Exercise **comparing standard, taxes** and tradable permits

Hp: two firms j=1,2 ; Total Abatement cost : $TAC_1 = A_1^2$ $TAC_2 = 2A_2^2$

Marginal abatement cost for firm $j \equiv MACj$

$MAC_1 = 2A_1$ $MAC_2 = 4A_2$

Initial emissions: $E_1^\circ = 40$ $E_2^\circ = 45$ → $E_1^\circ + E_2^\circ = 85$; Emission target = 40

Standard:

$E_1 = E_2 = 20$

→ $A_1 = 20$

→ $A_2 = 25$

→ $\Sigma TAC = ?$

→ $= 400 + 1250 = 1650$

Emission tax:

$h = MAC_1 = 2A_1 = MAC_2 = 4A_2$

& $A_1 + A_2 = 45$

→

$A_1 = 30$; $A_2 = 15$; $t = 60$ and $A_1 + A_2 = 45$;

$\Sigma TAC = ?$

$= 900 + 450 = 1350$

Emissions?

$E_1 = 10$, $E_2 = 30$

Fiscal revenue?

$= 10 \times 60 + 30 \times 60 = 2400$

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Marginal abatement cost for firm $j \equiv MACj$

$MAC_1 = 2A_1$ $MAC_2 = 4A_2$

Initial emissions: $E_1^\circ = 40$ $E_2^\circ = 45$ → $E^\circ_1 + E^\circ_2 = 85$;   Emission target = 40

Standard:	*Emission tax:*
$E_1 = E_2 = 20$	$p = MAC_1 = 2A_1 = MAC_2 = 4A_2$
→ $A_1 = 20$	& $A_1 + A_2 = 45$
→ $A_2 = 25$	→
→ $\Sigma TAC = ?$	$A_1 = 30$; $A_2 = 15$; $t=60$ and $A_1 + A_2 = 45$;
→ $= 400 + 1250 = 1650$	$\Sigma TAC = ?$
	$= 900 + 450 = 1350$
	Emissions?
	$E_1 = 10$, $E_2 = 30$

Firm 1 will sell 10 permits to firm 2