

# Greenhouse Gas Control Programs

John W. Wadsworth

# Cap and Trade: Delaware River

- Determine “optional level of pollution”
- Give “rights to pollute” to industry equal to (or less than) optimal level
  - Companies that can reduce pollution cheaply will add equipment and sell their rights to pollute
- Companies that would have to spend a fortune to reduce pollution buy rights to pollute from companies that reduce cheaply
  - River is the same
  - Most efficient way to get to desired level



# The Role of Carbon Trading

## Emitters will choose least cost option of:

- Internal abatement (reduce emissions)  
(scale back output, relocate, alter mode of operation, fuel switching, new technology/investments)
- Buy surplus emission allowances
- Buy verified reductions = offsets
- Pay penalty for non-compliance

Cap and Trade unleashes the creativity & economic incentives of markets in allocating capital to the least cost emission reduction options.

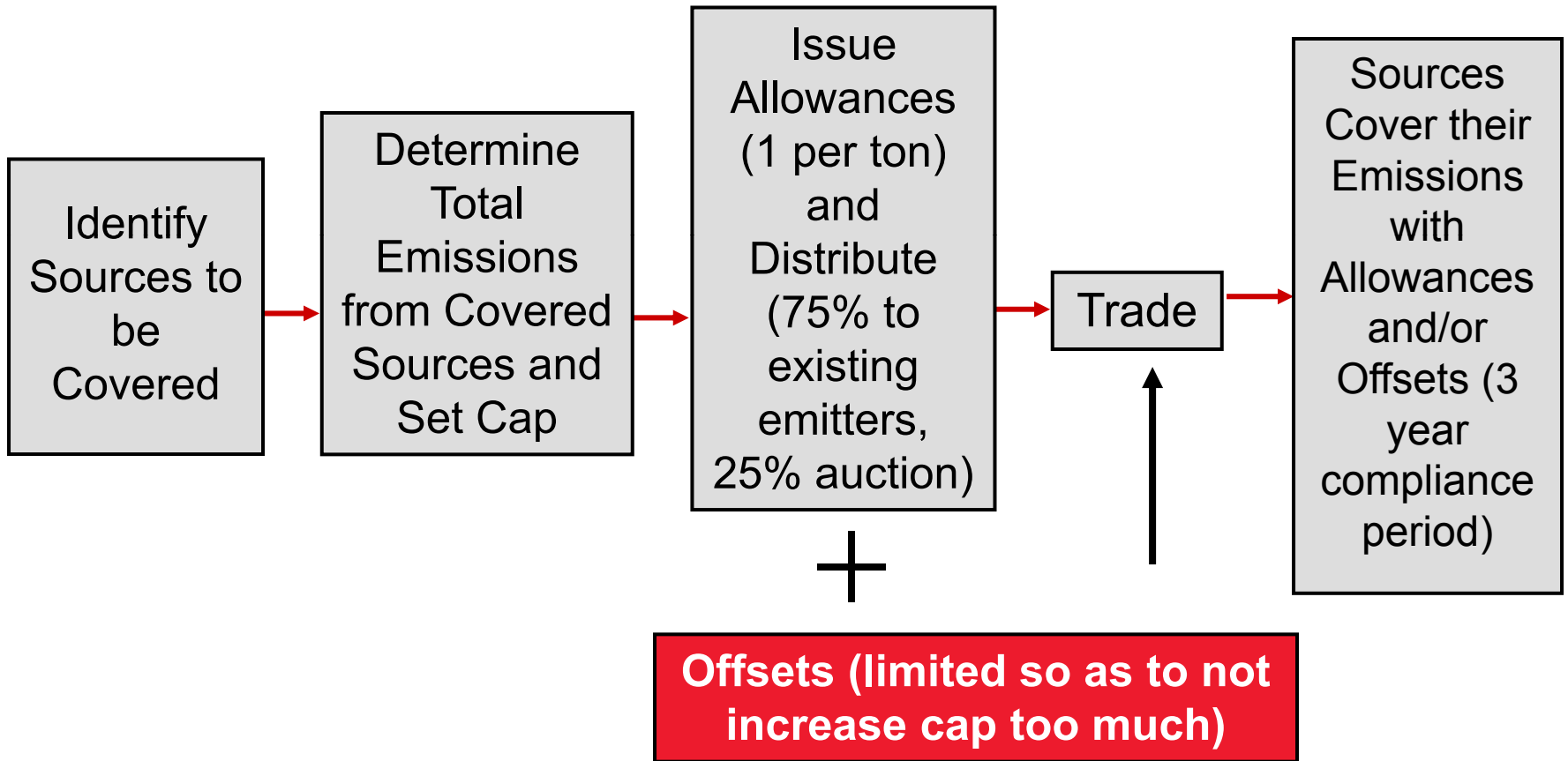


# RGGI: Scope, Targets and Participants



- Market-based emissions trading system
- Size: ~188 m s/t (~9% of EU ETS)
- Goals:
  - Stabilize absolute emissions 2009 - 2014
  - 10% below 2005 by 2019 (2.5%/year)

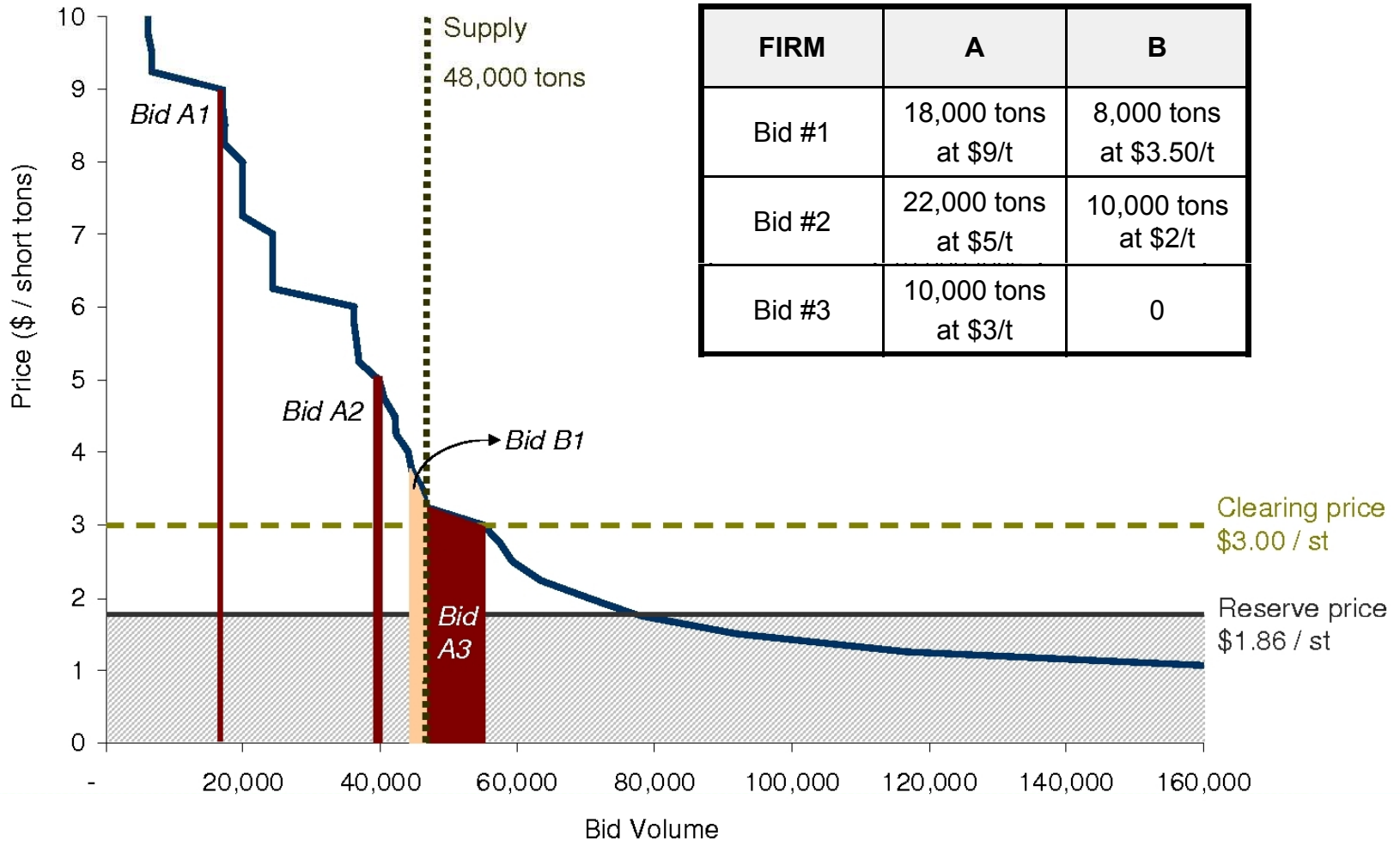
# Designing RGGI



# Key Design Features: Scope and Allocation

- Scope: Power Sector only
  - > 25 MW capacity
  - Regulated at the source (power plants)
- Allocation: almost 100% auction
  - Min 25% of state-wide cap
  - Most states going for 100%
- Use of proceeds for renewable energy, **energy efficiency** and public benefit
- Auction Design: uniform, single round, sealed bid auction
  - Held quarterly
  - Reserve price announced at \$1.86
- First auction was September 25, 2008; all allowances sold for \$3.07 per ton

# How Does the Auction Work?



# Legislative Action & RGGI

STATE	LEGISLATION	AUCTION
<b>CT</b>	Regulation approved by state's legislative review committee on 22 July, secretary of state on 23 July	91% auction, reminder set aside for clean power
<b>DE</b>	Legislation introduced May 5, 2008, passed end of June	60% to increase to 100% in 5 years
<b>MA</b>	Rules passed in Senate Jan 3rd, 2008, House in June	100% auction, incl. 1% REC purchase
<b>MD</b>	Rule approved in April	90% with 10% strategic set aside
<b>ME</b>	Statute passed June 2007, Rules in 3 parts—specific rulemaking to start in Dec 2008	100%
<b>NH</b>	Proposed RGGI bill passed in state legislature in May, governor signed into law early June	100%. Proceeds over \$6/st go to consumers
<b>NJ</b>	Rules passed Jan 8, 2008	98%
<b>NY</b>	Regulation being revised, state decided not to participate to 1 <sup>st</sup> auction	100%
<b>RI</b>	Legislation passed in June 2007. Rulemaking underway	100%
<b>VT</b>	Final rules adopted by state legislature, entered into force May 30, 2008.	100%

# What is a Carbon Offset?

## Definition

- A carbon offset is generated by the reduction of GHG emissions from a specific project (not renewable project)
- Offsets are used to reduce or neutralize the net carbon emissions of another entity (regulated entities, private companies or individuals)
- They can be traded where they “offset” one ton of CO<sub>2</sub> emission

# Key RGGI Design Features: Eligible Offsets

- Offset Types (domestic)
  - Landfill gas (methane) capture/burning
  - Sulfur hexafluoride (SF6) capture/recycling
  - Afforestation
  - Energy efficiency: reduction or avoidance of CO<sub>2</sub> emissions due to end-use
  - Agricultural manure management operations (avoided emissions)
  
- Geographic origin
  - RGGI States
  - Other US states that sign MOU with RGGI
  - International: CDM/JI, EU ETS under certain conditions



# Additionality

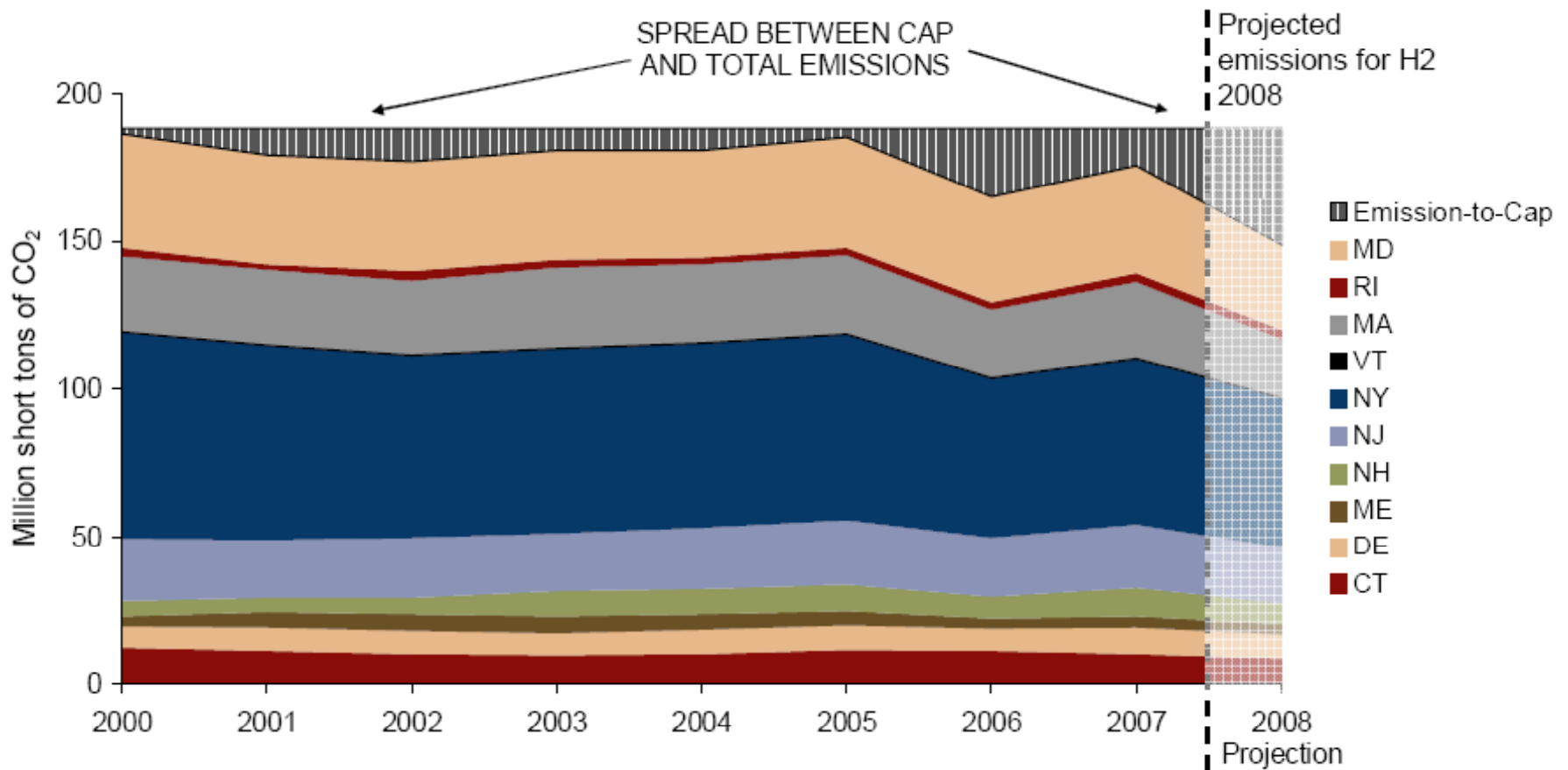
- **Model Rule: 10.3(d)**
  - **CO<sub>2</sub> offset allowances shall not be awarded to an offset project or CO<sub>2</sub> emissions credit retirement that is required pursuant to any local, state or federal law, regulation, or administrative or judicial order**
  - **CO<sub>2</sub> offset allowances shall not be awarded to an offset project that includes an electric generation component, unless the project sponsor transfers legal rights to any and all attribute credits (other than the CO<sub>2</sub> offset allowances) generated from the operation of the offset project that may be used for compliance with a renewable portfolio standard or other regulatory requirement to the State's Regulatory Agency**

# Additionality

- **Model Rule: 10.3(d) (cont.)**
  - **CO<sub>2</sub> offset allowances shall not be awarded to an offset project that receives funding or other incentives from any system benefit fund, or funds or other incentives provided through the consumer benefit or strategic energy purpose allocation required pursuant to these rules**
  - **CO<sub>2</sub> offset allowances shall not be awarded to an offset project or CO<sub>2</sub> emissions credit retirement that is awarded credits or allowances under any other mandatory or voluntary greenhouse gas program**











# Controversy: is RGGI Over-allocated?

Historical emissions 2000-2007, Projection 2008



# Waxman/Markey Draft

- Bill caps emissions upstream of the source, for oil
- Coal and natural gas capped at point of emission

		End-Use Sectors		
Fuel	Fuel Source	Power / Industrial	Transportation	Residential / Commercial
Coal	Mine	 		
Nat Gas	Processor / Importer	 		 
Oil	Refiner / Importer 			



# Waxman/Markey

- RGGI suspended from 2012 until 2017
- A RGGI allowance can be traded dollar for dollar for a Federal allowance (not one for one)

# One Person's View

- You need to understand economics
- Primary goal is to raise price of carbon
- Irrelevant whether you impose a cap or a tax
- Does “cap and trade” have any benefit if there is no equipment to capture carbon?

# One Person's View

- Biggest issue is variability in price of oil (with all upside going to OPEC)
- Every time OPEC revises prices, we find ways to conserve
- VCs tell us there are many technological proposals that only work if oil stays above \$100/barrel

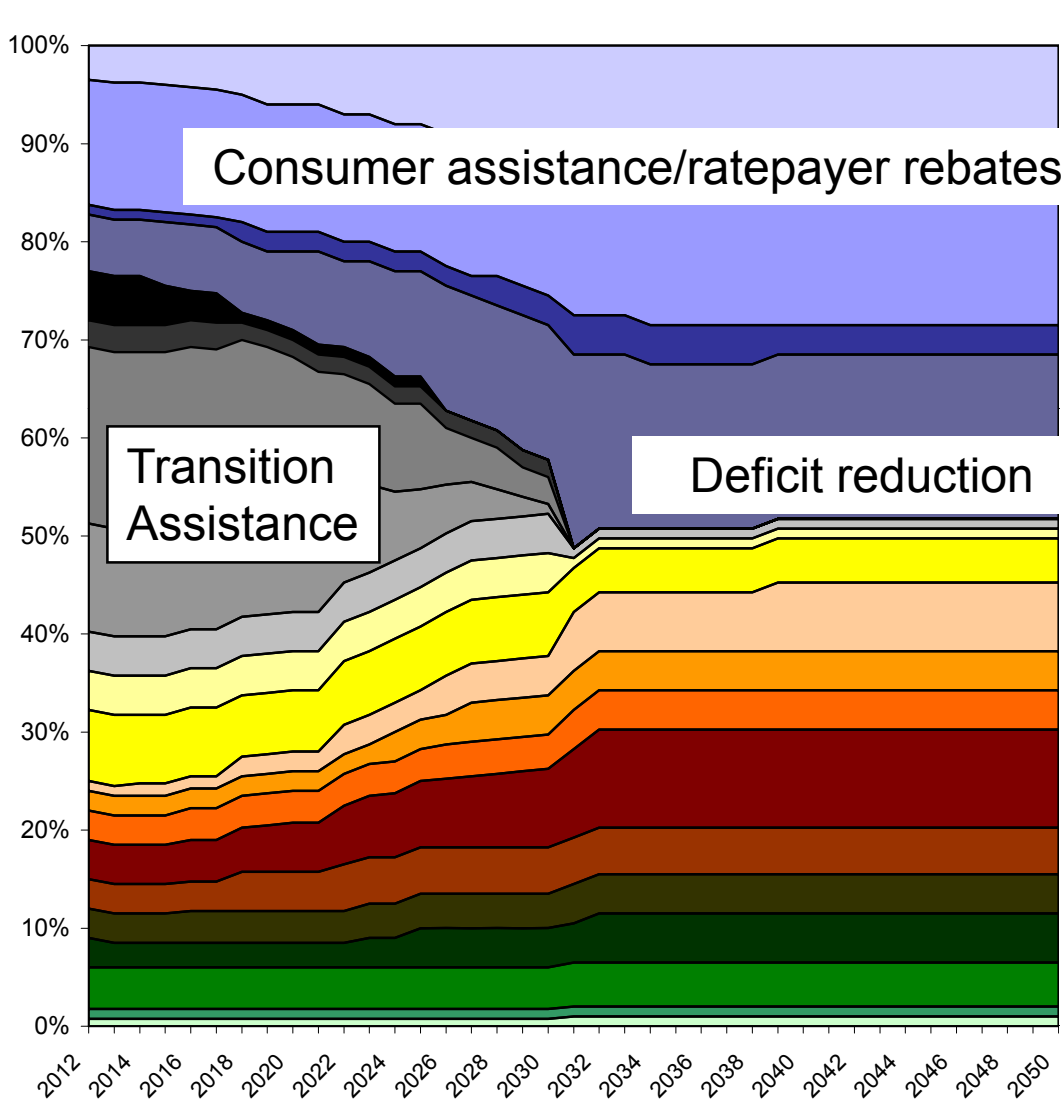
# One Person's View

- How about a variable tax on oil that, combined with OPEC, keeps oil at \$100/barrel
- To avoid overtaxing us, all money raised must be returned per capita
- Goal is to change behavior, not generate revenue

# One Person's View

- “Energy Independence” not (necessarily) “Climate Change”
- Combined with a cap and trade on coal and natural gas, and you accomplish both goals

# Key Design Features: Who Gets the Money?



\$\$ in form of proceeds from allowance auctions or direct allocation of allowances

- ← Renewable energy, energy efficiency
- ← Assistance to states/tribes for adaptation, rewards for leadership
- ← Support for forestry, international rainforest protection



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