets



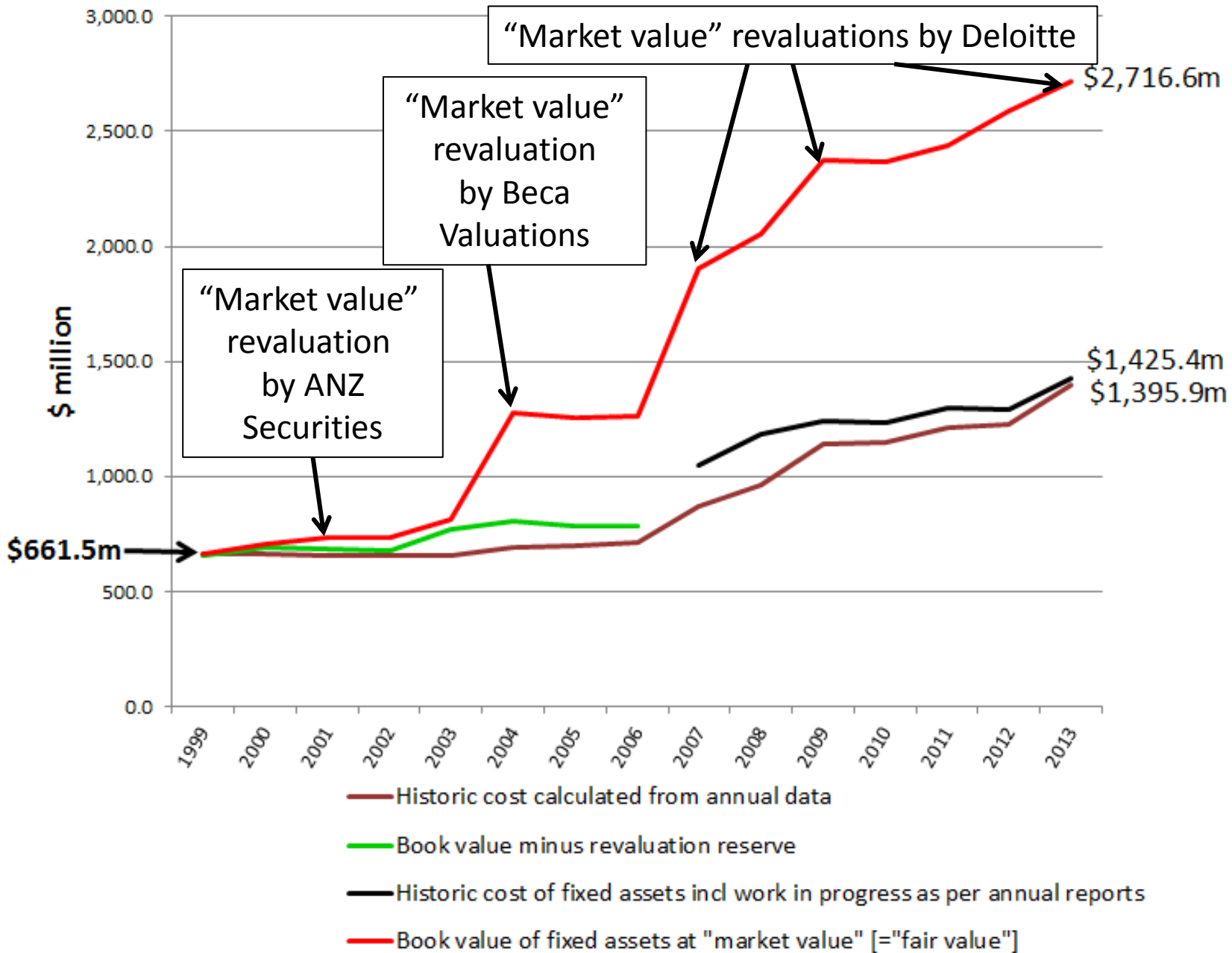
So a US regulator would have allowed Trustpower to recover, through its revenue, a “fair return” on and of a 2013 ratebase of \$1.4 billion

What has Trustpower charged consumers for under its “market value” [= fair-value] approach?

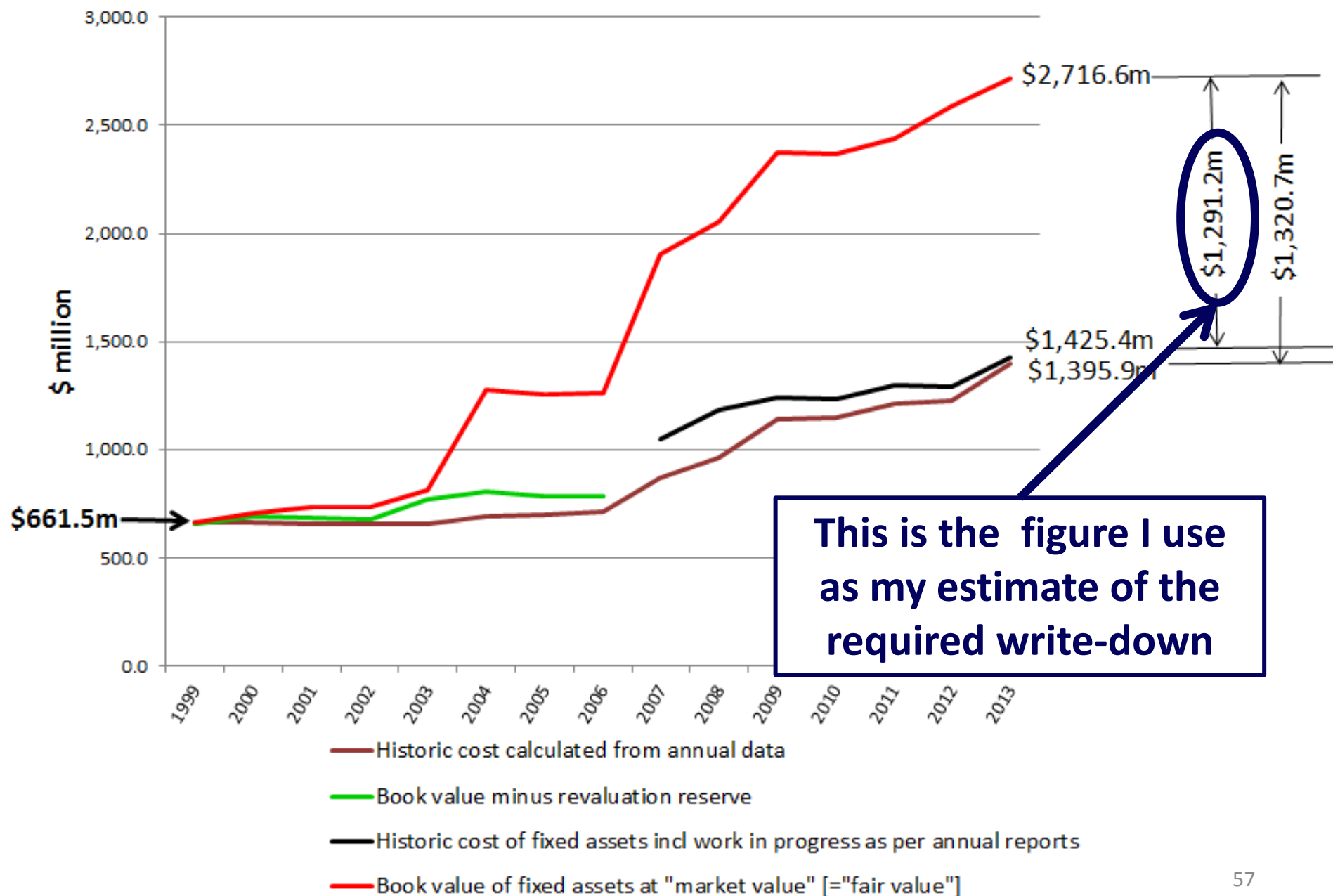
Trustpower Fixed Assets



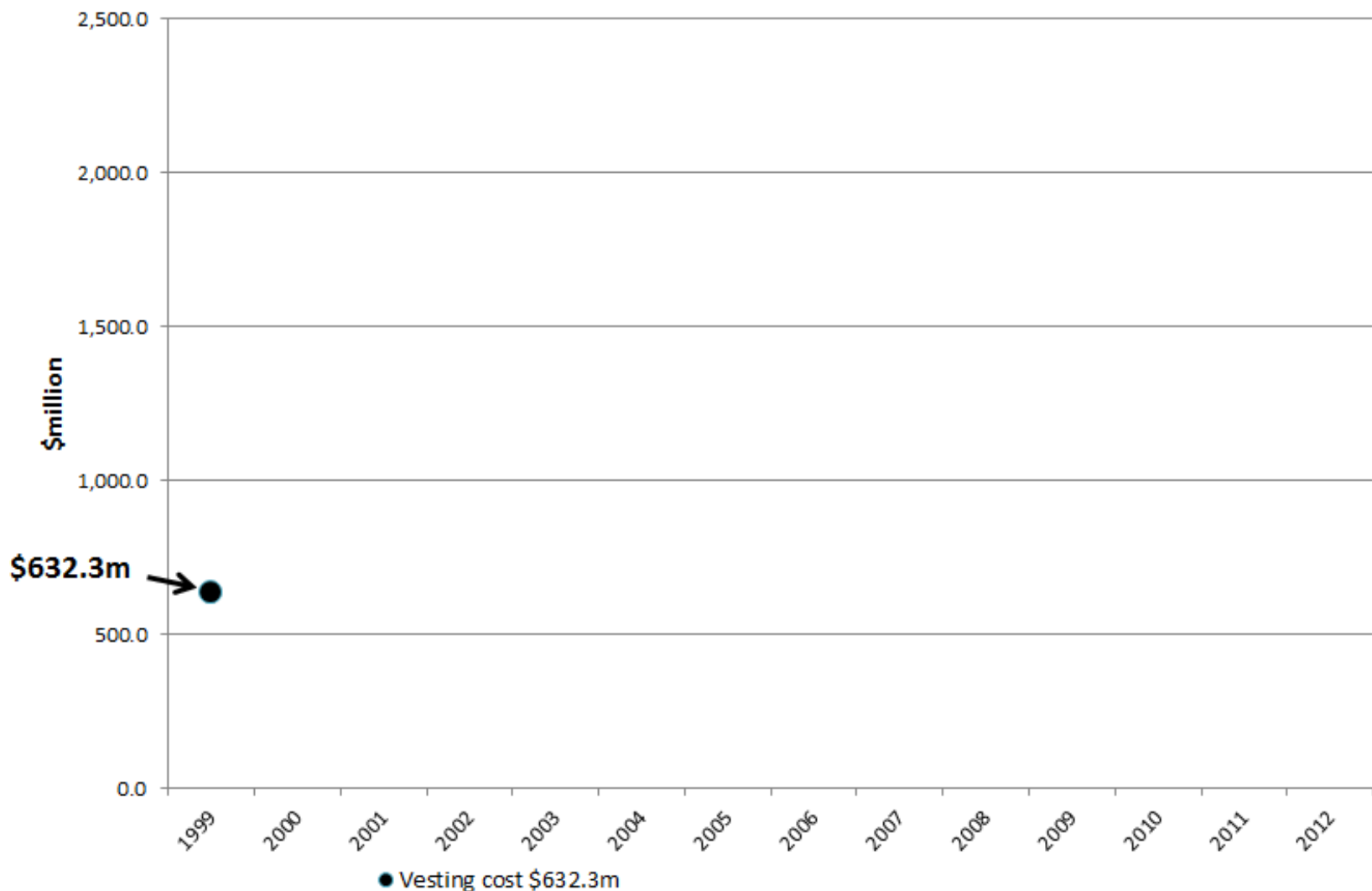
Trustpower Fixed Assets



Trustpower Fixed Assets



Reconstructing Genesis Energy's historic cost of fixed assets

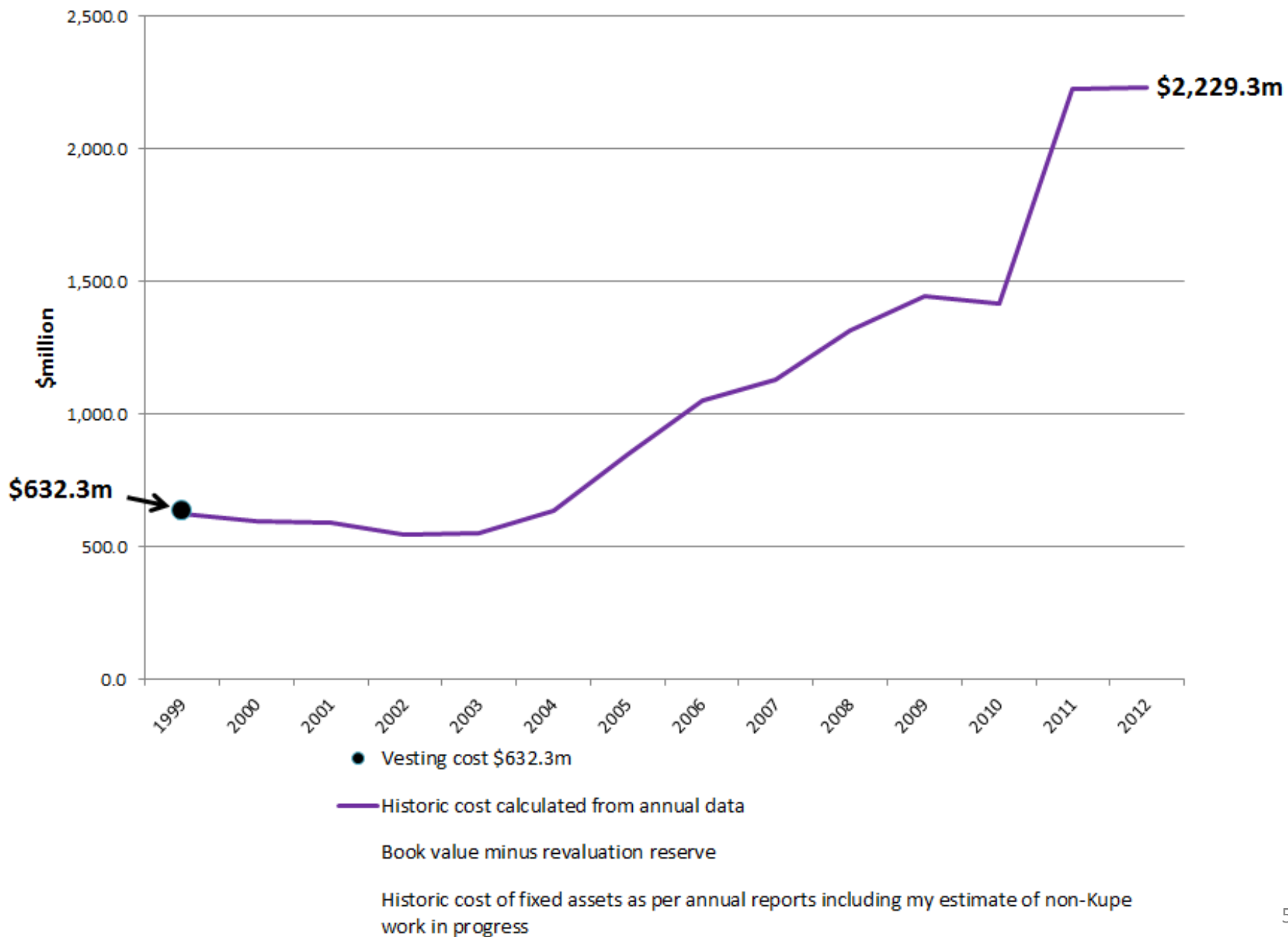


Historic cost calculated from annual data

Book value minus revaluation reserve

Historic cost of fixed assets as per annual reports including my estimate of non-Kupe work in progress

Reconstructing Genesis Energy's historic cost of fixed assets



Reconstructing Genesis Energy's historic cost of fixed assets

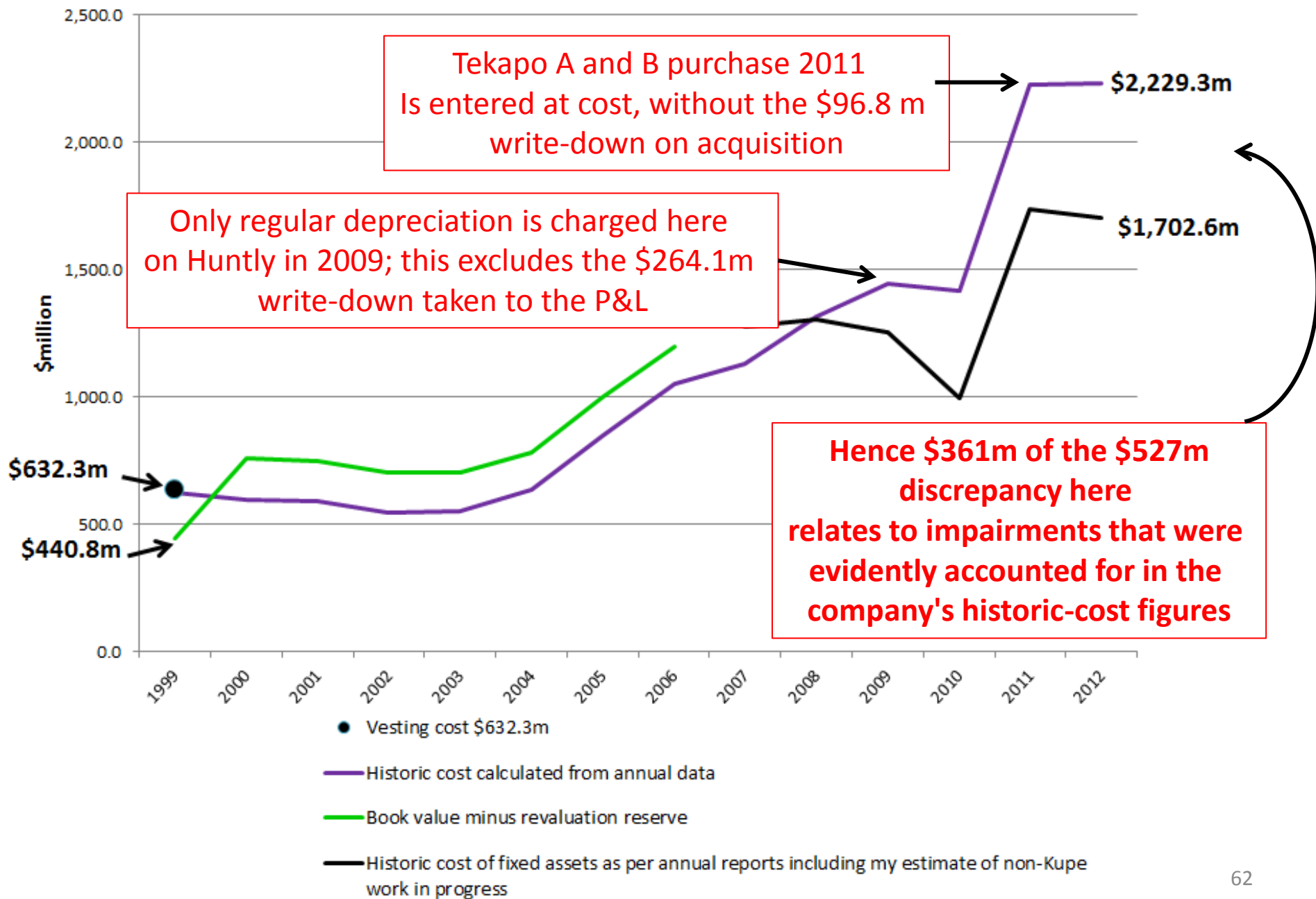


Historic cost of fixed assets as per annual reports including my estimate of non-Kupe work in progress

Reconstructing Genesis Energy's historic cost of fixed assets



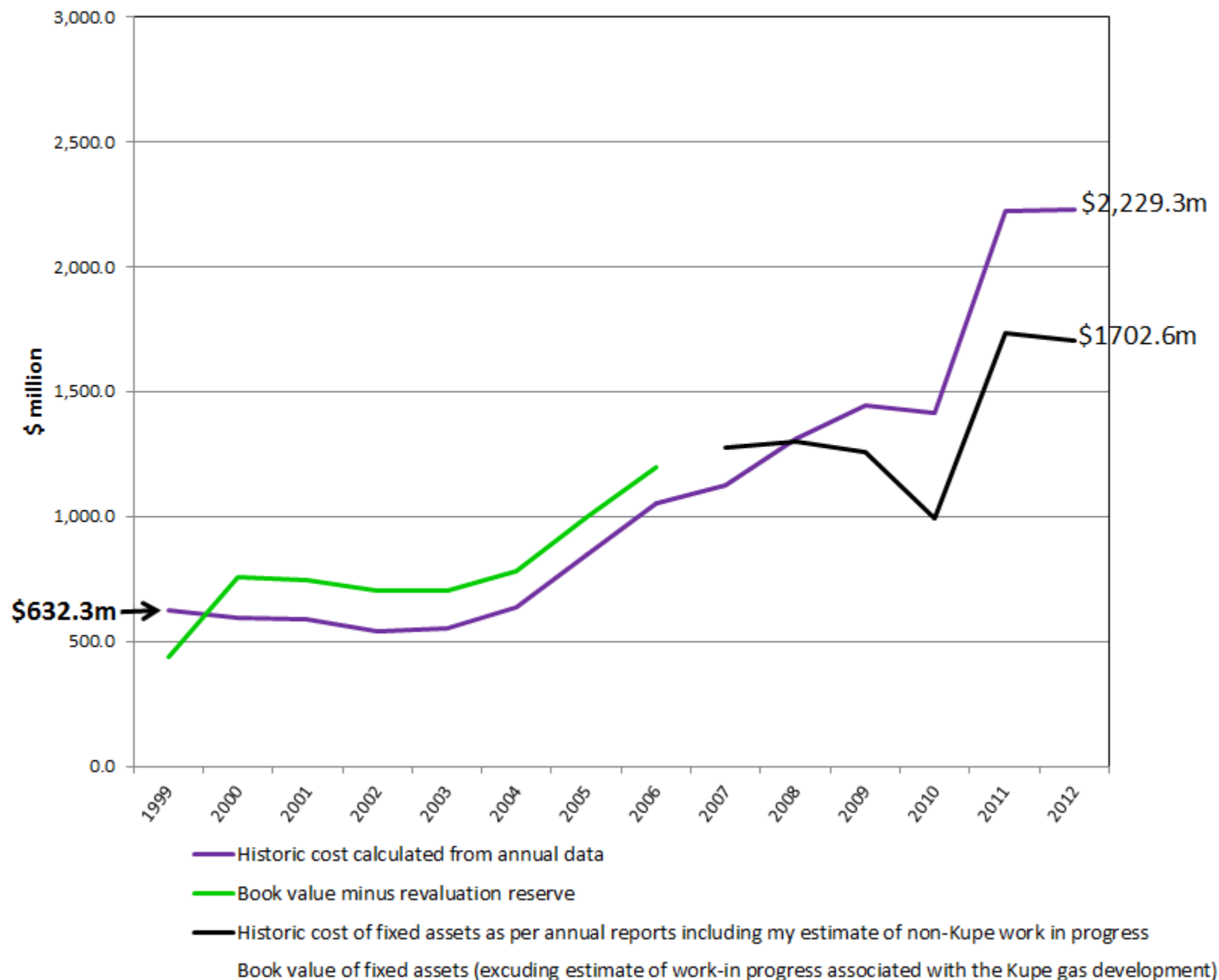
Reconstructing Genesis Energy's historic cost of fixed assets



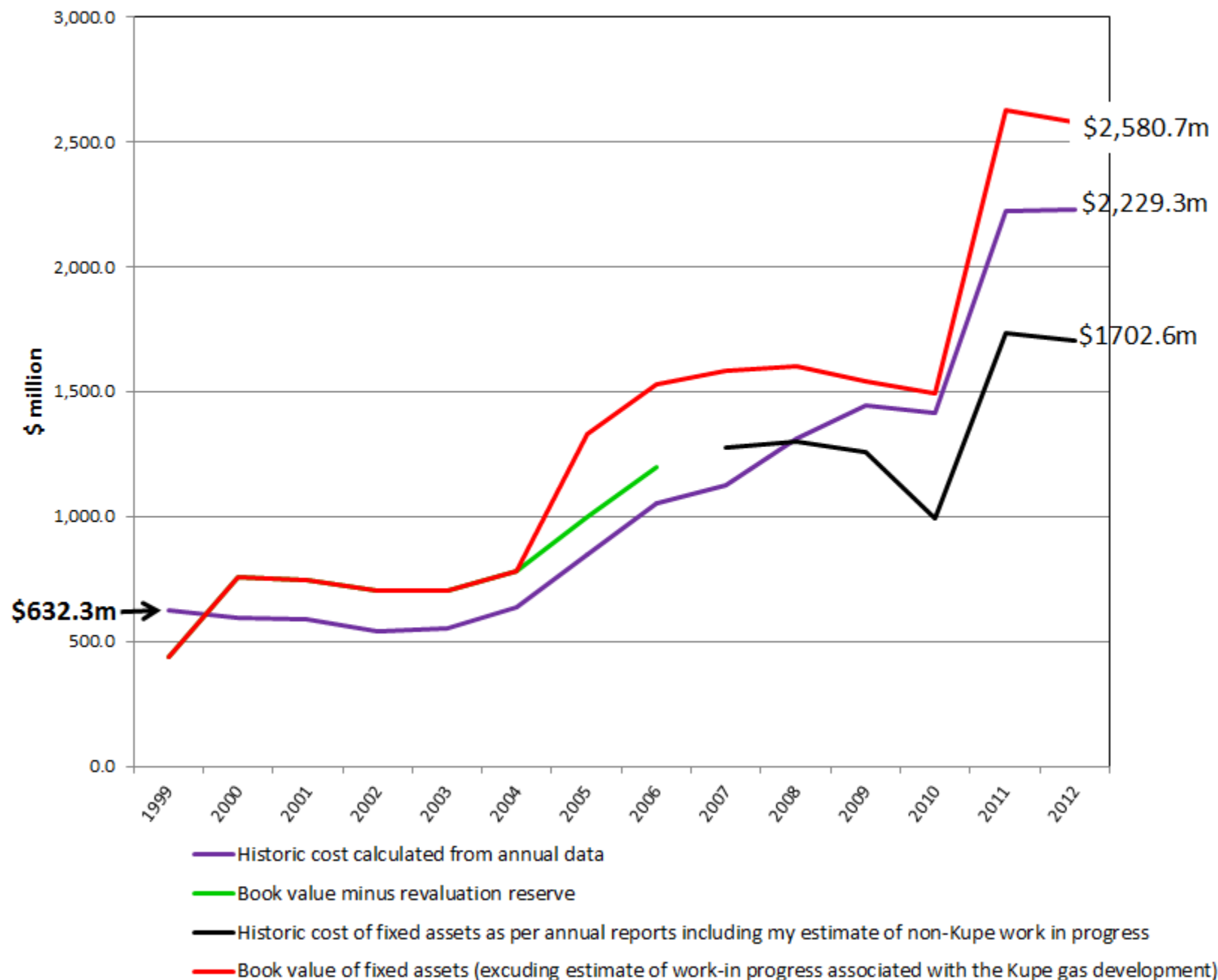
Those two write-downs might or might not have been recognised by a regulator

- A regulator might well have required a higher depreciation rate on Huntly from the outset
- A regulator would probably have objected to Genesis purchasing the Tekapo A & B assets at a price that exceeded their fair value
- So I'm inclined to take the company's own \$1.7 billion figure as the counterfactual regulatory asset base
- Now to compare this with the declared book value:

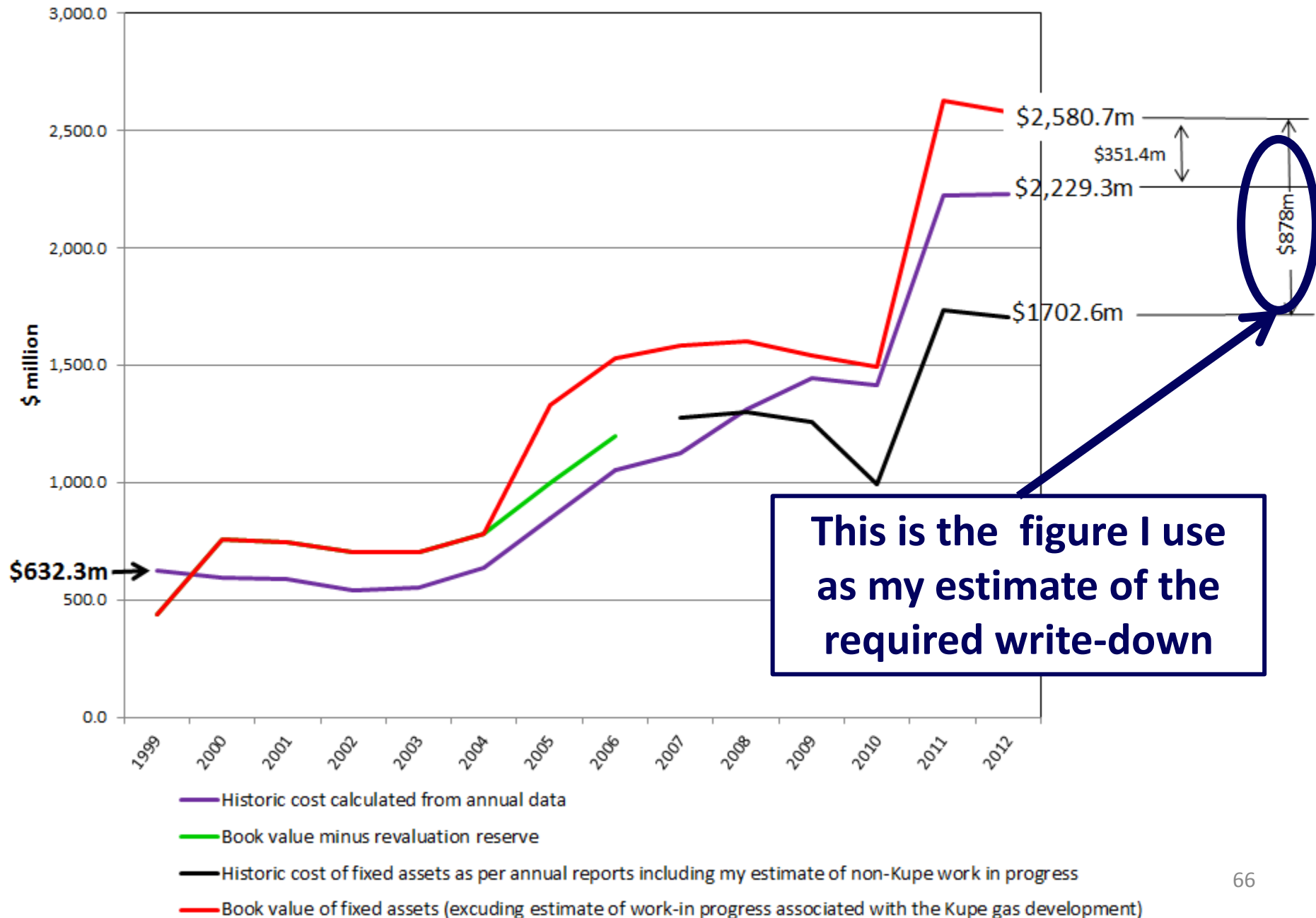
Genesis Fixed Assets



Genesis Fixed Assets



Genesis Fixed Assets



Conclusion: Genesis is the least exposed to regulatory risk of the five gentailers

- The reason is its relatively small hydro portfolio combined with the cost of running Huntly
- A write-down of \$878 million would take only 49% out of the 2012 shareholder equity of \$1.8 billion

Recall: Percentage of shareholders' equity at risk

	2012 Shareholder equity (\$mill)	Write-down (\$mill)	Equity remaining after write- down (\$mill)	Reduction (%)
Mighty River	3,014	2,839	175	94
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Source for shareholders' equity: Companies' Annual Reports

Three-quarters of shareholder equity is exposed

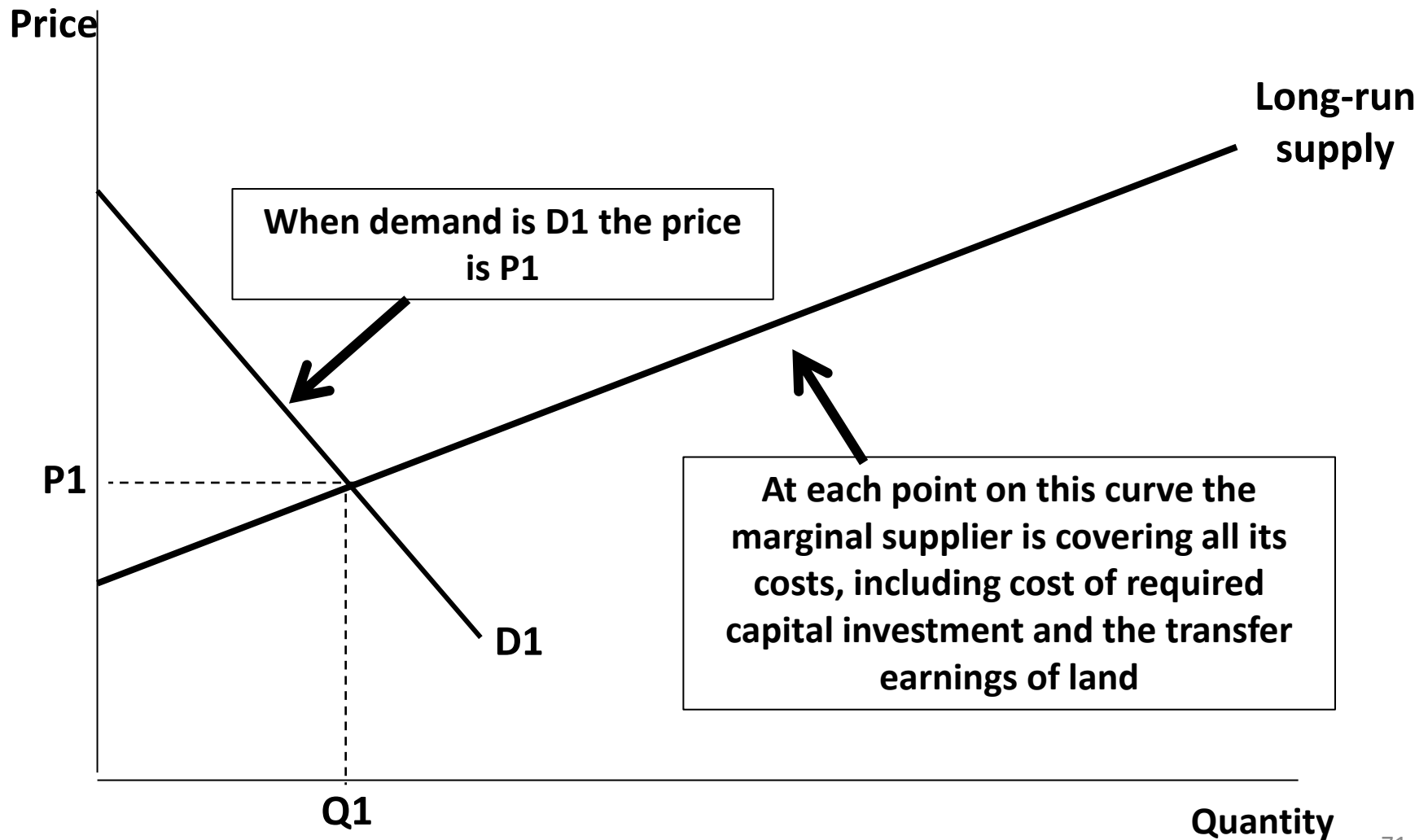
Wealth transfers and the market

- The revaluations I have been tracing are in no sense a necessary part of the electricity market. They were not required to enable the market to operate, and reversing them would not cause the market to fail
- We are dealing here with lump-sum transfers of wealth which have no immediate efficiency implications in terms of the neoliberal “public benefits test”
- Price-gouging is an issue of public morality, not market efficiency
- The gentailers have secured their wealth transfers (\$11.4 billion, 5% of GDP) by gouging defenceless small consumers – households and small businesses (MEUG members and Rio Tinto have protected their interests successfully)
- This brings us to the economic theory of rent

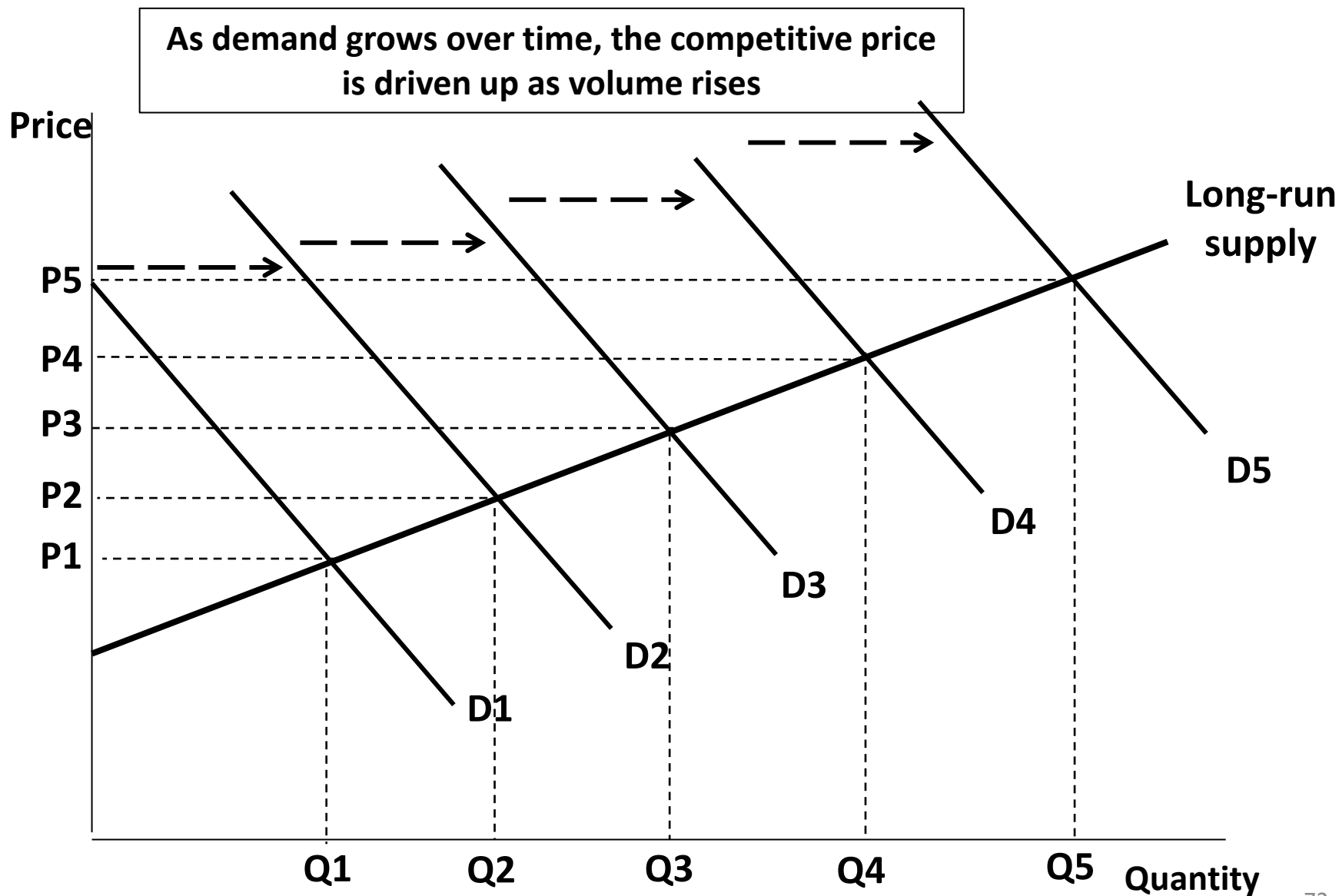
RENT

- Rent accrues to whoever happens to be the owner of a productive resource which lies “inside the margin” of a market
- Rent is not a cost – it is a demand-determined flow of revenue that accrues as a reward to ownership
- There are major ethical issues around the collection of rents because they are bound up with the nature and extent of property rights
- Nozick’s “Lockean proviso”, for example, states that property rights do not legitimately extend to extortionate wealth transfers (Robert Nozick, *Anarchy, State and Society* 1986 pp.176-182.)
- The common-law ideas of ‘prime necessity’ and ‘essential facilities’ embody this notion that charges must be “fair and reasonable”
- [Are the NZ courts a “price-fixing authority” or not? (*Transpower v Vector* says no; merits appeals from Commerce Commission decisions say yes)]

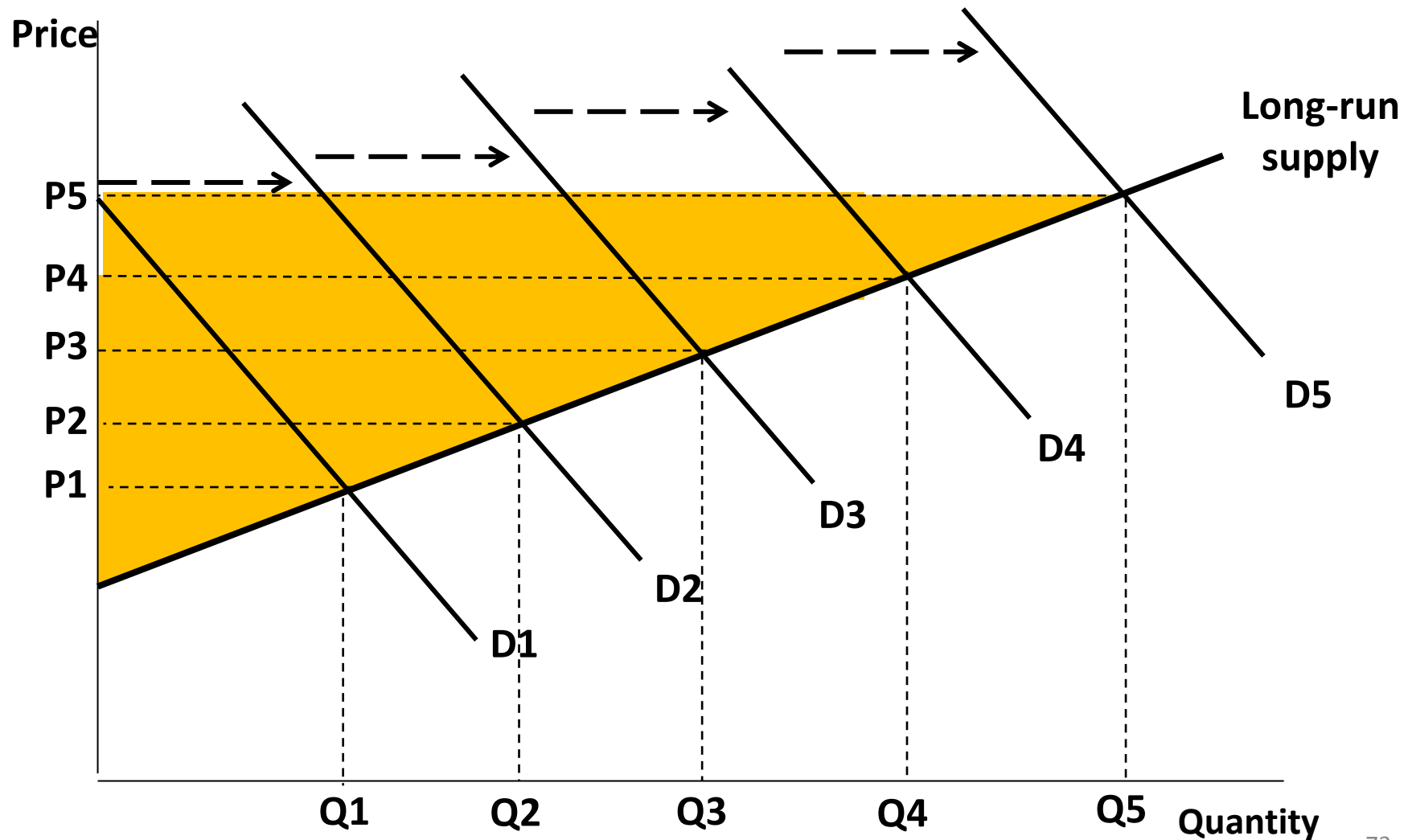
A competitive industry with an upward-sloping long-run supply curve (a “rising-cost industry”) and growing demand



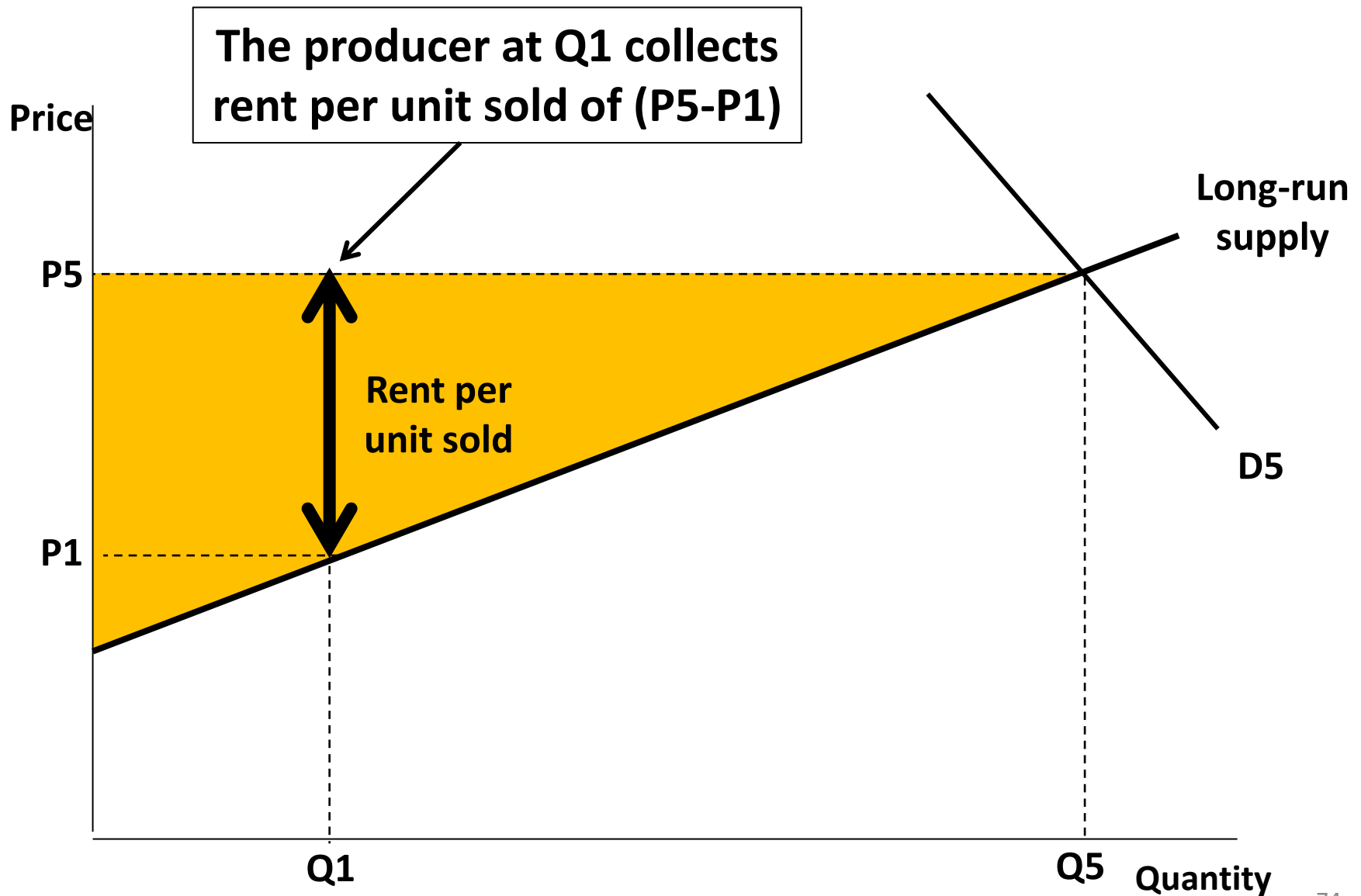
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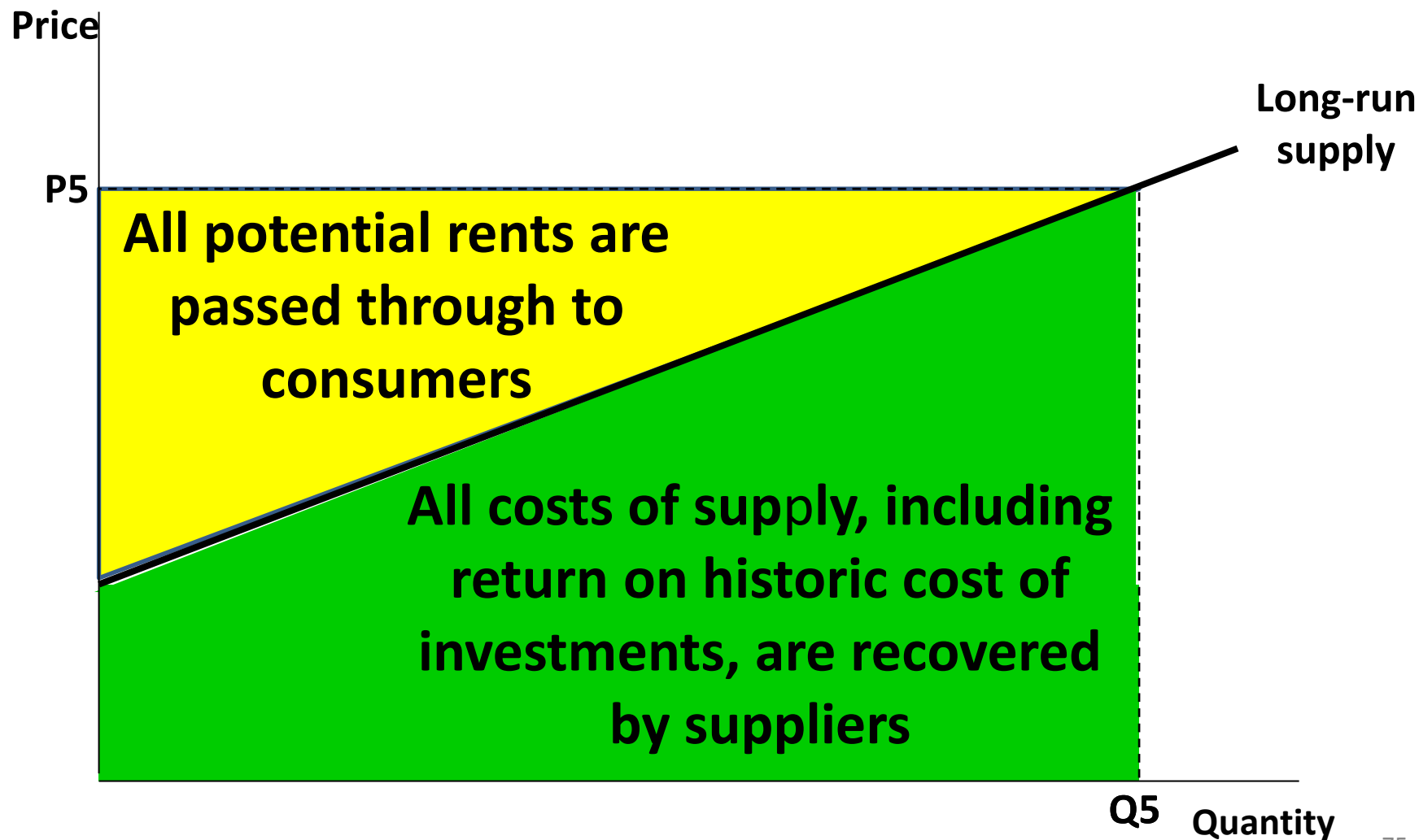
“Ricardian rent” is secured by the owners of infra-marginal production as the price is driven up at the margin:



When demand is D5, market quantity is Q5, and “competitive price” is P5, total Ricardian rent is the yellow triangle.



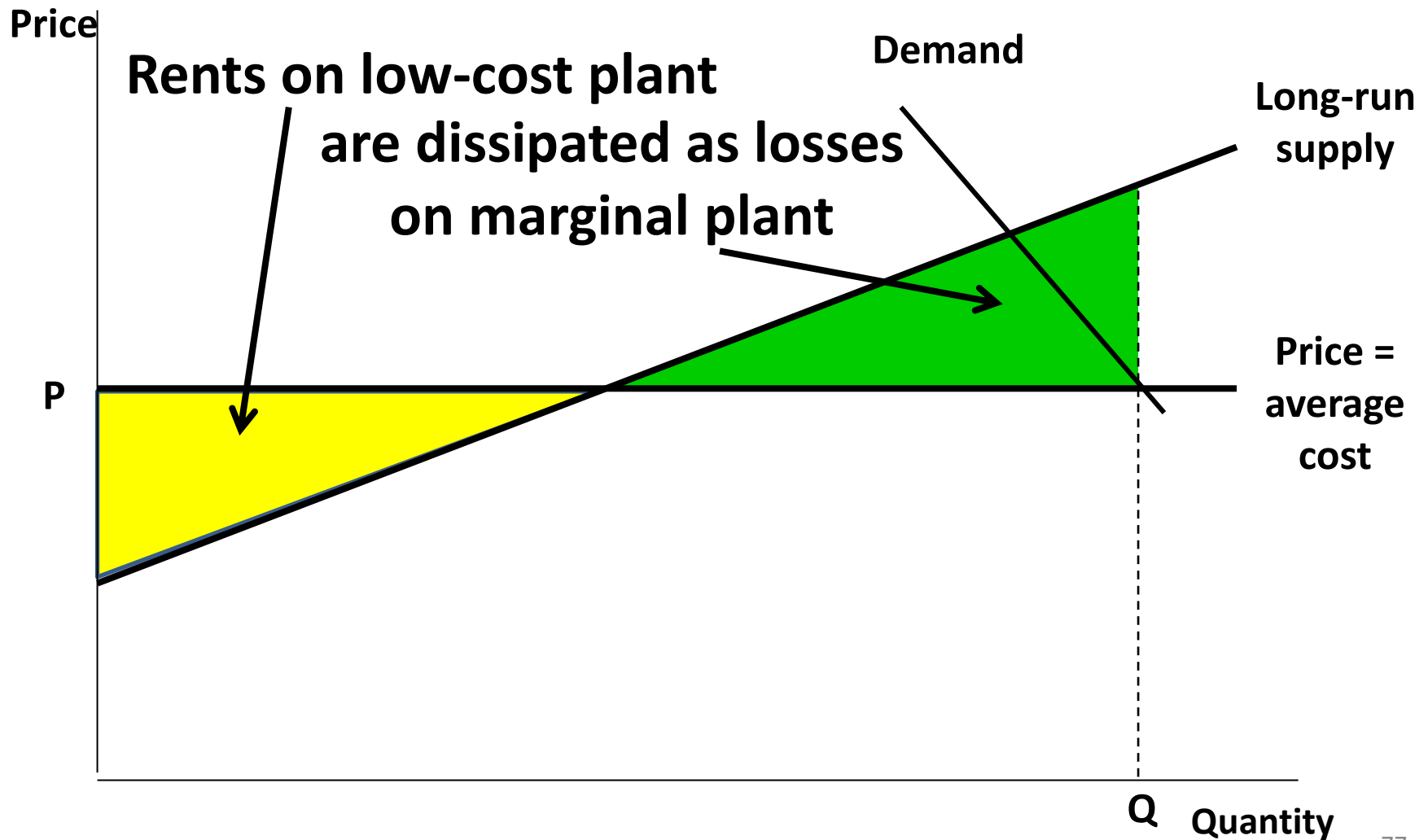
The historic-cost [sometimes called “least-cost”] regulatory model that has prevailed in the USA since 1944 requires all such rent to be passed through to consumers as a condition of allowing private firms to operate the supply system



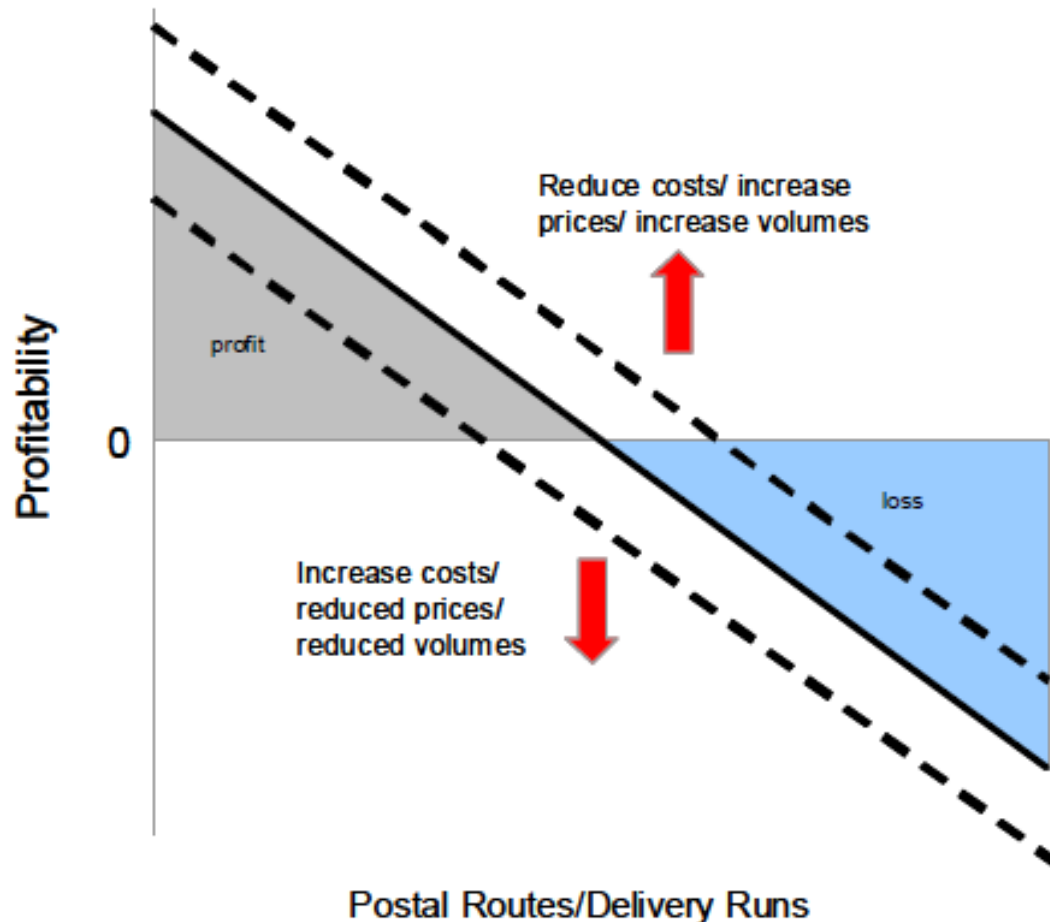
The US Supreme Court's *Hope* decision set the basis for subsequent utility regulation in the USA: *Federal Power Commission v Hope Natural Gas Company*, 320 U.S. 591 (1944).

“Rates which enable the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed certainly cannot be condemned as invalid, **even though they might produce only a meager return on the so-called 'fair value' rate base.**”

This means that price is set equal to average cost => the regulated firm supports its high-cost marginal plant out of total allowed revenues and just breaks even (including fair return on capital)

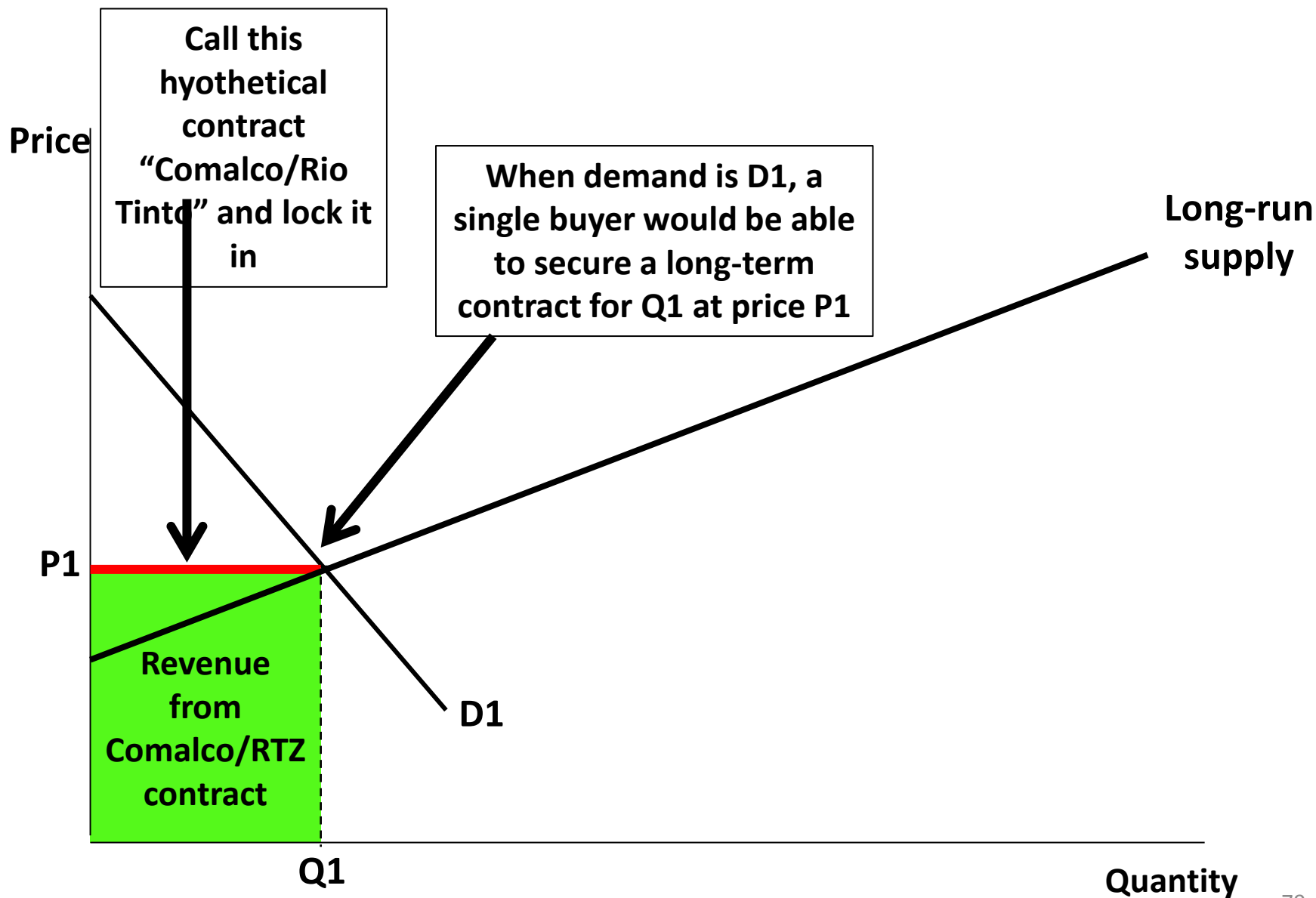


(Some New Zealand SOEs still price on this basis)

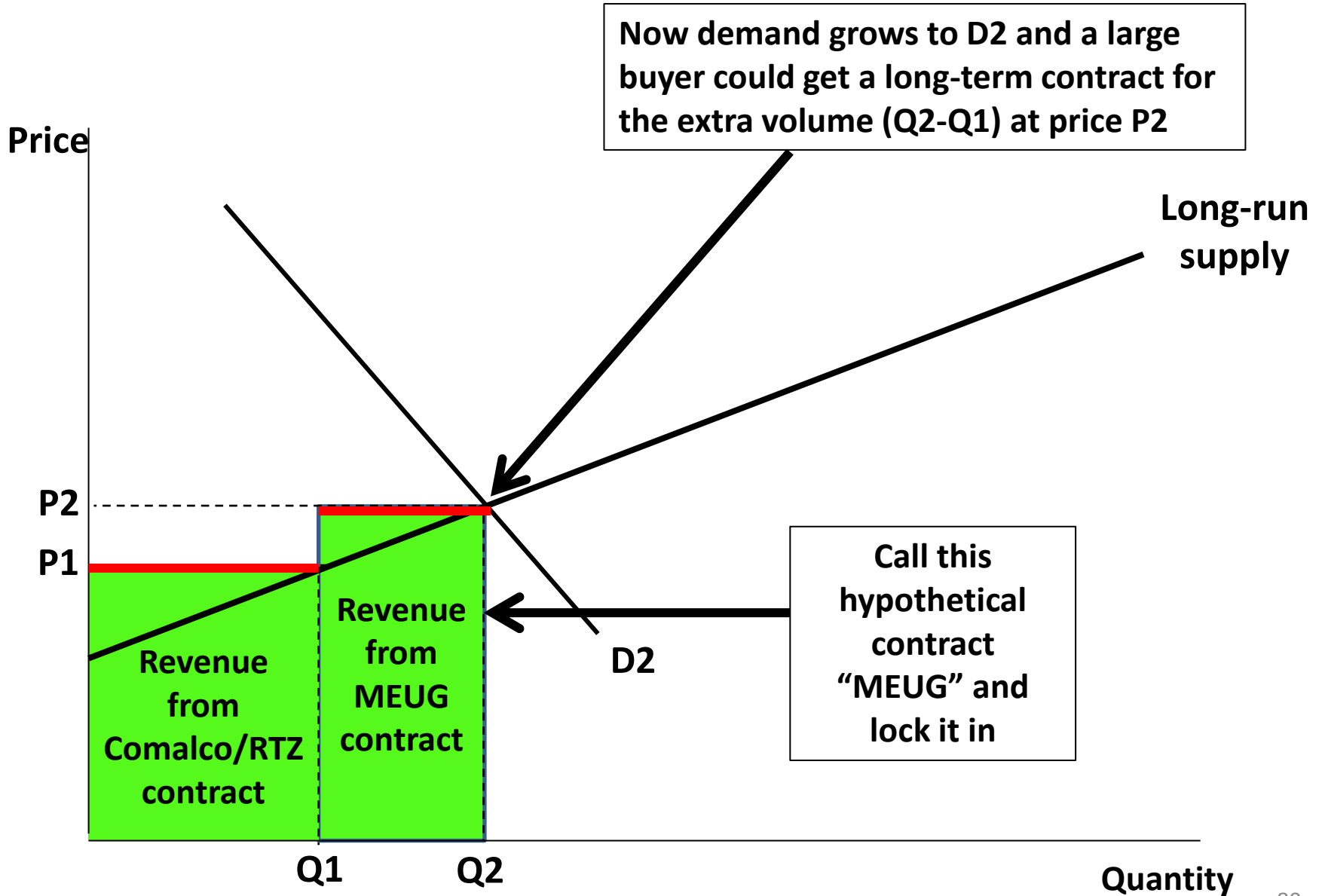


Source: NZ Post Group, *Access Pricing Review Report and Proposal for Industry Consultation*, October 2009, p.23,
http://www.nzpost.co.nz/sites/default/files/uploads/shared/industryconsultation_19october.pdf

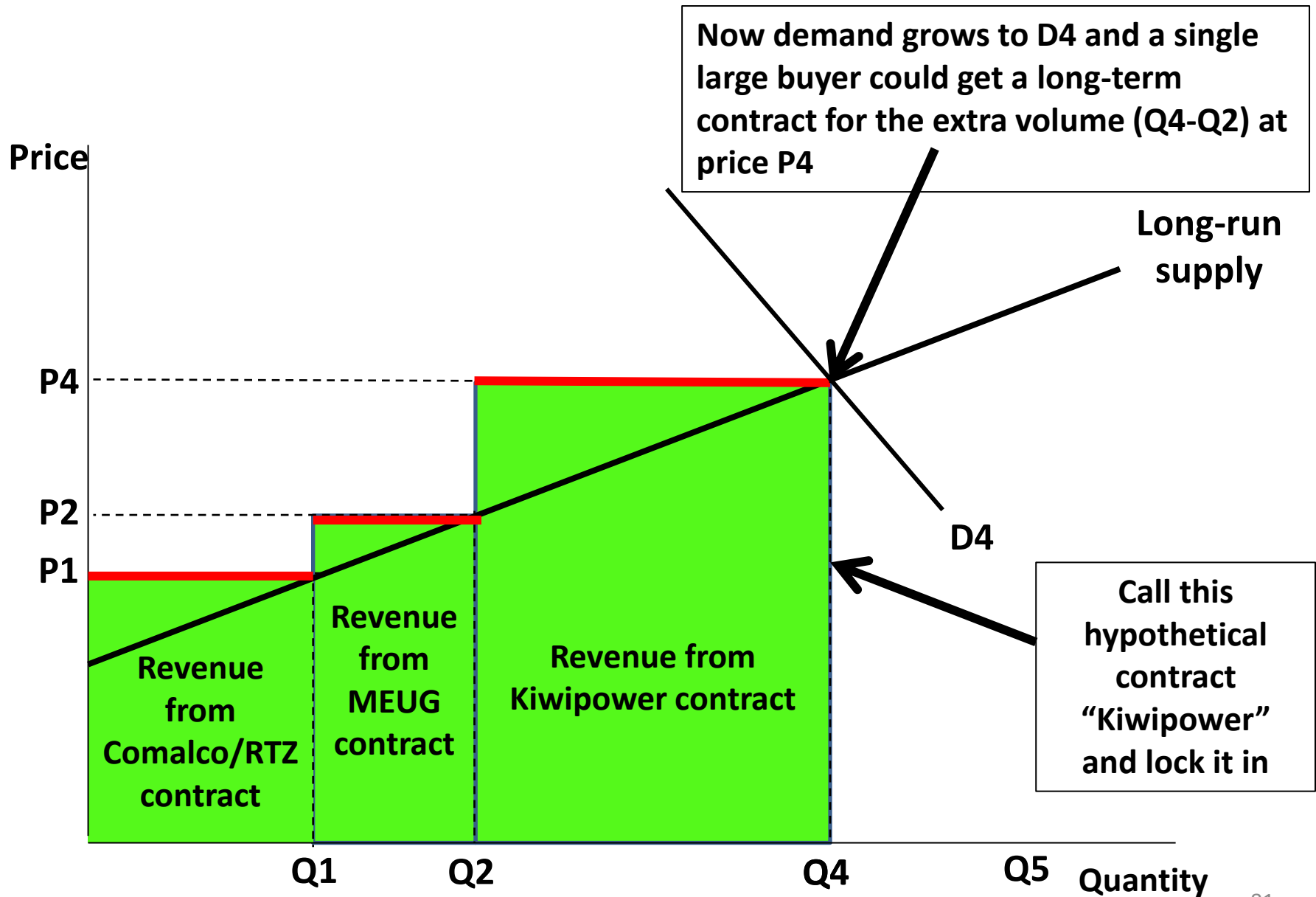
Returning to the supply/demand diagram, what happens if long-term contracts can be signed?



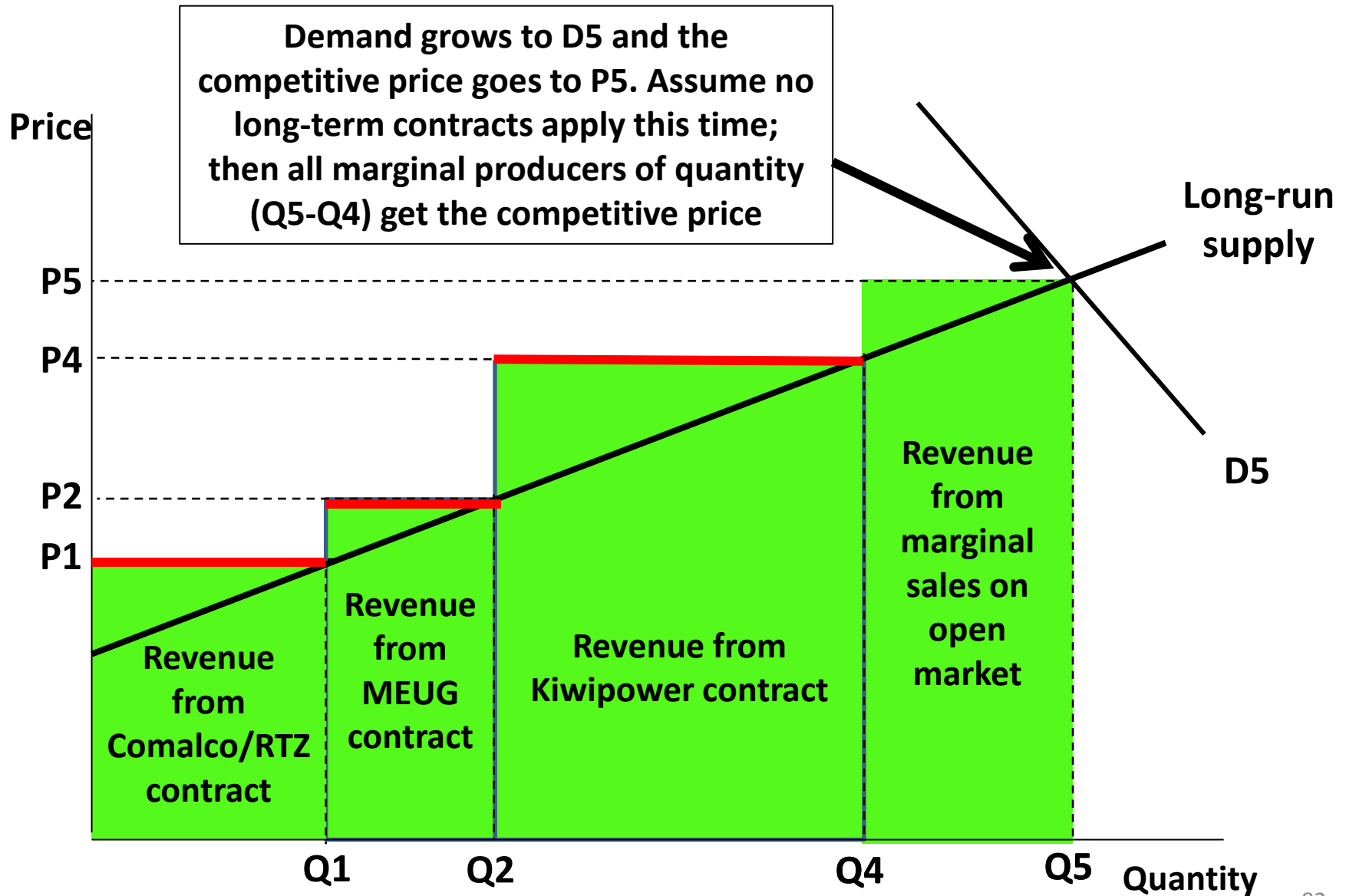
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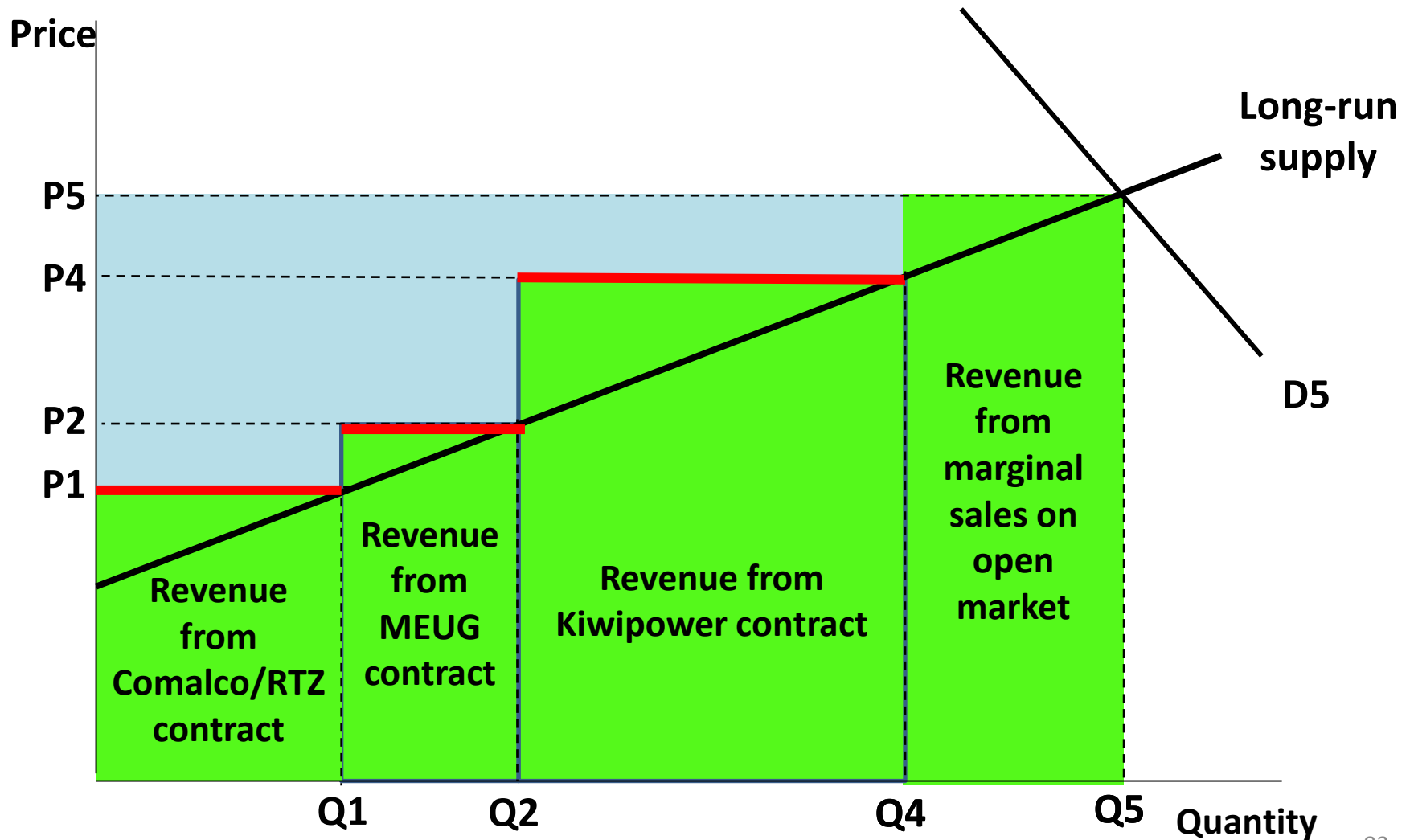
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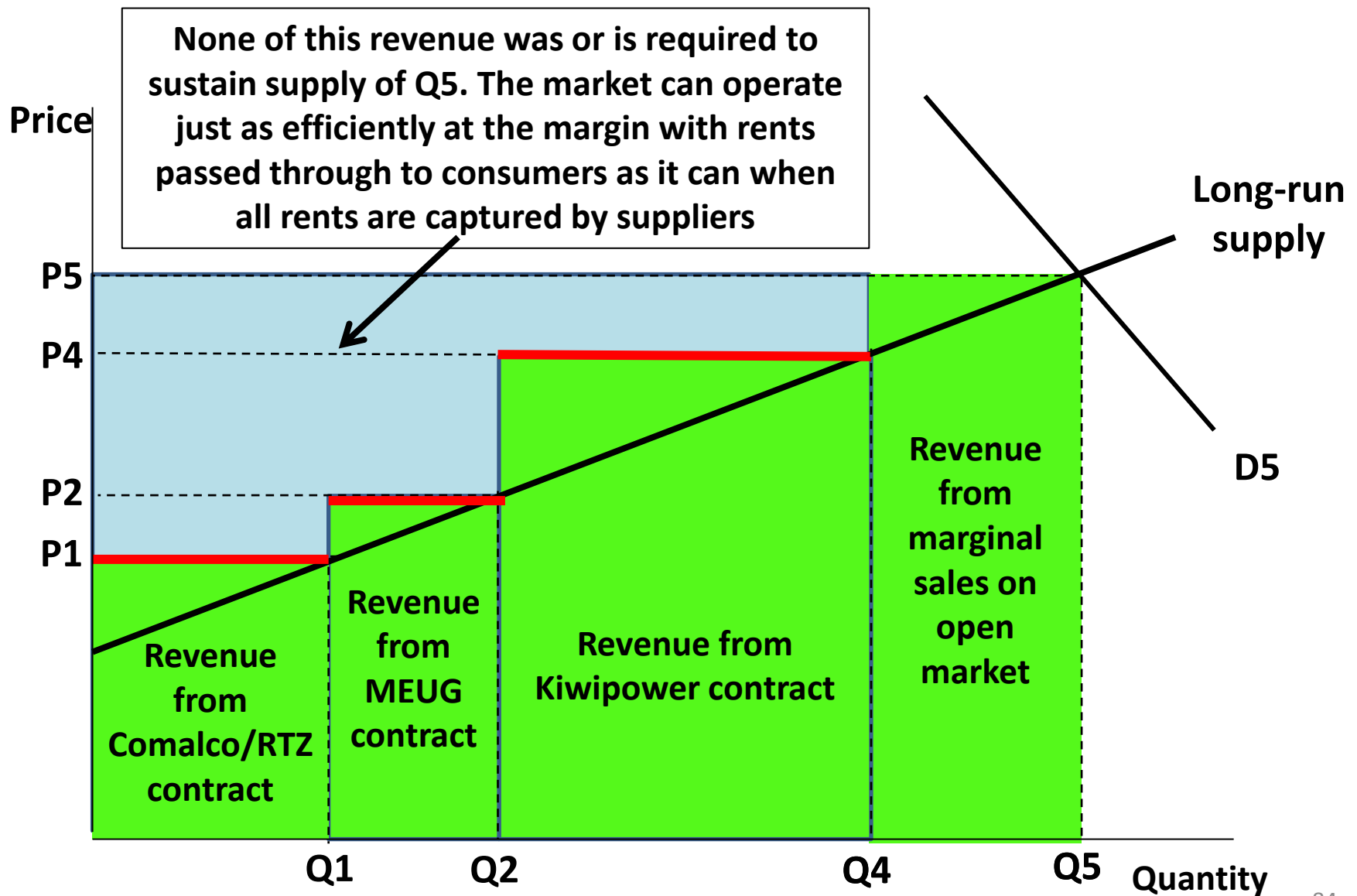
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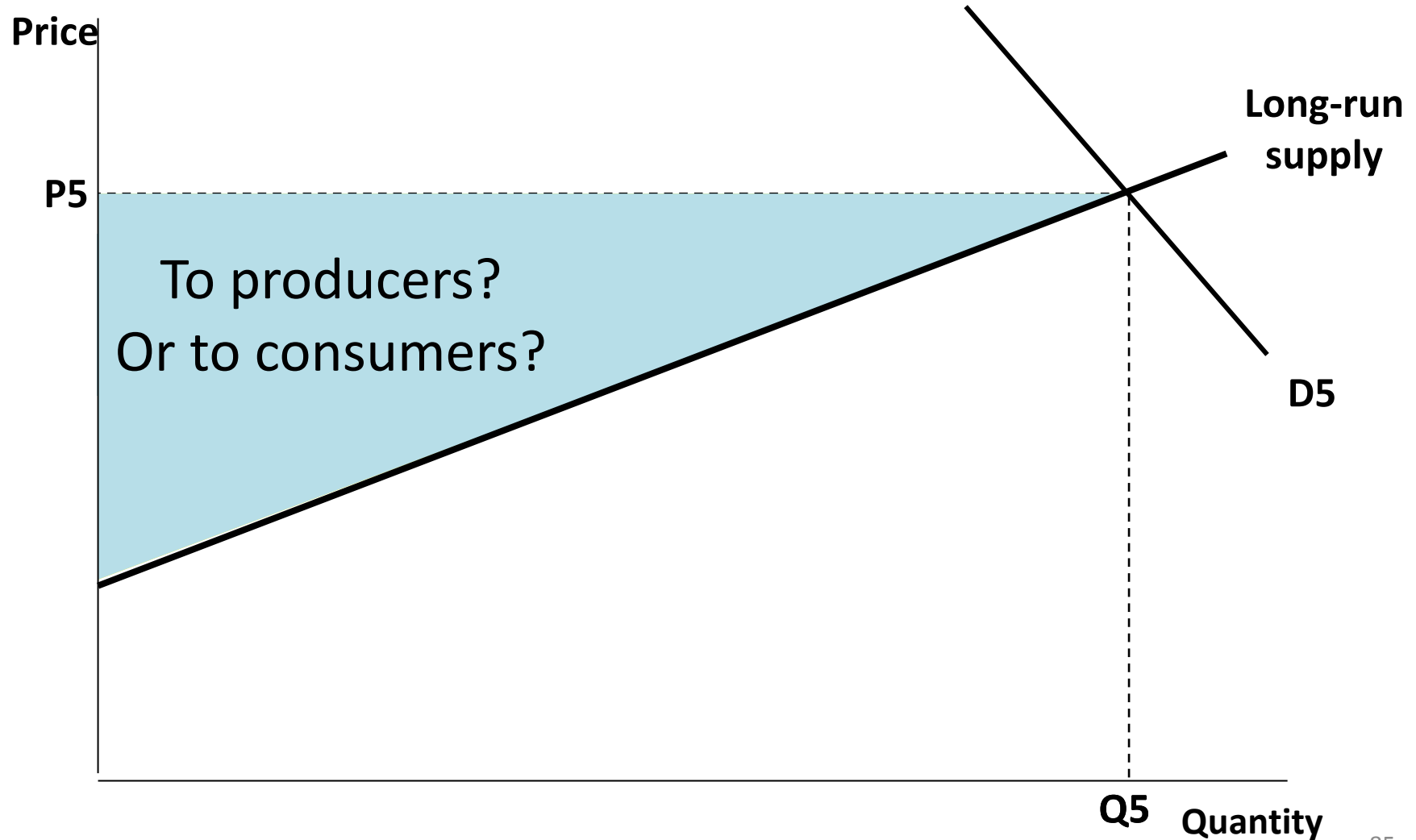
What you notice about this outcome is that much of the rent (the blue area) goes to buyers (via lower prices) rather than to suppliers



This is fully consistent with the operation of a competitive market in which each investor gets a full commercial return on their investment



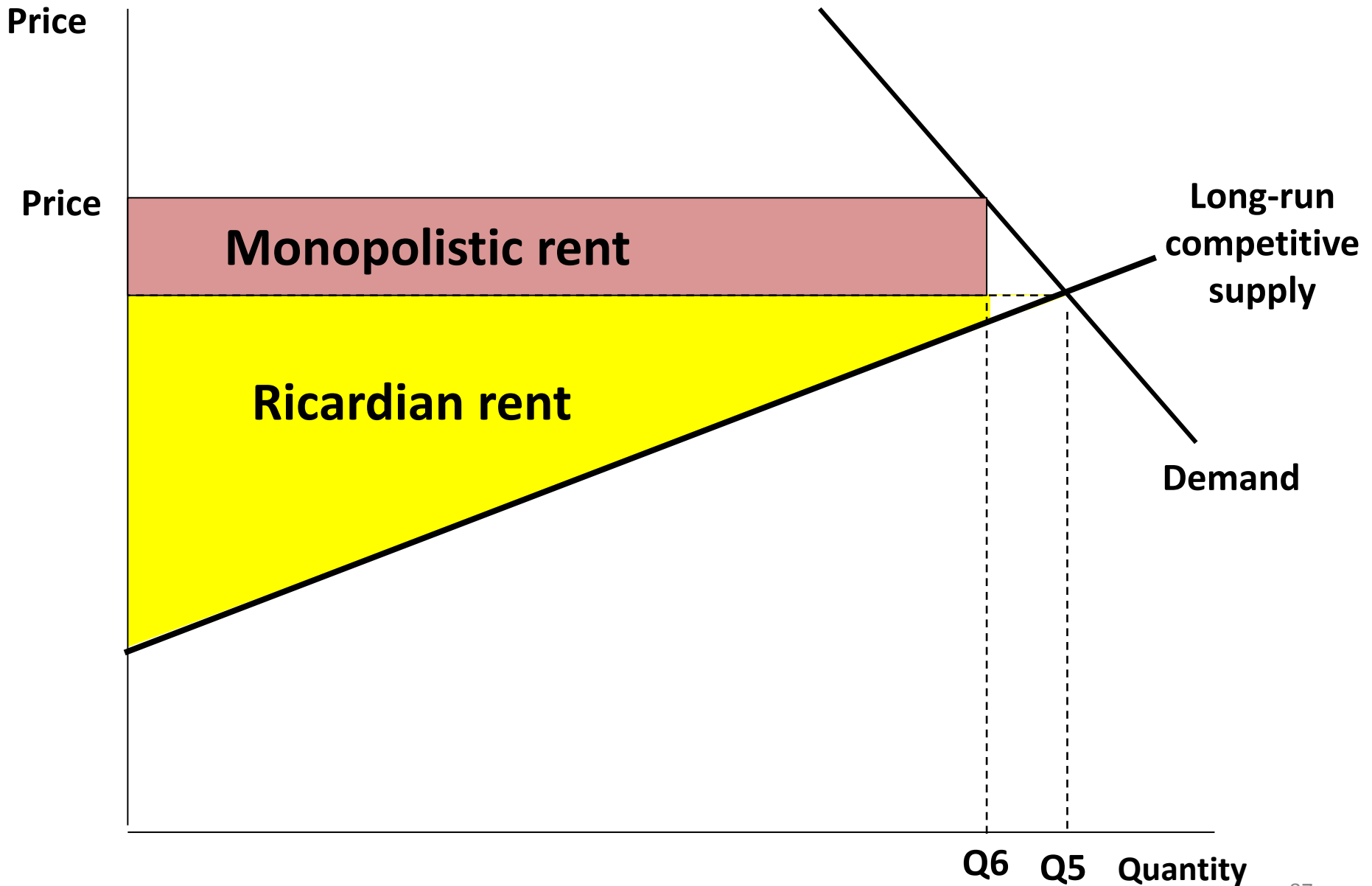
So who gets the rent is not an issue for economic efficiency.
It's simply an equity question



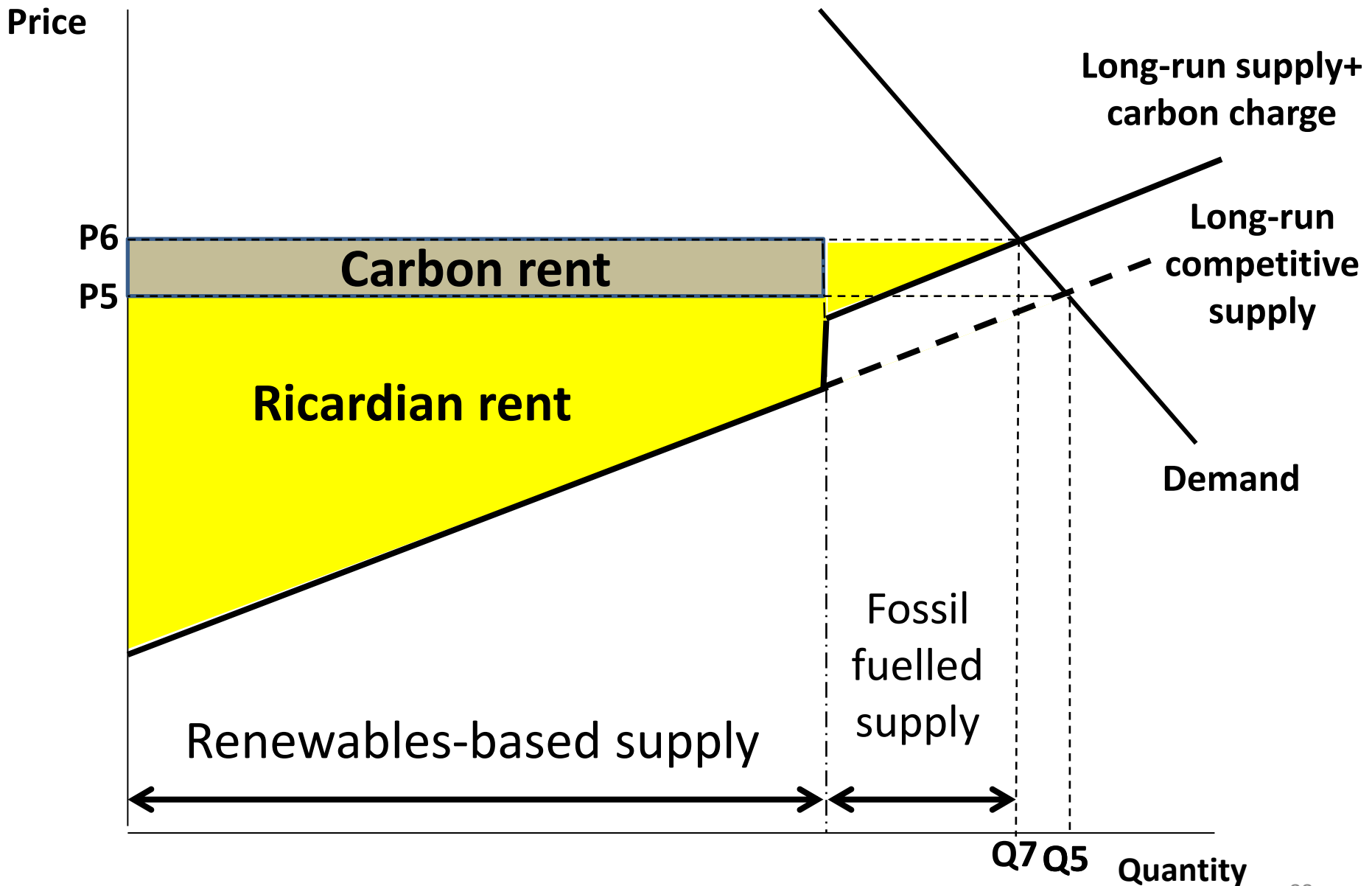
The textbook story so far has assumed:

- competitive conditions: at the margin only “normal profit” is secured and no excess (unnecessary) costs are incurred
- no carbon charges
- transferable non-specific assets: if demand were to shrink back down the long-run supply curve, the fixed assets (including land) could be simply reallocated to other economic activities

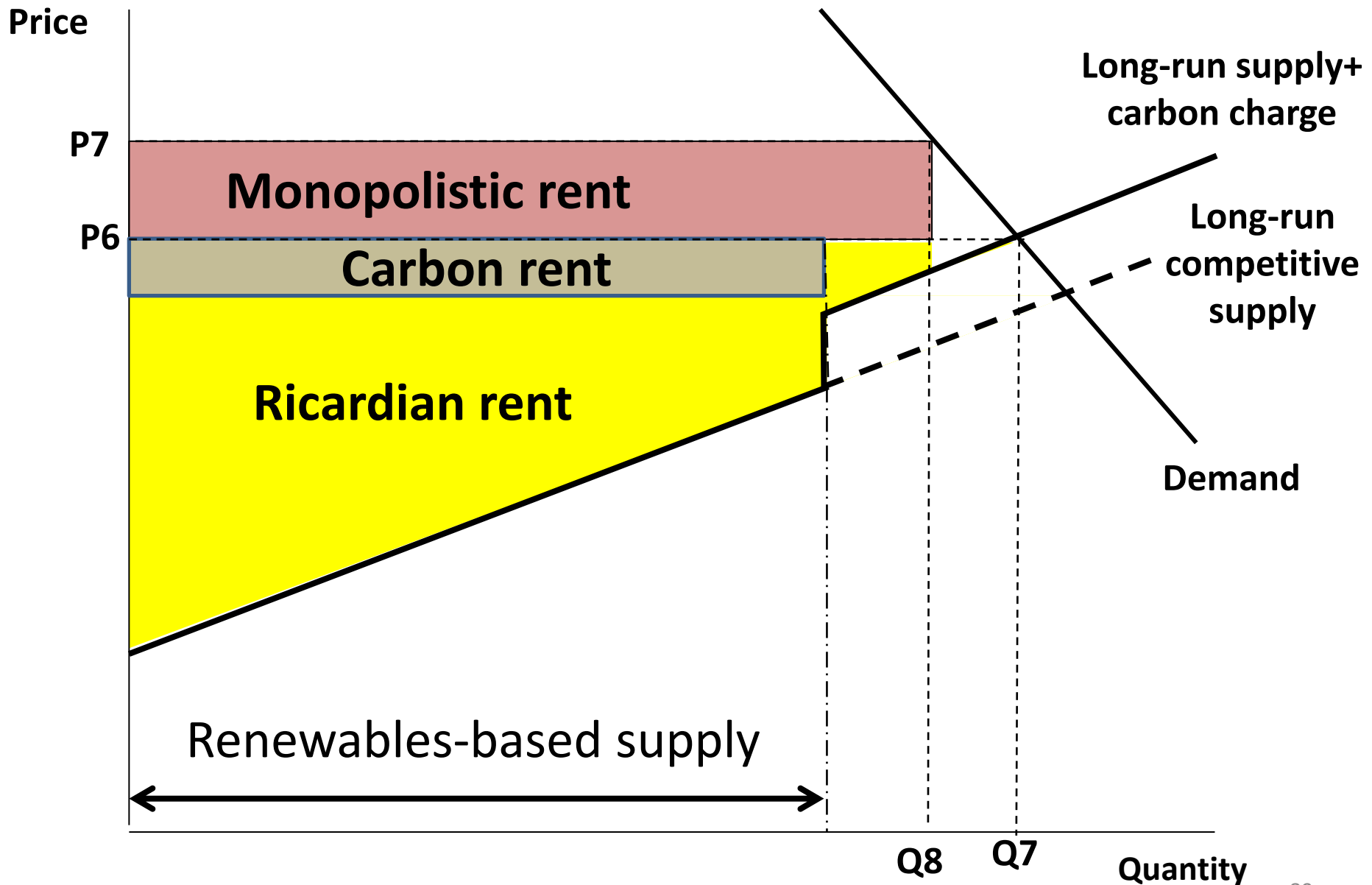
Uncompetitive conditions at the margin with barriers to entry:



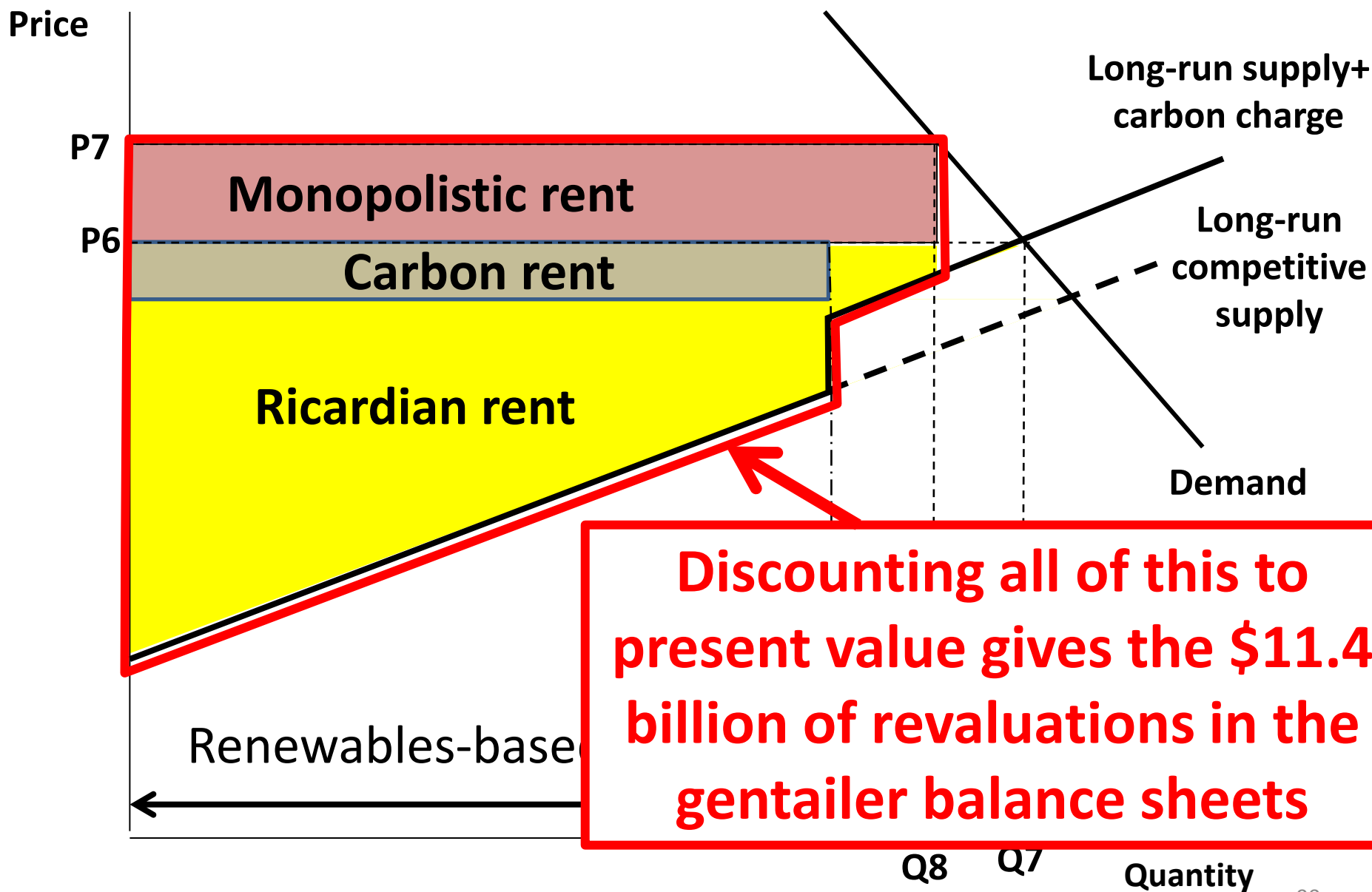
How about a carbon tax [or ETS] ?



With both a carbon charge on non-renewable generation and monopolistic pricing:



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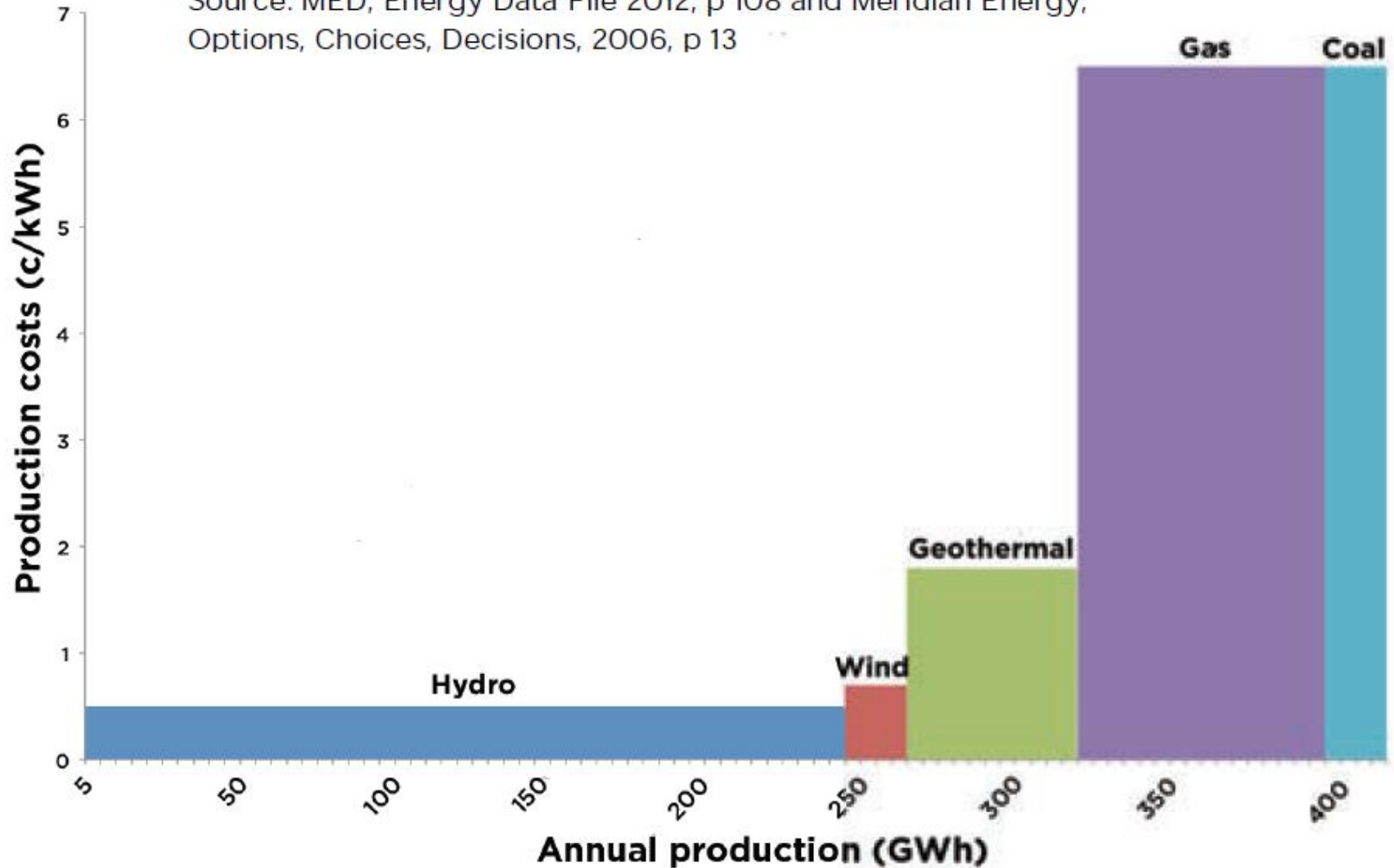


Finally, transferability

- The competitive long-run supply curve is an *ex ante* construction: it shows the supply price at which new producers will enter the market
- But once firms have entered and their investment costs have been sunk, the cost/supply price calculus changes
- In an established industry, the long-run supply curve shows the transfer earnings of all inputs including land and other fixed assets
- Hydroelectric dams and geothermal generating plants and gas turbines are “specific assets” which mean they don’t have very lucrative alternative uses => their transfer earnings are basically their scrap value
- So we can identify how far the price can be driven down before the various suppliers would actually exit the industry, and this gives a supply curve that looks much more like this:

Production costs of power plants by type

Source: MED, Energy Data File 2012, p 108 and Meridian Energy, Options, Choices, Decisions, 2006, p 13

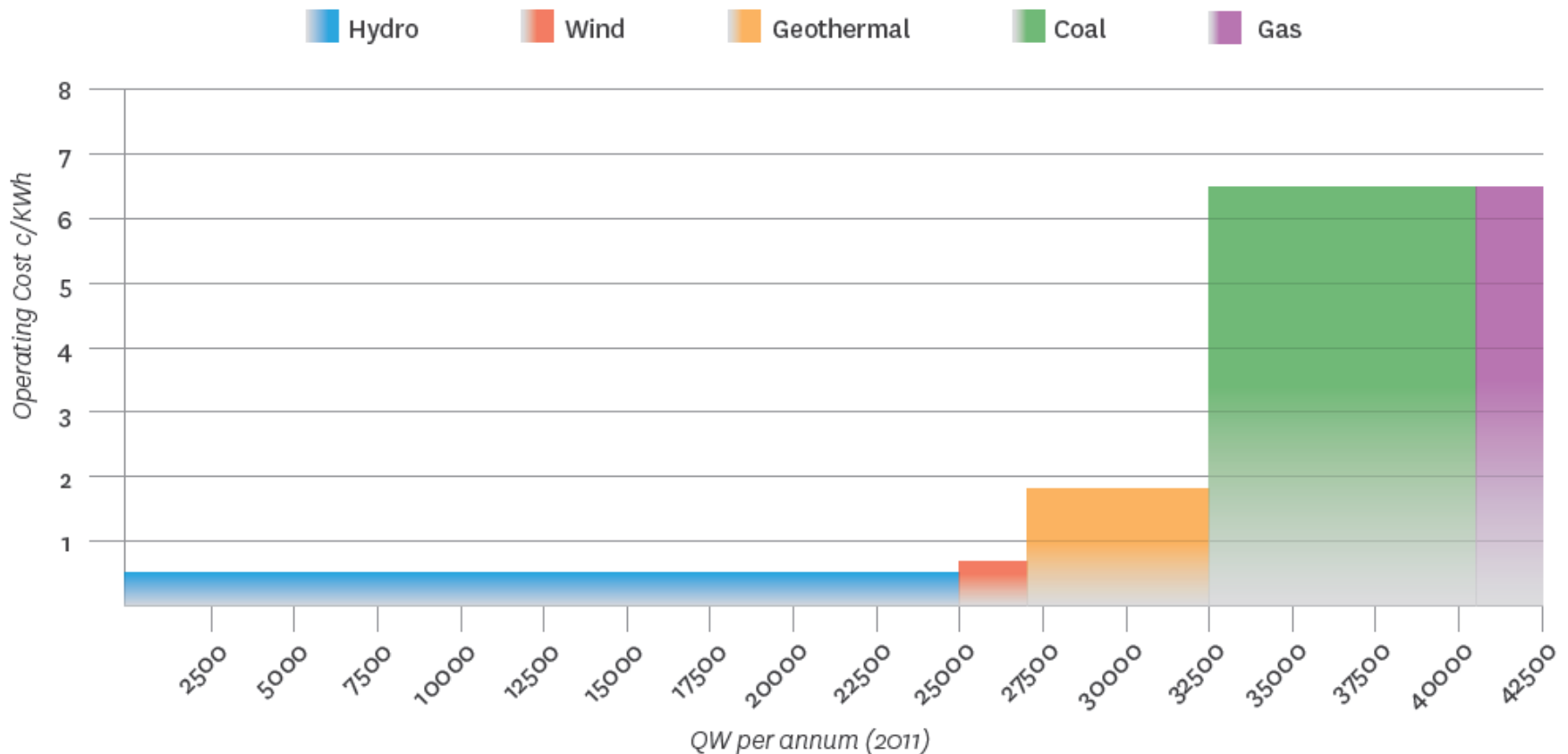


Source: *New Zealand Power: Energising New Zealand*, Labour Party policy document April 2013, p.7.

Market designed for excessive profits, not affordable power

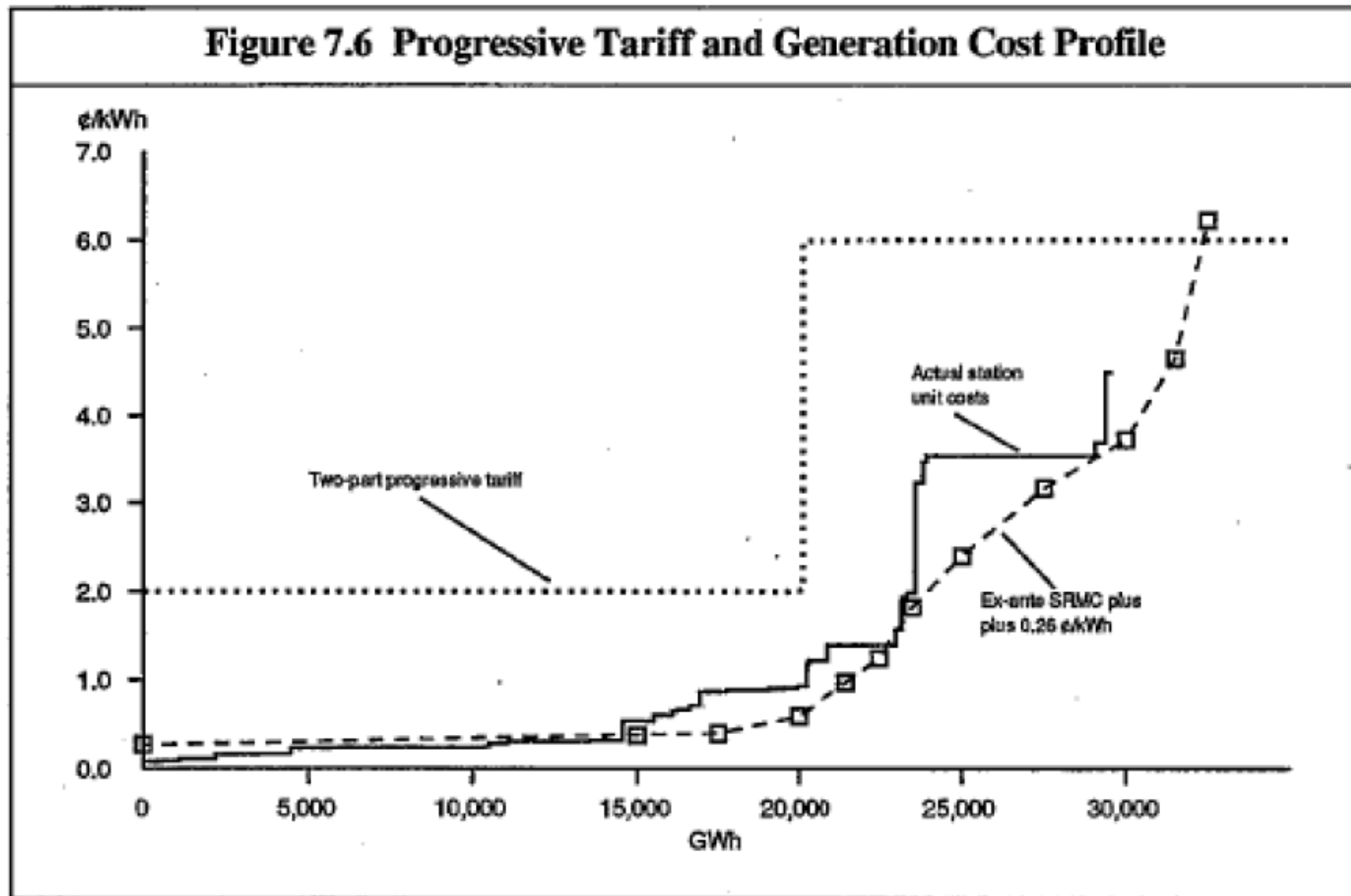
Average operating costs of power plants by type in the New Zealand electricity system

Sources: derived from Meridian paper Options, Choices, Decisions and MED Electricity Data File 2012



Source: *Empowering New Zealand: Greens Discussion Paper*, April 2013, p.5

Or, if we cast our minds back twenty years:



Source: Geoff Bertram, Ian Dempster, Stephen Gale and Simon Terry, *Hydro New Zealand: Providing for Progressive Pricing of Electricity*, 1992, p.51.

Ironically, the Electricity Authority has no role in this debate over rents

- “[T]he Authority’s focus is on promoting competition, reliable supply and efficiency in the electricity industry for the long-term benefit of consumers. **Consideration of fairness or equity issues is the responsibility of the MED** [Ministry of Economic Development].”

Ministry of Economic Development (2011) *Memorandum of Understanding between the Electricity Authority and the Ministry of Economic Development, January 2011*, <http://www.med.govt.nz/sectors-industries/energy/pdf-docs-library/electricity-market/electricity-industry/specific-legislation/mou-electricity-authority-MED.pdf>, p.6 paragraph 6. .

So to the big question: did the industry and the Government have a regulatory compact back in 1999 that opened the way for the price-gouging/rent-collection since?

- In other words, did the transfer of ownership to the five gentailers come with an unrestricted right to exploit their market power?
- This is the crux of “light-handed regulation”: promises of responsible behaviour are accepted up front in return for government withholding its regulatory hand
- But after the event, if the industry has broken its promises, what is the regulatory comeback?
- If not retrospective clawback, then the initial policy was time-inconsistent

Max Bradford didn't think he was opening the door to massive price increases

“Power prices will not rise under proposed energy reforms unless power companies make them, Energy Minister Max Bradford said... Mr Bradford said yesterday there was `no reason at all why electricity prices should rise for domestic or rural consumers under the Coalition Government's proposed reforms. If these prices do rise, it will only be because of explicit decisions by the power companies themselves and not because of the effect of the bill

The Press 23 June 1998

During debate on [electricity] legislation [in June 1998], Mr Bradford, Mr Luxton and Treasurer Bill Birch all claimed power prices in general would fall. Mr Luxton himself predicted "... power prices will be lower for ordinary New Zealanders." And two weeks ago, in response to TransAlta's price rise announcement, Mr Bradford said he had staked his reputation on bringing prices down for all customers.

NZ Herald 21 April 1999

“We promised consumers choice and lower power prices.”

(http://www.maxbradford.co.nz/national_news/electricity/2001-10-15_electricity_brad.htm)

Then came the Labour Government's *Energy Policy Framework* Oct 2000:

- “Costs and prices to consumers which are as low as possible, while ensuring that prices reflect the full costs of supply including environmental costs”, and
- “Fairness in pricing so that the least advantaged in the community have access to energy services at reasonable prices.”

No signal there that price-gouging and ‘fair-value’ revaluations will be OK ...

On the contrary, the first point is flatly incompatible with subsequent industry behaviour

So unless Government was acting in bad faith, average prices ought not to have risen as they have done

- If we take “light-handed regulation” at face value, the correct policy response to the past decade is to roll back the revaluations by requiring write-downs
- How the resulting revenue reductions are distributed to consumers is a matter of detailed tariff-setting
 - I and the Greens argue for progressive pricing
 - Labour has foreshadowed US-style flat average-cost tariffs but is “open to progressive pricing”