

Powering Ahead- Policy Tools for the New Distributed Energy Economy
Sydney, 11 November 2009

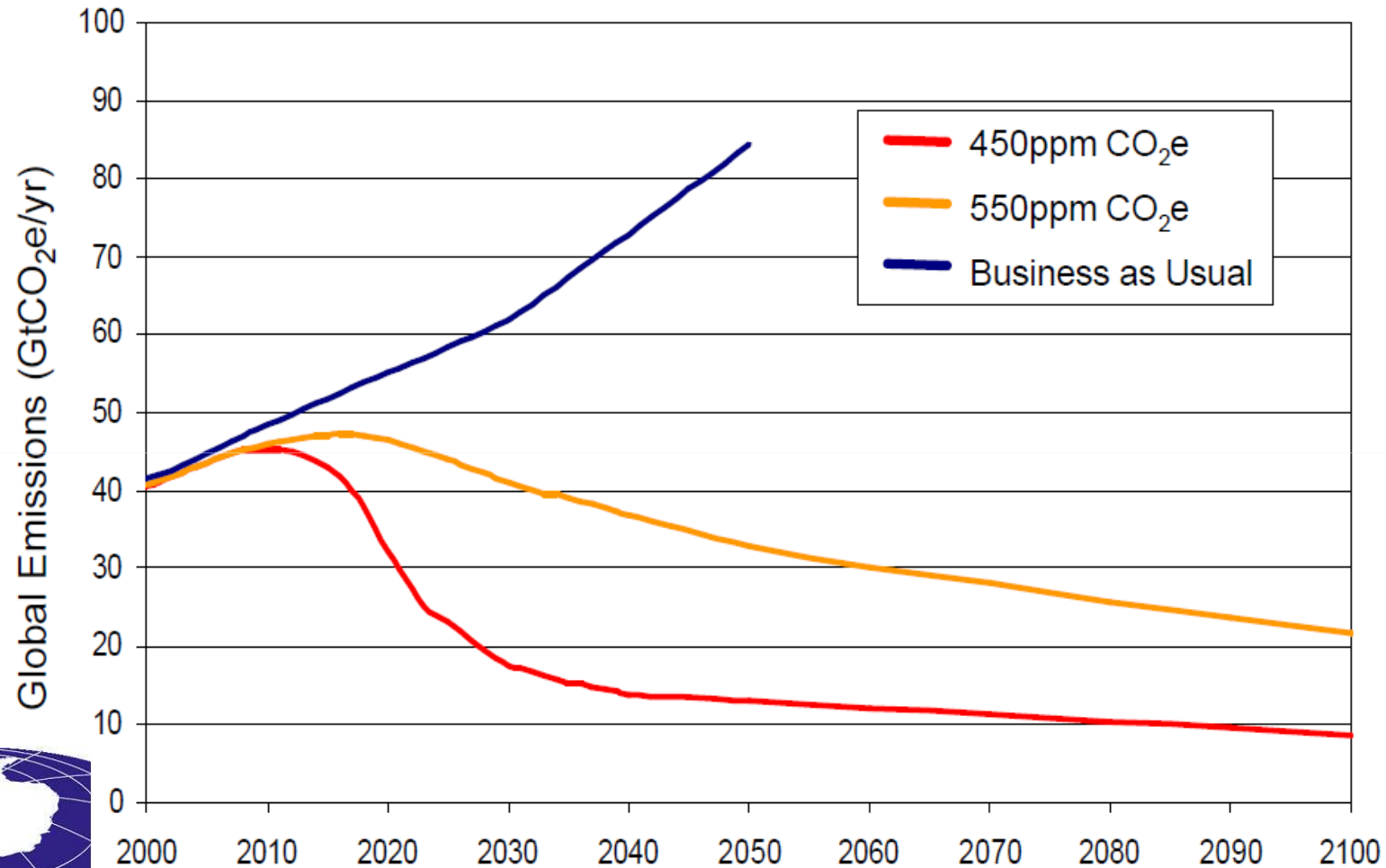
The Distributed Energy Policy Toolkit



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Emissions Paths to Stabilisation

are we on track?



What's the big idea?

Many small ideas

in Greenhouse abatement

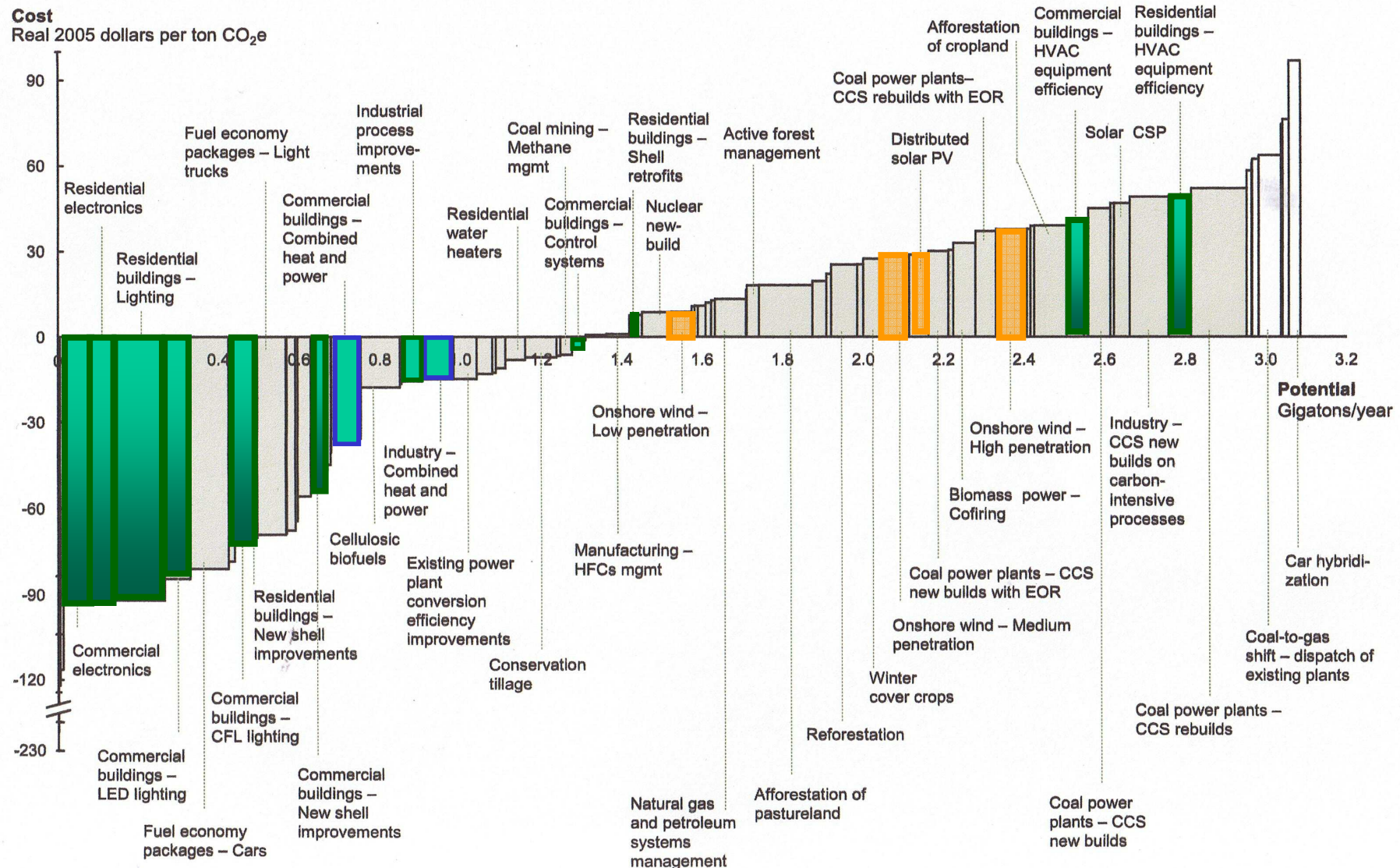
in Distributed Energy

in policy reform

... but in a coordinated way

U.S. MID-RANGE ABATEMENT CURVE – 2030

Abatement cost <\$50/ton

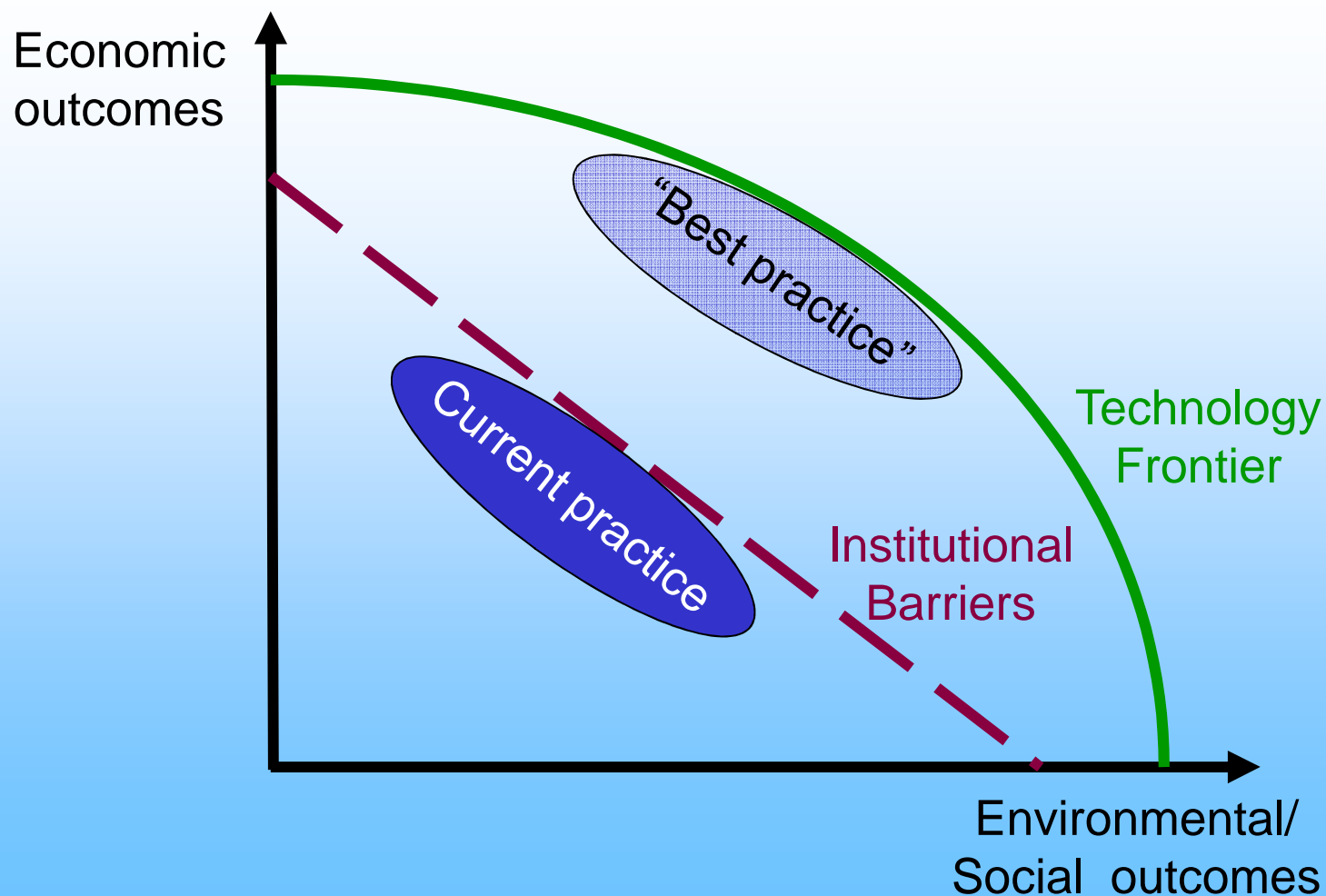


Source: McKinsey analysis

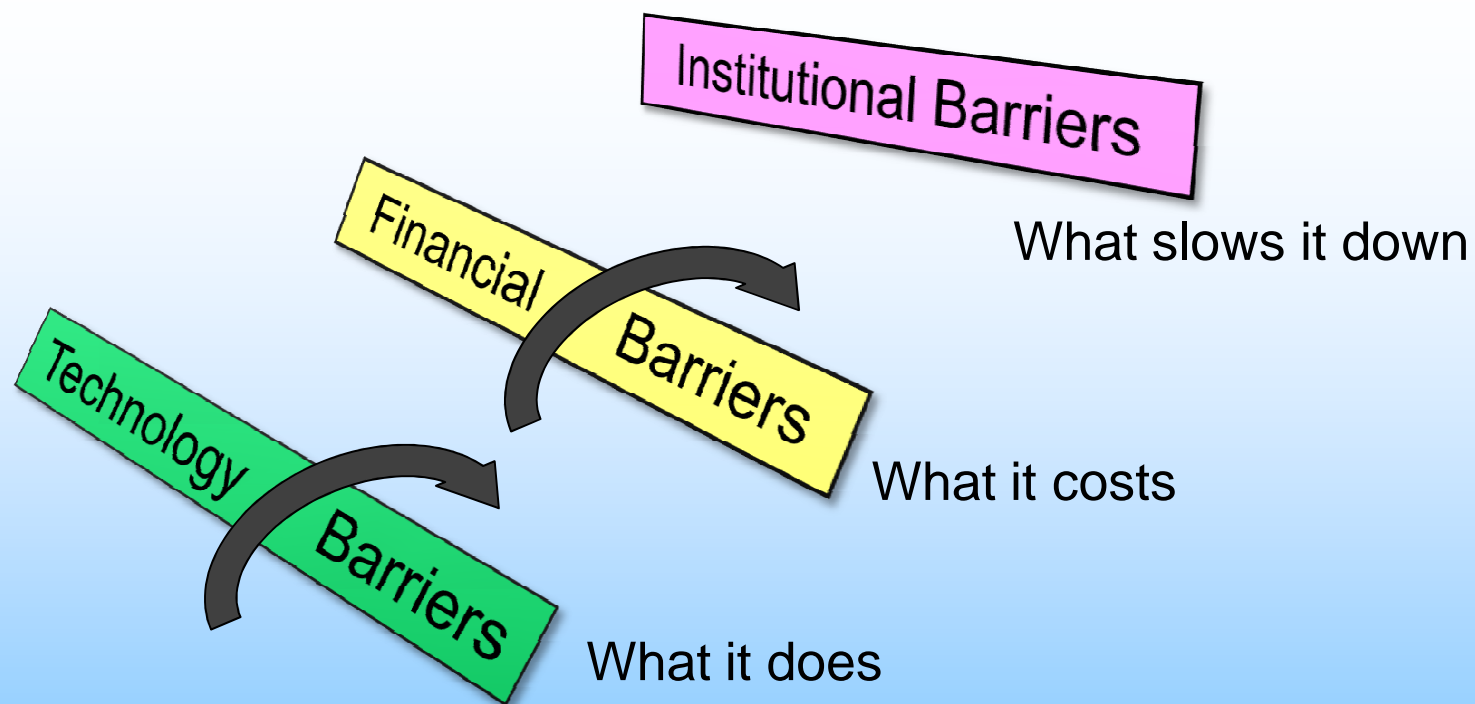
Distributed Energy is crucial to carbon abatement

“United States could reduce emissions by 31% to 46% by 2030”

Institutional Barriers: A framework



Types of Barriers to Trigeneneration



Institutional barriers are crucial

Classifying Barriers to Local Energy Options

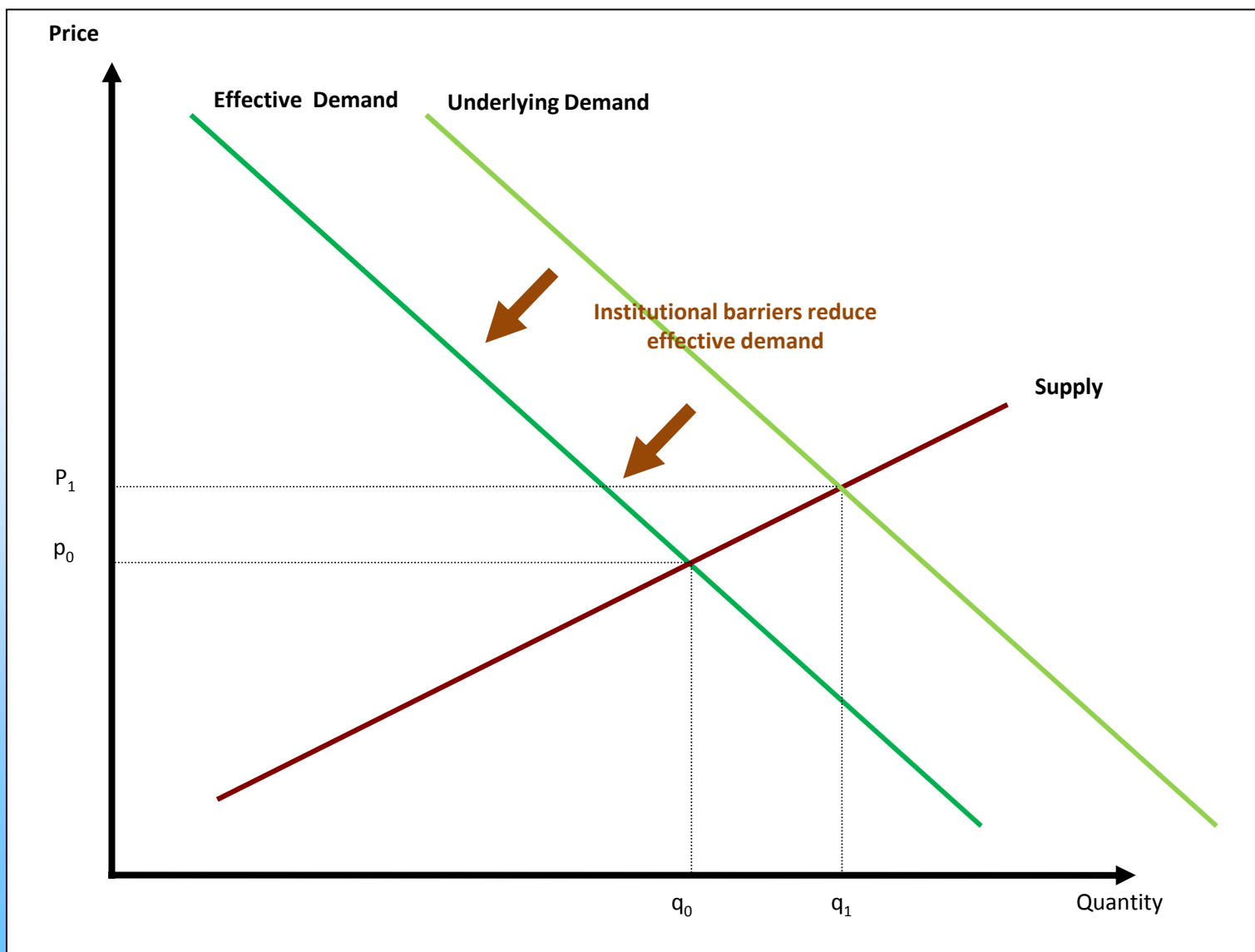
Barriers							
Technical		Institutional					
Current Technology	Current Costs	Regulatory Failure	Inefficient Pricing	Payback Gap	Split Incentives	Lack of Information	Cultural Barriers

What it does
↑
What it costs
↑

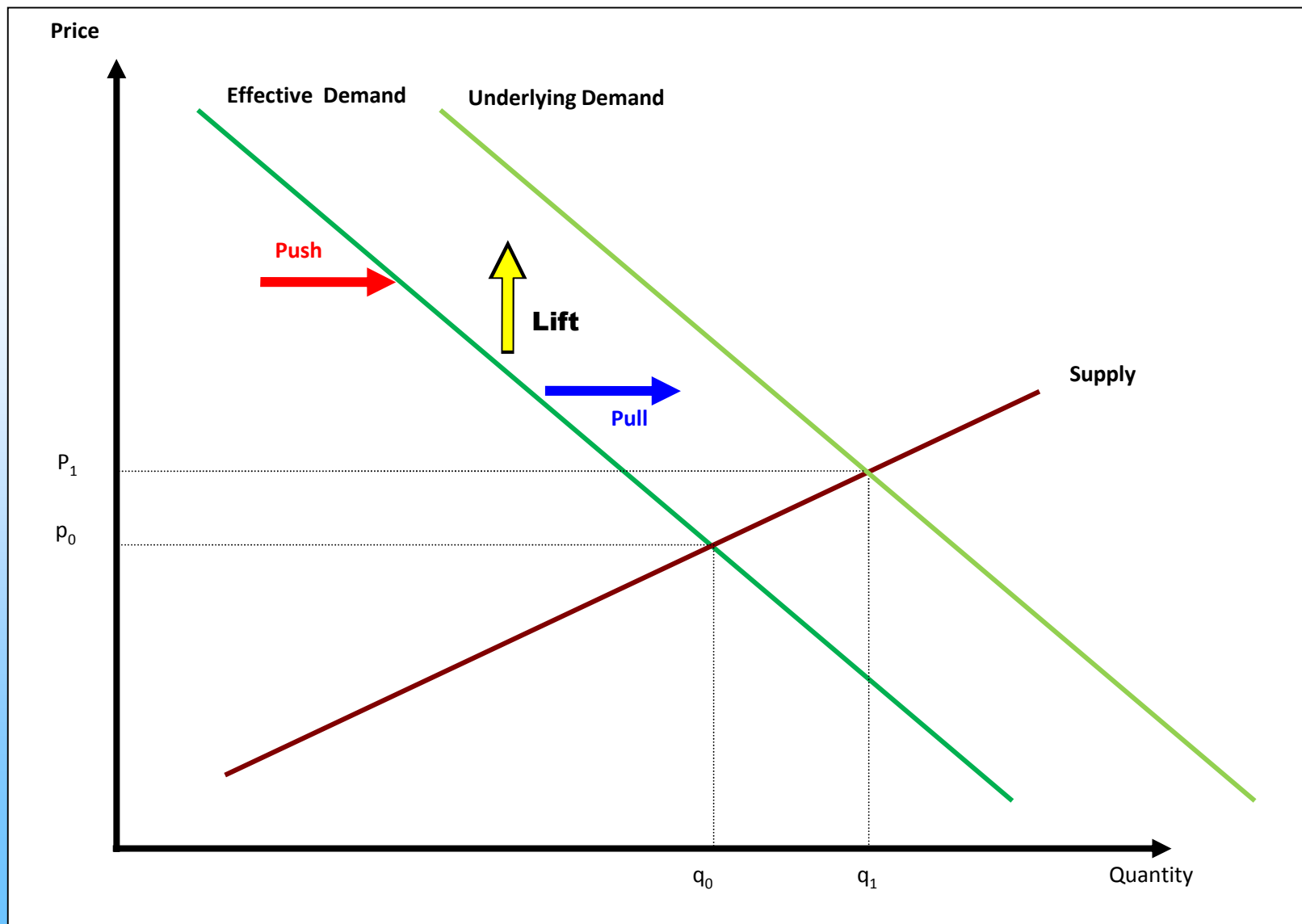
What slows it down

Institutional barriers are crucial

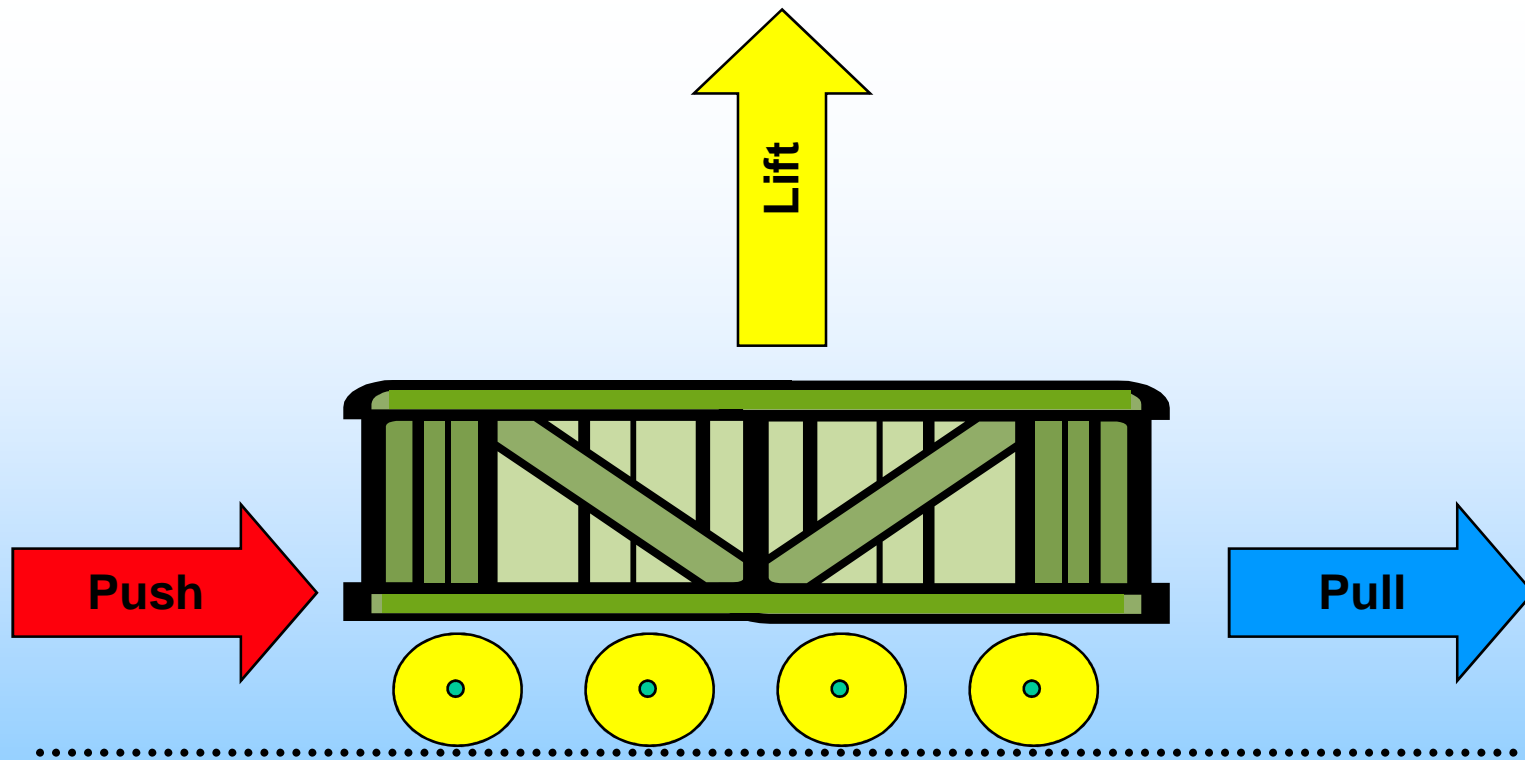
Impact of Institutional Barriers on DE



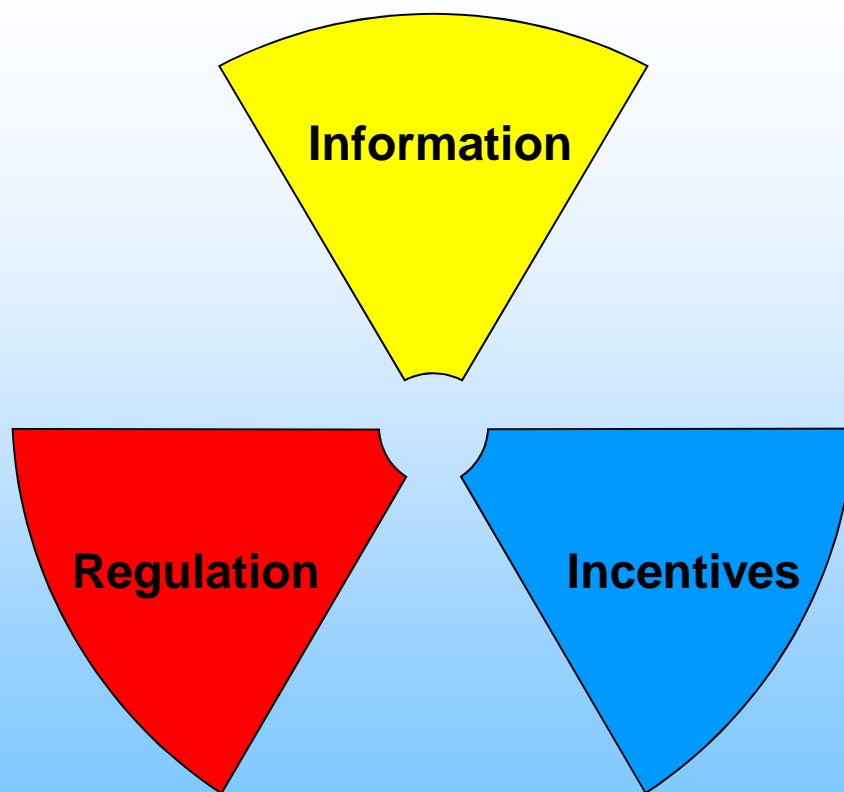
Policy tools to counter barriers



Moving the market



The Policy Palette



Primary Instruments

The Policy Palette



+ Secondary Instruments

The Policy Palette - “PIRFICT”



20 Policy Tools for DE



- 1: Decouple electricity sales from network profits**
- 2: Reform National Electricity Rules
- 3: Streamline DG Licensing
- 4: Carbon Price
- 5: Cost reflective pricing
- 6: Network support payments**
- 7: Distributed Energy Fund**
- 8: Reform feed-in tariffs
- 9: Public recognition & awards
- 10: Streamline network negotiation process
- 11: DE Ombudsman
- 12: Annual DE Review**
- 13: Training & skills development
- 14: Energy audits & technical support
- 15: Network planning info**
- 16: DE handbook & advisory service
- 17: Resource assessments & case studies
- 18: Extend retailer EE targets
- 19: DE targets & reporting**
- 20: DE Coordination Agency**

Regulatory Reform

1. Decouple network business profits from electricity sales:

Reform economic regulations which financially penalise those network businesses that reduce their electricity sales volume by supporting Distributed Energy.

2. Fair treatment of DE in National Electricity Rules:

Change the National Electricity Rules to require Distributed Energy options to be implemented wherever they are cheaper than network augmentation.

3. Distributed generation licensing requirements:

Streamline the complex and costly licensing requirements and procedures required for distributed generators to produce and supply electricity to the grid.

Pricing reform

4. ***Impose a price on carbon pollution:*** Introduce an adequate market price on carbon, such as through the proposed Carbon Pollution Reduction Scheme.
5. ***More cost reflective network pricing:*** Widely implement time-of-use pricing and deploy smart meters to residential and business customers.
6. ***Default network support payments:***
Establish a standard or default network support payment to be paid by the network business to distributed generators exporting to the main grid, and ensure that network businesses are not disadvantaged in providing such payments.

Incentives

7. *Distributed Energy Fund:*

Establish financial incentives to support Distributed Energy options.

8. *Reform feed-in tariffs:* Implement an adequate and nationally consistent feed-in tariff program for distributed, renewable energy technologies.

9. *Public recognition and awards:* Publicly recognise leadership in developing Distributed Energy options.

Facilitation

10. Streamline network connection negotiation process:

Establish a clear and consistent framework governing the processes and timeframes surrounding the negotiation of generator connection agreements between distributed generators and local network businesses.

11. Distributed Energy Ombudsman: Establish a Distributed Energy Ombudsman with the knowledge, technical engineering skills and authority to assist in dispute resolution.

12. Distributed Energy Review: Publish a comprehensive annual Distributed Energy review.

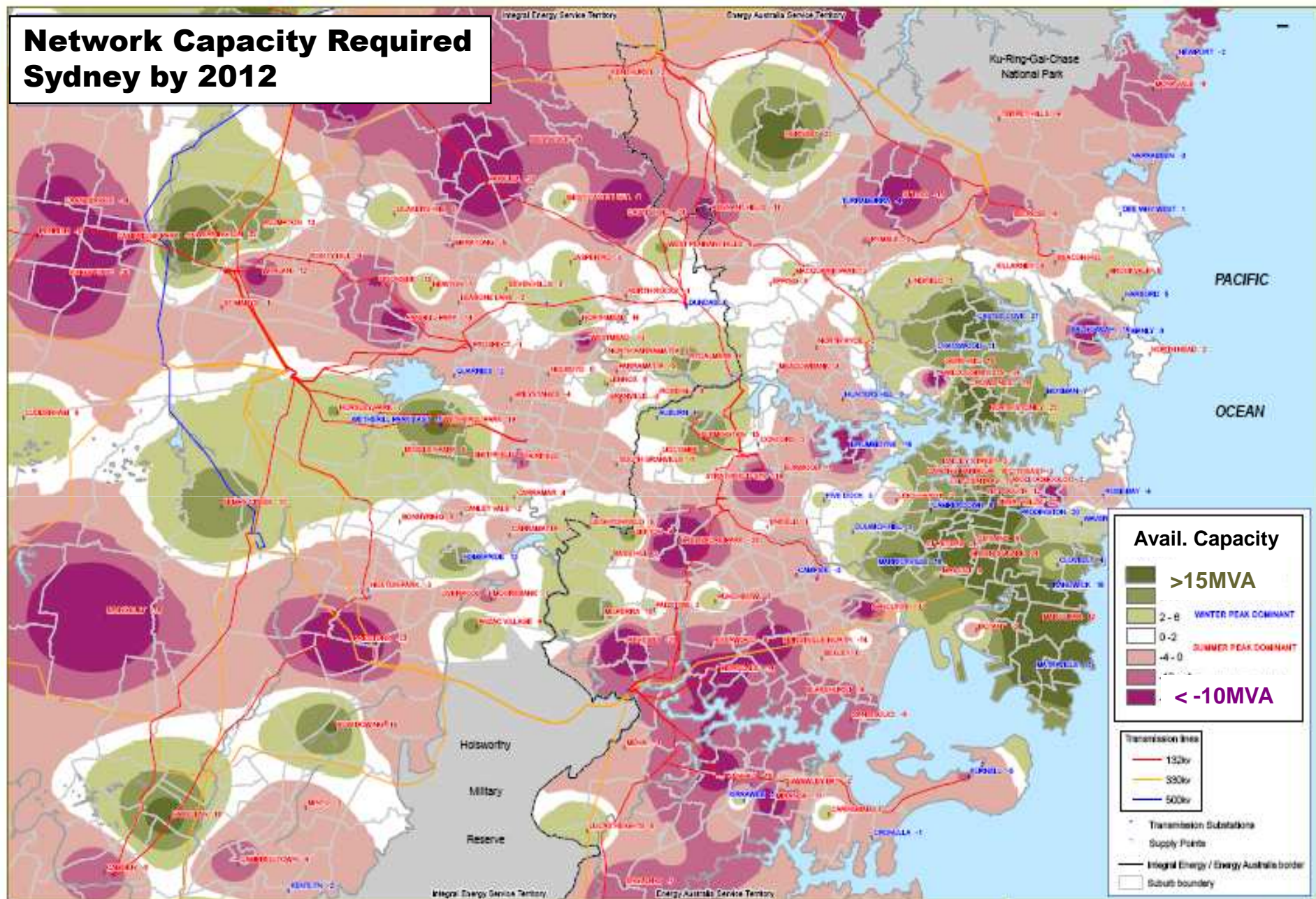
13. Training and skills development: Establish an industry training program for Distributed Energy options, building on existing 'Green jobs' training efforts.

14. Integrated energy audits and technical support: Assist energy users to identify and implement energy saving opportunities.

Information

- 15. *Better information on network constraints and avoidable costs:*** Improve and standardise mandatory, easily accessible, up-to-date and relevant demand and network planning information.
- 16. *Consolidate and disseminate information on Distributed Energy:*** Develop a Distributed Energy advisory service, website and/or handbook to provide information and guidance for Distributed Energy proponents.
- 17. *Resource assessments and case studies:*** Present a concise, consistent and accessible source of information on opportunities for developing Distributed Energy options.

Network Capacity Required Sydney by 2012



Data Source: Integral Energy 2006
Energy Australia 2005

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Note: Figures based on 2004/05
committed firm capacity minus
forecast peak demand in 2011/12

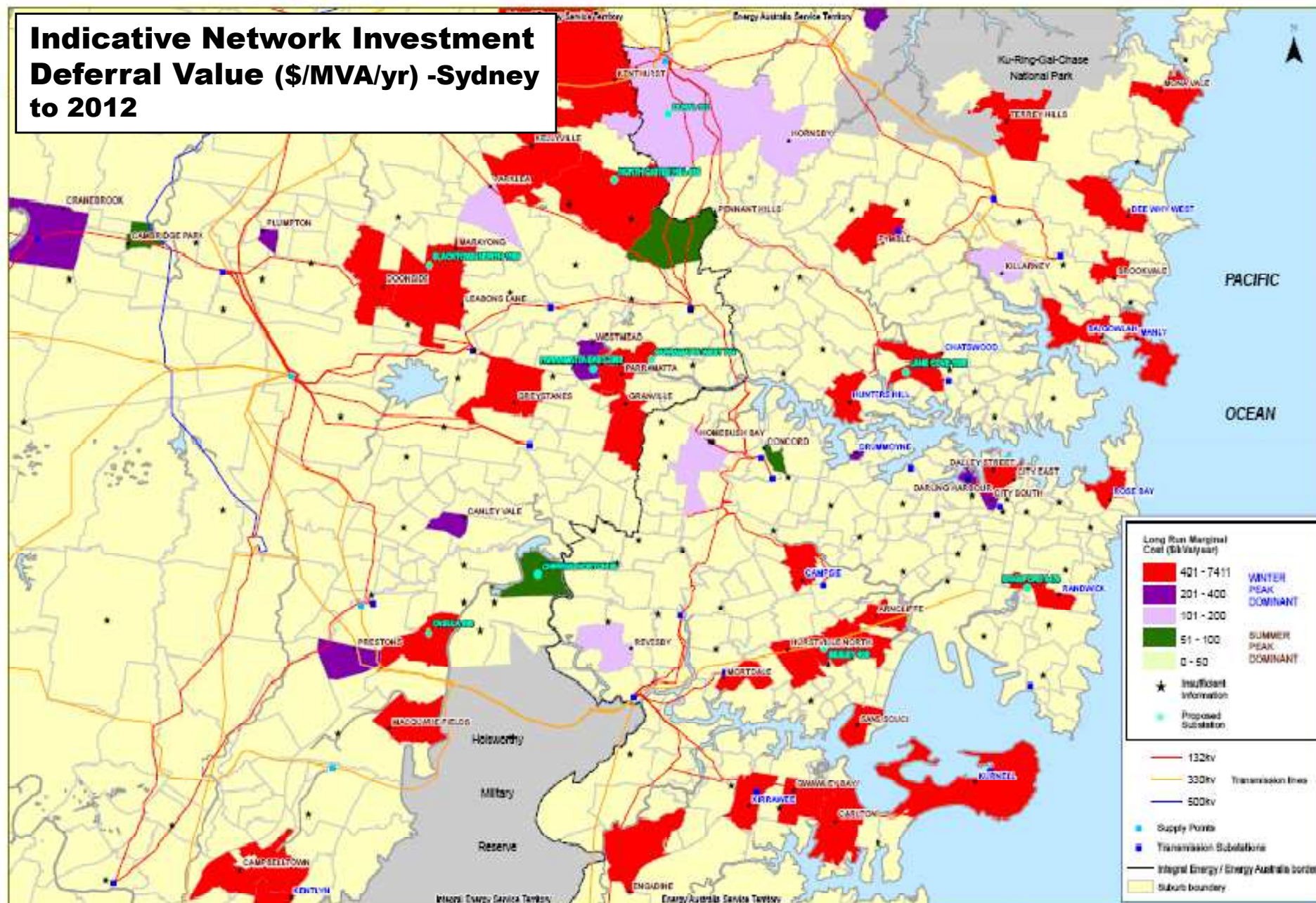
0 2.5 5 10 15 20
Kilometers

Note: shaded areas are provided for illustrative
purposes only. Actual areas serviced by each
zone substation are not shown.

Substations - Available Capacity (MVA) for 2011-12

Coordinate System: GCS - AGD66
Author: Chris Loty

Indicative Network Investment Deferral Value (\$/MVA/yr) -Sydney to 2012



Data Source: Integral Energy 2006
Energy Australia 2005

© Chris Dunstan 2006

0 2.5 5 10 15 20
Kilometers

Marginal Deferral Value (\$/kVA/year) for 2011-12

Coordinate System: GCS - AGD66
Author: Chris Loty

Targets (and Reporting)

- 18. *Extend retailer energy efficiency targets:*** Extend mandatory energy efficiency targets to capture more of the available cost-effective energy efficiency potential.
- 19. *Targets and reporting for Distributed Energy development:*** Establish annual targets for Distributed Energy and publicly report on progress.

Coordination

20. Agency to coordinate Distributed Energy development:

Establish a suitable government agency to coordinate a coherent Distributed Energy strategy.

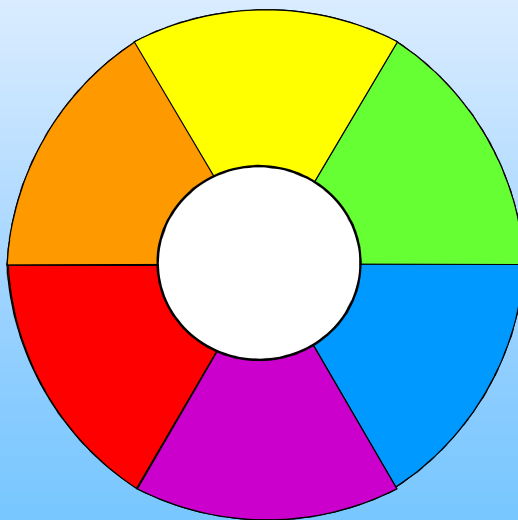
Application of Policy tools to forms of DE

Number	Policy Option	Dist Gen	Energy Effic'y	Load Mgmt
Regulation				
1	Decouple network business profits from electricity sales	✓	✓	✓
2	Fair treatment of Distributed Energy in National Electricity Rules	✓	✓	✓
3	Streamline licensing requirements for distributed generation	✓		
Pricing Reform				
4	Impose a price on carbon pollution	✓	✓	
5	More cost reflective network pricing	✓	✓	✓
6	Default Network Support Payments	✓		
Incentives				
7	Distributed Energy Fund	✓	✓	✓
8	Reform feed-in tariffs	✓		
9	Public recognition and awards	✓	✓	✓
Facilitation				
10	Streamline network connection negotiation process	✓		
11	Distributed Energy Ombudsman	✓	✓	✓
12	Publish a Distributed Energy Review	✓	✓	✓
13	Training and skills development	✓	✓	✓
14	Integrated energy audits and technical support		✓	✓
Information provision				
15	Better information on network constraints and avoidable costs	✓	✓	✓
16	Consolidate and disseminate information on Distributed Energy	✓	✓	✓
17	Resource assessments and case studies	✓	✓	✓
Targets				
18	Extend retailer energy efficiency targets		✓	
19	Targets and reporting for Distributed Energy development	✓	✓	✓
Coordination				
20	Agency to coordinate Distributed Energy development	✓	✓	✓

Are these the right policy tools?

What tools are missing?

How should we blend the colours?





Mark Rothko, *Untitled Mural for End Wall*, 1959



Vincent van Gogh, *Starry Night over the Rhone*, 1888



Jeffrey Smart, *Leaving LA*, 2007



Wassily Wandinsky, *All Saints Day*, 1911



Thank you



CSIRO Intelligent Grid Cluster

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About us – research program

Research projects

Research teams

Engaging stakeholders/industry

news and events

- First stakeholder process
November 2008

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Home

What is an Intelligent Grid?

The Intelligent Grid Research Program is an Australian collaboration between five universities investigating technologies and practices to make our electricity networks smart, greener and more efficient.

The electricity "grid" is a collective name for all wires, transformers and infrastructure that transport electricity from power plants to users. In all networks, some energy is lost as it travels, making distribution inefficient.

An "intelligent" electricity grid has a minimal amount of waste and a highly efficient use of power. It is an electricity network that uses distributed energy resources and advanced communication and control technologies to deliver electricity more cost-effectively, with lower greenhouse intensity and in response to consumer needs.

Distributed energy means, smaller forms of electricity generation and management of energy use combined to balance out the load of all the users on the system. For example, distributed energy resources could involve heating, cooling and powering a commercial building using a combination of solar panels, micro turbines, fuel cells energy efficiency and load control.

Small generators include wind turbines, solar panels, micro turbines, fuel cells and cogeneration (combined heat and power). These types of energy sources can be closer to the users, rather than one large centralised source a long way away. Some rely on renewable energy with no greenhouse emissions and others make more efficient use of conventional power generated from coal.

Advanced types of control and management technologies for the electricity grid can also make it run more efficiently. These include things like advanced control systems and smart electricity meters that allow

www.igrid.net.au