Impacts of electricity restructuring on householders, and policy options to address them

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Social impacts of activities: restructuring
Predicted social impacts of: investment and pricing in the restructured environment – and of re-restructuring

- Who is making decisions on these?
  - Investment – Energy companies, and Electricity Commission
  - Pricing – Nobody!
  - Re-restructuring: Government, Electricity Commission
- Who is responsible for assessing impacts?
  - Of investment projects – regional councils, tribunals, Env't Court
  - Of energy strategies – hopefully regional councils
  - "Economic impacts" Electricity Commission, but narrowly defined
  - Impacts of pricing – Nobody!
- What data sources are used in this paper?
  - Energy Data File, MED Information Disclosure (from tariff data)
  - Company Annual Reports (Profits – Net Profit after Tax)
  - Social impacts – surveys, Wnmeds, CABureaux, HEEP

Trends in domestic electricity prices since 1986

- Pre-restructuring: constant nominal tariffs followed by sudden rises
- NZED monopoly on generation, politicised prices - all-electric houses
- 1986 ECNZ corporatised, prices rose
- Further price rises after local power board restructuring, and winter shortages
- Price fell 1998-2001 following generation surplus
- Fixed charges mean small consumers pay more

Direct impacts

- Low income consumers spent over 7% income on fuel+power; increasingly switching to LPG: condensation
- Houses are cold (not only low-income), medical consequences
- All consumers: high prices cause leakage of $ out of regional economies

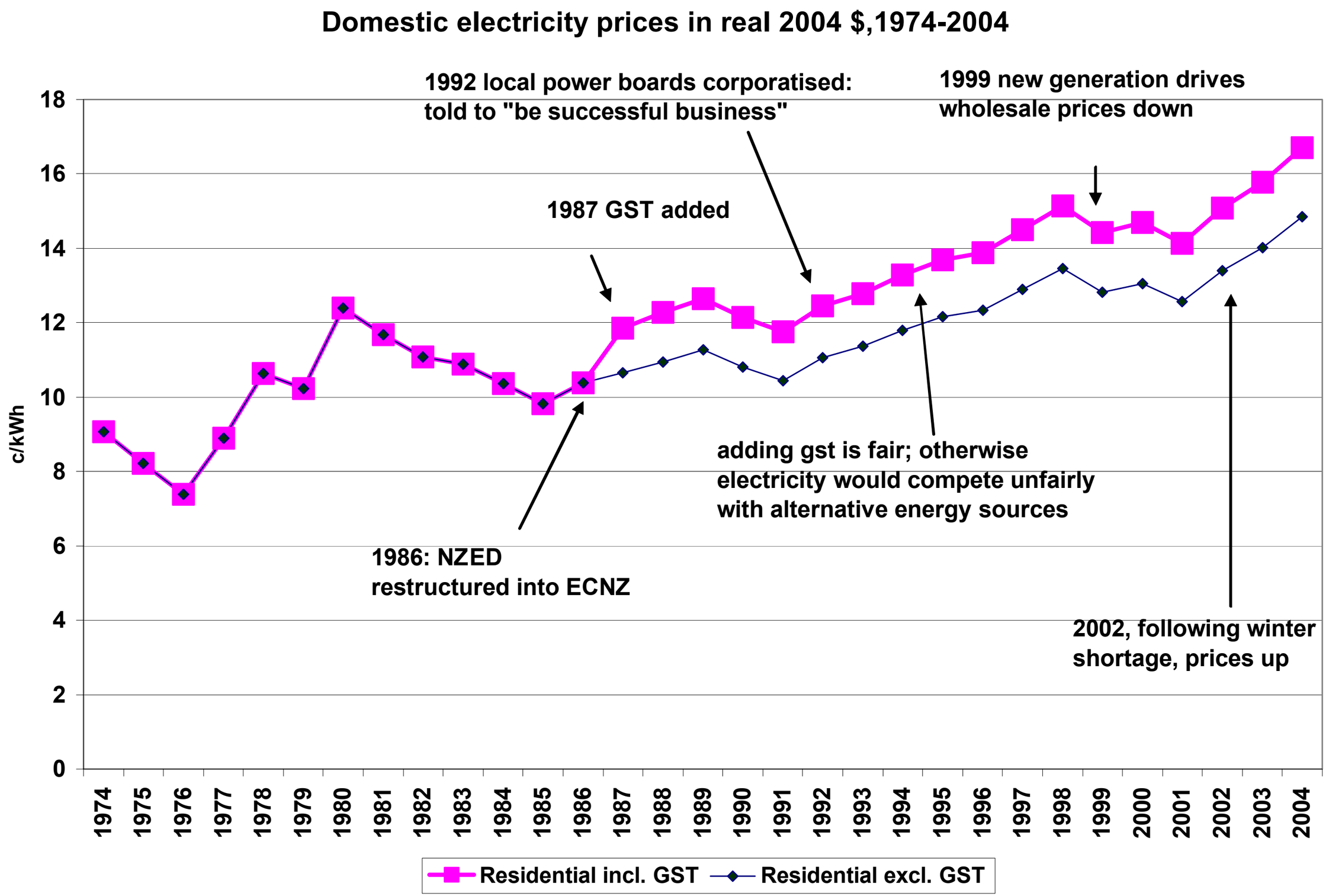
Policy options to reduce or mitigate impacts

Low Income issues:

- Promote Low Fixed Charge tariff
- ensure prepay meters available <u>and</u> reasonably priced <u>not</u> 28c/kWh
- major revamp of energy efficiency retrofits
- No easy answer as to how these should be funded.

Issues relating to economy as a whole and to all consumers

- Define and mitigate market power of generators
- Recognise and describe impact of strategic (transmission) decisions on future energy economics
- Write this into regional energy policies!!
- Accept the fact that real costs are increasing; not economically efficient to expand conventional supply system indefinitely
- Investment priority should be distributed energy resources: modernise!
- Address conflicts of interest within Government, Electricity Commission


Domestic electricity prices in real 2004 $,1974-2004
1992 local power boards corporatised:
told to "be successful business"
1999 new generation drives
wholesale prices down
1987 GST added
adding gst is fair; otherwise
electricity would compete unfairly
with alternative energy sources
1986: NZED
restructured into ECNZ
2002, following winter
shortage, prices up
c/kWh
0
2
4
6
8
10
12
14
16
18
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
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1993
1994
1995
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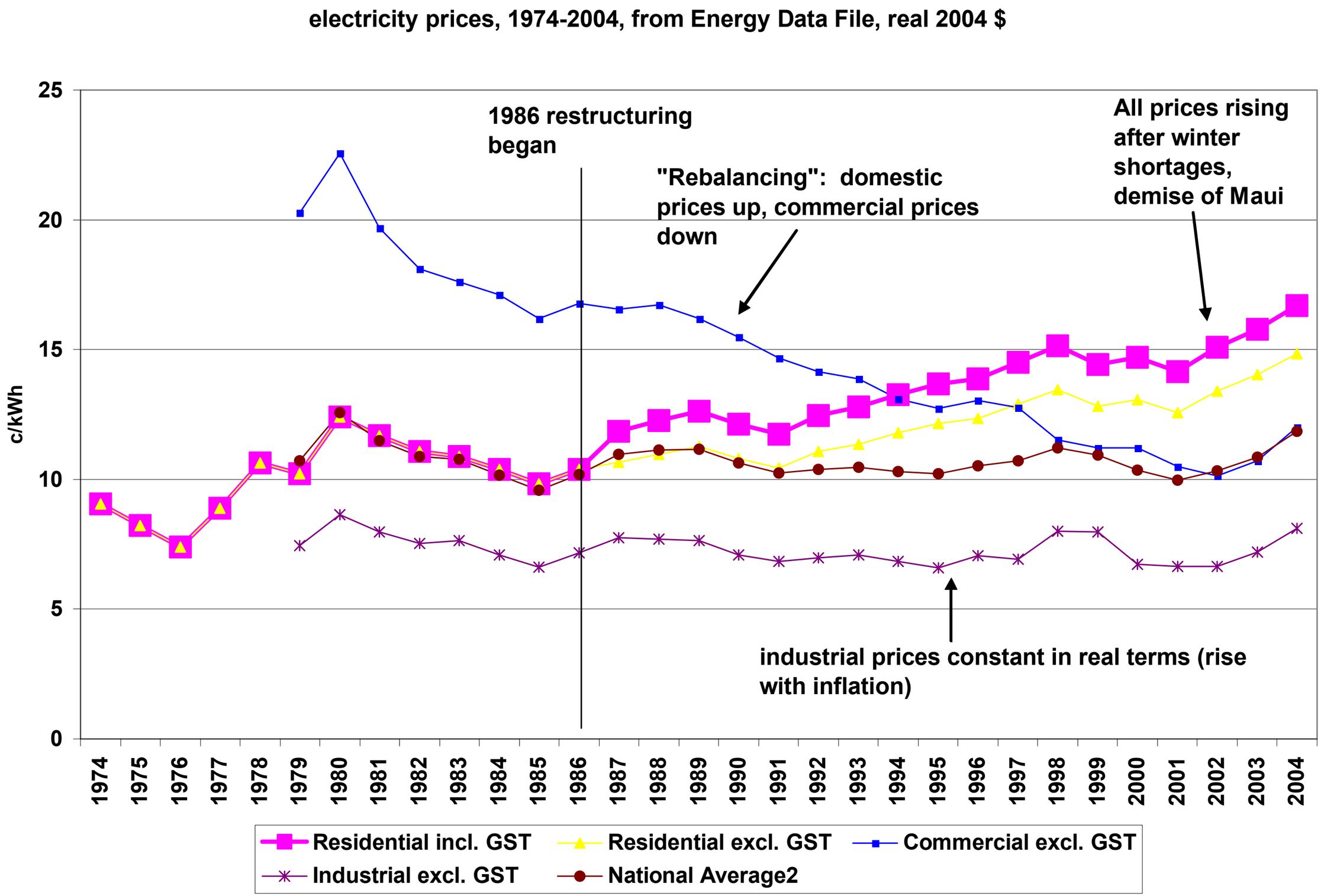
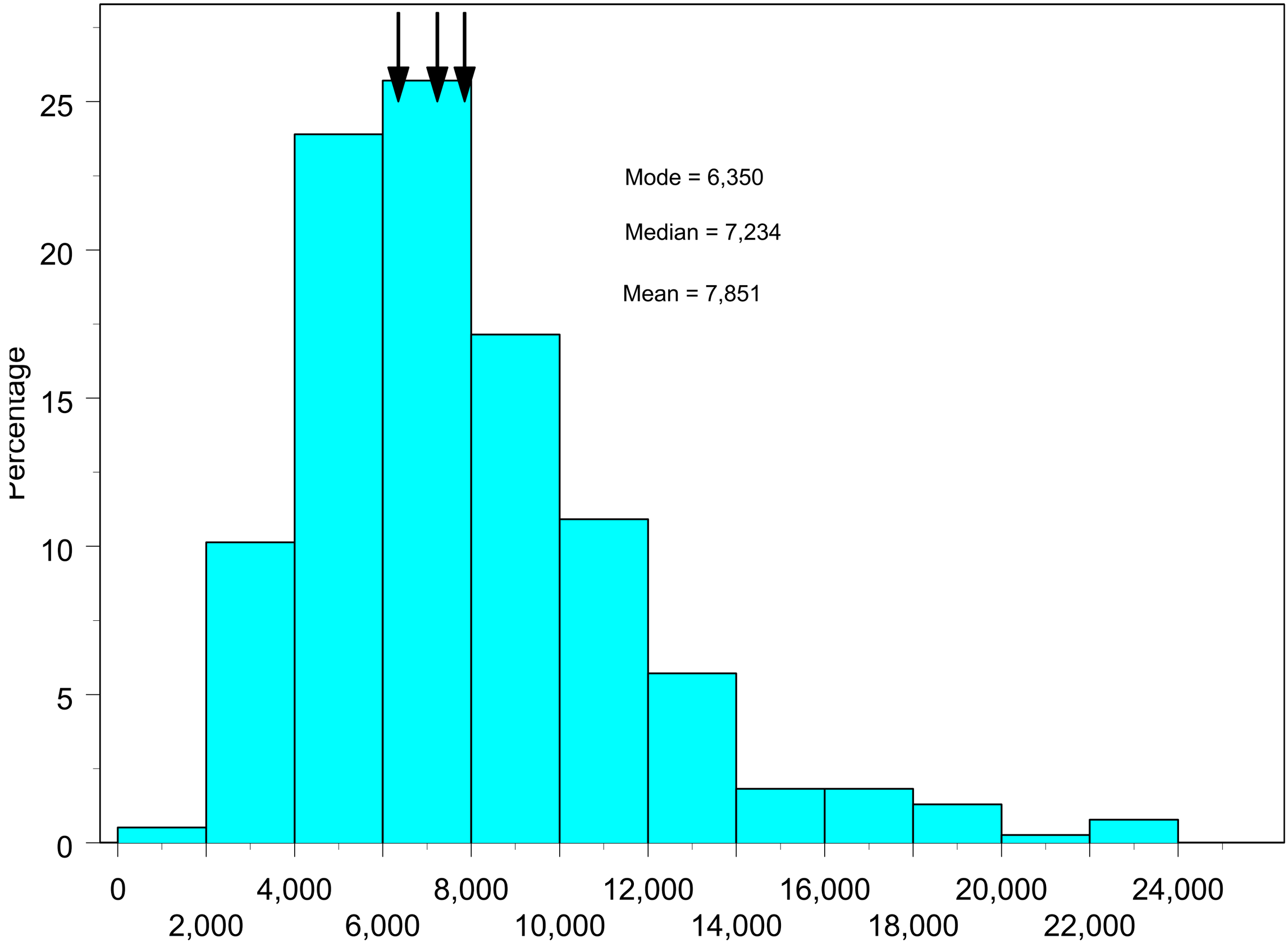
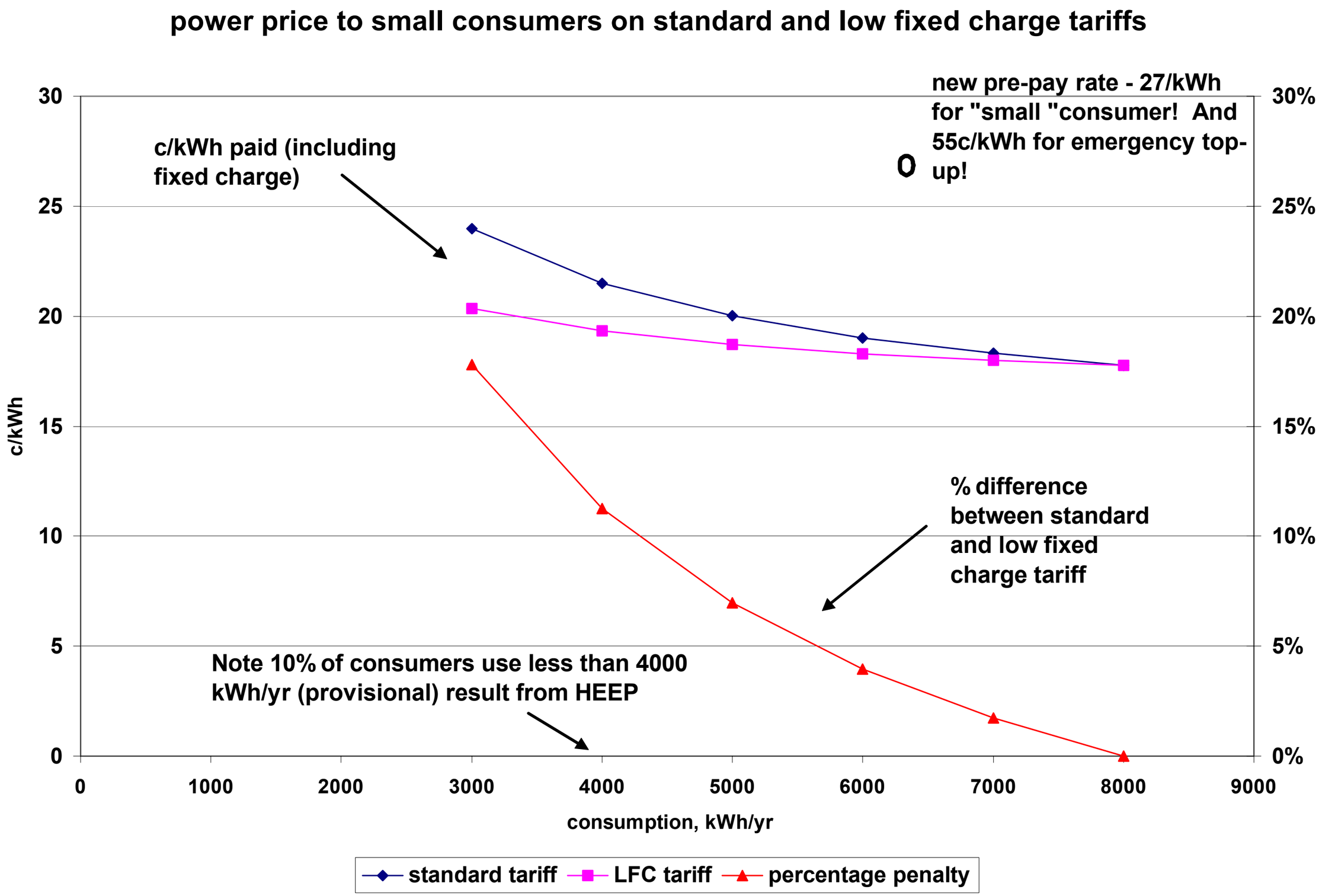
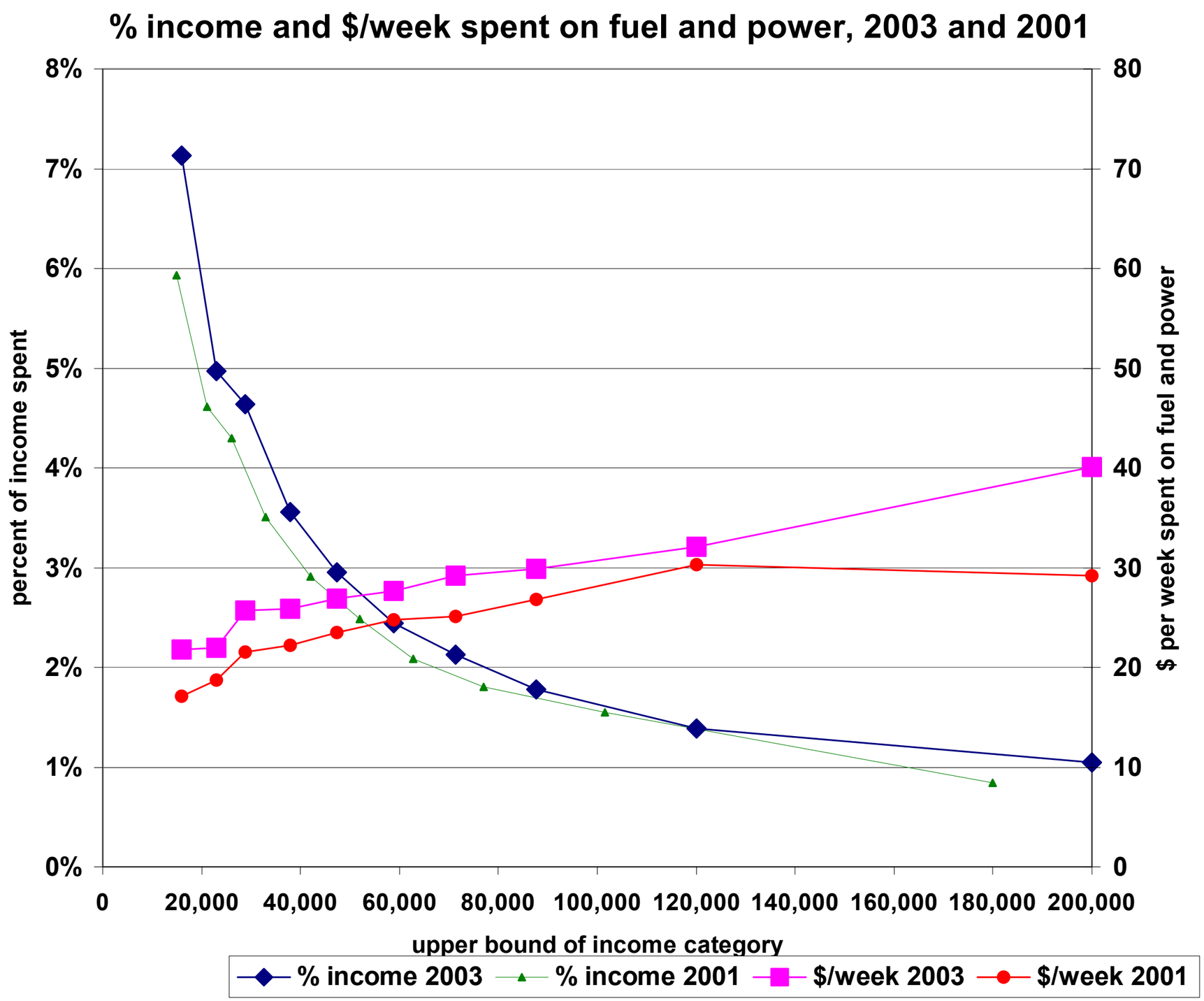
1997
1998
1999
2000
2001
2002
2003
2004
Residential incl. GST
Residential excl. GST


electricity prices, 1974-2004, from Energy Data File, real 2004 $
c/kWh
25
20
15
10
5
0
1986 restructuring began
"Rebalancing": domestic prices up, commercial prices down
All prices rising after winter shortages, demise of Maui
industrial prices constant in real terms (rise with inflation)
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Residential incl. GST
Residential excl. GST
Commercial excl. GST
Industrial excl. GST
National Average2


Mode = 6,350
Median = 7,234
Mean = 7,851
Percentage
0
5
10
15
20
25
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
20,000
22,000
24,000


power price to small consumers on standard and low fixed charge tariffs
new pre-pay rate - 27/kWh for "small "consumer! And 55c/kWh for emergency top-up!
c/kWh paid (including fixed charge)
% difference between standard and low fixed charge tariff
Note 10% of consumers use less than 4000 kWh/yr (provisional) result from HEEP
c/kWh
30
25
20
15
10
5
0
30%
25%
20%
15%
10%
5%
0%
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
consumption, kWh/yr
standard tariff
LFC tariff
percentage penalty

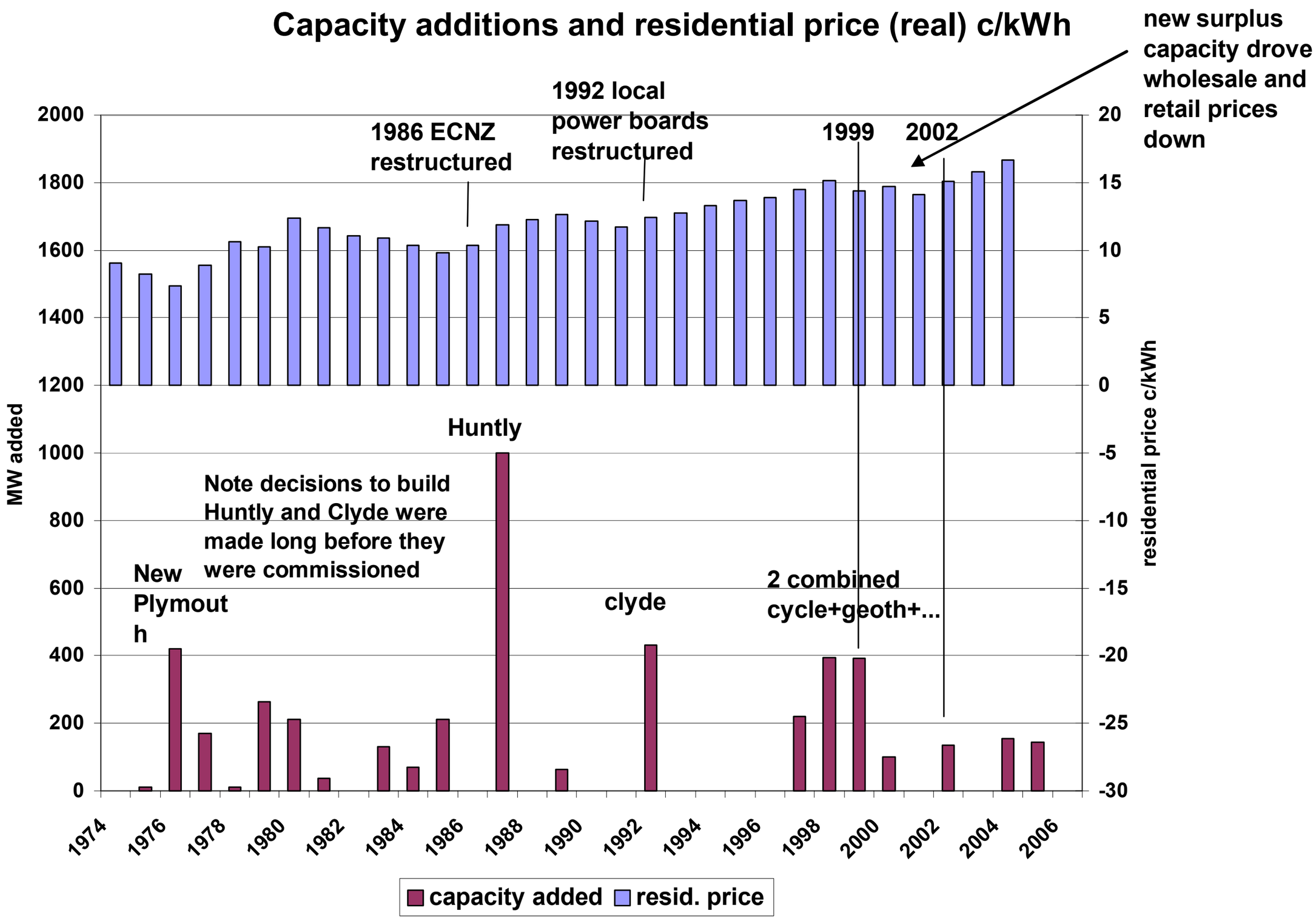

% income and $/week spent on fuel and power, 2003 and 2001
percent of income spent
$ per week spent on fuel and power
8%
7%
6%
5%
4%
3%
2%
1%
0%
80
70
60
50
40
30
20
10
0
0
20,000
40,000
60,000
80,000
100,000
120,000
140,000
160,000
180,000
200,000
upper bound of income category
% income 2003
% income 2001
$/week 2003
$/week 2001

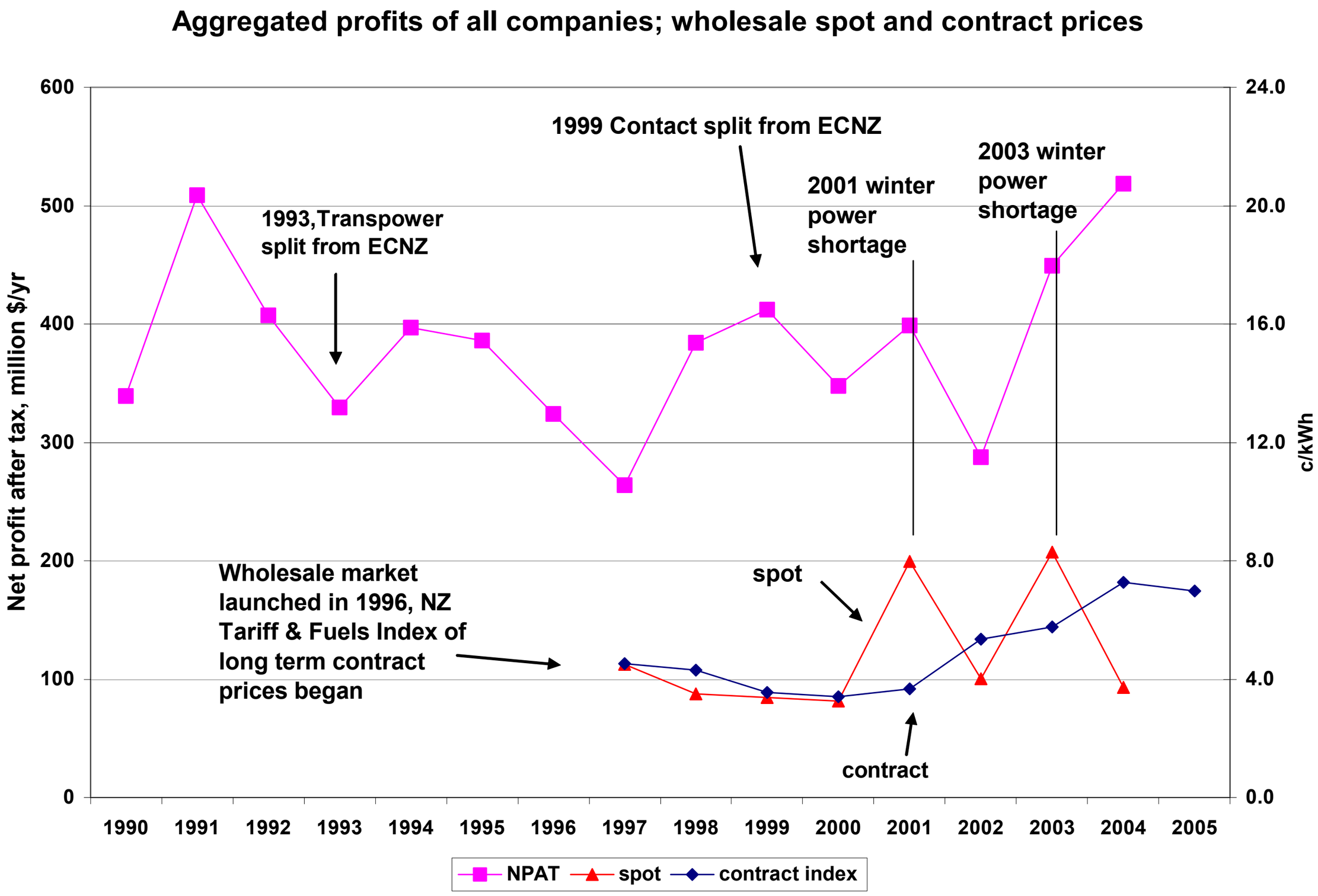
Price rises “justified” as needed to enable investment in new generation, to meet demand growth. Wrong!

- Small and low-income consumer demand is not increasing – evidently suppressed by budgets
- Demand increases coming from larger users (irrigation, commercial buildings, industry) most of whom get cheaper electricity

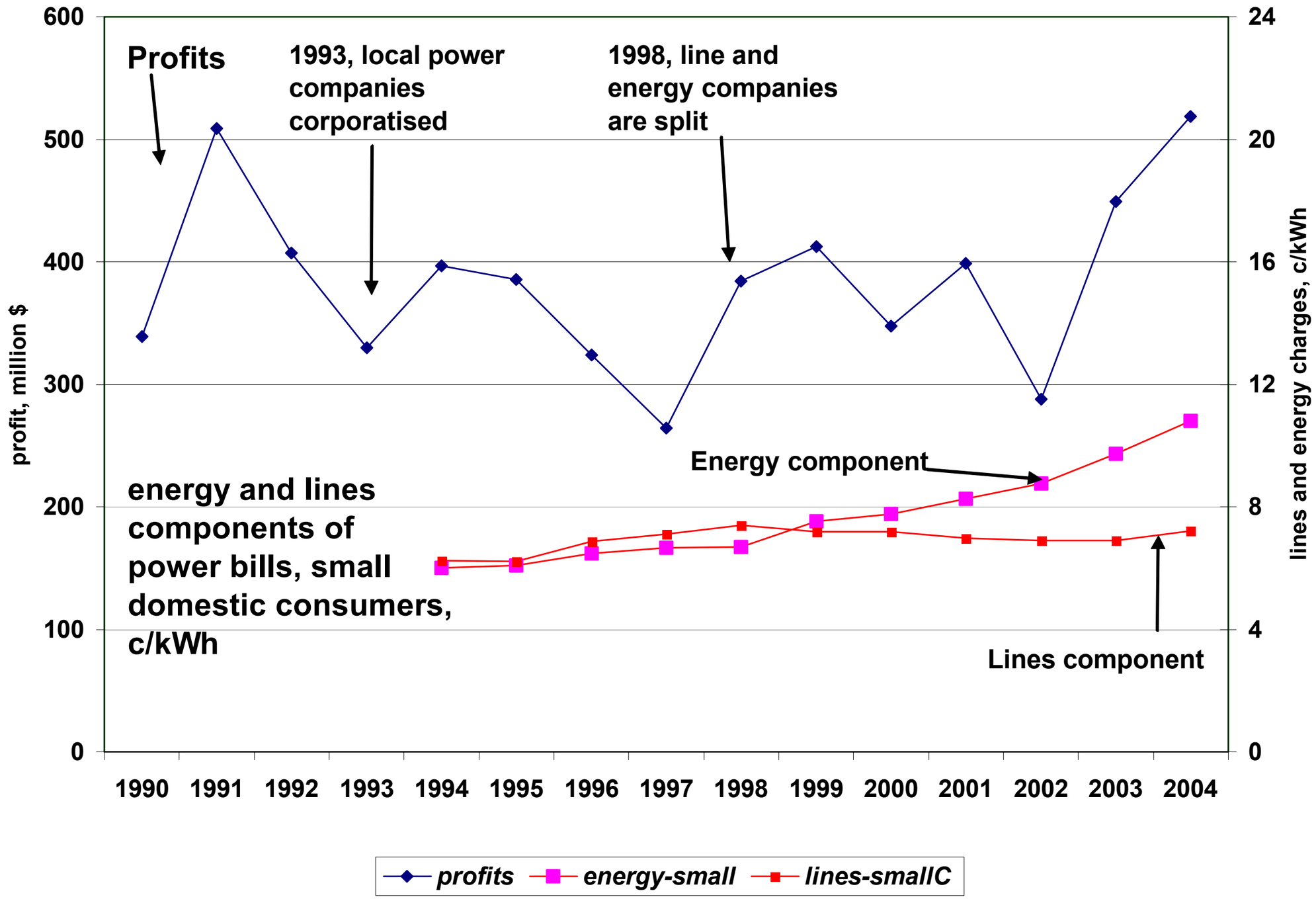
Following graphs will show:

- Spot prices soared <u>before</u> winter demand peaks
- some $ invested in Australia not NZ
- Companies use captive customers to manage price risk of generation
- In an effectively competitive market, companies could not raise prices above costs


Capacity additions and residential price (real) c/kWh
new surplus capacity drove wholesale and retail prices down
1992 local power boards restructured
1986 ECNZ restructured
1999
2002
Huntly
Note decisions to build Huntly and Clyde were made long before they were commissioned
New Plymouth
clyde
2 combined cycle+geoth+...
MW added
residential price c/kWh
2000
1800
1600
1400
1200
1000
800
600
400
200
0
20
15
10
5
0
-5
-10
-15
-20
-25
-30
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
capacity added
resid. price


Aggregated profits of all companies; wholesale spot and contract prices
Net profit after tax, million $/yr
c/kWh
600
500
400
300
200
100
0
24.0
20.0
16.0
12.0
8.0
4.0
0.0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
1993,Transpower split from ECNZ
1999 Contact split from ECNZ
2001 winter power shortage
2003 winter power shortage
Wholesale market launched in 1996, NZ Tariff & Fuels Index of long term contract prices began
spot
contract
NPAT
spot
contract index

Retailer-generator aggregate profits and retail energy prices



Policy options, national level: Independent analysis needed

- Surplus profits represent leakage of $ from local, regional economy
- Determine whether profits reflect fair cost of capital, or market power of generators and retailers
- Electricity Commission's Market Surveillance Committee only investigates market power but only in spot market, not contract market
- Electricity Commission does not address price levels in retail market, only retail contracts.

Policy options, national level: analysis needed of rules and “institutions”

- Electricity Commission <u>not</u> independent of the companies it regulates; e.g. calls for submissions on its work programme <u>only</u> from Market Participants

- Commerce Commission addresses “fair” pricing for lines, from viewpoint of consumers. Nobody is responsible for “fair” pricing of energy component.

- Analysis needed: how to achieve balance in Grid Investment Test, which now counts benefits only to “electricity industry” not economy as a whole

- Analyse whether past and future amendments to RMA favour Think Big energy strategies over regional energy development

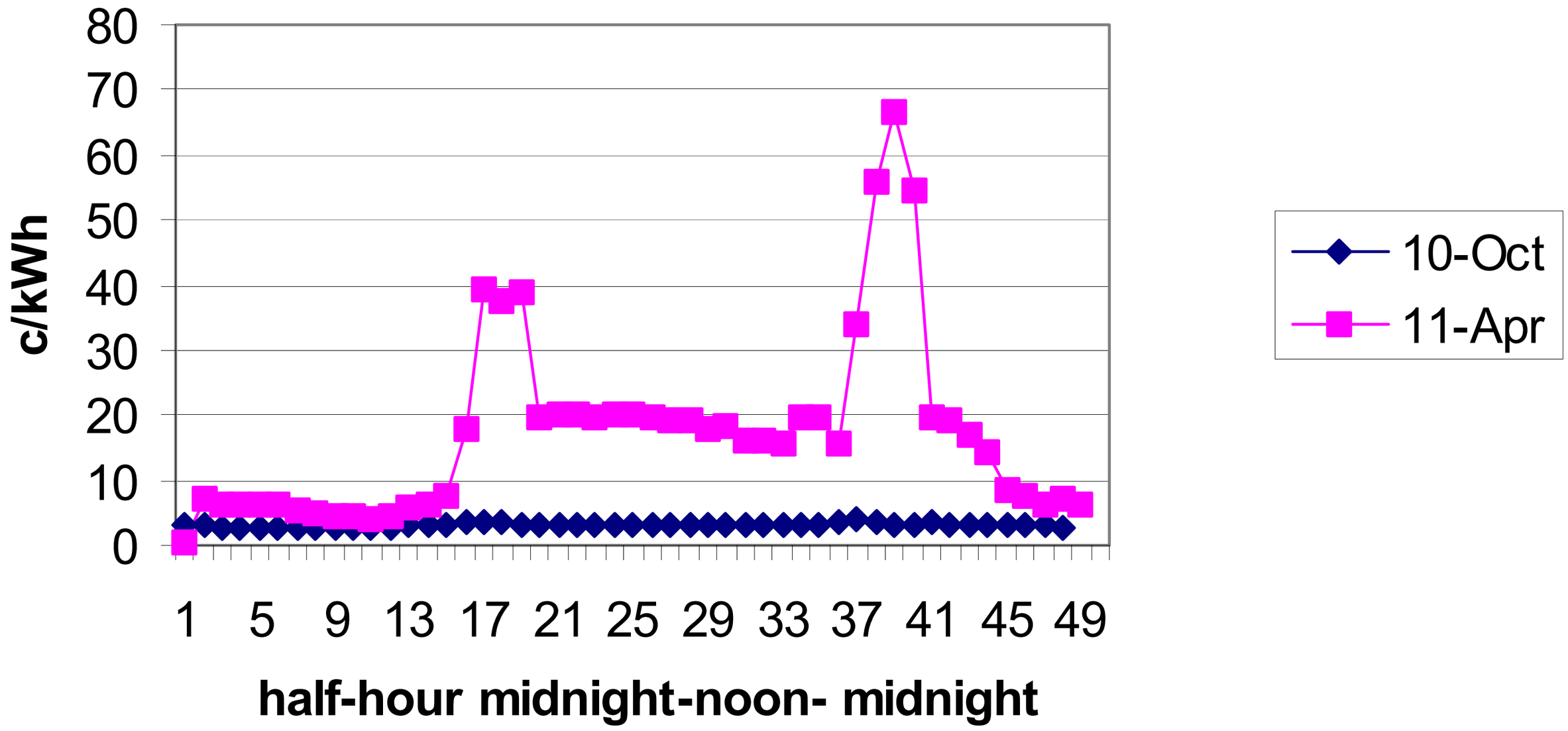
Policy options regional level: must be evidence-based

- Identify regional resources of energy supply and savings
- Identify environmental and social costs and benefits of development
- Create regional energy strategy for comparison against proposed Think Big energy developments (Transmission lines, big power stations, coal mines, hydro, etc)
- In most cases big power stations and transmission lines not the cheapest way to meet demand
- Many tiny investments in energy supply and efficiency near customers are more cost-effective and give extra benefits – health, jobs, security of supply
- “Efficient reliability” investments reduce peak and energy demand and reduce CO2 emissions
- Policy environment today supports think big investments; must change.

Household consumers an important part of new investment paradigm

- Households take 60% of demand during winter peaks north of Auckland (giant pylons)
- Home insulation, CFLs, natural gas, efficient wood burning etc etc could reduce those peaks
- Ripple control not enough, smart metering could reward price-responsive demand
- “Housepower” concept: customer-centred locally organised whole-house audits and retrofits <u>appropriate</u> to each household; high value of peak and energy electricity savings recognised, leading to lower power bills

BUT -

- Companies (including State-Owned generator-retailers) have no incentive to encourage demand reduction - it reduces their profits.
- Conflicts of interest within Government and the Electricity Commission must be mitigated if these opportunities are to be realised.

Spot price, ordinary and peak days, Haywards, yr 2000