
Projecting the impacts of energy programs in Australia

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What I will cover

- ✍ Historical and projected trends in energy efficiency of selected appliances
- ✍ Estimated impacts of energy programs
 - » Energy labelling (introduced 1986-90)
 - » MEPS (introduced 99, but expected 96)
- ✍ Australia only, not New Zealand
 - » No equivalent market monitoring in NZ
- ✍ New appliance efficiency only, not stock

Data periods – actual trends

- ✍ Pre1986: Age of Guesswork
 - » no standard test, patchy model data
 - » limited market data (sales and price)
- ✍ 1986 to 1993: Age of Improvisation
 - » Standard test, complete model register
 - » Incomplete market data
 - Model-weighted analysis
 - Partial sales-weighted
 - Model succession analysis

Data periods – actual trends

- ✍ Since 1993: Golden Age (almost)
 - » Standard test, complete model register
 - » Good market data
 - 70-90% coverage of refrigerator, freezer, dishwasher, clothes washer, dryer model sales
 - No coverage of airconditioners, water heaters
 - » Can track all main appliance attributes
 - Size, features, energy performance
 - » Can analyse price-energy relationships

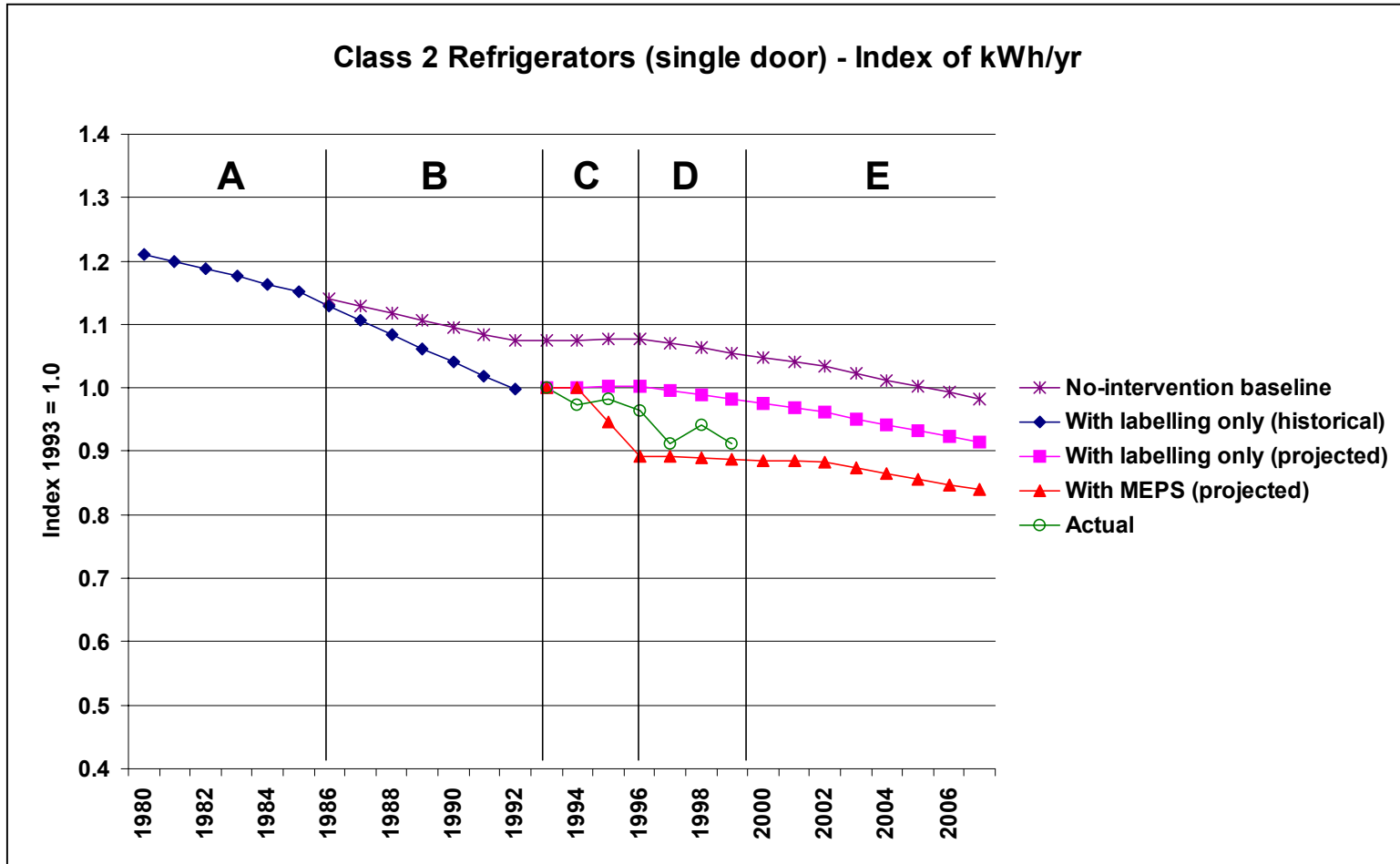
Baselines

- ✍ Program impact is difference between “baseline” and “actual”
 - » “Actual” trend alone not enough
- ✍ Pre-intervention baseline often hard to estimate
 - » Only get full data after program starts
- ✍ Post-intervention baseline can never be verified
 - » Program impact will always be an estimate

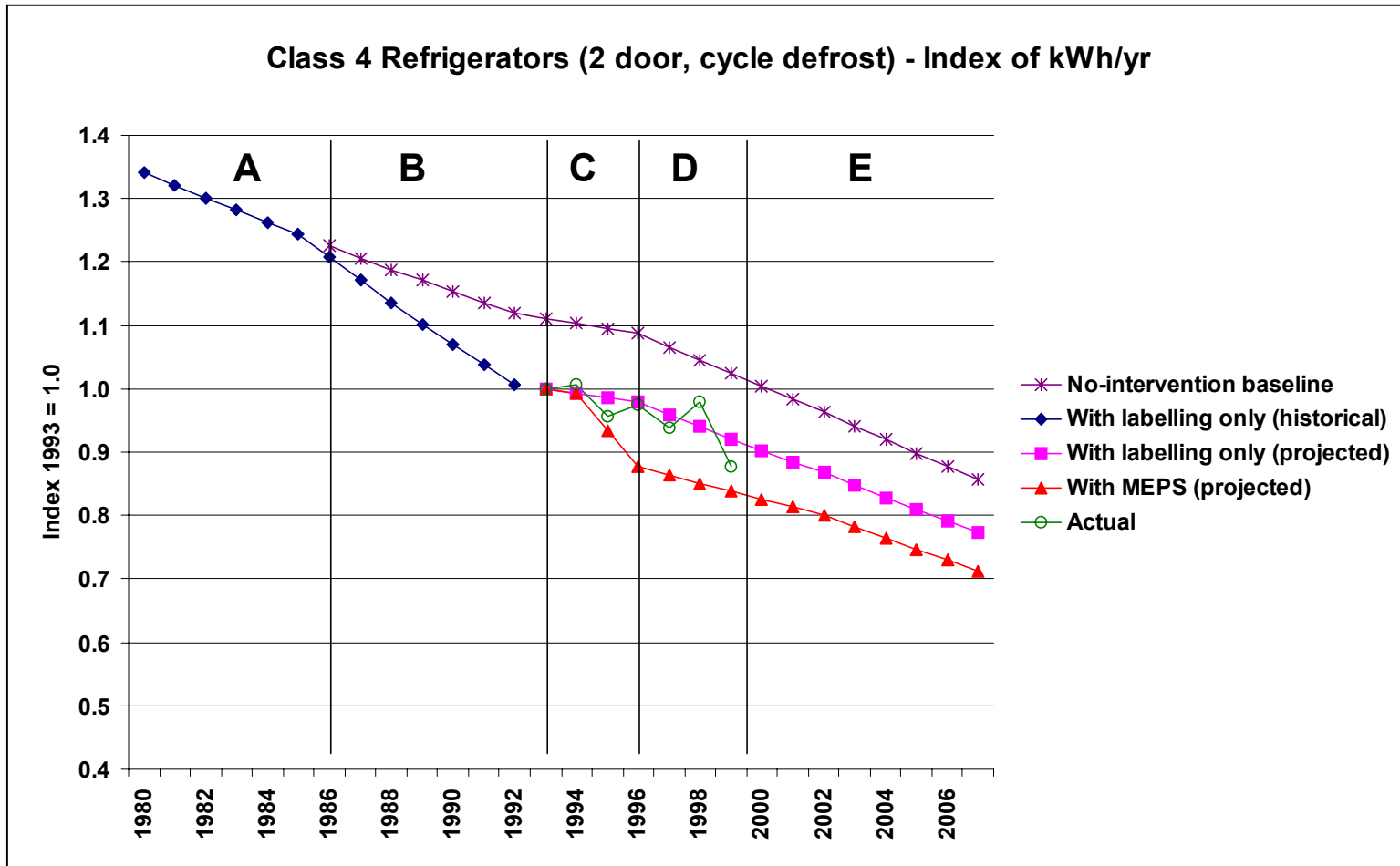
Trends in following diagrams

- ✍ No-intervention baseline
- ✍ With labelling only
 - » Historical to 1993, then projected
 - » Acts as baseline for MEPS
- ✍ With MEPS (projection made in 1992)
 - » Assumed start in 1996 – actual start 1999
- ✍ Actual sales-weighted energy (eg kWh/yr)
- ✍ All trends are indices with 1993 = 1.0

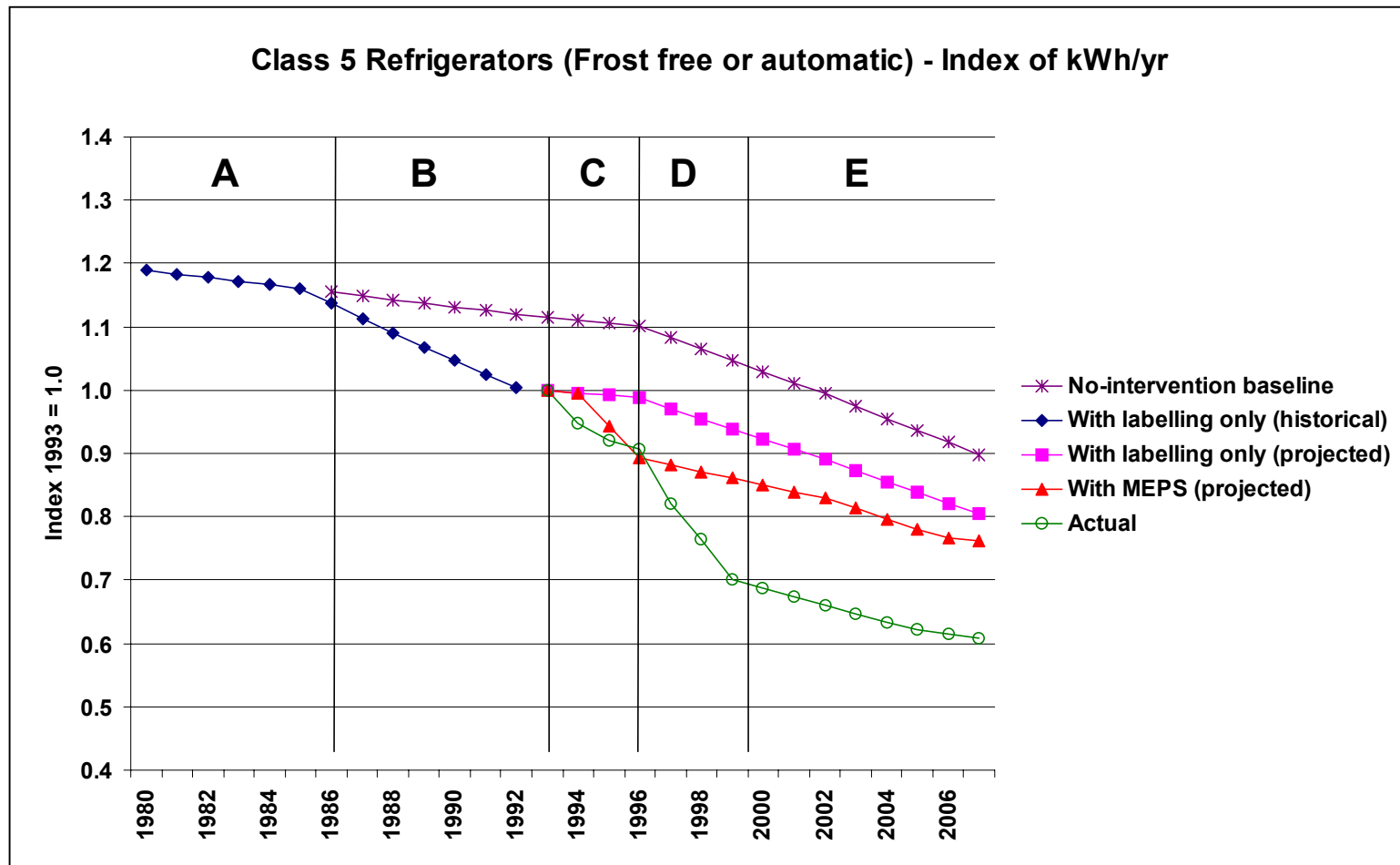
Refrigerator – single door



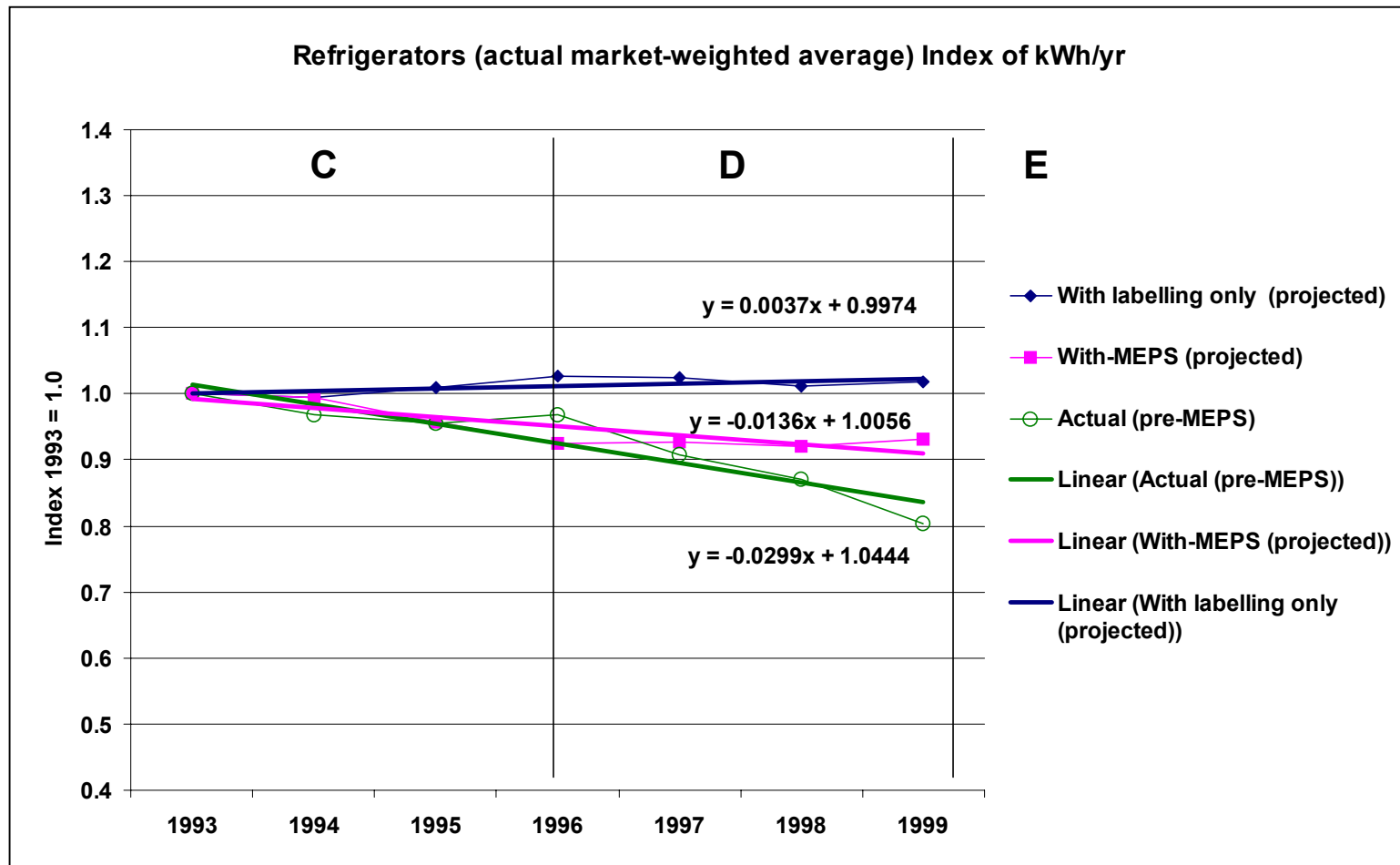
Refrigerator-freezer (cyclic)



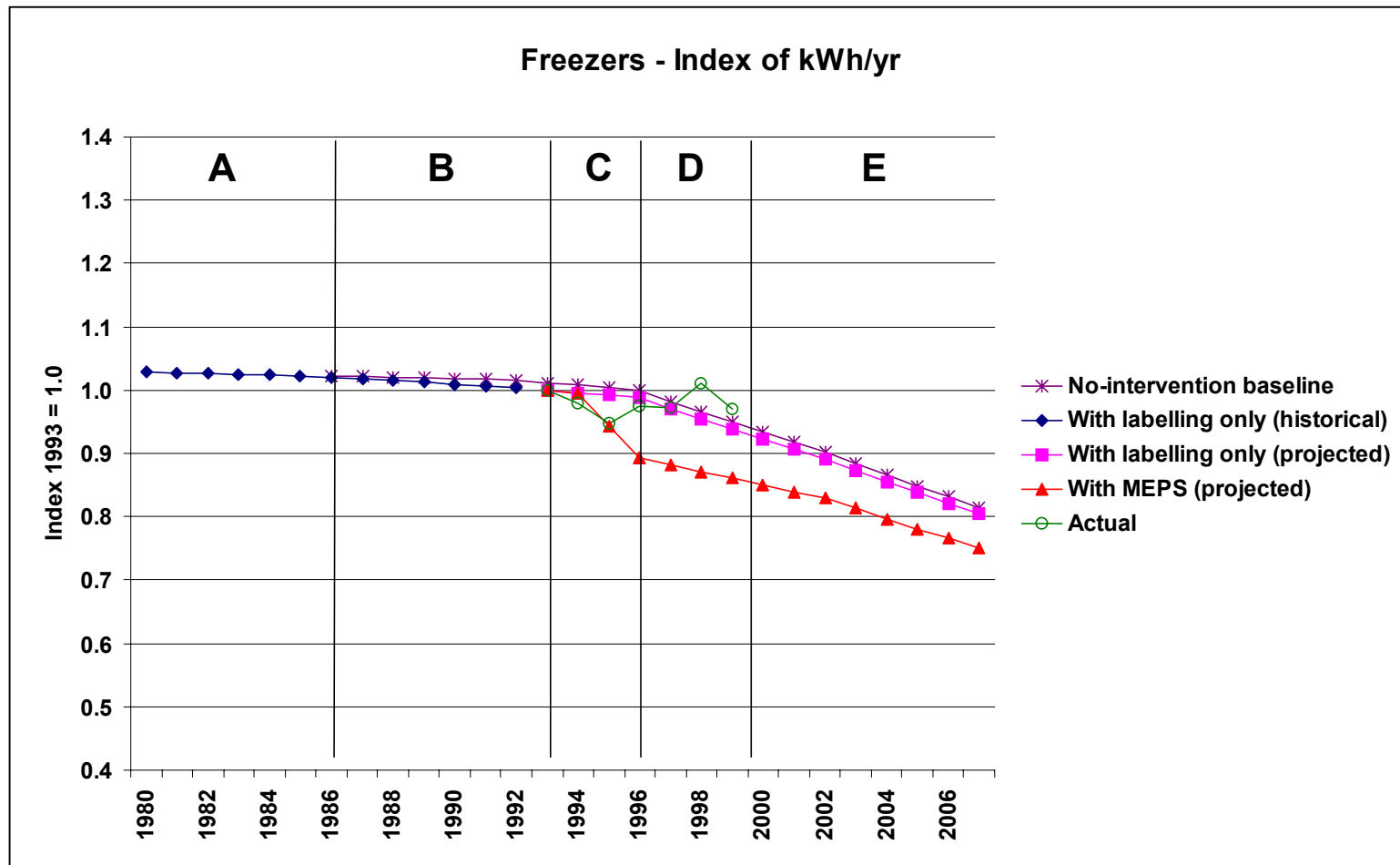
Refrigerator-freezer (auto)



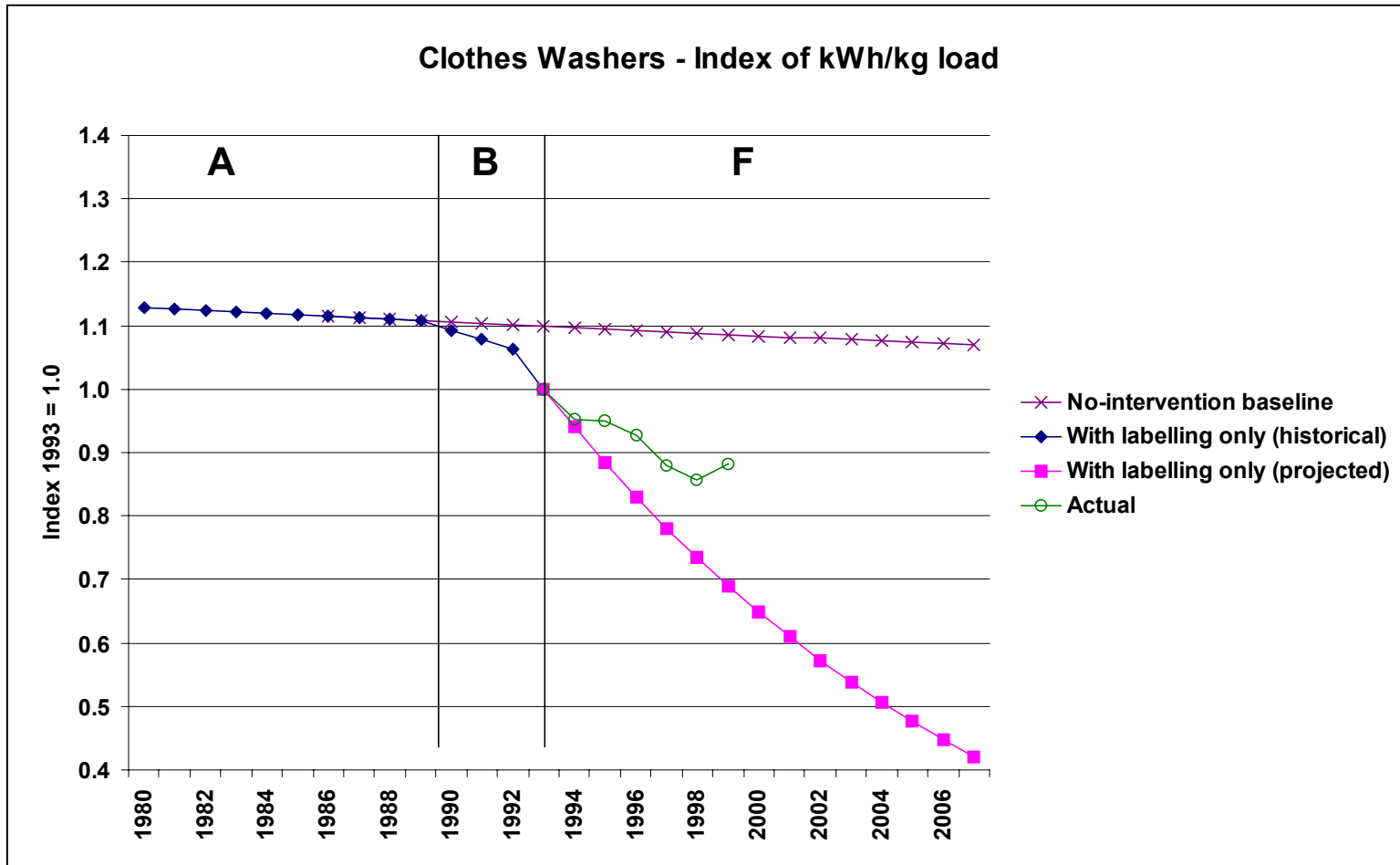
Refrigerators (3 types)



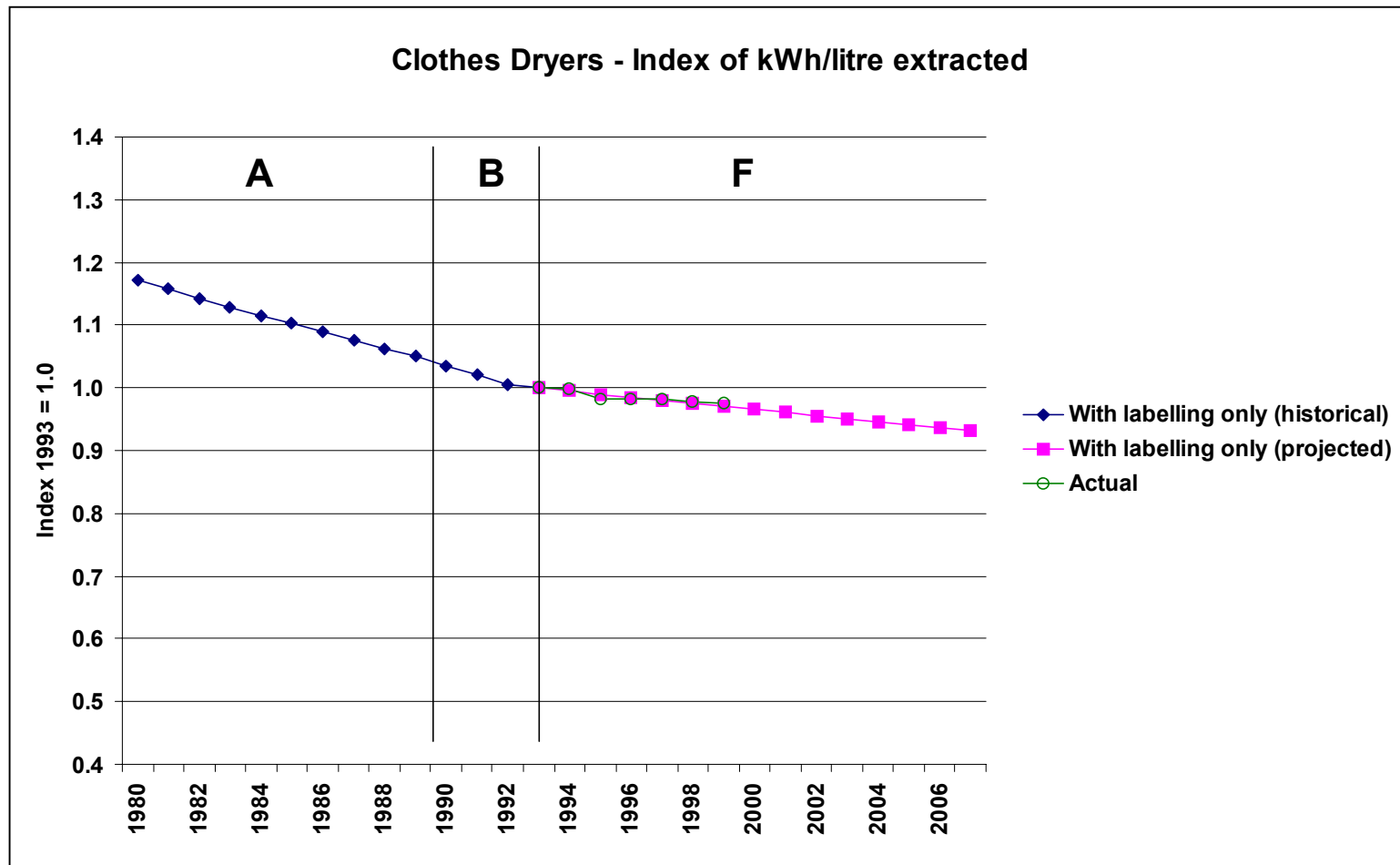
Freezers (all types)



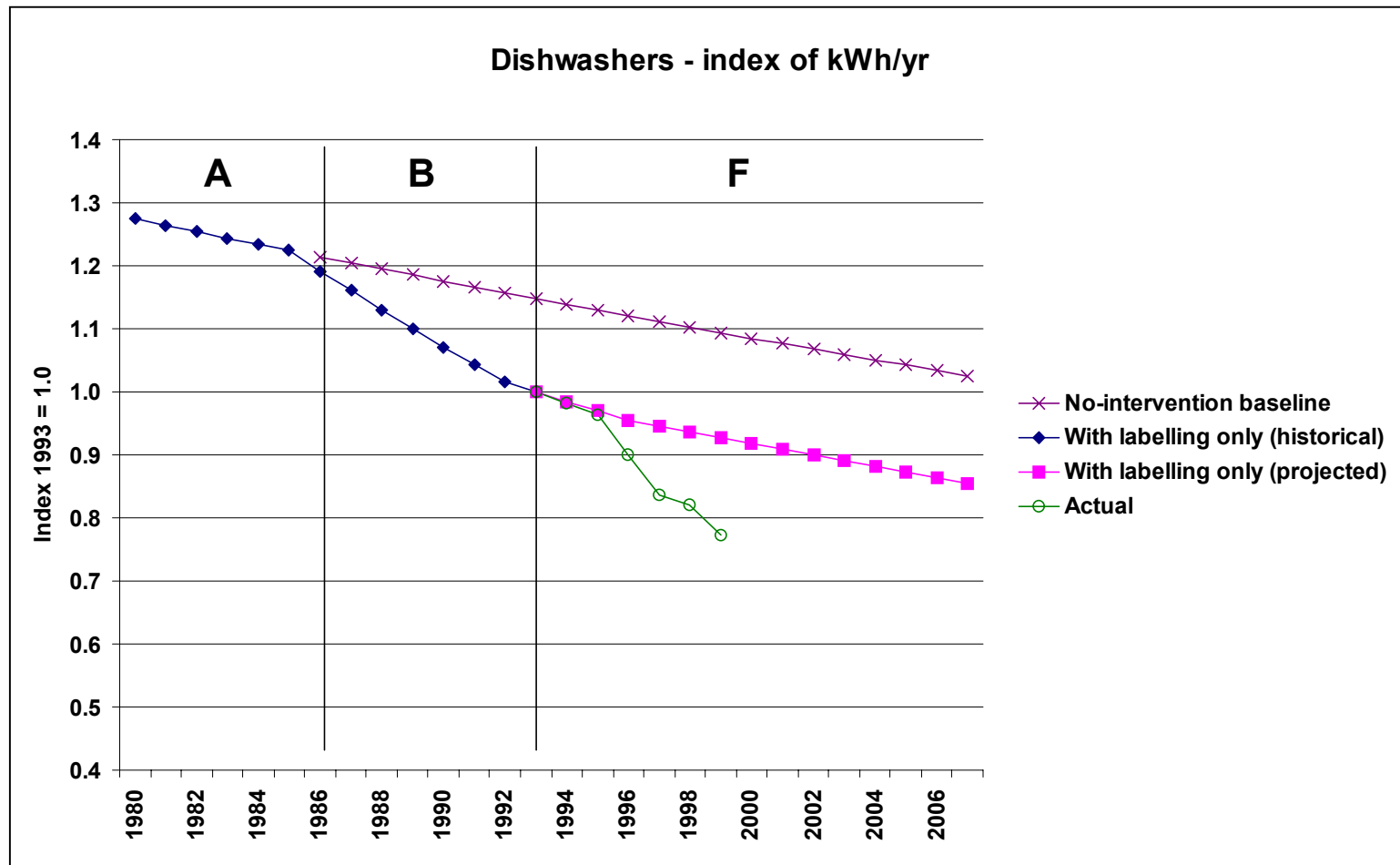
Clothes washers



Clothes dryers



Dishwashers



Conclusions - projections

- ✍ Accuracy of projections?
- ✍ Fairly accurate for 3 products:
 - » Single door refrigerators, cyclic refrigerators, clothes dryers
- ✍ Underestimated improvements for 2:
 - » Auto refrigerators, dishwashers
- ✍ Overestimated improvements for 2:
 - » Freezers, clothes washers

Changes in energy indices

	Efficiency 1980	Efficiency 1999	Estimated reduction	Annual rate	Baseline 1999	Actual cf baseline
Refrigerator – single door	1.212	0.911	-25%	-1.6%	1.055	-14%
Refrigerator – cyclic defrost	1.341	0.878	-35%	-2.3%	1.024	-14%
Refrigerator – frost free (auto)	1.190	0.701	-41%	-2.9%	1.047	-33%
Freezers – all types	1.028	0.970	-6%	-0.3%	0.949	2%
Clothes washers	1.129	0.881	-22%	-1.4%	1.086	-19%
Clothes dryers	1.171	0.976	-17%	-1.0%	0.931	5%
Dishwashers	1.274	0.773	-39%	-2.7%	1.094	-29%

Conclusions - impacts

- ✍ Labelling had large impact on 2 products
 - » Auto refrigerators, dishwashers
- ✍ Smaller impact on 3 products:
 - » Single door refrigerators, cyclic refrigerators, clothes washers
- ✍ Negligible impact on 2 products:
 - » Clothes dryers, freezers
- ✍ Evidence of MEPS impact in lead-up