

## Module 2: Deep Dive Policy Instruments

### Lesson 2:2 Regulations and Standards



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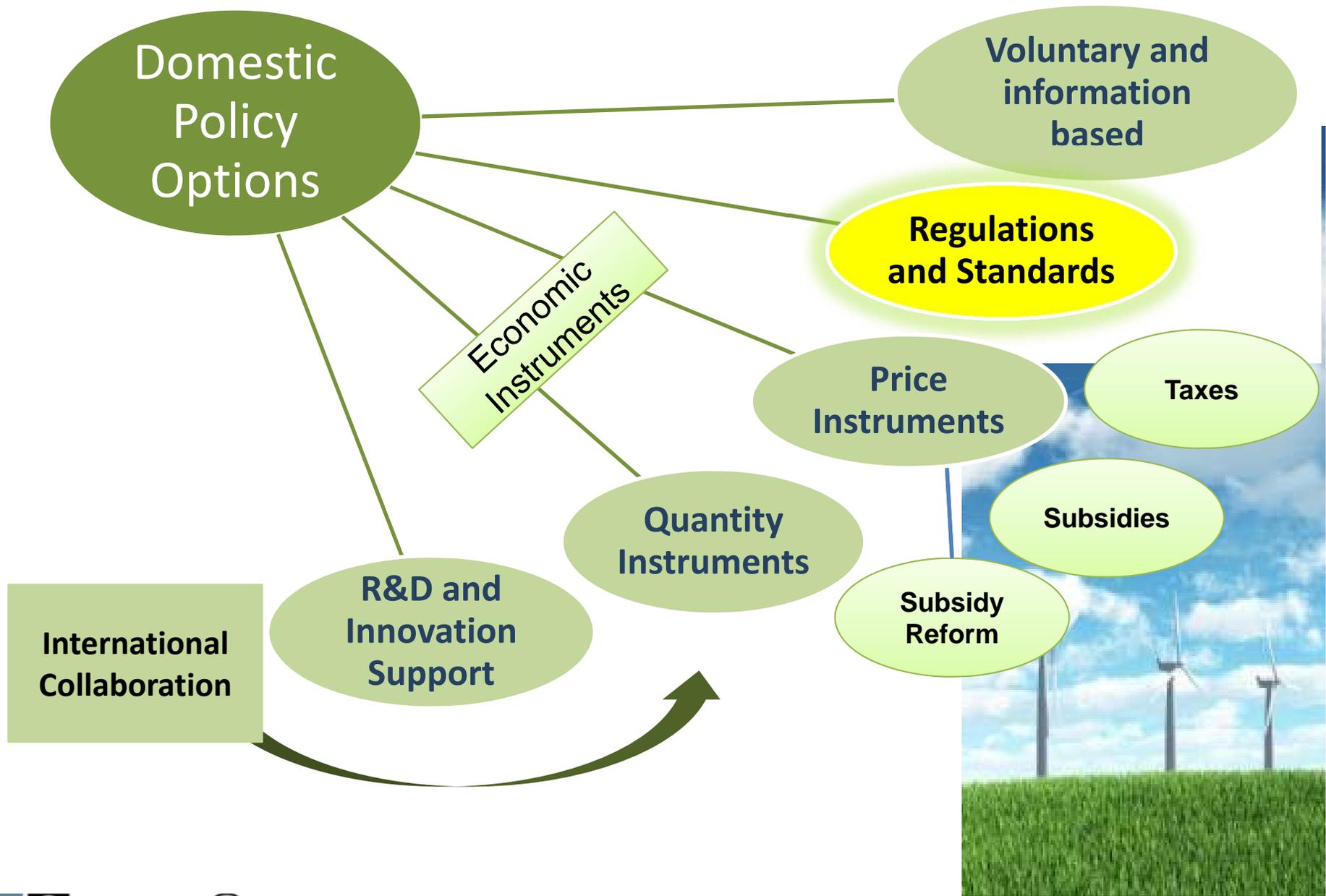
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### In this lesson you will review:

- The main types of regulatory instruments
- The key issues in policy design and implementation
- Summary of the advantages and limitations of regulatory instruments
- Resources and References



# Policy Options for Low Emission Development



# The rationale for regulatory policies

## Why consider regulations?

### Environmental externality

The market fails to account for the pollution and environmental degradation that they cause

Government regulations **require** emitters to take actions to reduce GHG emissions

Government regulations entail mandatory actions for emitters to reduce GHG emissions.



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## How regulatory approaches work

Regulations are often known as ‘**Command and Control**’ approaches

Mandatory  
action

Monitored  
and enforced

Specifies *mandatory* actions or outcomes for firms or households

### Technology Standards

- Specify technologies that **can** be used (e.g., required use solar hot-water heating)
- Specify technologies that must **not** be used (e.g., ban of incandescent light bulbs)

### Performance Standards

- Specify mandatory outcomes without prescribing how these outcomes are achieved (e.g., maximum allowable total GHG emissions, or maximum allowable GHGs per unit output)



# Technology vs. Performance Standards

Each approach has different characteristics

## Technology Standards

Mandate the use of a technology,  
which needs less monitoring

**Less need for monitoring = greater simplicity**

## Performance Standards

Mandates a specific performance –  
firms choose how to attain performance

**More flexibility = greater economic efficiency**



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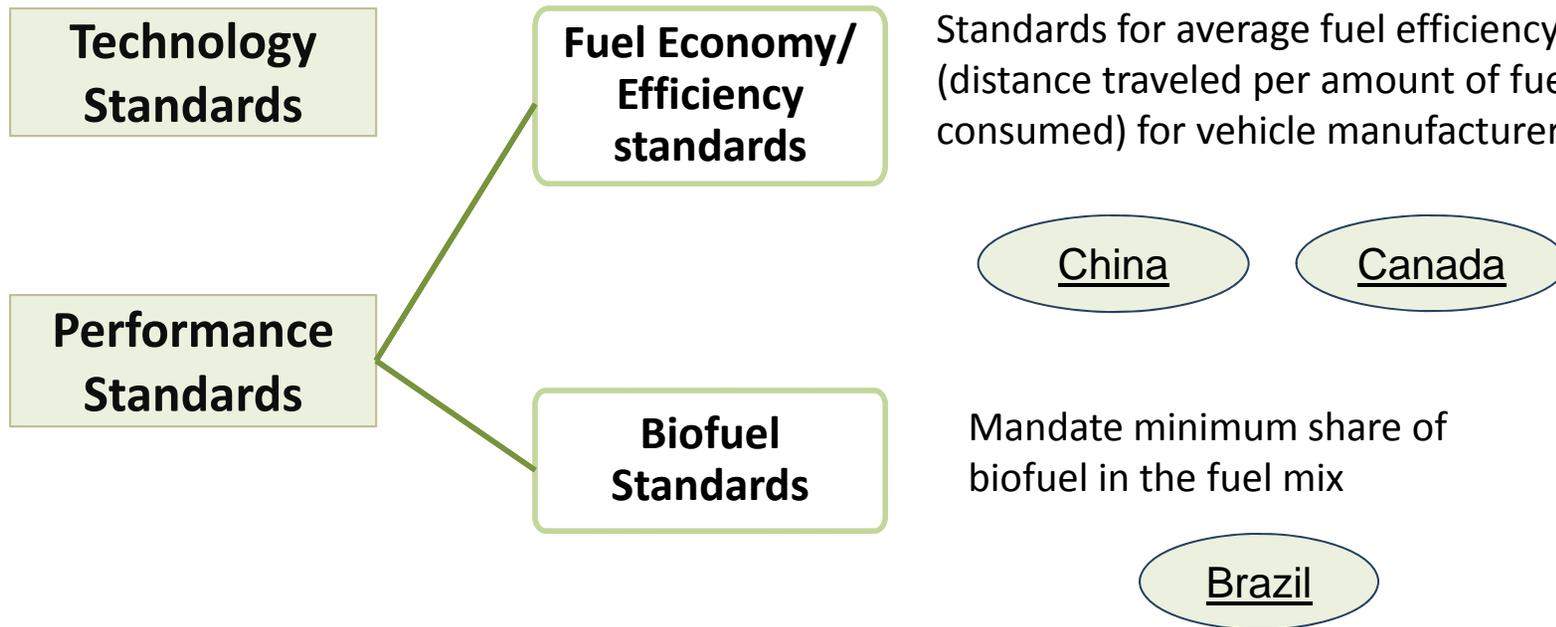
# Examples of Regulations in Different Sectors



# Examples: Transportation Sector



The transportation sector is a key sector responsible for emissions in many countries. Regulations in this sector are often applied to vehicle manufacturers to reduce emissions.



# Examples: Power Sector



In the power sector, performance standards can be mandated for power plants

Technology Standards

**Performance Standards**

Power Plant Standards

Limits in GHG emissions in power plants, specified in kg of CO2 per MWh of electricity generated

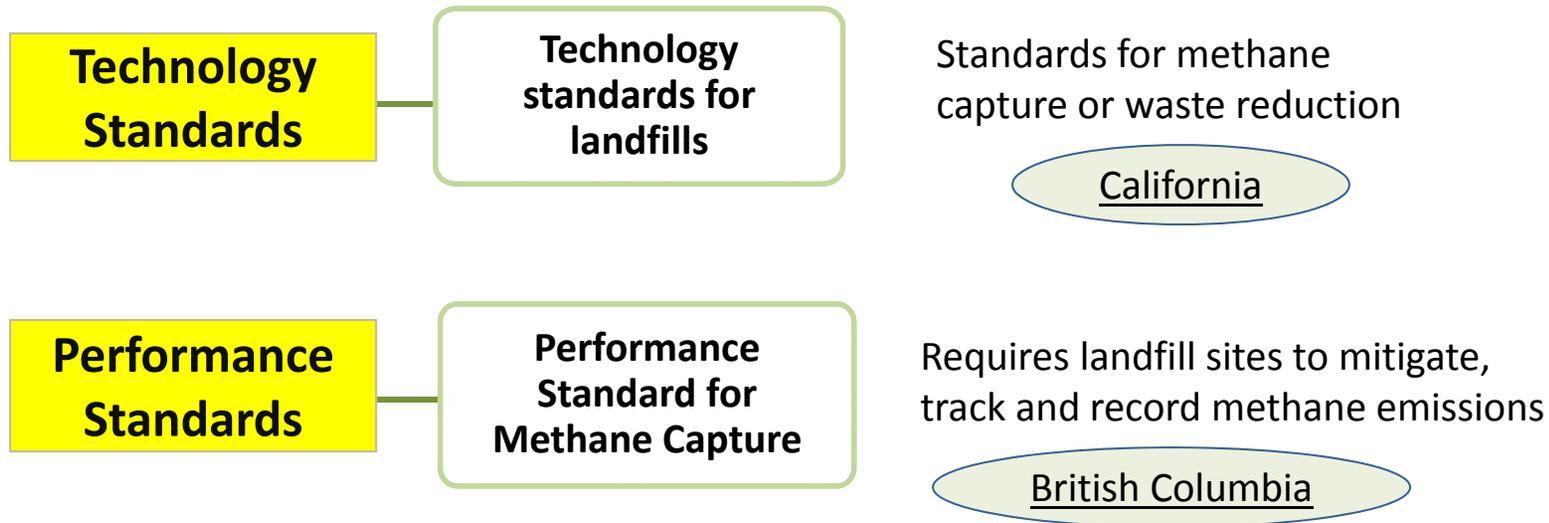
Canada

US

# Examples: Waste



Most emissions in the waste sector come from landfills that produce methane.



# Examples: Building Sector



In the commercial and residential building sector, Technology Standards can be very effective in improving energy efficiency and reducing emissions.

**Technology Standards**

**Building codes**

Mandate certain energy efficiency technologies to be used in buildings (e.g., solar hot water heating, levels of insulation)

China

Brazil

**Performance Standards**

# Examples: Industrial



The industrial sector accounts for 1/3 of global energy consumption and emissions. Many old, inefficient facilities remain in both industrialized and developing countries. Regulating these facilities can promote upgrades to improve energy efficiency and reduce emissions.

Technology Standards

Performance Standards

Best Available Techniques (BAT)

Limit the amount of emissions allowed from new sources or from modified existing sources.

EU

Source Standards for Industrial Facilities

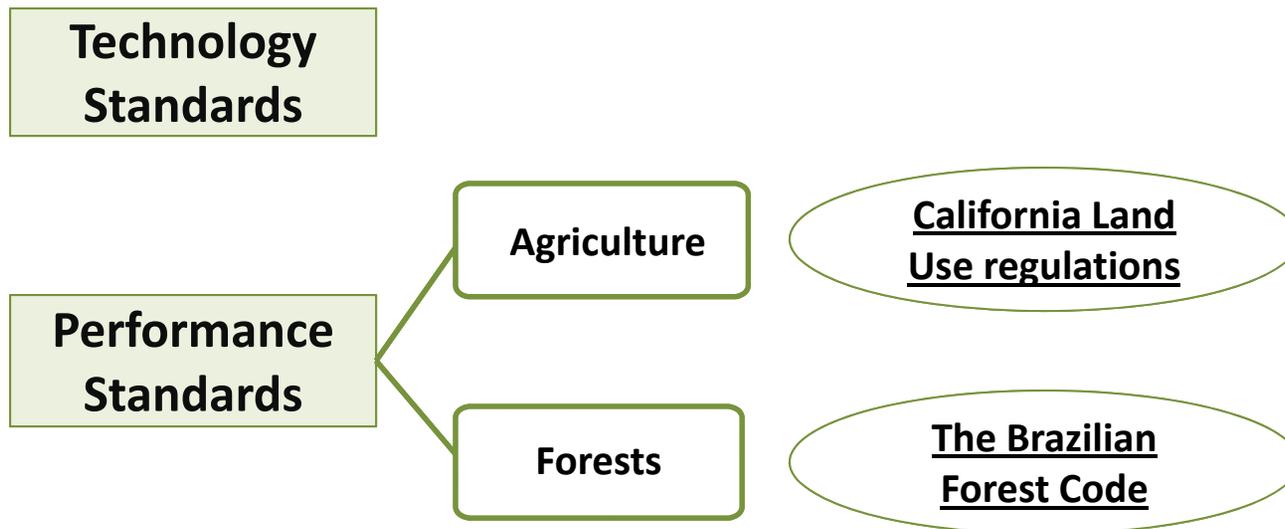
Sector-by-sector basis.

The Portland Cement NSPS

## Examples: Land Use



Regulations for land use usually address emissions from agriculture or deforestation. In these sectors, it is rather difficult to implement standards and actually monitor them. However, these sectors are responsible for much emissions and should be considered by policymakers.



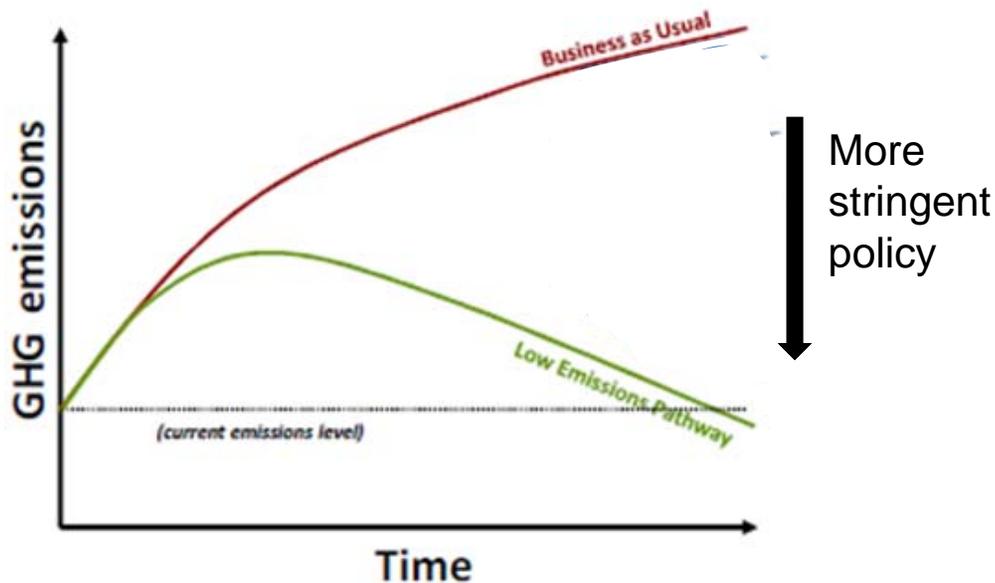
## Key Issues for Design and Implementation

1. **Setting the Standard**
2. **Coverage of regulations**
3. **Flexibility mechanisms**
4. **Managing regulations over time**
5. **Incenting innovation**
6. **Monitoring and enforcement**



## Key Issue #1: Setting the Standard

How much change is required by a regulation?



### Consider:

- Is the performance standard required substantially more aggressive than current performance?
- Are the technologies mandated already widely deployed?
- How much do alternative technologies improve performance?



## Key Issue #1: Setting the standard

What actions or performance level is required?

Detailed information about technologies and processes is required within government

Wide variation within a sector often makes setting a uniform standard challenging

Wide variation from facility to facility

Detailed, sector-specific technical data and information required

Complexity in defining standard can lead to politicization

More complex compliance rules mean more expensive compliance

Stakeholder engagement

Credible analysis



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## Key Issue #2: Coverage

### Which emissions could be regulated?

Transportation?



Power Sector?



Waste?



Agriculture?



Buildings?



Coverage

#### Consider:

- What are the costs of emissions reductions?
- How easily can the regulation be enforced?
- What are the major sources of emissions?
- What are the social implications of regulations?



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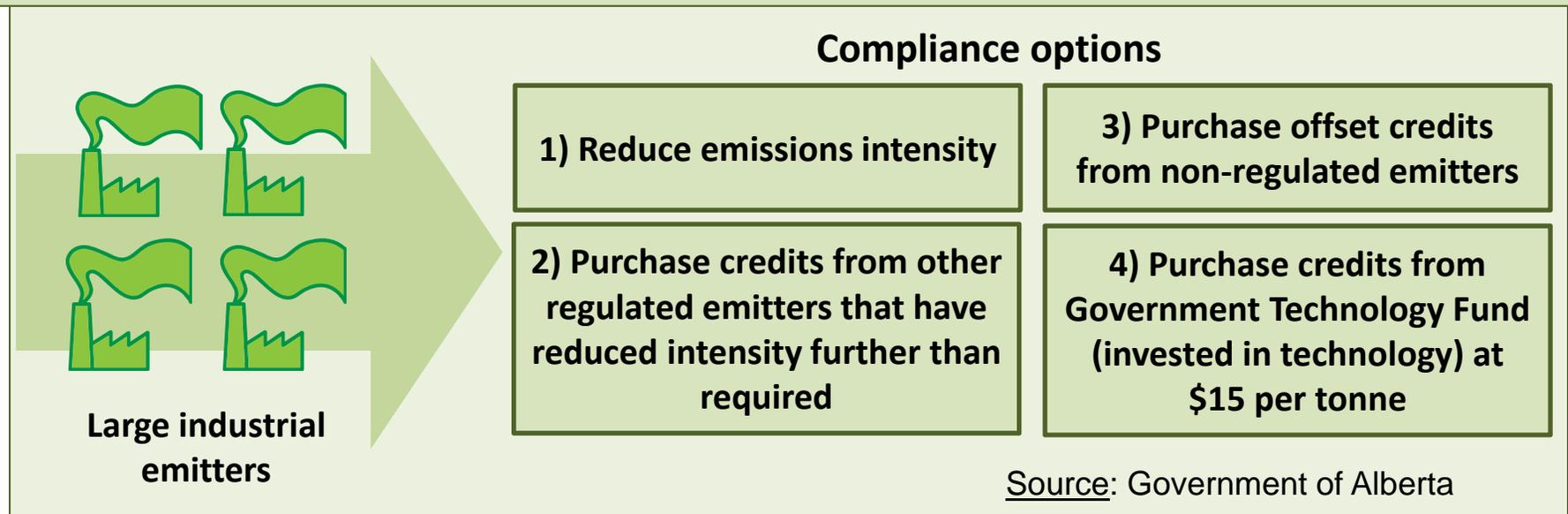
## Design Issue #3: Flexibility mechanisms

**How much flexibility do regulated emitters have  
in *how* they comply with the regulation?**

### Flexibility Mechanisms

- Recognize that compliance costs vary widely from emitter to emitter
- Can lower costs and therefore allow for more ambitious standards

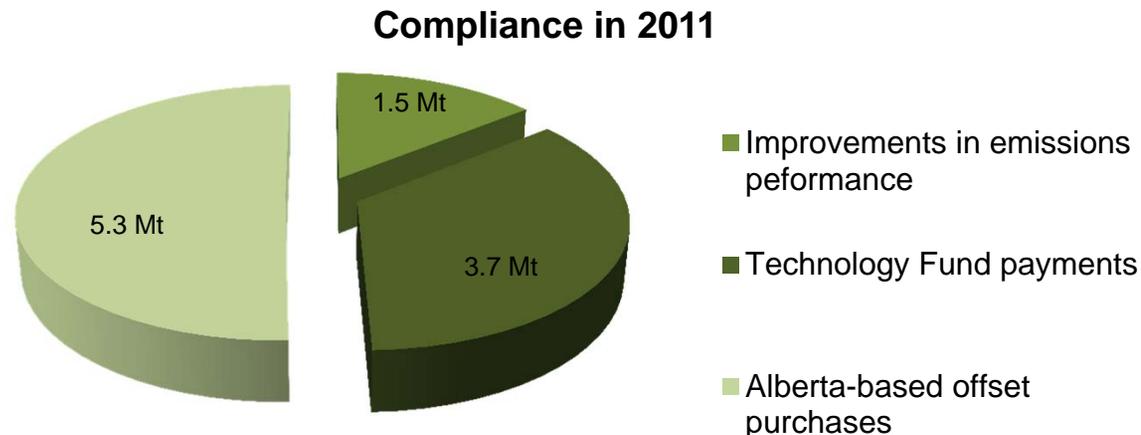
**EXAMPLE:** Province of Alberta (Canada) Specified Gas Emitter Regulation  
**Performance Standard: Improve Emissions Intensity by 12%**



## Design Issue #3: Flexibility mechanisms

### Example: Province of Alberta, Canada

#### How have emitters responded to the flexible regulation Alberta?



Source:  
Government of  
Alberta

#### Outcomes:

- Overall compliance of 10.5 Mt in 2011 (represents 4% of Alberta emissions)
- Actual emission reductions of 5.2 Mt in 2011
- 1.0 Mt of credits awarded for intensity improvements beyond 12%

#### Considerations:

- Compliance obligations are small (12% intensity improvements)
- Maximum abatement cost is capped (\$15 per tonne CO<sub>2</sub>e)
- Flexibility reduces costs but can also reduce outcomes

[Learn more>](#)



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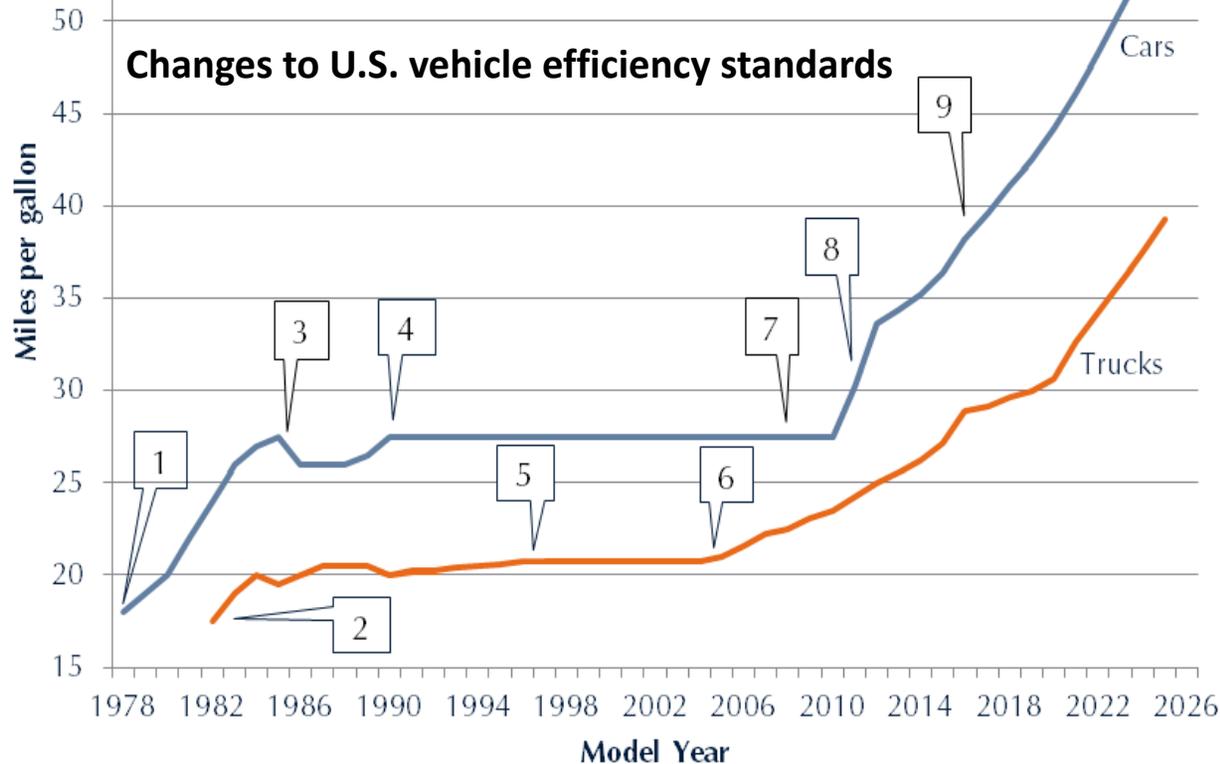
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## Key Issue #4: Managing policy over time

### How should be the regulation be adjusted through time?

Regulations should be updated regularly to reflect changes in available technology and to continue to incent emissions reductions. If regulations change too much, they become unpredictable and send a less certain signal.



1. 1978-1985: Congress sets car standard (1978-1985)
2. DOT sets truck standard to max feasible (1979-1996)
3. DOT decreased car standard (1986-1989)
4. DOT sets car standard to 27.5 mpg (1990-2010)
5. Congress freezes truck standards at 20.7 mpg (1997-2001)
6. Bush Admin issues new truck targets (2005-2007)
7. EISA changes CAFE to footprint standard (2008-present)
8. Obama Admin issues new car & truck standards (2012-2016)
9. Obama Admin issues new car & truck standards (2017-2025)

Source



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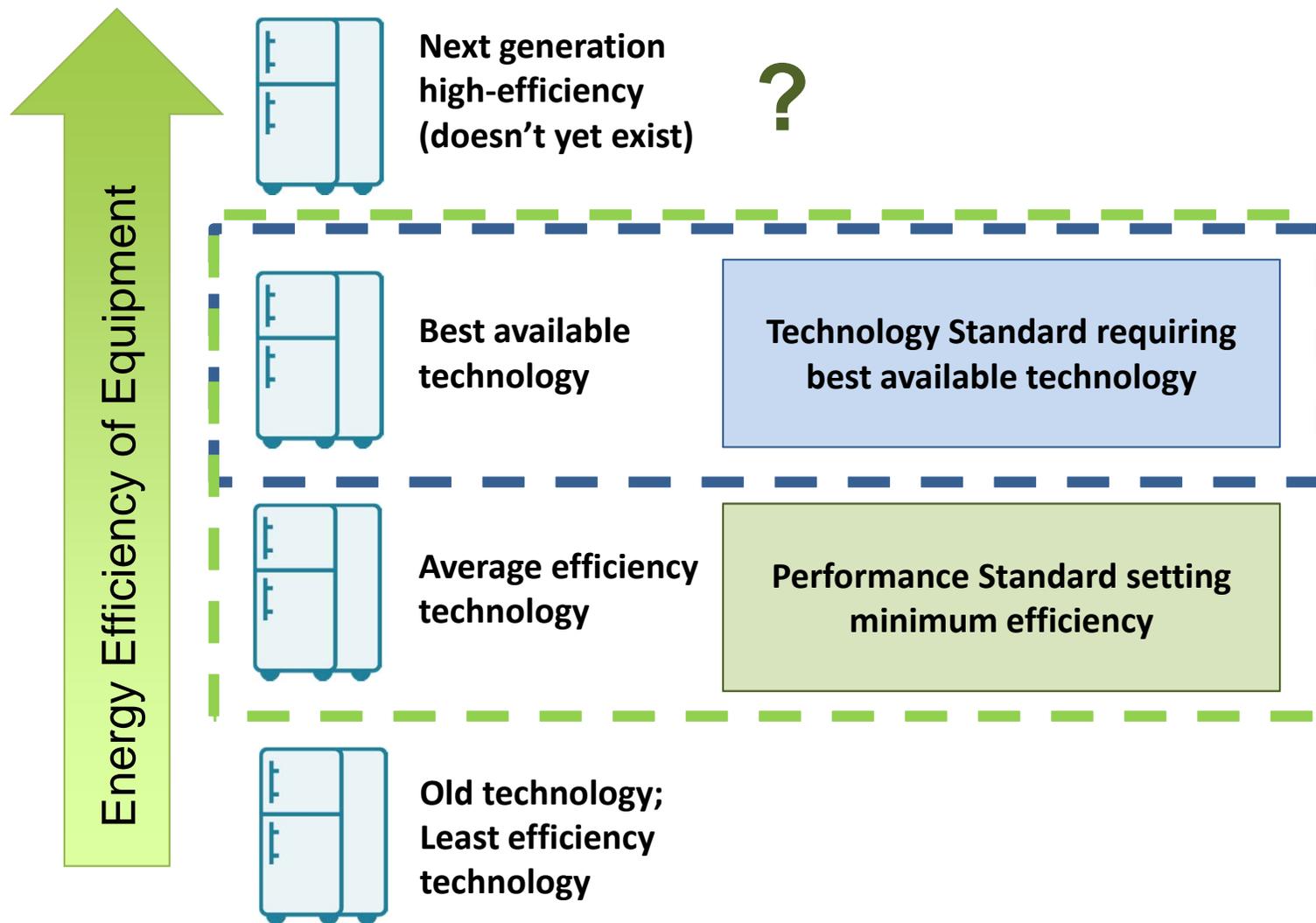


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## Key Issue #5: Incenting innovation

How can regulations provide incentives for innovation of new, revolutionary emission-reducing technologies?



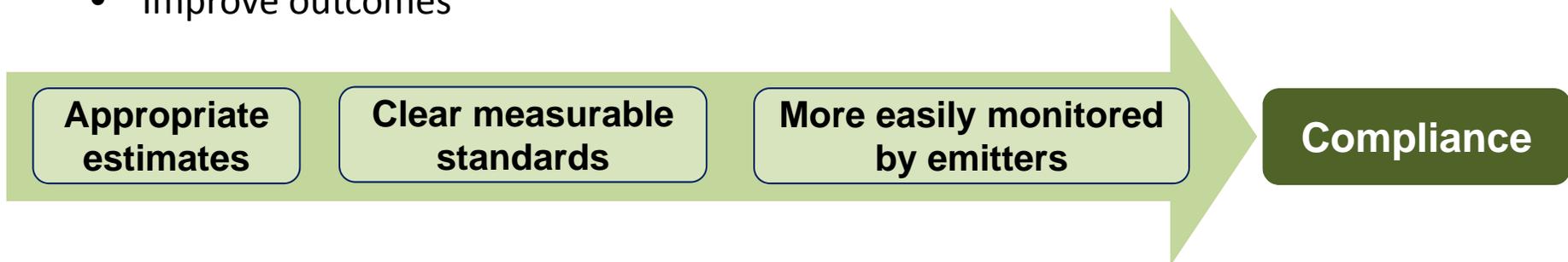
## Key Issue #6: Monitoring and enforcement

### How can compliance with a regulation be ensured?

Monitoring of activities or firms many times determine the quality of the standard itself.

A coordinated monitoring process could:

- Decrease overall costs of regulation
- Improve outcomes



### Enforcement

If cost of compliance > fines that may be imposed + low likelihood of inspection = **Less compliance**

### Emitters consider



## Summary: Advantages and limitations of regulations

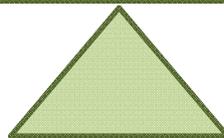
### Regulations both advantages and limitations

#### Advantages — Vs. — Limitations

- Provides certainty about environmental outcomes
- Widely understood form of environmental policy with long history
- Pragmatic approach that manages to touch a broad base of emitters and products

- Difficult to determine 'optimum' standard
- Less cost-effective than Market Based Instruments (imposes disproportionate costs on emitters)
- Provide lower incentives for innovations and reductions beyond the standard.
- Should be revised frequently

**Success depends greatly on enforcement of compliance**



## Summary: Tips for cost-effective regulations

### Making regulations sustainable in the long run

Ultimately, goal is that regulations increase compliance flexibility and allow emitters to equalize abatement costs.

#### Set the Standard

Establish clear effort targets.

Engage in multi-party stakeholder processes throughout policy design

#### Coverage

Provide a sensible level of coverage that reflects domestic circumstances and priorities

#### Flexibility

Enable flexibility mechanisms while achieving emissions reductions:

#### Managing policy over time

- Establish transparency and certainty
- Monitor and enforce
- Regulations can be designed to transition to Market-based instruments (MBIs)

Source: IISD 2011



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## References and Resources

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