http://tasmaniantimes.com/index.php?/weblog/article/professor-west-reminds-tasmania-that-hydro-past-constrains-future/

Hydro Past Constrains Future

Peter Fagan

27.10.09 5:30 am

69 comments

Whatever else Tasmanians agree or disagree with in Professor West's report, they should be grateful for this timely reminder that hydro-industrialisation continues to impose heavy costs on their state. In dollar terms alone, the sale of electricity to these industrial users below cost and way below potential value is costing the State Government up to $220 million in revenue every year.

If two-thirds of Tasmania's annual electricity generation was to be freed up for purposes other than powering these old and highly energy-intensive plants, a range of options and opportunities would be available.

For example:

* a great deal more of the hydro electricity generated could be sold at peak times and peak tariffs via Basslink to mainland Australia
* electricity production could be reduced whenever the hydro storage reservoirs were depleted by drought, restoring some degree of energy security to the system
* the ability of the hydro system to make electricity availabile instantly could enable integration of substantially more eco-friendly wind power into the

Tasmanian and national grids - if this one isn't clear to you the problem space is outlined in these Wikipedia articles:
http://en.wikipedia.org/wiki/Load_following_power_plant
http://en.wikipedia.org/wiki/Intermittent_power_source
The most intriguing possibility that gaining control of its electrical energy resource would afford Tasmania is the opportunity to revisit the restoration of Lake Pedder. Draining all or part of the Huon-Serpentine impoundment (the "new" Lake Pedder) need cost less than 20% of the electricity generation capacity of the Middle Gordon scheme.
Restoration of the Lake would bring enormous benefits to Tasmania.
Remember - less than 60 air miles from Hobart, one of the natural wonders of the world lies under less than 40 feet of water. It is submerged in a massive diversion pond (NOT a storage) whose sole purpose is to transfer water to a hydro power station, two thirds of whose output is gifted, below cost and way below potential value, to old-tech secondary industry.
Professor West's recommendation serves to remind Tasmanians that what had become the political, social, economic and environmental nightmare of hydro-industrialisation did not end when the High Court ruled out the construction of the Gordon-below Franklin dam in July 1983. More than 25 years later, Tasmania - Australia's poorest state - a rich island full of relatively poor people - continues to bleed revenue and incur household and business energy costs, social costs, environmental costs and opportunity costs resulting from the excesses of hydro-industrialisation.
The case for restoration of Lake Pedder and a wealth of other resources are available from the Lake Pedder Restoration Committee web site:
www.lakepedder.org

Professor West's report points out that these three metallurgical plants consume two-thirds of Tasmania's annual electricity generation, pay less for it than its cost of production and employ only 1400 people.

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1. $220 million in subsidies distributed around 220,000 households around the State (approx) means that each household is paying $1,000 per year extra to maintain that subsidy.
   Of course, businesses will be paying more, pushing up prices, while householders pay less.
   A more accurate hip pocket figure for voters showing the real costs to them, might be the ticket before the State election.
   Posted by Mike Bolan on 27/10/09 at 08:44 AM
2. You were making a modicum of sense right up to the point where you dredged up the restoration of Lake Pedder.
   You're not serious, are you? At a time when renewable electricity is at a greater premium than ever before, will only become more so, and we have the means to export it via Basslink?
   I can't resist: If anything, we should be looking seriously at resurrecting the Gordon-below-Franklin scheme.
   Another question. Yes, those power-hungry industries should be paying at least the cost of production. But where are those sorts of operations going to set up if you shut them down entirely in Tasmania? China, maybe, where they'll build them another coal-fired power station and let them get on with it?
   Is that really the best outcome for the planet? Or don't you Greens do that 'think globally' thing any more?

Posted by Mark Duffett on 27/10/09 at 10:42 AM

3. Thanks Mike (Bolan)for those observations. It is also important for Tasmanians to appreciate that the costs to their households and businesses are recurrent. So if the cost to a family is $1,000 per year, their bill since Basslink commenced in 2006 is $3,000 and counting.
   Of course household and business subsidies to the bulk electricity consumers did not begin with Basslink. But by establishing an alternative market for Tasmania's electricity, Basslink serves to make their size greater and their inequity ever more apparent.
   Mark (Duffett), it would be easy to dash off a riposte to your somewhat truculent post. However it will be worthwhile to answer the questions you pose in a considered manner, and I will do so in due course; perhaps in another article that I hope Lindsay Tuffin will agree to publish.
   Posted by Peter Fagan on 28/10/09 at 09:19 AM
4. 'Somewhat truculent'? What I'm dishing out here is a model of equanimity compared to what it seems I have to take.
   I have no doubt whatsoever that Lindsay will publish another article from you, Peter. I look forward to its appearance.
   Posted by Mark Duffett on 28/10/09 at 10:37 AM
5. Big business, Big favours...that seems to be what our lab/lib giv't stand for. Big corporations like the Comalco,Temco and Nyrstar are really that far removed from the big timber corporation that constantly gets favouritism from our lab/lib gov't.
   Posted by Concerned Resident on 28/10/09 at 10:58 AM
6. Wholesale electricity in Australia and comparable countries is worth around $40 per MWh over the long term. That's the price whether Hydro, Nyrstar, Temco, the Greens or anyone else loves or hates it. Baseload electricity just isn't worth a fortune, a point made very well by the reality that much of what

Tasmania imports is at $30 per MWh (3 cents per kWh) or less.
If industry is paying somewhere near that price then there simply is no subsidy. It may be below production costs, but it's not Comalco's fault if electricity production in Tasmania isn't profitable at market prices. The blame for that would lie with whoever decided to build the uneconomic means of production if indeed that is the case.
Hydro can't do much to influence price just as I can't walk into the boss' office tomorrow and expect a doubling of pay unless the going rate for my skills in the general community has likewise increased. That I may need the money is irrelevant - the market sets the price.
At the time of writing, the wholsale spot price of electricity is 2.5 cents per unit (kWh) in Tasmania. That compares with 2.4 cents in SA, 2.3 cents in NSW and Vic, 2.2 cents in Queensland. Information from the AEMO website http://www.aemo.com.au
Posted by Shaun on 28/10/09 at 09:02 PM

7. A question for Mark Duffett - do you have any thoughts on the appropriateness of triple-bottom-line accounting?
How many megawatts would the Gordon-below-Franklin scheme have to generate for its economic benefit to outweigh the environmental degradation and the social angst it would produce?
10000? 1000? 100? 10?
Do such trade-offs make any sense? Should we give any weight in decision-making to things without a dollar value? If so, how?
Simple questions. I'm sure you have some answers.
Posted by Neil Smith on 28/10/09 at 10:47 PM
8. '

Just when I reckoned it would be the way to go to vote Green again , and we get this old chestnut raising it's ugly head, drain Pedder ! yeah right! you

have to be bloody insane , that sort of comment is exactly what will ensure that the “Green” vote will be “zilch” ! come next election.

Some just never learn do they ?

d.d.

Posted by d.d. on 29/10/09 at 12:04 AM

9. Fair questions, Neil, but I don’t think I concur that they’re simple. Certainly the answers aren’t.
The weight of ‘environmental degradation’ and ‘social angst’ factors in decision making shouldn’t be zero, but nor should it be infinite. And remember it’s not just economic benefit that you’re trading off against.
As I allude to above, in a globalised economy not building a hydro scheme in Tasmania may mean a coal-fired power station being built somewhere else. So there are environmental trade-offs as well.
I don’t know how you can democratically quantify the environmental factors. If it were solely up to me, though, my criterion for building it would be…well let’s say that for 100 MW I definitely wouldn’t proceed. But for 1000 MW (and/or at least an additional 2000 GWh in storage capacity, allowing the storage of wind-generated electricity) I definitely would.

Posted by Mark Duffett on 29/10/09 at 09:18 AM

10. Shaun (#6) thanks for your comments; you appear to be knowledgeable in this area and I appreciate your input. My impression is that you are not responding to the thrust of Professor West’s argument, amplified by Sue Neales and myself. We are talking about taking more of the hydro-generated power out of the baseload power market and reserving it for sale as peakload power when it can command a better price.
Would you care to think about and comment on that proposition?

Posted by Peter Fagan on 29/10/09 at 11:00 AM

11. I just spent an hour writing a detailed reply to post #10 only to see the site refuse to accept it. If the technical issues can be sorted I might type it all in again but it's gone for now.
Short answer though is that there aren't enough high price periods in Victoria to export a significant amount of our electricity at those prices. We could realistically export perhaps 30 GWh (versus Tasmanian consumption of 11,000 GWh) at very high prices and perhaps another 100 GWh at moderate prices. Anything beyond that is a case of importing at one low price and exporting at a slightly higher, but still low, price in order to profit form the difference.
If we had exported large volumes to Victoria over the past decade, we would have received an average of about 3.5 cents per kWh after transmission losses.
Posted by Shaun on 29/10/09 at 08:58 PM

12. This is part 1 of a 3 part comment trying to answer the underlying questions of power subsidies and the old debate about new hydro development in Tasmania.
I'll try to keep this in "laymans terms" although it's an inherently technical subject that necessarily involves a lot of math.
First, some basic facts.
Tasmania uses about 11,000 GWh of electricty per annum. This is equivalent to an average load of 1250 MW.
This load varies between about 900 MW overnight during Summer to a peak of about 1900 MW during Winter. Peaks occur during Winter around 8am and 6pm. Minimum load overnight during Winter is typically around 1100 MW.
Summer loads are considerably lower, ranging from typically 900 MW overnight to a daily peak around 1300 - 1400 MW in the morning. Afternoon load is commonly around 1200 MW - a notable point given

that mainland states load (and national electricity market prices) peak at this time.
Generation:
About 9680 GWh from hydro depending on what assumptions are made about rainfall. Anywhere between 9300 and 10,200 GWh would be a reasonable range since rainfall can not be forecast with certainty but 9680 has for many years been the accepted figure. In recent times 9500 has been suggested based on actual rainfall over the past decade.
Peak capacity of the hydro generators is 2260 MW but this can not generally be achieved due to maintenance outages, hydraulic constraints and transmission constraints. Around 2100 MW is generally achievable although a “guaranteed” figure would be about 1700 MW given that one power station, Gordon, accouts for 432 MW and from time to time will be shut down for maintenance.
430 GWh from wind assuming average wind speeds.
Gas we have 205 MW capacity with the new combined cycle unit, 178 MW from open cycle gas turbines (less fuel efficient than combined cycle) plus 240 MW from the old steam turbine units (which are presently mothballed but could be returned to service if needed, one of them is not in running condition however and thus requires repairs).
Actual output from gas will depend on plant operation. Maximum values after allowing for maintenance are about 1600 GWh from the combined cycle unit, 1400 GWh from the open cycle gas turbines (but these would be uneconomic in that role) and 1750 GWh (at reasonable cost but higher than the cost of combined cycle generation) from the steam turbines if they were restored to full operation.
The open cycle gas turbines can also burn diesel fuel as backup to natural gas. The combined cycle unit is gas only. The steam turbines were historically oil-

fired prior to conversion to gas in 2002 and 2003, at which point oil-firing capability was abandoned (though much of the infrastructure remains on site).
Basslink has an export capacity of 628 MW for short periods and 500 MW continuous. Imports are limited to about 430 MW due to system security reasons (the ability of the system to cope if the link goes down - 430 MW is a lot to lose all at once) but can reach 478 MW at peak. All these figures are measured at the Tasmanian end - transmission losses are up to 5.5% at maximum export but are considerably lower at lower levels of power transfer.
So in summary: 9680 GWh from hydro, 430 GWh from wind (total 10110 GWh) and consumption of 11,000 GWh. The gap between hydro/wind and consumption is made up by imports and gas, the preferred means depending on market prices.
Most imports to Tasmania are at prices less than $40 per MWh, much of it less than $20 per MWh. There are exceptions to this at times however.
At the time of writing, Tasmanian load is 1107 MW of which 415 MW is being imported from Victoria at a price of $21 per MWh.
End Part 1

Posted by Shaun on 29/10/09 at 11:59 PM

13. Part 2.

The National Electricity Market (NEM) is characterised by prolonged periods of low prices (around $15 / MWh is common overnight) with Victorian prices averaging around $36 per MWh over the past decade.
Occasionally however prices reach very high levels up to $10,000 / MWh during Summer afternoons and often around $250 / MWh during Winter evenings. Those very high prices exist for only a few hours each year and occur during periods of very high temperatures, particularly when that coincides with generating plant breakdown in Victoria or SA.

Now here's the problem. We've got 10,110 GWh of hydro and wind power to sell to someone. Plus we've got another 1600 GWh of cheap combined cycle gas power. Plus we can cheaply import at least another 2000 GWh when Victorian prices are low via Basslink. Plus we could get another 1750 GWh at reasonable cost (around $40 per MWh including gas transmission costs) by restoring the steam turbines at Bell Bay to operation.

But Basslink can only export 0.628 GWh per hour at most. And there are only a few hours each year of very high prices. So we can only export a few GWh, perhaps 30 GWh in total, at very high prices. That can be worth a lot of money if it's at $10 million per GWh ($10,000 per MWh) during price spikes, but in terms of energy volume it is small.

MOST OF THE MONEY IN POWER GENERATION IS MADE IN A FEW HOURS EACH YEAR. A small minority of total generation delivers the bulk of the profits - that's just how the market works.

Add in the moderatley high prices during Winter evenings and that's perhaps another 100 GWh at most.

So we can only really export about 1% of total generation at high prices. That can be highly profitable certainly, but it doesn't answer the question of what to do with the rest of the power.

If we did reduce industrial use then we could either obtain less from imports / gas or export more at times of low prices. But that's only worth $20 to $40 per MWh depending on what sort of volumes are being considered. We don't have the means to sell the whole lot during occasional price spikes (and if we did then the increased supply would cause prices to crash).

New generation can be built on the mainland at no more than $40 per MWh. Even if every possible cost is included, the new plant at Bell Bay doesn't cost

more than $50 per MWh. And we've got steam turbines sitting idle that, even with gas transmission charges included (an arguable point given that the pipeline has already been built) doesn't cost much more than $40 per MWh.

And if you consider the subsidy value of Renewable Energy Certificates, the real cost of developing wind energy in Tasmania is also somewhere around $40 per MWh.

So all things considered, I'd argue that if industrial power consumers in Tasmania are paying somewhere around $40 per MWh (4 cents per kWh or "unit") then that's not unreasonable and not a subsidy. That is, quite simply, what baseload electricity is worth in the market and it's a price even the privately owned generators in Victoria, who are in business only to make a profit, have chosen to accept.

In addition to purchasing baseload energy, the industrial customers do provide some services to the electricity industry in general. In particular, they offer load for automatic interruption in the event of supply problems, thus avoiding blackouts affecting the general community. Given that some of this load is tripped without notice every few DAYS (not weeks or months but DAYS), I would argue that this does have at least some value.

To properly address the question of subsidies would require knowing exactly what the major industrial users pay for their electricity. But if it is somewhere around $40 per MWh (4 cents per unit) then that would not be unreasonable.

End Part 2

Posted by Shaun on 30/10/09 at 12:00 AM

14. Shaun (#6), I don't have all the fingers at my fingertips, but your contribution regarding market prices looks like a red herring.

Only if the southbound capacity of Basslink were greater than or equal to the demand of "Comalco",

Temco and Nyrstar put together could all those users possibly be buying at a free market price.
Since the import capacity (to Tasmania) of Basslink is limited to 480 MW, and the average - virtually continuous - demand of the three major plants is more like 600MW, some of the energy must always be coming from Hydro Tasmania generators. And it is bought at a long-term contracted price, said to be between 1 and 3 cents per kWh. If it is costing the government-owned enterprise more than that to produce it (which it is), we do have a subsidy.
The wholesale spot price in Tasmania is an illusion. If the Hydro were a true market player attempting to make ends meet - or, heaven forbid, even make a profit - the price would rise; Basslink being "full" no mainland generator could compete. But they effectively have to buy from themselves just to satisfy their contractural obligations. Under such conditions the "price" is arbitrary. It is only a pretend market.
If they can buy a large chunk of what they need via Basslink at prices comparable to their industrial sale price, of course they will do so - but for a lot of the time (possibly all the time?) they can't. So usually there is a subsidy on ALL the energy sold, not just the locally-produced excess.
With all access to low mainland prices being soaked up by the big operators, Aurora of course has to buy high - and unsurprisingly sets their tarriffs to the rest of us accordingly. One way we get screwed. But it's even worse than that - because it has to be we Joe Blow electricity consumers who are the ones mostly financing all these shenanigans.
Posted by Neil Smith on 30/10/09 at 12:07 AM

15. Part 3.

So what about Lake Pedder?
The role of Pedder in power generation is somewhat misunderstood. It's role is not as a storage - it only

stores around 160 GWh. Nor is it really about bulk energy per se - it's about 570 GWh per annum.
What it is about is this. The major storages only account for 30% of total hydro-electric generation, the rest being from small storages and run-of-river generation.
In short, the small schemes run flat out when it rains but produce peak power only when it's dry - they just don't have the storage capacity to do otherwise.
But here's the problem. When it is dry there is an obvious need to maintain power production in total. And this is also the time, Summer, when those high priced exports are possible. This situation unavoidably requires a high rate of discharge from major storages (Lake Gordon and Great Lake) during dry periods - and "dry" in terms of catchment yields means the entire period from October to April - a full 6 months.
Without Pedder, there simply wouldn't be the required inflows into major storages to facilitate the support role they provide. Tasmania would experience a seasonal shortfall of power production even if loads were reduced and the smaller schemes were spilling water (or alternatively we exported the power cheaply at times of low prices to avoid spill) all Winter.
Pedder's contribution is mostly during the dry season and the importance of the water it diverts to Lake Gordon is even higher during drought periods.
In short, the major storages are just 30% of hydro gneration (or 27% of total consumption) but they have to balance fluctuation in output from the other 70% of hydro generation, plus fluctuation in gas-fired generation (which is not totally reliable), variation in wind speeds and variation in imports from Victoria. That's a rather huge task and from time to time it does require very high levels of output - something

that wouldn't be possible if water hadn't been diverted and stored prior to it being needed.
The smaller schemes fill and spill even in a dry year and many of them may do it several times in a season. In contrast, Lake Gordon and Great Lake have NEVER been completely full. Not once.
I can certainly see the argument for draining Pedder. But doing so undermines any shift toward greater reliance on intermittent generation (wind, solar etc). Cutting 40% of the inflows to a major storage and the state's largest power station doesn't come without consequence.
For those who have mentioned the Franklin, I'll just post some factual data and let you judge for yourself.
The Gordon-below-Franklin dam as it was proposed involved flooding the lower 30% of the Franklin river in addition to much of the Gordon river below the present Gordon Dam. The scheme would have produced 1580 GWh per annum and added an effective 1600 GWh to system storage, principally by re-use of the water from Lake Gordon.
The Franklin and King scheme involved a dam on the Franklin River itself above the lake formed by the Gordon-below-Franklin dam plus diversion of the King River into the Franklin. It would have added 1472 GWh annual output and 515 GWh of storage. An alternative that was actually built was development of the King River scheme only, this produces 569 GWh per annum with 233 GWh storage capacity.
Another scheme that was proposed at the same time was the Albert Rapids dam immediately below the existing Gordon Dam. This would have no impact on the Franklin River and is not far from the existing Gordon dam. It would have produced 219 GWh and added 696 GWh to storage capacity, almost entirely by re-use of the water from Lake Gordon.
An alternative to the Gordon-below-Franklin that was proposed at the time but never built was the

Gordon-above-Olga dam. This would have produced about 1050 GWh per annum and added around 2800 GWh to storage capacity through re-use of water from Lake Gordon. Those figures are less certain than the others I have listed since the scheme was never properly designed, it being a primarily political idea at the time.

Excluding those schemes listed above, there is approximately another 3200 GWh of hydro resources that could potentially be developed in Tasmania.

I will leave the politics to others for now. My intention here is to provide factual information only at least for now.

Disclosure: I am not an employee, consultant or contractor of Hydro Tasmania or any of the bulk power consumers in Tasmania despite obviously having a lot of knowledge on the subject of energy in Tasmania.

I do hold investments in a number of energy-related companies, none of which are in the electricity business in Tasmania.

Posted by Shaun on 30/10/09 at 12:08 AM

16. Mark (#9). I'm glad you don't think the questions are simple. I was just kidding, to see what you'd say.

It's easy to say that "the weight of 'environmental degradation' and 'social angst' factors in decision making shouldn't be zero, but nor should it be infinite". I think we can all agree on that. It leaves a pretty large range, and we do need to pin ourselves down a little more precisely to be of any use! It pretty much defines our position on the political spectrum.

I get your point about the non-building of a hydro generator in Tasmania possibly implying construction of another coal burner - but I doubt that any such connection could be inferred in reality. Especially with regard to the Franklin scheme. I think the proposed rated (full gate) power output was to

have been 120 MW. The cliffs haven't got any higher since 1983.

As for possible pumped storage of wind-generated energy, there are plenty of existing storages screaming out to be topped up - Great Lake for instance, where the pumps from Arthur's Lake already exist, and the 300 MW capacity and huge head at Poatina allows the electricity to be regenerated as quickly as you like.

Posted by Neil Smith on 30/10/09 at 12:41 AM

17. Shaun (#11) I empathise with your frustration at losing your detailed reply to #10. Bitter experience with web site posting has taught me to always write a post in Notepad or Microsoft Word and only attempt to copy it into the posting field when it is complete. That is the safe way to do it.

    I notice that you have now recreated your intended post and I am sure those following this thread will read it with great interest. Thank you.

    Posted by Peter Fagan on 30/10/09 at 08:16 AM

18. d.d. (#8) the campaign to restore Lake Pedder is not an "old chestnut". It is a perfectly reasonable proposition. Please, with an open mind, take the time to visit the Lake Pedder Restoration Committee (LPRC) web site and elsewhere and learn more about it.

    I am not "bloody insane", nor are any of the people who work with me on this proposal. You are welcome to call our idea "bloody insane" but please leave out the personal stuff.

    I don't agree that your preoccupation with the "Green" vote…come next election" should prevent me from writing an article about something I care about deeply. The article was written by me as an individual; it is not even an official statement from the LPRC. It contains my opinions. I have never discussed this issue with Nick McKim or any of his staff or current candidates. I do not know what they

think about it. In fact I have never met any of those people. The article was not timed with the election in mind. It was a response to Professor West's interesting and thoughtful report.
d.d. having responded to some of your gratuitous insults, I would like to make five points:
1. Your angry and hostile reaction to the raising of the issue of Lake Pedder restoration is not untypical. My advice to people who experience this emotional response is to say "Don't PANIC."
2. Lake and river restoration and dam decommissioning is not a "Green fantasy". It is normative, and there is a great deal of activity and proposed activity worldwide. For more information, see:
http://www.lakepedder.org/resources/index.html#worldwide_activity
3. The LPRC would never seek to impose restoration as a major cost burden on the Tasmanian community. To quote from our literature:
"Restoration is envisaged as a national project – funded nationally, located in Tasmania, drawing on the skills and enthusiasm of all Australians, benefiting all Australians."
4. John Howard committed $10 billion to restore the Murray Darling river system. Far far less is required to restore Lake Pedder and I believe the prospects of success are greater.
5. The conviction that Lake Pedder could and should be restored is shared by many in Tasmania and the wider Australian community. We are convinced that a restored Lake Pedder is practical, possible, and once realised, will amaze and delight most Australians.

Peter Fagan
Posted by Peter Fagan on 30/10/09 at 08:34 AM

19. Shaun, thanks for your contributions. Nothing like a bit of quantification to get an issue sorted out. Thanks in particular (Neil also) for the details of the Gordon-below-Franklin and related scheme specs; googling 'Gordon below Franklin' will show you a great deal about the anti campaign, but very little about what the proposal actually was.
A question for you, Shaun: Will the advent of the CPRS affect the calculus of electricity prices, in particular the going rate for exports to Victoria, and if so how?
Posted by Mark Duffett on 30/10/09 at 01:03 PM

20. I too thank Shaun for some decent factual information, well presented. I note that he has quoted 1580 GWh per annum for the Gordon-below-Franklin scheme, which would equate to 180MW continuous. Since the generation of any power station is not uniform over time, the rated power output would have to be somewhat more than 180 MW - so, more than the 120MW I thought I remembered. This pushes it a little bit further up into Mark Duffett's region of "difficult decision making". But in my opinion (and for all sorts of reasons) it is quite clearly an indefensible scheme to resurrect.
Posted by Neil Smith on 30/10/09 at 03:08 PM

21. Neil, Shaun et al
Power output of the Gordon below Franklin scheme was estimated on long term average water yields know at that time (1980).
Since 1997 the Hydro system has lost 13 percent of its capacity owing to long term drought, and nearly all of this is attributed to increased evaporation from soils, meaning loss of inflow into storages.
This looks like being a permanent problem. Even in this very wet year inflow into the hydro's storages is only marginally above long term average. Those storages are now at 48 percent capacity as we go into Summer.

What does this mean for the actual capacity of a GbF scheme if that were to be resurrected. One supposes the original mooted 180 MW would have to be downgraded by 13 percent. (That is for sustained load of course, the generator capacity is higher but that has little bearing on the sustained power that can be produced from the scheme.)

But this is not the major issue at stake anyway. Existing hydro storages are presumed to be greenhouse neutral only because it has been deemed too hard to measure the greenhouse impact of them. If any hydro scheme were to be built today it would have to take those greenhouse emission factors into account and they are very considerable.

I outlined all this in a recent TT article: http://tasmaniantimes.com/index.php?/article/they-should-have-dammed-the-franklin-after-all/

Now that we know that our planetary climate stability has gone well past the tipping point, we Earthlings have no option but to make some terrible choices. Even having to entertain things like nuclear power and carbon sequestration (for all their associated risks) because other risks are even greater.

I would even put a hydro scheme on the Franklin as one of those terrible choices, except that, even as a hypothetical exercise, it does not measure up as a solution. At best it would supply 8 years of electricity growth so that more people can go out and buy up plasma TVs. And the scheme's long term greenhouse impact would be very long term – i.e. thousands of years after those plasma TVs are on the tip face.

That's the reality of it. We need to get real about energy, not just talk about supply and demand as if we humans have no control over such things.

We are like ants on a log that is being consumed by fire, running madly in all directions, looking for a way to jump off to safety whilst our feet are getting hotter and hotter. Many of the mad cap schemes

being put forward have about the same wisdom and logic as that of a crazed ant.
Another reality check is to simply look at the 30 year doubling time for energy consumption in Australia. If this growth is not arrested smartly then we simply will not have the luxury of calmly comparing energy choices such as hydro schemes and woodchip driven power stations and wind turbines on Cape Raul and so forth – and deciding which is the least problematic. We would have to accept them all. And that still wouldn't be enough.
Posted by Chris Harries on 01/11/09 at 03:12 PM

22. Agreed with the general comments from Chris Harries although I'd suggest that there is a possibility that water yield losses in the SW of the state may not be to the extent of those seen elsewhere due to local climatic factors. That would need proper investigation to confirm or otherwise however. Ultimately though, there's not much difference between 180, 170 or whatever MW if we continue ramping up energy demand constantly. We could dam every last creek, build wind farms to the maximum technically viable level, mine all the coal in the state and still be left in the dark.
That ultimately is why hydro-industrialisation was always destined to hit the wall. Once it reaches a large size, achieving high annual % growth becomes incresingly difficult and ultimately impossible. And it's the same reason why the current boom industry, tourism, is also certain to hit the wall at some point. Already in the media we hear the tell-tale signs that sound all too familiar. We need constant new developments otherwise the whole thing (tourism) falls over as an economic growth strategy - something to that effect is in the paper today.
At some point we run out of workable developments as we attempt an ever increasing rate of building them whether it's hydro, tourism or anything else.

The same applies to every industry on Earth - constant growth ultimately can not work on a finite planet. At the global level, oil seems the resource closest to hitting that point, indeed many will argue it's there now (a view I agree with in broad terms - it's somewhere near the limit now).
I'm NOT advocating that the Gordon-below-Franklin or any other hydro scheme actually be built at the present time unless it's in a non-environmentally sensitive area and stacks up better economically than other forms of power.
But I'd rank just about any dam ahead of nuclear (uranium / plutonium) power that's for sure. 100 years maybe to clean up the mess from a dam versus 100 times that to deal with the mess left by nuclear - it's a no brainer as far as I'm concerned. There's far less risk of unplanned happenings too - worst case of a dam failure in that area and it might kill 50 people on a boat downstream, a trivial consequence compared to a major nuclear accident.
If the broader question of the folly of attempting constant growth on a finite planet had been previously addressed then I would accept that dam as a not unreasonable way of helping meet ongoing, stable energy demands as oil and gas use inevitably declines. We're always going to need some energy from somewhere - hopefully from somewhere other than the over 90% nationally that comes from fossil fuels today.
As for greenhouse gas emissions, agreed there are issues there but that particular scheme floods a relatively small area in relation to power output. It would stack up better than some other hydro schemes assuming it does have a long operational life. And, horrific though it sounds, but if all the biomass were removed from the area first then that does greatly reduce the emissions.

But there's no real point in damming it just to keep the game going a few years longer. Make the underlying situation stable and then it would be worth at least seriously considering as a component of a national geothermal / wind / hydro / solar grid where hydro is key to balancing generation with load in the short term (ongoing operational basis).
My personal expectation though is that we'll end up burning everything (fossil fuel) we can get our hands on globally for years to come. Sad but I do think that's what will happen, a view formed simply by watching what is actually being done rather than paying attention to what is being said. Actions speak louder than words - and much of the action is in ramping up coal use.
Posted by Shaun on 01/11/09 at 07:20 PM

23. Interesting Shaun, that nearly everybody immediately agrees, in a sentence, with the obvious notion that we need to focus on demand (in half a sentence), then spend all of the rest of their argument on supply side.
It's like "Okay, of course we can't keep growing exponentially, okay let's all agree on that, then do nothing about it but spend virtually all of our energy on supply side discussions".
I have found over the years that this ends up being an almost totally gender based ideology, it is always and only men lining up various supply options and comparing them in such was as to lend support to their favourite, whatever that may be. There are essays and websites galore devoted to this supply-side excitement.
The more complex social science of changing human behaviour gets almost zero attention by comparison, as if that's just too difficult, just so difficult that we follow the path of feeding energy to keep up society's insatiable demand. (Tasmania is in the top 3% of energy consumption patterns in the world.)

Have a look at scientist / environmental advocate Barry Brook's site http://bravenewclimate.com/. He strongly supports the nuclear option as a safe future energy supply – using hard science. I can find good earnest men actively supporting multifarious energy supplies from hot rocks, wind, hydro, fuel cells, nuclear, forest biomass - but it's much harder to find anything like the same sort of attention on demand side work. (Barry's site does some of that.)

On the issue of water into Hydro impoundments, the Hydro has done plenty of work on that with climate experts and they know their situation. This October when we thought it was quite wet, inflow into the Hydro's impoundments was about half of normal average.

My comments here are not to downplay the future role of hydro-electric power but to keep up a reality check on the ongoing debate. Particularly, what we really need energy for. Why are we happy to dam remaining wild rivers and burn our garbage for power and split atoms when we could halve our energy consumption in a trice with virtually no impact on lifestyle amenity?

(The earnest men of technology quickly react to that one by once again turning that argument immediately to supply side, saying - well after you have done that you will still need to look at supply technologies. What they don't say is they have no intention of really addressing the primary problem, they just have an obsession with energy sources.)

Our banal cultural obsession with supply side choices has become a meme (definition: an element of a culture or system of behavior that may be considered to be passed from one individual to another by nongenetic means, esp. imitation).

A bit like the emperor with no clothes.

Posted by Chris Harries on 02/11/09 at 09:16 AM

24. For me personally, the reason to focus primarily on the supply side is simple.

The underlying cause of the demand problem, globally, is the notion of constant growth. And the inability to change that stems from the entire debt based fiat money system which has only two modes of operation - constant growth or outright collapse. That situation arises simply because tomorrow's growth forms the collateral for today's debt - no growth and the whole thing falls over. Hence the obsession with growth.

There's basically no chance of me having any influence over the global fiat currency system, even the likes of national governments are largely helpless in that regard. There's little that I or even the entire country can do about it beyond expressing views that will lead to nothing.

On the other hand, in the local context Tasmanians can indeed influence what happens on the supply side as has been demonstrated in the past. So I choose to focus on something that might have an impact rather than something which almost certainly won't.

Long term, the financial situation in the US, Australia and other heavily indebted countries will quite likely lead to massive change in the monetary system - either the "repayment" of those debts through the printing press (inflation) or outright failure of the system. Given a choice, bankers and politicians will almost certainly choose inflation as the preferred outcome.

After all that, there might be some hope for change but that's far from certain given that the powers that be will surely fight to retain the status quo as long as possible. In the meantime, the wind / hydro / coal / gas question is a very real one where something can actually be done.

As for Tasmanian energy consumption being high, agreed it is but that's largely due to exports in the form of processed materials. But closing a smelter or two does zero to fix the global problem - all it does is swap hydro in Tasmania for coal in China which isn't exactly an improvement. Indeed with the wealth redistribution effects and consequent GDP growth in China etc are considered, it's dramatically worse (environmentally) to be sending industry there or to any other lesser developed country - the growth in consumption is effectively multiplied by domestic factors.

Posted by Shaun on 02/11/09 at 11:12 AM

25. Well Shaun,

That's a prognosis that we do have to go nuclear in a big way, because renewable energy of any kind can't feed a unsustainable society, especially one that convinces itself that is the way it has to be.

Ironic that the environment movement should convince me of this.

Not that even nuclear energy can sustain a non-sustainable economy, but it is a lesser risk than what climate change promises.

Your belief in this is shared by almost everyone, you are not certainly alone, so this is not a reflection on you, it's a sad reflection on the human condition.

Posted by Chris Harries on 02/11/09 at 03:14 PM

26. An interesting postscript to this:

[url="http://www.businessspectator.com.au /bs.nsf/Article/Copenhagen-G20-global-warming-climate -change-pd20091109- XLRUC?OpenDocument&src=kgb"] Alan Kohler today[/url] quotes a Business Council of Australia report saying that electricity prices in Australia will double in five years, due to the CPRS amongst other things.

(Sorry I think the hyperlink above is behind a paywall; I'm currently in the 21-day trial period for this site. So you'll just have to take my word for it that this is what he said.)
This serves to drive home my point above (#2): Renewable electricity is at a greater premium than ever before, will only become more so, and we have the means to export it via Basslink. Bring it on.
Posted by Mark Duffett on 09/11/09 at 04:27 PM

27. Mark (#26) my impression is that you are in agreement with Professor West's argument, amplified by Sue Neales and myself - that Tasmania could benefit from gaining control of its electrical energy resource.
Where we differ is that you seem to think that if Tasmania were to do this, she should go for the absolute maximum dollar return that could possibly be obtained from selling peak load power.
I believe that the dollar return from a strategy that emphasises peak load sales would be such that Tasmania could afford to forgo the small part of the opportunity that would be required to allow the restoration of Lake Pedder. This gesture of restitution - GIVING BACK to the land by restoring Lake Pedder - would bring other benefits to the community. Talk to people in the tourism sector and see what they think.
It's good to see you
reading http://www.businessspectator.com.au where you will find some interesting alternative information. Here is another reading suggestion for you: get hold of Peter Thompson's Power in Tasmania, published in 1981, and read Chapter 7 Resource Politics - Directions for Change. As far as I am aware, the
gloomy conclusions Peter reached nearly twenty years ago still hold true:

"the benefits from Tasmania's resources policy have been channelled into corporate hands and the costs have been shouldered by the community."
"Without far-reaching changes in policy on hydro, forestry and minerals development, the Tasmanian community will be impoverished by the exploitation of its own riches."
"This brief survey of the ownership and control patterns of Tasmania's principal resources reveals a history of shocking mismanagement of the community's wealth. Tasmanians have offered some of the world's largest corporations subsidised power, subsidised forests and subsidised minerals."
Please read the chapter and then ask candidates running in your electorate for the next state election to discuss this issue with you.
Posted by Peter Fagan on 10/11/09 at 01:51 PM

28. Peter (#27), thanks for your considered response.
Yes, I do maintain that Tasmania should be maximising its economic return from its hydroelectric infrastructure. However, that's not the whole story.
Putting it baldly, I also think it's worth making the sacrifice of keeping Lake Pedder under water for another several decades, if it means taking a coal-fired power station off the board elsewhere. If sedimentation rates in the vicinity of the lake are as low as the reports indicate, another century won't make much difference. Or at least until we can build a fusion or otherwise nuclear power station on the shores of Macquarie Harbour.
Also, in terms of the purely economic case for Pedder restoration, I wonder about the long term sustainability of tourism in a carbon- and peak oil-constrained world.
Thanks also for the book suggestion, complete with provocative quotes. It'll be interesting to see how

prognostications made then are holding up in contemporary light, nearly thirty years later. It's apparently on the shelf at my local library; I'll pop in tomorrow.

Posted by Mark Duffett on 10/11/09 at 10:39 PM

29. I would argue that tourism is also a heavily subsidised industry and that draining Pedder would constitute an increase in that subsidy.

How much do we spend on TT-Line losses, roads, advertising / promotion and the endless calls to ignore other opportunities that might threaten tourism? It must surely add up to a relative fortune propping up an unsustainable industry notorious for low wages and dead-end jobs.

The reason I point this out is that, as with hydro-industrialisation, tourism is ultimately doomed as a long term economic driver in Tasmania. It relies absolutely on cheap oil and tourists having a surplus of wealth generated by productive industry in their home states / countries.

Its constant growth also at some point requires the intentional construction of "tourist attractions" as natural features become overwhelmed by visitor numbers. Given that Tasmania is largely a "natural" destination as far as tourists are concerned, it's not clear that it is even possible to meaningfully expand the range of attractions by non-natural means.

Draining Pedder would seem to be an attempt at just that, the intentional creation of an "attraction". In doing so it has a lot in common with attempting to build the Gordon-below-Franklin dam in the late 70's (it was officially announced 1979). A high cost, last gasp attempt to maintain something which can ultimately not be sustained.

If we need to add over half a million tonnes of CO_2 to the air each year and undermine the ability to support intermittent power generation generally, not to mention the financial costs, then it suggests that

tourism is very quickly becoming as dangerously dominant in Tasmanian thinking as hydro-industrialisation was 35 years ago.
Environmentalists were for many years fond of using the terms “sunset” and “sunrise” to describe various industries. 30 years ago tourism and the service economy in general was indeed in the “sunrise” category whilst primary energy production (by any means) clearly wasn’t.
Looking today and energy tops the list of world problems with production seemingly having a far greater economic future than anything reliant on consumption.
The whole anti-hydro, pro-tourism strategy worked nicely in an era of cheap oil and the booming service and then financial economy. But with diminishing resources, surging demand, talk of limits to CO_2 emissions and the readily observable problems the financial economy is encountering, that era seems over at least for the moment.
Posted by Shaun on 10/11/09 at 10:55 PM

30. #29 - I’m in tourism and get no subsidies.
TT Line is subsidised because Tasmanian Governments over time have totally failed to set up an operation which financially justifies its existence, despite it being absolutely vital to this State.
That successive governments have also totally failed to achieve the bloody obvious in that Bass Strait is and should be part of the National highway network and funded as such by Canberra (as it does all major interstate routes) is in no way the fault of the local tourism industry, and if this failure to achieve national road status means that Tasmanians subsidise TT line, then that is not the tourism industry being subsidised, but merely Tasmanians being forced to prop up yet another of the ineptly conceived and hopelessly run State Government

businesses that are continually costing Tasmanians their potential prosperity.
Like Forestry Tasmania. Yet again no dividend paid to Tasmanians this year, despite the loss of yet another big chunk of our old-growth forest resource.
And since when are the State's roads a subsidy to the tourism industry? One loaded B-double log truck does more damage to the roads than the entire fleet of hire cars would in a year, and the hire cars pay a damn sight more registration and MAIB per annum than does that one B-double. Let's be fair about who is *really* getting subsidised with roads, OK?
Face it, we are being and have been run historically by a bunch of self-serving, selfish morons, and it's time we took the responsibility for voting for them in the first place. March 20 is a chance to start the rectification process, but just watch us piss it up against the wall as we always seem to do.
The same old faces will no doubt reappear with the same old "dig it up, chop it down, burn it" approach to industrial "development". Imaginations of gnats, the lot of them.
As for CO2 emissions, no-one seems to be pointing out the value of the vast CO2 sequestration and storage facility that was wiped out by the formation of the Gordon/Pedder "lakes" (never mind the loss of tourism potential of the original lake Pedder).
Posted by amyb on 11/11/09 at 07:41 AM

31. This is another can of worms, but I'm unconvinced old growth forests *sequester* CO2. Store yes, sequester no. As an authoritative source states:

> *the case for old forests as carbon sinks is not airtight. The measurements used…rely on the flux of CO2 levels over the forest, but this kind of metric can be skewed by young stands of trees within an old-growth forest or an increase in growth as a result of higher atmospheric carbon dioxide levels*

If mature forests are net taking up carbon over thousands of years, where is it going? If you look at our old growth forest soils now, you don't see too many coal measures in the making.

Posted by Mark Duffett on 11/11/09 at 11:12 AM

32. #29 your argument about National Highway status for Bass Strait may well be valid as may your argument about Tasmanians propping up an unprofitable enterprise in the TT-Line.

However, do those same arguments not apply equally to the question of energy? Why should industry in Tasmania pay higher rates than that available in Victoria simply because we do not have a federally funded Bass Srait power link? And why should they pay more just because Tasmania developed uneconomic hydro schemes?

I'm not outright for or against subsidies per se. But if we're going to apply one rule to one industry (regardless of what that industry is) then it only seems fair to apply the same rule across the board.

As to the original question, can anyone honestly say they don't expect rising energy prices into the future? If so then I'd be interested in hearing on what basis? The way I see it, everything points toward higher energy prices ahead. CO2 caps or taxes, oil, gas, food, the actions of central banks - it's all pointing toward higher energy prices.

If we don't maintain cheap fossil fuels globally then the past 30 years of re-orienting the Tasmanian economy to suit a cheap energy world is going to come undone rather spectacularly.

Tourism and the service economy only works as long as energy stays cheap just as hydro-industrialisation only worked whilst energy (globally) was relatively expensive and we had a comparative advantage. Cheap energy wrecked the viability of hydro development just as expensive energy will wreck the viability of mass tourism.

Maybe we should just wait a few years and see what happens with the CO2 and oil issues? I can't see any reason to make a deicision now when the debates about CO2 and oil extraction in many regions are still ongoing. Wait until they're resolved and then we'll know the true situation as it affects us in Tasmania. My personal view is that we're headed for very much higher energy prices across the board and especially in the case of liquid fuels.

Posted by Shaun on 11/11/09 at 02:00 PM

33. This is one of the best threads in a long time. Thanks to all who have contributed.
The point I would like to raise is not about the the opportunity cost, or the loss of generating capacity, or the relative costs of base-load power in other jurisdictions, but this: the cost of the remediation works involved in unplugging the Scott's Peak dam. It is not just a matter of letting the water go. Not only that the dunes behind the original beach would take hundreds of years to regenerate, if ever. They would never be the same, and nor would much of the rest of the altered landscape. At least as it is, there are still wheel ruts in the sand of the last planes to take off from the beach, (as divers tell us), but hese would be blown away as soon as the water receeds, and the forces of nature would then mould a different landscape, after finding millions of dollars from somewhere, and depriving it from health, education, and other infrastructure. Talk about another green, fairies-at-the-bottom-of-the-garden fantasy! Go and make another cup of herbal tea....

Posted by George Harris aka woodworker on 11/11/09 at 10:46 PM

34. Whether unplugging Lake Pedder is a good policy move or a bad one, the present political climate makes it a very unlikely reality.
People en masse want their non-sustainable lifestyles (actually they are induced into it with billions of

advertising) and this means society is now prepared (en masse) to go down with the ship rather than entertain strong cultural change and leadership.
Unplugging Lake Pedder is one thing. But in order to keep up ever-growing power supply for all our new plasma TVs and oversized fridges, and in the face of climate change, there is growing popular argument that we now have no choice but to burn woodchips and garbage for power, build nuclear power plants, line our coastlines with wind turbines (in time we will see them in places like Cape Raoul).... all of this endeavour purported to be in the interests of protecting the planet.
And this will still not be nearly enough. In the long run, doubling our energy demand each 30 years can never be satisfied with wind turbines or anything else.
In this frenetic climate, Lake Pedder is unlikely to ever be unplugged but it does, nevertheless, stand as a powerful symbolic beacon for what we have done, are doing and where we are going.
Even mention the idea of unplugging the dam sends some into a blind fury because it is seen as heresy in our cultural mindset. Heresy against what society fundamentally stands for, unbridled growth.
But take heed. This is the very same mindset that world leaders are trying to grapple with in Copenhagen on December 12th in their last ditch attempts to turn things around.
What comes around turns around.
Posted by Chris Harries on 12/11/09 at 08:05 AM

35. The majority of Tasmanians DO NOT WANT the pulp mill, conversely the majority of Tasmanians DO NOT WANT to drain “Lake Pedder” and there lies the conundrum ! those who MAY be tempted to vote Green next election will be turned off in doing so, purely because some “fruit cakes” have resurrected this stupidity.

Now! I can't believe that anyone wanting to stop the "PULP MILL" would have ! resurrected this idiotic notion , most especially in the present climate of fresh water shortage ,and are in fact stirrers from the enemy camp trying to disenfranchise possible future "Green supporters" and if they continue that may well happen, for instance I personally, have never voted "Green" purely because of such crackpot idea's , however I intend to on his occasion in the hope that I am right in my assumption that such idea's are planted in the minds of the public in order to show "Greens" as airheads.

d.d.

Posted by d.d. on 12/11/09 at 08:46 AM

36. What part do the ravenous corporate entities play in this imbroglio, of energy creation, mass energy consumption, political manipulation, in fact the masses of influence over the affairs of even our little Tasmania?
All well toward the meaningful debate on energy sources, consumptions and environmental concerns, the bit I don't understand is of the unwieldy overwhelming influences as now thrust upon us all by these avaricious profiteering corporate gorgons?
They the corporates, care not one whit toward their resource consumptive excesses.
I believe the evils of corporate dominance have a powerful influence upon the wherewithal methods of attempting to rectify the wrongs, the imbalances and the way ahead, for all of us in our now present and toward our futures.

Posted by William Boeder on 12/11/09 at 09:48 AM

37. d.d. all I can do is to ask you to go back to #18, read what I wrote and think about it.

Posted by Peter Fagan on 12/11/09 at 11:16 AM

38. (37)
Peter, I have done that ! and you are wrong!

Let me ask you a question, What is of more importance to you ? “stopping this mill” or “draining lake Pedder” and please don’t go off on some rant ! it is a simple question ! one or the other !

If you pick stopping the mill then take my suggestion post 35 on board, because “Fred and Marge Average” think draining Pedder is “loopy” at best and will turn away from the GREENS ! and their votes are exactly the ones we need to garner, if we are to turn around election.

O.K ! so you have your beliefs ! do us all a favour and wait until after the election before canvassing the subject because you do the “Mill” cause no favours believe me, and I know that even those who agree with your wishes would agree with that scenario.

PULP MILL FIRST AND FOREMOST !

d.d.

Posted by d.d. on 12/11/09 at 02:04 PM

39. This thread is great, to me it started by talking about ending subsidies to major users of power.
It is really that simple, the poorest people subsidise the rich. It is always like that.
If you look at your own power bill you will see that the more power you use the less you pay per unit. Exactly opposite to user pays.
Last figuers I saw were that bulk users were paying something like $132 per Kilowatt year.
Mr and Mrs average pay $0.19 per Kilowatt hour this equates to $1,664.40 per Kilowatt year.
That is 12.6 times the price.
Why is it that a company that is set up to make profits is subsidised so. I have heard that the biggest users of power in Tassie the 5 only employ about 1400 workers. So the jobs mantra doesn’t really apply.
I agree with Chris Harries we need to use a lot less power. I work as an Electrical Contractor and I hate it when I walk into a house and see downlights

everywhere. They are a symbol of our stupid wasteful society as are plasma TV's.
We actally need to have a fundimental change of consciousness and use what we need. Why is a loungeroom fitted with 8 downlights that use 400 watts when the same room can be lit with a single 60 or 100 watt bulb.
I know that I am a dreamer but for humans to survive we have to give up on the ever expanding market economy crap. We only have one planet.
Posted by Pete Godfrey on 12/11/09 at 07:25 PM

40. Spot on, Chris Harries (#34).
It's the love of unsustainable, ever-increasing luxury that constrains our future. Forces it into a rapidly-accelerating dance over the edge of the cliff. I winced when you mentioned the "plasma TV" - that's getting a bit hackneyed - but perhaps it's as good a symptom as any.
A lot of this devotion to what many see as "raising their standard of living" is indeed manufactured by the advertisers, on behalf of corporations who want to make more and more money by flogging off more and more junk. But perhaps our history has bred it too - since the end of World War II when we delightedly realised that things could get better - but unfortunately nothing had taught us to think of the finiteness of our planet. By the time some of us learnt, the self-interested corporates firmly held the reins.
No amount of extra energy production from hydro or any other source will ever be enough to keep us going on this planet if we don't curb our appetites. It's just like a starving plague of rabbits confined to one side of a fence - open up a hole and in next to no time they die out because they gobble up the new grass too.
The love of people for "more and more" is the reason governments have not yet acted to avert anthropogenic climate change - devotion to an

increasing “standard of living” is so “normal”, so widespread, that a political leader proposing the necessary contraction of the economy would be voted out. Even though a much greater contraction in the economy in the near future, coupled with widespread deaths, is what will happen with no action.
The reality of being terminally unpopular is what politicians cannot face. So they talk as though climate change can be combatted in a “nice” way, with a bit of rijigging to the energy mix such that the flood of plasma TVs never has to stop.
This is the crux of our present tragedy. Our psychology is our true enemy. And the democratic system of governance covering most of the world makes it seemingly impossible to combat. What price a wise and all-powerful world dictator when we need one?

Posted by Neil Smith on 12/11/09 at 10:40 PM

41. (39)

Pete , now have me in all of a lather ! i replaced all my globes with these new fangled 11 watter’s ! purchased a “Fujitsu” heat pump to replace the original electric heater ! because they were supposed to be energy efficient! changed my shower head, so now i have to do jig to catch the drops ! bought a new energy efficient fridge ! however because of my love for nature shows,and m/bike racing, i purchased a large plasma T.V.

I live alone and conserve power and my bills are larger than ever , it,s always appeared to me that the service charges keep rising, are you saying that plasma t.v’s are expensive to run ?

d.d.

Posted by d.d. on 13/11/09 at 07:28 AM

42. Yes, DD plasmas are generally so. LCDs generally use much less. Few appliance merchants bother to inform customers on performance rating, so the buyer has to do the finding out.

But let's not get hung up on plasma TVs. I empathise with your concern over rising power bills.
Power bills are going up and so they should because for too long hidden costs of energy supply (climate change being just one) were never priced into the energy that we buy and the chooks have come home to roost. Energy has been so cheap that we let it run through our fingers.
For those who are concerned about this, a judicious strategy to reduce consumption can actually beat the rising power prices. My household power consumption has been declining at about 20 percent per annum as we have strategically done things. The upside is that our home is more comfortable to live in now and we have maintained a normal lifestyle.
Here is a new website devoted to assisting people with this endeavour: http://powerdown-tas.org/
In short we in the rich world can live comfortably on about one quarter of the energy we presently use.
Part of that solution is with government providing appropriate services, part of it must come from our own efforts.
Nobody can be blamed for their own circumstances we are all born into the wasteful society that surrounds us. This is not about a blame game.
Posted by Chris Harries on 13/11/09 at 09:26 AM

43. I plead guilty as charged, Peter Godfrey (#39), though in my defence the downlights were already installed in the house when we bought it (it has significant other energy advantages e.g. north-facing). I understand there is a significant cost (hundreds of $) involved in converting the downlights to take compact fluoro or, even better, LED bulbs. I'm waiting for the latter to improve in both price and quality before biting the bullet. Of course, if electricity prices really do double in five years that'll be a strong incentive to make the switch too.

I'm not certain that 'unsustainable, ever-increasing luxury' (#34, #40), is the primary problem, though. There is some cause for optimism (or at least less pessimism) in the fact that the energy intensity of advanced economies (amount of energy used per unit of GDP) is steadily declining, and is projected to continue to do so. See figure 31 HERE
The inset part of the figure (which is for the US, but other advanced economies will be similar) is the key point here. I actually think energy expenditure as a proportion of GDP will increase rather than plateau or decline as projected in the main part of this figure, but this will only serve to increase the steepness of the projected decline in energy intensity.
No, the main problem is expressed in this graph, also from the EIA website; figure 11 HERE.
I don't think you can really characterise this as being down to 'plasma TVs and oversized fridges', it's a bit more fundamental than that. Hopefully through accelerated energy intensity decline (i.e. efficiency) as indicated above we can make the blue line (OECD energy consumption) plateau and fall. But the red line (non-OECD energy) is rather more intractable.
Posted by Mark Duffett on 13/11/09 at 09:28 AM

44. A lot of relevant information and a number of interesting facts on this thread.
I took the view with Aurora Energy that their toll upon my domestic electricity account of something like 10% on each quarterly account was an excessive impost and unfair grasp upon the householder.
I believe that after having emailed through to Aurora Customer Service twice, then the Energy Ombudsman, then The Energy Regulator, to finally receive a rather concise listing of what is where and what for.
Stil there remained this 10% factor, somehow this was conveyed to me as an essential and without it Aurora would die a miserable death.

On the matter of heavily subsidised supply of power to industry, this came under some other body/authority/contractual-dealing et al, so as to be held quite seperately and of no real concern to myself.
After having pursued this matter to its finite end, I am still no better served with the reasons why the domestic costs are so far mightier for those who can least afford it, [EG: the average worker,]when in fact the private enterprise corporates enjoy a cosy minimal charge for their massive power usages.
The matter of the returns to Aurora as to the rental cost per quarter, for having their 40 year old meters on my property, is in my mind a bit of a dodgy rort, surely the bloody things are paid for by now?
It sems to me that our Energy Regulator favors Aurora over and above the consumer, yet no explanation was given as to the 'rates for mates' special corporate gifting prices for energy supply?
Furthermore, all our various utility costs are deftly calculated and decided by persons well above the income level of the average Joe on the street?
For those who seek further information, Mr. Glenn Appleyard, the States Energy Regulator, will be happy to tell you as much as he has told me?
A politely written letter that implies pay up and shut up.
Posted by William Boeder on 13/11/09 at 11:07 AM

45. To Don and others on Plasma TV's from what I have read they consume somewhere near 250 watts, an old Cathode Ray Tube TV, of say 21 inches used about 100 to 120 watts. You can check on the back of the TV for the wattage.
As far as downlights go there are some 5 watt LED inserts now available that are approximately equivalent to a 20 watt Halogen bulb, they are great for spots above benches and general lighting albiet a little expensive.

My problem with downllights apart from their inefficient use of enerty is that we go to enourmous trouble to insulate houses and make them 4 or 5 star energy efficient then we poke 90 mm holes all through the ceiling for downlights that then suck all the heat up into the ceiling. As well as having to make a 200 mm * 200mm patch around each one with no insulation to prevent fires.
You may as well put in an exhaust fan to such all the heat up into the roof space.
Other ways to lower energy consumption are to turn TV,s videos, stereos etc off at the power point. They are known as phantom loads and over a year can add up to quite a considerable amount of cost just to keep their little lights on.
Just keep in mind that small is beautiful.
Pete
Posted by Pete Godfrey on 14/11/09 at 11:03 AM

46. A few comments:
42" plasma TV uses about 350 Watts, an LCD equivalent uses about 250 Watts. The real issue with plasma isn't the technology per se, it's no worse than the old CRT sets, but that the screens are generally so much bigger. The increase in size, not the plasma display, is the cause of the increased energy consumption.
But back to energy pricing.
Household electricity bills include metering, distribution, retail etc charges and these are the majority of the bill. Bulk power purchased on your behalf by Aurora being less than half of what you are paying for.
Aurora is, on behalf of small consumers, a bulk power purchaser in the same manner as the major industries and should be able to negotiate similar rates for baseload (constant 24/7/365) supply.
One problem however is that Aurora's domestic customers don't have a constant 24/7/365 load and

this does increase generation costs significantly, a long understood reality of power generation worldwide.

However, government has set the rate Aurora buys from Hydro to a rather high 7 or so cents per unit (I don't have the exact figure handy). That Aurora has a rather peaky load, driven by electrical heating and the ridiculous obsession with peak rate water heating in this state (used by nearly 90% of homes), does go part of the way to explaining why that rate is so high. But 7 cents is certainly still on the high side of what is reasonable.

So why, I hear you ask, does that 7 cents end up as nearly 20 cents for light & power (just under 12 cents for heating) by the time it gets to your house? That's a good question but you can't fairly blame heavy industry for distribution, retail, meter reading and GST charges given that they are taking bulk supply from the transmission grid and don't actually use the distribution network. It's not reasonable to expect anyone to pay for something they have no use or need for.

I note that at least one major industrial power user has dumped Aurora as it's retailer, presumably due to getting a cheaper offer from rivals. Other companies would not be seeking to take this business from Aurora if supplying major industry wasn't profitable. That in iself ought to settle the argument.

Looking at Hydro's most recent Annual Report, electricity revenue averaged about $70 per MWh. Given that Aurora is not paying much more than this for bulk purchases it just doesn't stack up mathematically to argue that industry could be paying the very low prices that some claim. Hydro is averaging $70 per MWh, Aurora is paying a bit above that for a very peaky load profile, and baseload generation for industry is really only worth $40 or so anyway (as is genuine baseload supply to Aurora).

So what is the problem here? My rough look at the figures suggests there's no subsidy to industry as a whole. Households households are however paying a little bit too much and Hydro is charging a bit too much.
You can't fairly blame the bulk power users for a situation of Hydro charging Aurora too much for bulk power since it doesn't involve them. The blame quite rightly lies at the feet of those who invested in uneconomic means of generation, thus requiring high charges to break even financially.
But it was the Tasmanian and Australian people through their elected representatives who made the mistakes and who thus ought to foot the bill. I say that noting that the industrial power consumers were, for obvious reasons, always in favour of developing the cheapest options for supply - they can't really be blamed for political decisions to do otherwise which were beyond their control.
The bottom line is that if uneconomic means of production are built then ultimately someone ends up paying for that. That's the lesson to be learned here.
Posted by Shaun on 15/11/09 at 10:45 AM

47. Actually, Shaun, its a bit more complex. This is the only State in which the vast bulk of electricity is bought up by major industrials, most of it used in metallurgical smelting.
These predate the modern era and (so it is argued) the power they use comes from the older hydro schemes, the capital costs of which have been fully ameleorated. We buy our power from the schemes built more recently, and therefore we pay what is called the 'marginal costs of production'.
The 50 year debate about how much the major industrials should pay is sort of solidified, because the public is not privy to the actual amounts being paid, and in any case the ability of the major

industrials to say “we’ll just pack up our bags and leave if we are forced to pay more” is enough to lock in the present situation.

Now most Tasmanians are happy to live with that situation and that’s okay. They would rather pay a bit more themselves than, for instance, the zinc works closed down (whether that price sensitivity is real or not).

The real problem arose with the Basslink debacle and the immense impact that climate change is having on the Hydro’s performance, having lost about 13 percent of its capacity to changed climatic conditions. Hydro Tas can’t be blamed for the changed climatic conditions, but it has had a huge impact on its finances. And how does that impact pan out with power prices? Well, the major industrials are on long term power contracts which, although not completely rigid, are hedged against any marked changes in prices so the retail consumers (that’s us) have to cop it sweet. We are a small slice of the energy load yet we had to bear the brunt of the Hydro’s financial crisis.

A factor making this even worse for the Hydro was our entry into the national electricity market (NEM), now that we have a cable across Bass Strait. The NEM means that the Hydro (or Aurora) no longer ‘own’ their business customers, who can buy power from the cheapest sources. Exposure of the Tasmanian system to the open market means that we are left with the low paying bulk industrials whilst intermediate business on much higher tariffs can go elsewhere if they can buy power at a better price.

It’s a dog eat dog market out there and, to date, Aurora has kept most of its market share despite Tasmania’s troubles with drought and the Hydro’s finances. One thing’s for sure, though, this bunkering down comes at a price and that price is what we the consumers will have to fork out to keep our power system in the black.

Expect more power price hikes. But that's not a bad thing, energy has been generally subsidised for far too long and we have been spoilt rotten by it.
Posted by Chris Harries on 16/11/09 at 06:55 AM

48. OK, Chris (#47), that's the second time you've mentioned

> *...the Hydro...having lost about 13 percent of its capacity to changed climatic conditions.*

I seem to remember having discussed this issue with you before, it being far from clear that Hydro catchment rainfall will be reduced by climate change. In fact, some models predict substantial rainfall increase, increased evaporation notwithstanding. How has so precise a figure as "about -13%" been arrived at?
Posted by Mark Duffett on 16/11/09 at 08:43 AM

49. By the way folks, if you would like a neat snapshot view of how power is travelling across the nationwide electricity grid (including Basslink) and how much is being paid for it, just go to this:

http://www.aer.gov.au/content/index.phtml/itemId/658719
Posted by Chris Harries on 16/11/09 at 09:08 AM

50. Peter (#45), thanks for that, yes, I was quite perturbed when I got up into my ceiling space and saw all the holes in the insulation for the reasons you describe. But as I suggested earlier, it's not just a matter of swapping LED or compact fluoros for halogen bulbs, is it? I've been told (by people who should know) a new transformer and associating rewiring is also required in order to handle the greatly reduced load. Hence the hundreds of $ cost of conversion over and above that of the LED inserts themselves.
Posted by Mark Duffett on 16/11/09 at 09:13 AM

51. Oh, and it's not the most authoritative source, but a succinct roundup of TV energy consumption is HERE.

Posted by Mark Duffett on 16/11/09 at 09:18 AM

52. Responding to Mark at 48.

From the Hydro itself, at its presentation to the very recent Energy Tasmania 2009 conference.

The Hydro representative was at pains to make sure the audience had not taken the Winter rains to presume that the drought is over for the Hydro.

Their graphs show a slump of 13 percent over a decade and, although this could be seen to be an incidental aberration, their own studies of changing climate indicate that such a condition looks like being permanent.

Again, its not the rainfall that is so much changing the dam inflows, it is soil dryness (caused by evaporation / higher winter air temperatures) and the consequent lessening of run-off.

Compounding this is an absence of Winter snow in the highlands, meaning that instead of using the mountain tops for temporary water storage, tiding them over until well into Spring (as used to be the case) the additional winter inflows will result in spillage of water from run-of-river schemes.

None of this problem is of the Hydro's making, they have genuine problems in managing both their storage levels and their competitive advantage (or disadvantage) in the national electricity market.

There is no certainty over climate trends, and I would wish a return to the good old days, but I think it is wishful thinking to presume our recent wet months are an indication of what will happen in the coming decade.

Posted by Chris Harries on 16/11/09 at 10:27 AM

53. What are the implications of the probable duplication of Basslink?

The use of a metallic return makes this very likely.

Posted by Richard on 16/11/09 at 04:48 PM

54. Chris Harries #47

I would argue that whilst the power used by the zinc works etc is from the older schemes and is produced at genuinely low cost (which it certainly is), the "correct" price for that energy is what would be competitive in the market today.
If I built a house 50 years ago then the price I would sell it for today is that which is competitive in today's market, original construction costs being irrelevant. If I made a profit on selling that house then that's my gain. If I made a loss then it's my loss. A buyer today isn't interested in what it cost me to build originally, they're interested in how my offer compares with other offers for similar product that are available now.
It's a similar situation to how Saudi Arabia (for example) still extracts oil from old fields discovered half a century ago. But they sell it at whatever today's price happens to be whether that's a profit or a loss on their original investment.
It's no secret that Saudi's old wells are indeed profitable whilst other oil companies overseas invested in high cost projects during the late 70's and early 1980's that turned out not to be overly profitable during the relatively low prices of the mid-1980's and through the 90's. Hydro made essentially the same mistake, betting on higher energy prices that didn't happen.
That some of those overseas projects made a loss is ultimately a problem for those who invested in them - a refinery buying crude oil is only going to pay today's market price regardless of production costs. Likewise Hydro's customers are only going to pay today's market price regardless of Hydro's actual costs.
For Hydro, they can realistically only sell into the national market (including Tasmania) in competition with other generators or choose to not sell at all and let the dams spill. Whether or not that's profitable is certainly a valid question, but if it's not profitale then

there's really nothing Hydro can do about it. Try ramping up prices and customers will simply relocate (industrials), build their own power generation at lower cost (note Aurora's new power station) or use some other energy source (gas, solar, wood etc). Hydro can't sustainably charge $100 if others are willing to sell at $50 from new or existing plant. Short term they could get away with it, but doing so would simply attract a flood of new power plant construction until Hydro either dropped prices or was left with no customers.

If Hydro is selling at $100, and I can make a profit building and operating a new plant at $50, then I'll have no trouble building my plant and selling its entire production to Hydro's former customers. It's not as though Hydro has any credible means of stopping me building and operating a power station in competition with them.

It's just like I can't sell my house for $1 million if other similar properties are only worth $300,000 regardless of how much I spend building it in the first place. If I refuse to sell at market price then I won't be selling at all.

The real problem for Hydro is that under the actual energy market and storage inflow conditions we have today, some of their past investments simply aren't profitable or anywhere near it. Some certainly are highly profitable, but others are a rather large loss and this constrains the overall business since the costs associated with the loss-making schemes have already been incurred.

As of right now, it's technically possible for Aurora's power station and Basslink to each supply about 30% of total Tasmanian consumption - that's 60% all up. It wouldn't take too long for someone to supply most of the rest, industrials to relocate and/or households switch to gas if Hydro's prices aren't reasonable.

Hydro absolutely lacks any sustainable market power in this environment so the best they can do is price so as to avoid attracting additional competition and hope that the long term combination of inflows and energy prices is profitable. If it's not then they're stuck with a loss unless government legislates for what is effectively a bail out of past unprofitable investments.

All that said, with sufficient inflation in fossil fuel prices and/or a tax on carbon, Hydro would become rather profitable assuming it does continue raining. But there's little if anything they can do other than wait for that to happen.

Posted by Shaun on 16/11/09 at 11:06 PM

55. In response to Richard at 53, Transend's preferred route for a second cable would run from the NW tip of Tasmania to Cape Otway in Western Victoria.

If we accept that Tasmania's power demand is increasing more rapidly than any renewable add-ons, then a 2nd cable means we can import more power from the Mainland, but also have a greater capacity to deliver peak load to Victoria during short periods of high peaks over there. The net direction of energy would be southward.

We need to forget about Tasmania being a major exporter of renewable energy, we don't have such an excess commodity. But if you believe in the virtues of the national electricity market a second cable can increase trading opportunities for Aurora.

If you believe in the virtues of a containment policy - focussing on Tasmanian energy self reliance, it would have been more sensible not to build number one Basslink. Then trading market offers commercial opportunities but, as much, a growing dependency on the huge size and complexity of the aggressive national network of power generators.

Posted by Chris Harries on 17/11/09 at 06:44 AM

56. From #52:
"...the very recent Energy Tasmania 2009 conference."
Chris do you know if it is possible to view or read the presentations at the conference?
Thanks, Peter F
Posted by Peter Fagan on 17/11/09 at 08:21 AM

57. Sorry mate, I received the slide shows minus their speech notes and have since ditched them. Will try to recover the Hydro one for you and send direct, along with my notes taken at the time.
Posted by Chris Harries on 17/11/09 at 10:37 AM

58. Federal opposition leader Tony Abbott told a Millennium Forum function in Sydney (December 2009) "My first public disagreement with the former prime minister, Mr Howard, was over my proposal to drain Lake Pedder" - for more see Michelle Grattan article in the Age - URL =:
(rejoin)
http://www.theage.com.au/environment/emissions-poll-a-tax-showdown-abbott-20091216-kxhv.html
Posted by Peter Fagan on 21/12/09 at 07:38 AM

59. my understanding is that only the top two feet of Lake Pedder is drawn off for use in the adjacent Lake Gordon generator - the remainder of the water sits there like concrete (just holding up the top two feet) and so effectively has a value for electricity generation of zero. If the remainder of that water were siphoned out into Lake Gordon then it could be used to generate electricity - and make money for The Hydro. Lake Gordon is a lot deeper than Pedder, and Pedder could be siphoned (for free - not pumped at a cost) over a fair period of time, and perhaps the Great Lake could be allowed to fill up a bit while all this is going on.
Posted by Luke Drifter on 26/05/10 at 11:41 AM

60. Increasing the effective storage capacity of the Gordon scheme by drawing down Pedder would have

some advantages in terms of power generation, but there is a significant ecological and aesthetic cost of lowering the level of Pedder and that is why levels are not normally dropped more than 1.5m from full. From an engineering perspective, that makes no sense and the level can be dropped significantly further, but the ecological aspects and relatively minor benefit are such that it isn't done in practice. All that said, 100% of the available water flow from Pedder is used to produce enough electricity for about 60,000 homes. That, net energy yield and specifically energy yield into a major storage (increasingly critical given the development of wind and solar energy) is the primary function of Pedder. The storage it does provide is a relatively minor aspect of its purpose.

Posted by Shaun on 26/05/10 at 11:12 PM

61. Luke @59,

You are absolutely correct.

And so is Shaun @60, regarding the fact that there is not much point in drawing down Lake Pedder storage just a bit, the original lake is still submerged.

What posters have been surmising is that, Lake Pedder merely being a flow through, is it feasible to utilize that flow-through water without the need for having a dead impoundment – that has drowned Australia's most spectacular natural icon.

In other words, is it possible to kill two birds with one stone.

I would be amazed if there is no engineering solution to that, it is much more of a financial question, an imagination issue and also one of political priority.

Of course there are engineering solutions if it was deemed a wonderful thing for Tasmania to recover the original Lake Pedder, however there would be some inevitable loss in hydro-electric performance.

The ‘60,000 homes’ statistic relates only to a situation where Pedder Impoundment waters are not used at all – and that is not what is being argued.

Posted by Chris Harries on 27/05/10 at 05:02 AM

62. Luke Drifter #59 wrote:

“my understanding is that only the top two feet of Lake Pedder is drawn off for use in the adjacent Lake Gordon generator - the remainder of the water sits there like concrete (just holding up the top two feet) and so effectively has a value for electricity generation of zero.”

Your understanding is correct Luke, that’s how it works.

Many Tasmanians do not understand this - they assume that the “new” Lake Pedder is a vast reservoir that “drought-proofs” Tasmania’s hydro electricity generation system. In fact the “new” Lake Pedder is not a reservoir at all. As I have written elsewhere:

“From a technical, hydro-electric scheme point of view, the current Lake Pedder is an impoundment or diversion pond rather than a reservoir or lake.

While the term reservoir can be applied to any body of stored water, in a hydro-electric scheme it is usually understood to mean a body of stored water that can be drawn down to ensure water is available to drive the scheme’s turbines and thus generate electricity when insufficient water is entering the reservoir to keep it full. The current impoundment does not and can not fulfil this function because there is no mechanism in place (pumping infrastructure or tunnel) to draw down the water and transfer it to the neighbouring Lake Gordon where the Upper Gordon hydro-electric scheme’s only power station is located.”

It is for this reason that the Lake Pedder Restoration Committee (and others) use the name “Huon-Serpentine Impoundment” for the current lake rather than “Lake Pedder”.

You wrote “the remainder of the water sits there like concrete (just holding up the top two feet)”. That’s a reasonable metaphor.
Personally, I liken the designed role of the impoundment to a non-mechanical pump (although others find this analogy confusing or misleading). I see the impoundment as an “elevation pump”: the Huon and Serpentine Rivers were blocked by three dams, their waters rose behind the dams to an elevation at which the CURRENT FLOW can cross the watershed between the Serpentine and Gordon river catchments and fall into Lake Gordon, from where they pass through the Gordon power station.
There were, of course, other ways of transferring the water across the watershed that did not involve creating this vast diversion pond and flooding the original Lake Pedder. These alternatives were and indeed still are practical.
Posted by Peter Fagan on 27/05/10 at 07:47 AM

63. Shaun #60 wrote:
“Increasing the effective storage capacity of the Gordon scheme by drawing down Pedder would have some advantages in terms of power generation, but there is a significant ecological and aesthetic cost of lowering the level of Pedder”
Regarding the reasons the new Lake Pedder (Huon-Serpentine Impoundment) isn’t lowered:
1. There is no infrastructure in place to lower it. Once the water level drops below the level of the outlet to Lake Gordon (McPartlan Pass Canal), pumps to lift the water into the canal or a tunnel to pass it beneath the watershed would be required.

The raison d’etre of the design was that the ongoing energy loss cost of pumping would never be required and the capital cost of tunnelling could be avoided.
The volume of water in the relatively shallow impoundment was never considered by the Hydro

Electric Commission to be storage, although Hydro was happy for the general public (and the politicians?) to imagine that the new lake, with its vast surface area, was drought-proofing storage.
2. In addition, Hydro and the politicians did not want the impoundment to ever be significantly lowered for aesthetic reasons. They convinced themselves that an artificial lake with a stable water level (no unvegetated scars when the water level dropped) would be regarded by the public as beautiful, and a different but acceptable substitute for the real Lake Pedder.
They also understood that the impoundment, being quite shallow, would not have to drop in level very much before it might be possible (from the air, or from the neighbouring mountain peaks) to see the outline of the original lake.
Just as deposed leaders are oftentimes disposed of anonymously, lest their graves become sacred sites and rallying points for their followers, the Hydro and Tasmania's politicians wanted Pedder buried and invisible forever, in the vain hope that it would be forgotten by even its most ardent devotees.
Posted by Peter Fagan on 27/05/10 at 07:55 AM

64. I will simply point out that the infrastructure IS in place to lower Lake Pedder significantly below it's present minimum level and that some drawdown was intended during the original design of the scheme. For presumably political reasons, an operating restriction was imposed limiting drawdown to 1.5m rather than the originally intended 3.4m.
The key point of Pedder, in an electrical / engineering sense, is that it provides 20% of all inflows to long term storage in Tasmania despite providing a far lesser contribution to total generation.
It is already a significant operating problem that only 30% of generation is from the two major storages, the other 70% being somewhat intermittent in nature

due to dependence on high flow, small storage schemes. Given the need to rely very heavily on major storage when inflows are low, and this is a normal seasonal occurrence, a loss of flow to those storages can not be efficiently offset by an addition of intermittent generation elsewhere (a point often missed).

This limitation becomes increasingly serious in the event that further intermittent generation sources, such as wind, are developed. Whilst many will argue that the Hydro lakes “act like a battery”, the reality is that two thirds of the flow can’t really be used in that way, and the remaining one third is already heavily committed to balancing the other two thirds.

All that said, as someone more concerned about the limitations of fossil fuels than about ever seeing the original Lake Pedder, I will suggest a practical engineering compromise.

1. Drain the Lake, retaining the existing Serpentine Dam as pondage for a pumping / siphon (depending on the storage level of Lake Gordon at the time - pumps will need to be installed but not always used) scheme. This would retain 70% of the physical water flow from Pedder (about 60% of energy after pumping losses) but, critically, it retains it as an inflow to Lake Gordon and not as some run-of-river intermittent generation.
2. Build a new dam and power station on the Huon River well downstream of the existing Scotts Peak Dam (closer to Huonville than to Scotts Peak), thus retaining the SW (most reliable rainfall in the whole state) as a useful catchment area. The new power station would have an output of about 430 GWh per annum. I would suggest it be built with provision for two 125 MW machines, only one of which would be initially installed.

Overall, the above represents an increase of 40% on the energy presently obtained from Pedder and does

so with minimal impact on inflows to long term storage (noting that energy used for pumping is IN THIS CONTEXT irrelevant since pumping would primarily occur at times of high run-of-river inflows elsewhere, thus not requiring generation from long term storage to operate).
If the objective is to restore the original Lake Pedder without forcing the future construction of baseload thermal generation then this is a workable fix that actually delivers a benefit to BOTH sides (ie restored lake, additional system yield and additional peak generating capacity).
Seems like a workable solution to me. Now you just need to find $1 billion or so to make it happen - realistically that would need Australian Government funding.
Posted by Shaun on 29/05/10 at 02:17 PM

65. From http://www.hydro.com.au:
"Lake Pedder
Full Supply level 308.5 m
Minimum Water level 306.9 m
In normal operation its level will not vary by more than 1.5 m in order to restrict the exposure of unsightly mud flats in a particularly scenic region of the State; for emergency operation the Governor may vary the minimum level to 305.4 m by an Order-in-Council."
Shaun, you wrote:
"I will simply point out that the infrastructure IS in place to lower Lake Pedder significantly below it's present minimum level"
Can you explain this further? I assume you are implying that the McPartlan Pass Canal is at such an elevation that it can continue to drain water from the Huon-Serpentine impoundment into Lake Gordon when the level of water in the impoundment is below the stipulated operational minimum of 306.9 m and

even the emergency minimum of 305.5 m. Or are you referring to something else?
The mention above of the mud flats is interesting and demonstrates how Hydro/Government got themselves into a bind with the design they chose.
To compensate for destroying a national park and flooding Lake Pedder, they committed to making the "new" Lake Pedder a place of natural beauty.
Flooding the Serpentine and Huon catchments so they would drain into Lake Gordon created a shallow lake on predominantly flat ground. They were therefore severely restricted in the extent to which they could lower the level of the "new" Lake Pedder, as mudflats would certainly appear even with quite modest drawing down of the impoundment's waters.
The utility of the new Lake Pedder was compromised and the design as it must operate is highly sub-optimal. As Shaun rightly points out, better designs are now (and were then) available.
Posted by Peter Fagan on 30/05/10 at 03:35 PM

66. Shaun #64 your suggested practical engineering compromise at the Serpentine end accords very much with my thinking. As you appreciate, the level of Lake Gordon is, these days, so low for so much of the time that it would often not be necessary to pump Serpentine water through a tunnel into Lake Gordon - gravity alone would transfer it.
I hadn't quite come to grips with the potential for generation of electricity downstream on the Huon from the Huon part of the impoundment, so I am most interested to be made aware of that.
My thinking was it might be best to not drain the Huon part of the impoundment - firstly to reduce the land rehabilitation cost and risk, and secondly to retain this part of the impoundment as a reservoir that could in future supply water where needed in south eastern Tasmania.

I am pleased to learn that the Huon waters need not be lost as a source of “clean and green” electricity.
Posted by Peter Fagan on 30/05/10 at 03:40 PM

67. The original intention was that the canal would not normally be closed, such that the level of Lake Pedder at any given time would be a function of recent inflows (noting that flow through the canal will naturally decrease as the lake level falls such that it would rarely reach normal minimum operating level).

Assuming that Lake Gordon is not full (and with energy demand exceeding long term Hydro inflows it is unlikely to ever be full), from a purely engineering perspective it makes sense to operate the system so as to have as much of the combined Pedder / Gordon volume in Lake Gordon as possible, thus maximising head at Gordon Power Station and avoiding a “locked up” problem in respect to the water in Pedder in the event that Lake Gordon did approach empty (noting that maximum flow through the canal is well below maximum discharge rate from Gordon Power Station, meaning that Gordon could run dry whilst Pedder storage remained well above minimum level - it’s never happened but it is possible in an emergency).

Although not generally a problem in practice, a higher level in Pedder does increase the chance of spill from Pedder during a high rainfall event (noting that in this scenario Lake Gordon would likely be nowhere near full due to its’ greater volume relative to inflows). The practical effect of this is a small (in practice trivial) net reduction in inflow to Lake Gordon. Depending on future climate patterns, it may at some point become more significant.

If it weren’t for the aesthetics, the logical operating strategy would be to leave the canal permanently open and simply ignore the level (and appearance) of Pedder, thus maximising water levels in Lake Gordon

and minimising the potential for spill. Restricting the level is this in itself a compromise.
As for any use of the Huon downstream, if the Scotts Peak Dam were retained as a regulating pondage (ie allowed to partially fill during high rainfall events, useful as a means of flood control downstream) then that would improve regulation of flow (ie it effectively increases storage capacity) through any power station on the Huon, noting that such a scheme would have a relatively small storage capacity.
Under that scenario and depending on what assumptions you make as to rainfall, output could exceed 500 GWh per annum which isn't a great deal less than the present contribution from Pedder. That is from one dam and associated power station, the Huon scheme, and does not include the possibility of building a second, much smaller, dam at Judbury (producing around 50 GWh per annum).
As I've said, I'm not unhappy with Pedder the way it is at presnt. But I would say that swapping the existing Lake for a diversion from the Serpentine into Lake Gordon plus a new dam on the Huon is a more than acceptable compromise in terms of power production.
On the other hand, simply draining the Lake and taking no action to address the reduced flows into Lake Gordon would add to the existing difficulties with limited flows into long term storage, thus futher limiting the ability of the system to balance intermittent generation elsewhere. Given the limited nature of oil and gas reserves, plus the problems associated with coal (or nuclear) power, I wouldn't see such a situation as acceptable from a sustainability (or simply economic) perspective.
So:
560 GWh presently from Pedder, dispatched (electrically) as fully regulated generation from Gordon Power Station as required.

OR
390 GWh from Serpentine catchment dispatched as above.
PLUS 500 GWh from the Huon scheme. Flows not fully regulated, but with sufficient storage to permit peaking operation during the dry season as required.
Increase in system peak generating capacity of 100 - 150 MW from new Huon power station.
LESS about 60 GWh used for pumping from Serpentine into Lake Gordon, noting that this energy would be used mostly at times of high system inflows and is thus not an additional load on the system during dry periods. Assuming some pondage was retained via Serpentine Dam, the pumps would also be modestly oversized so as to enable them to be switched off at peak electricity demand times, thus avoiding any addition to system peak demand.
As I've said, I'm more concerned about the future energy situation than about draining any lakes. BUT if both the Serpentine and Huon waters were put to use then from an energy perspective I can't see anything wrong with the idea in a technical sense, indeed in most respects it constitutes an overall improvement to the system.
Posted by Shaun on 01/06/10 at 11:34 PM

68. Shaun thanks for the detailed response at #67 - greatly appreciated.
As a general observation, Lake Gordon being apparently permanently stuck at a low level does enable us to revisit the entire design and configuration of the power scheme.
The fact that transfer of Serpentine water by tunnel would generally be against a low head or no head at all and could be powered by wind power (when available) or off-peak power, greatly diminishes the economic and engineering rationale behind the existing "flood and transfer the overflow" design.
Posted by Peter Fagan on 04/06/10 at 04:15 PM

69. The discussion re the possibilities of reconfiguration of the Middle Gordon Power Scheme (Serpentine Dam alone) was interesting and certainly deserves investigation although I would not support a new storage on the Huon River for hydro power purposes. The other interesting aspect of the discussion was the extent it moved away from the conservation thinking which resulted in the establishment of the Lake Pedder National Park, the battle to save it and the decision not to build the Gordon below Franklin Dam. These values I believe should have centre stage. With regard to the restoration prospects all the evidence of button grass regrowth around dams which have remained at low levels for several years suggests that this will be no problem - the peat is still there.

Posted by Geoff Mosley on 15/06/13 at 03:04 PM

- See more at: http://tasmaniantimes.com/index.php?/weblog/article/professor-west-reminds-tasmania-that-hydro-past-constrains-future/#sthash.QMOgsljb.dpuf