



Energy research Centre of the Netherlands

Options to address EU ETS induced increases in power prices and windfall profits

Jos Sijm

2006 Annual Forum on Energy & Sustainability

Towards a global climate change strategy – The EU ETS and beyond

Madrid, November 15-16, 2006



Introduction

- CO2 Price Dynamics project
- Debate on EU ETS induced increases in power prices and generators' profits
- Focus of presentation: Background and options to address EU ETS induced increases in power prices and profits

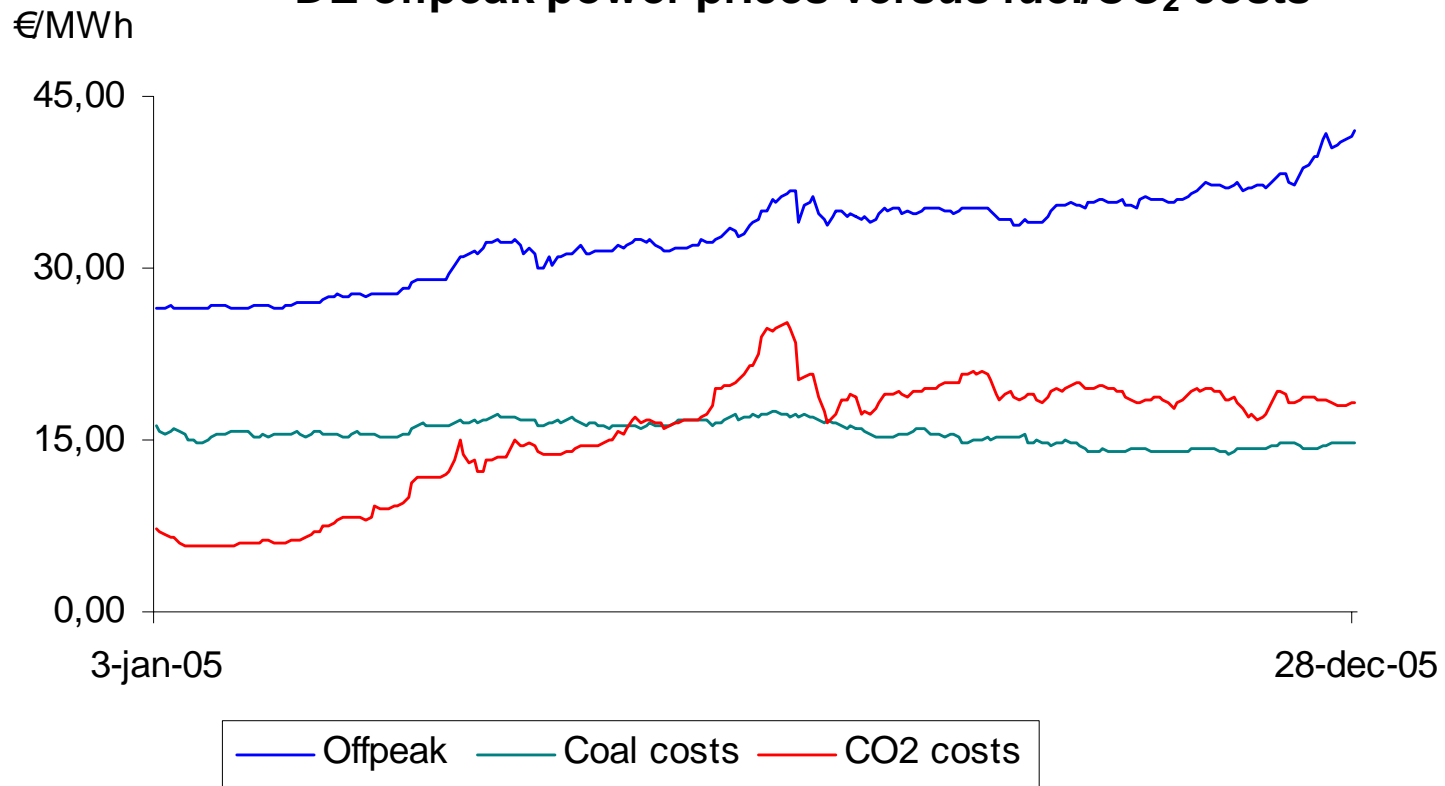
Contents

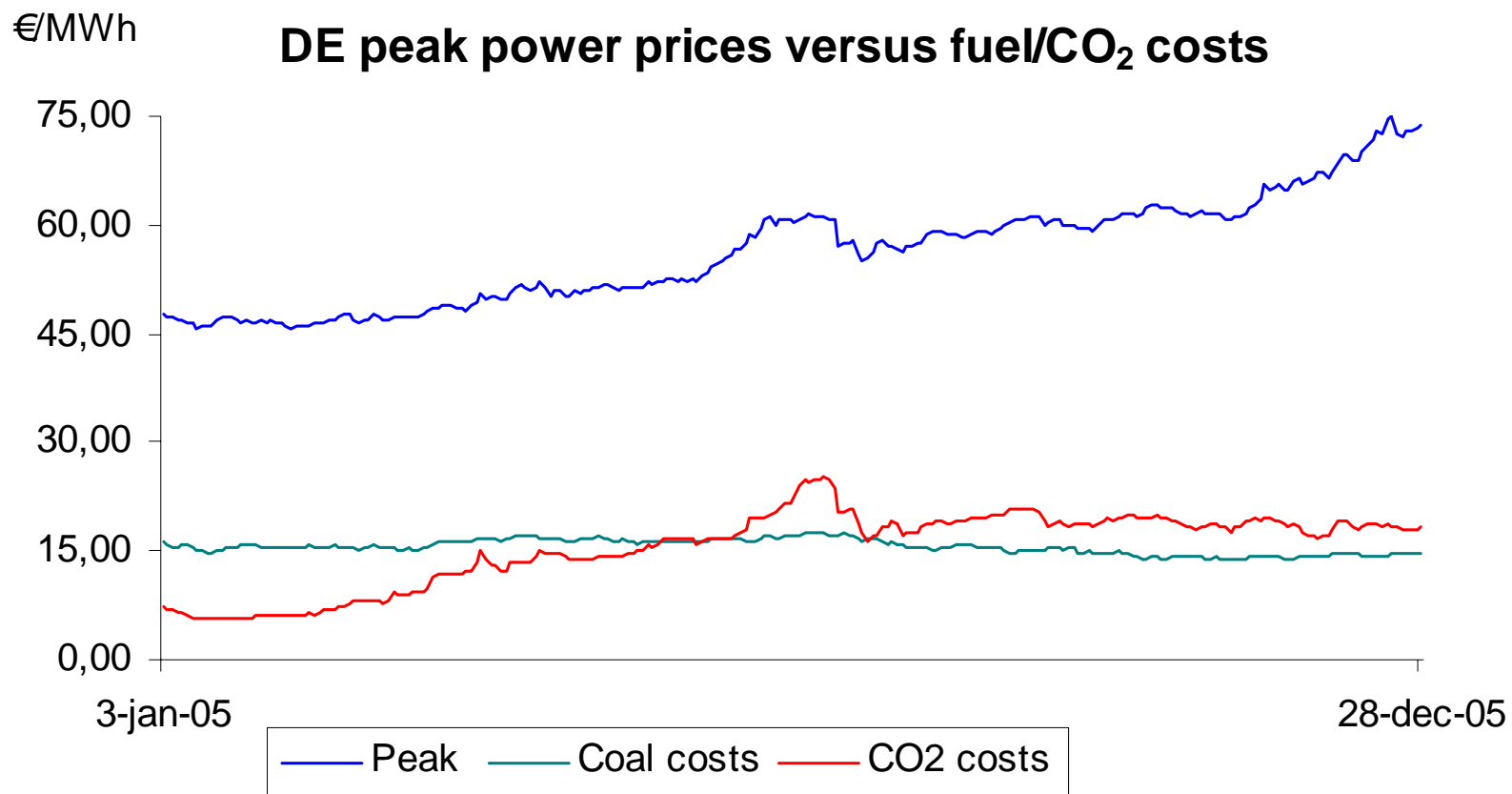
- Impact EU ETS on power prices
- Impact EU ETS on generators' profits
- What's the problem?
- Options to address the problem
- Conclusions

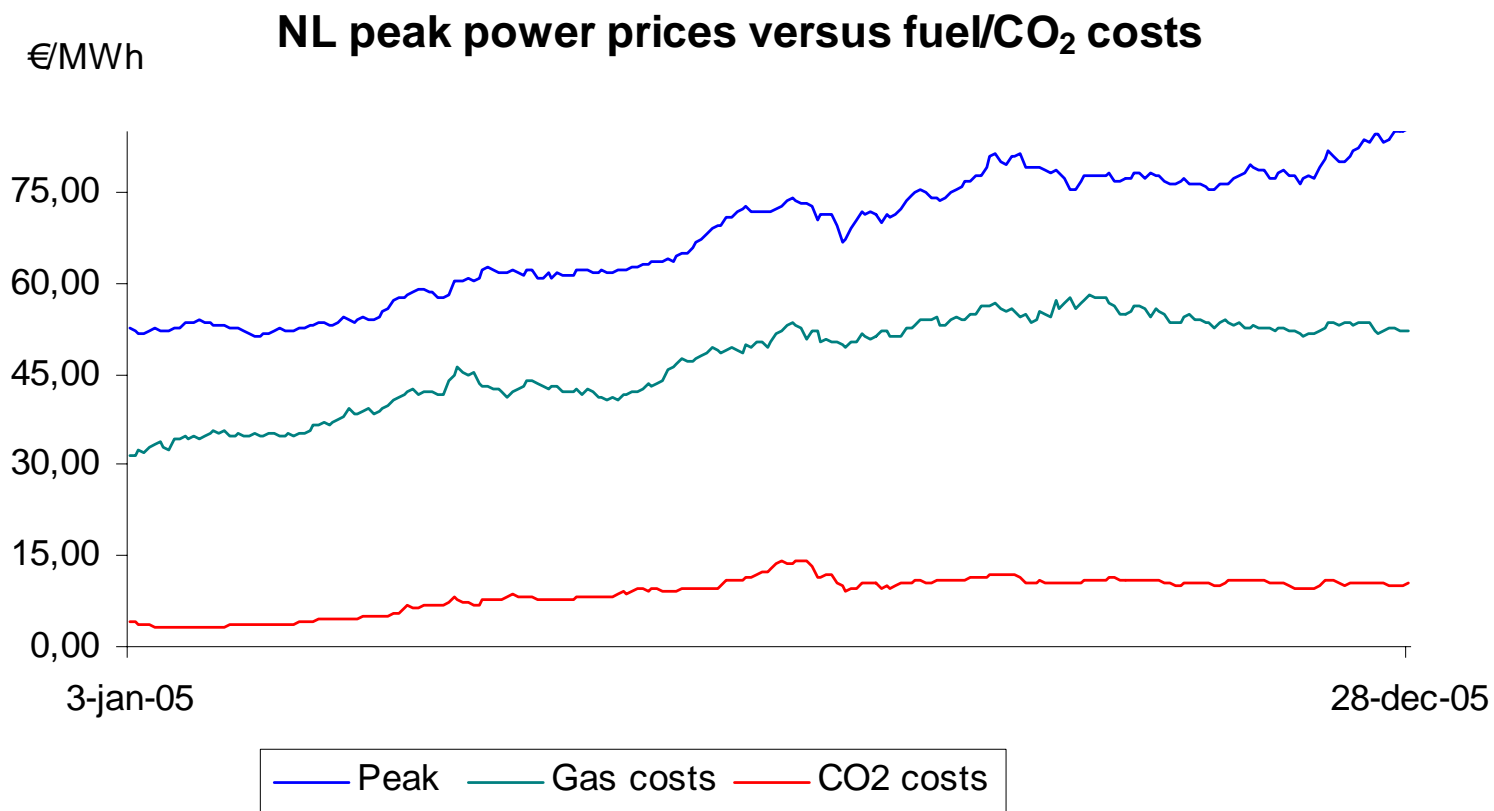
Impact EU ETS on power prices



DE offpeak power prices versus fuel/CO₂ costs

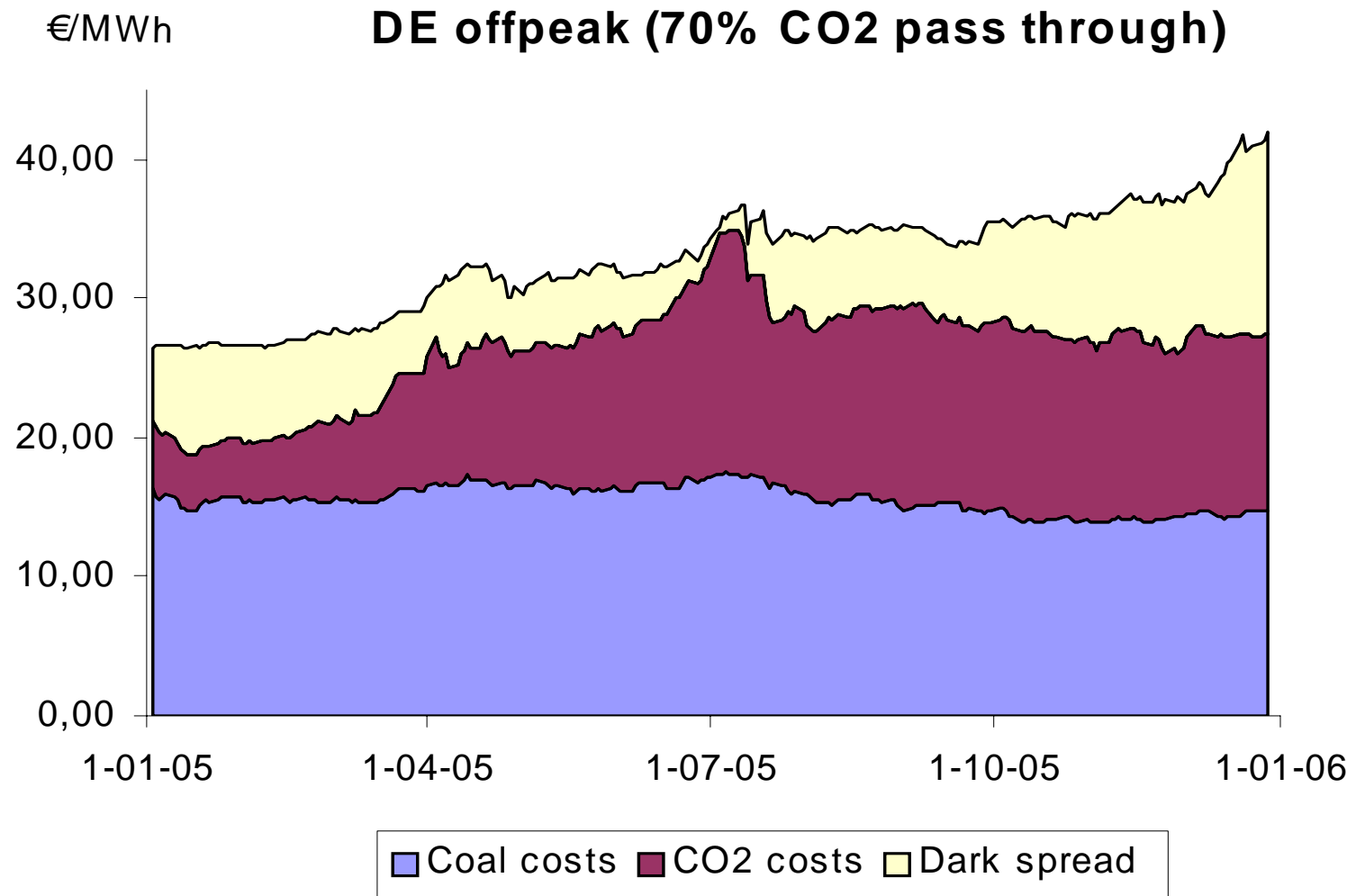


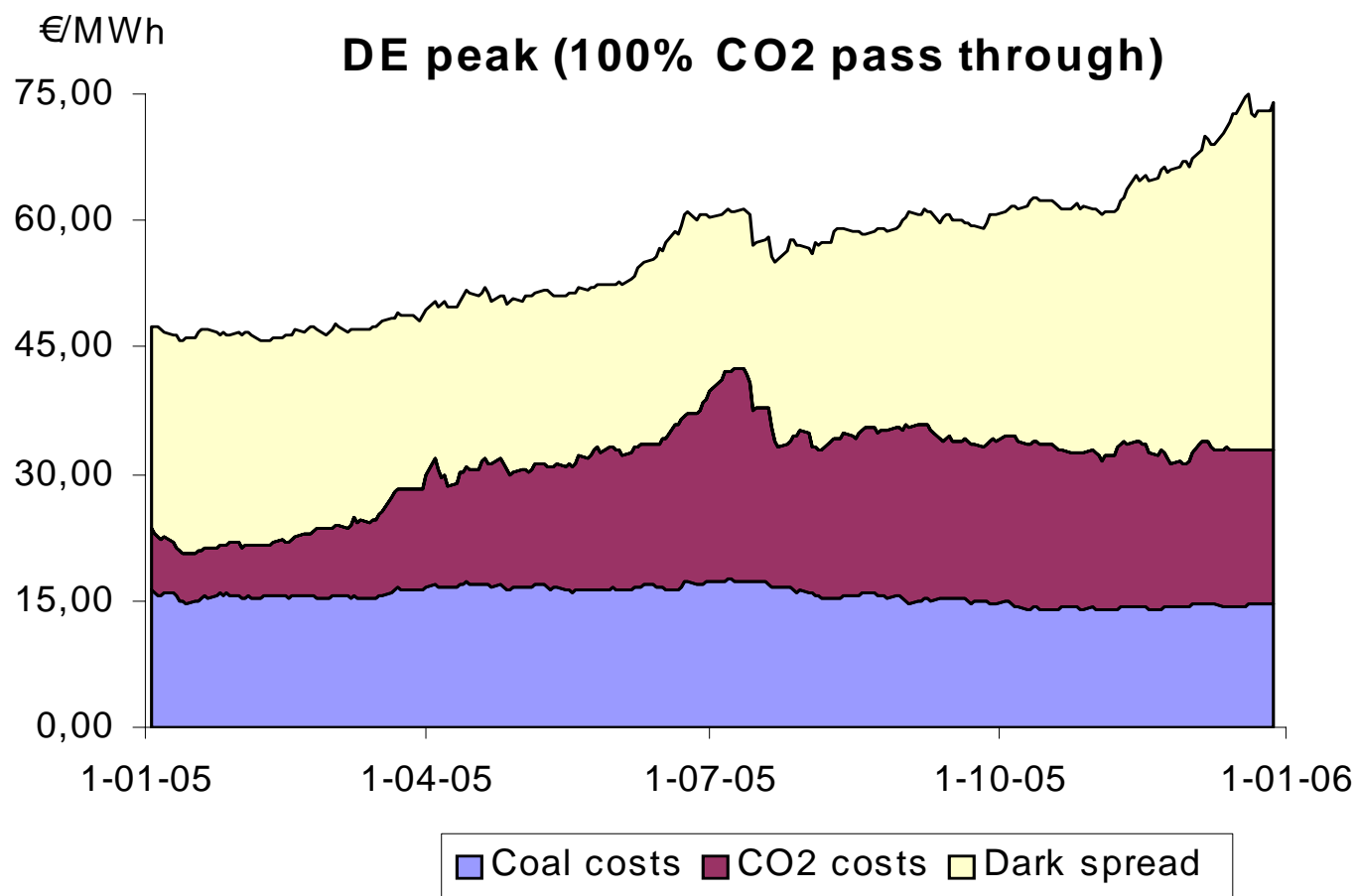


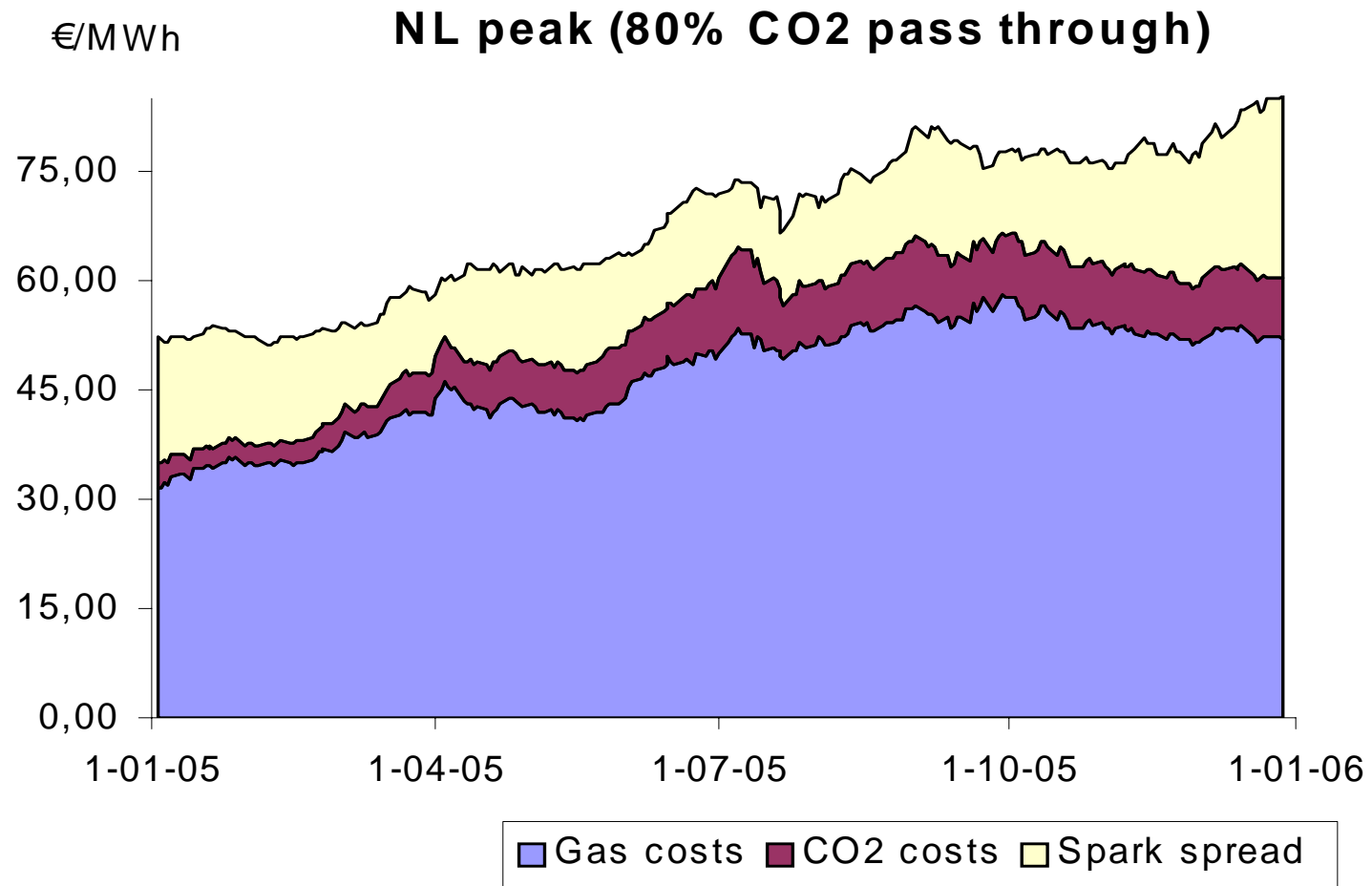


Changes in wholesale power prices by underlying factors (in €/MWh)

	Power price		Increase in:			
	Early 2005	Late 2005	Power price	Fuel costs	Carbon costs (% pass through)	Other (scarcity)
DE off-peak (coal)	27	41	14	-1	8 (70%)	7
DE peak (coal)	46	73	27	-1	12 (100%)	16
NL peak (gas)	52	84	32	20	5 (80%)	7







Major findings

- Power prices increased substantially over 2005
- Three causes:
 - Higher fuel costs (NL peak/gas)
 - CO2 cost pass through (DE off-peak/coal)
 - Other/growing scarcities (DE peak/coal)
- Share of CO2 cost pass through in power price increase varies from 16% (NL peak/gas) to 57% (DE off-peak/coal)

EU ETS impact on generators' profits



Changes in generators' profits

- Distinction in profit changes due to:
 - A. ETS induced changes in production costs, power prices and sales volumes (assumption: buy all allowances)
 - Depends on marginal (price-setting) unit versus inframarginal unit
 - B. Free allocation
 - Depends on % of allowances received for free
- Distinction is important because of:
 1. Different causes
 2. Different effects/incentives for new investments
 3. Different policy implications

Estimates of windfall profits

- Model scenario estimates (in % of baseline profits):
 - Windfall A: -1.6% / 42%
 - Windfall B: 9.6% / 46%
 - Total: 8.0% / 88%
 - Depending on scenario assumptions (market structure, demand elasticity and carbon price)
- Empirical estimates:
 - NL (ECN): €300-400 mln/a (35 MtCO₂ free allowances)
 - UK (IPA): €1200-1300 mln/a (134 MtCO₂ free allowances)
 - Qualifications: rough estimates, major differences between countries and installations; time lags; static analyses

What's the problem?

- Increase in power price:
 - Intended, rational effect, but:
 - Affects competitiveness of energy-intensive industries (EIs)
 - Affects small end-users (equity, double taxation)
- Windfall profits:
 - Windfall A: inherent to carbon pricing (intended for newcomers, but unintended for incumbents)
 - Windfall B: inherent to free allocation (unintended, adverse equity effect, socio-political hard to accept)
- How to address these (unintended) effects?

Policy options



Policy option	Intended effect		Other effects/comments	Feasibility
	Power price	Windfall profits (A/B)		
1. Indirect (free) allocation	No	No (A) Yes (B)	<ul style="list-style-type: none"> •Compensates (only) covered EIIs •Double compensation •Perverse power use effects 	•Questionable
2. Auctioning + recycling	No	No (A) Yes (B)	<ul style="list-style-type: none"> •Most efficient price signal •Recycling: compensation + other benefits •(Adverse) effects on industrial competitiveness 	<ul style="list-style-type: none"> •Sheltered sectors: feasible •Other sectors: questionable
3. Relative benchmarking / output-based allocation	Yes	Yes (A/B)	<ul style="list-style-type: none"> •Less environmental certainty •Less efficient •Administrative demanding 	<ul style="list-style-type: none"> •Sheltered sectors: questionable •Other sectors: feasible
4. Taxation + recycling	No	Yes (A/B)	<ul style="list-style-type: none"> •Recycling: compensation + other benefits •Hard to determine exact windfall profits •Tax both categories of windfall profits? 	•Hard to implement

Policy option	Intended effect		Other effects/comments	Feasibility
	Power price	Windfall profits (A/B)		
5. Price regulation: - wholesale - retail - carbon	Yes Yes Yes	Yes (A) No (B) Yes (A) No (B) Yes (A/B)	•Against market liberalisation •Risks of market disruption •Less environmental effectiveness	•Questionable
6. Reducing CO ₂ price - lower cap - more JI/CDM	Yes Yes	Yes (A/B) Yes (A/B)	•Less (domestic) emission reductions •Less dynamic efficiency (?)	•Feasible
7. Encouraging power sector competition	No	No	•Paradox: more competition may reduce oligopolistic pricing/profits, but increase CO ₂ cost pass through and ETS induced windfall profits	•Difficult, feasible, but not effective to address EU ETS adverse effects

Policy option	Intended effect		Other effects/comments	Feasibility
	Power price	Windfall profits (A/B)		
8. providing state aid to Energy Intensive Industries (EIIs)	No	No	<ul style="list-style-type: none"> • May violate EU state aid rules • Adverse competitive effects • Adverse fiscal effects 	• Questionable
9. Promoting EII strategies:				
- Energy saving	No	No	• Lack of cost-effective options	• Limited feasibility
- Self generation	No	No	• Several constraints	• Limited feasibility
- long term contracts	No	No	• Only temporary solution ('hedging')	• Feasible
10. Border tax adjustments	No	No	<ul style="list-style-type: none"> • Trade conflicts? • Compatible with WTO rules (only when auctioning)? 	• Perhaps feasible (more study/discussion needed)
11. Long-term options:				
- global climate policy regime	No	No	• Avoids leakage and adverse competitive effects	• Difficult, but maybe feasible in the long run
- technological innovations	Yes	Yes (A/B)	• Enhances dynamic efficiency	• Feasible in the long run

Conclusions (1)

- Power prices have increased substantially during 2005, but only part (16-57%) is due to CO2 cost pass through.
- A distinction should be made between windfall profits due to:
 - ETS induced changes in power prices, sales volumes and costs
 - free allocationsSince they have different causes, effects and policy implications.

Conclusions (2)

- To some extent, EU ETS induced higher power prices and windfall profits (A) are intended, rational and/or inherent effects of climate policy. However, free allocations and resulting windfall profits (B) have unintended/averse effects that should be addressed.
- There are hardly any policy options that address both EU ETS induced increases in power prices and windfall profits without adverse, socio-economic effects. Feasible options include auctioning (sheltered sectors), relative benchmarking (other sectors) controlling CO₂ prices (more JI/CDM) and encouraging technological innovations.

More information

- ECN Report (Sijm et al. 2005):
 - <http://www.ecn.nl/docs/library/report/2005/c05081.pdf>
- Article Climate Policy (Sijm et al. 2006):
 - <http://www.electricitypolicy.org.uk/pubs/tsec/sijm.pdf>
- Contact details:
 - E-mail: sijm@ecn.nl
 - Phone: +31 22456 8255