

Pramod Kumar
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Subject: Diwali Contest

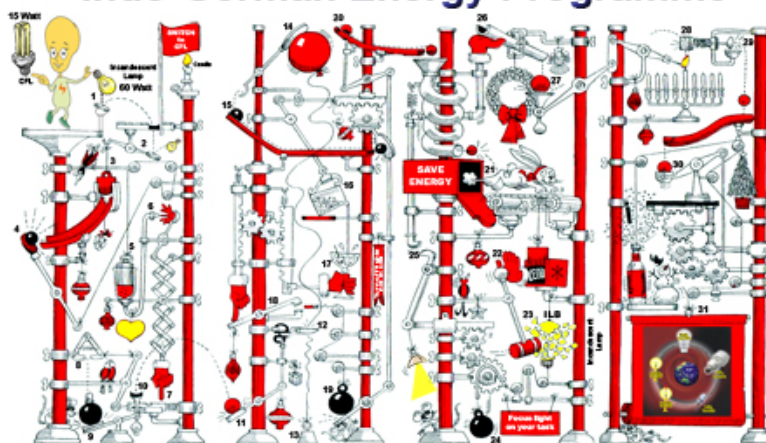
Sir,

I am herewith attaching my answers for Diwali contest.

Please find the attached word document and consider me to be one of the participants to this Diwali contest.

Thanks & regards,
 Pramod Kumar

Diwali ILB Bulb destroying machine Indo-German Energy Programme



Modified and based on a cartoon "Incredible Roy Doty Christmas card" by Roy Doty

Stage	Action	Reaction
1	ILB Dropped on plate	Bounces to plate
2	ILB bounces on plate 2	Pulls thread
3	Pulled thread lifts gate	Black ball released
4	Black ball pushes the hinge	Loosens the thread
5	Plunger pushes the liquid	Liquid comes out with pressure
6	Liquid operate the hinges	Hand lifts
7	Hand lifts operates the trigger to left	Pulls the thread to right
8	Pulls the thread releases the the ball	The Black ball falls
9	Black ball hits plate	Triggers red ball
10	Red ball jumps	Red ball jumps and falls on plate
11	Red ball pushes the plate	Operates the scissors
12	Scissors cuts thread	Weight falls
13	Weight falls	Released red balloon
14	Red balloon rises	Lever falls down
15	Falling Lever drops the ball down	Ball hits another end plate
16	Operates gear	Pull the jug to drop liquid
17	Liquid drops in cup – Hand falls due to weight	Operates the gear – pushes the hand
18	Hand operate the mechanisms	Releases the thread
19	Thread is loose	Black ball falls on plate and crushes the mouse – Lifts the red ball
20	Red ball is released	Release the Rabbit in the SAVE ENERGY box
21	Rabbit runs on the thread mill	Thread coils on the spindle lifts a gate

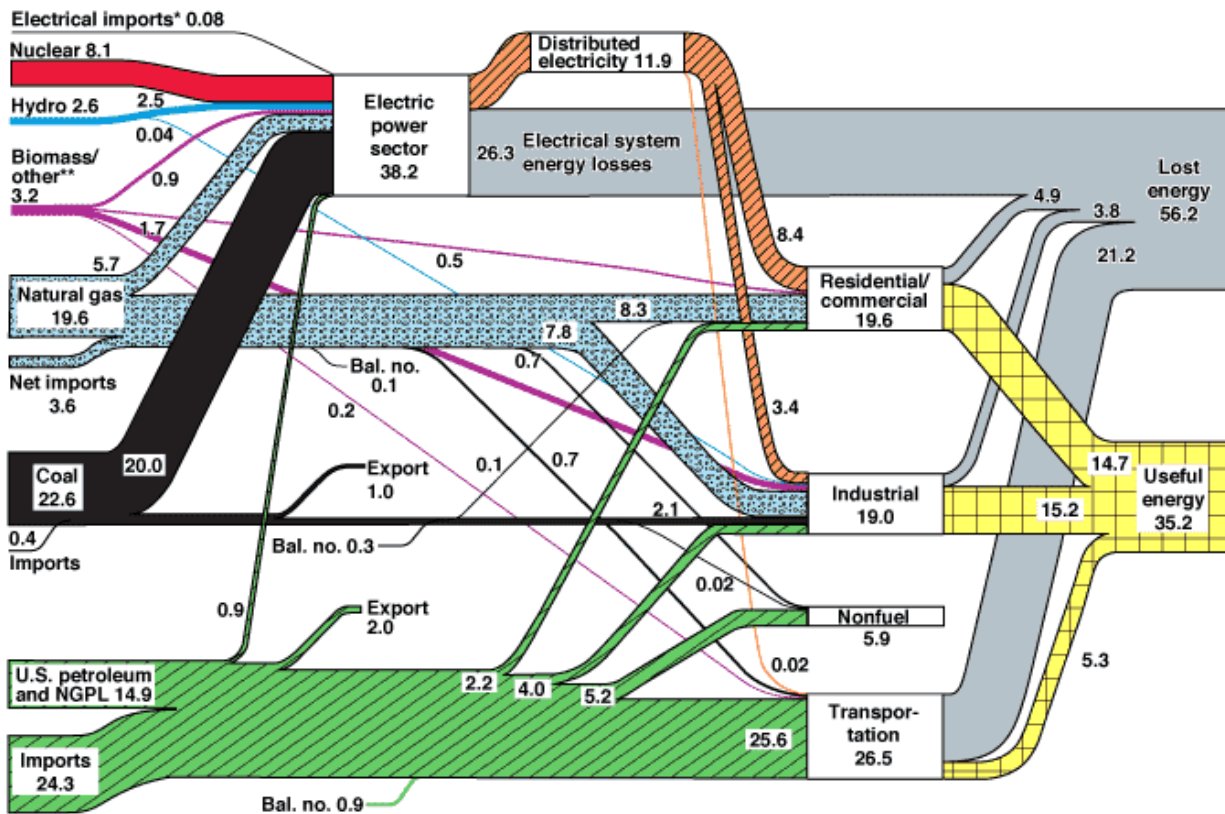
22	Hand released by lifting of the hand	Hand pushes the lever
23	Hammer crushes the yellow ILB	Loosen the thread
24	Lose thread operates the banner "Focus light on the task"	Operates the gear
25	Gear unlatches the lever	Pushes the spring
26	Pushed spring Lifts the hand	Releases the red ball
27	Ball falls on the plate	Moves the burning match to light the candle
28	The burning match releases the spring	Pushes a handle
29	The handle throws the red ball	Ball falls on a plate
30	Ball operates the levers - falls	a. Host the BEE Lamp cycle poster b. Operate complex gears which lead to opening of the bottle
31	BEE Lamp cycle poster hosted	

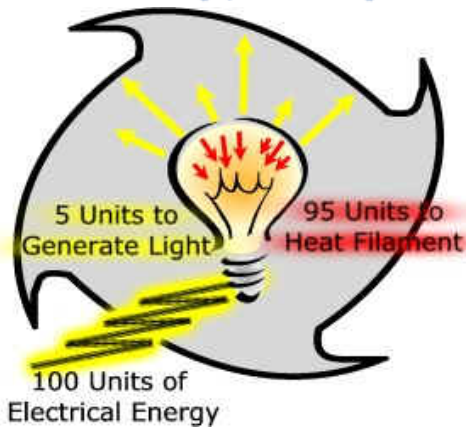
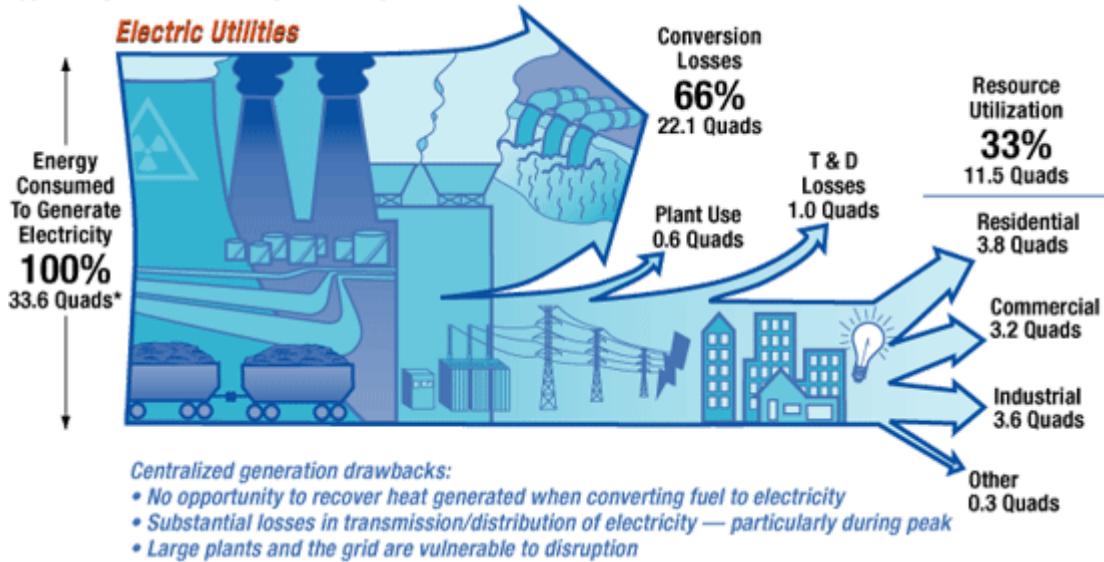
Remember that an incandescent light "bulb" converts only ?% of the energy in coal provided to a power plant to generate a useful energy output.

Tell us the following:

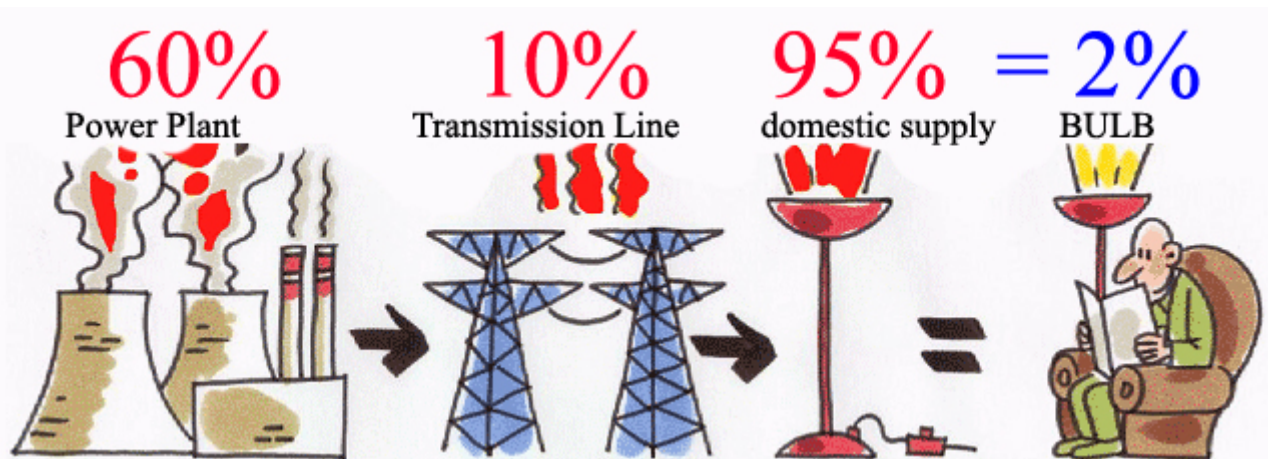
1. Estimate how large is "?" in percent.
2. What is the "useful energy output" of a CFL.
3. Where is the energy lost on its way from coal to electricity consumed by the CFL.

Answer –





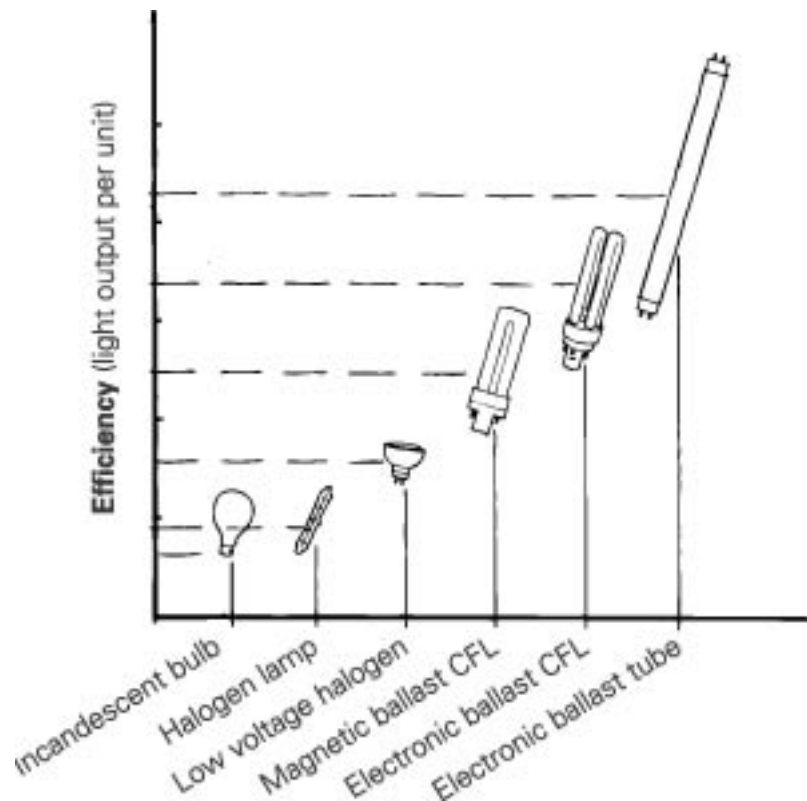
Efficiencies of common energy conversion devices		
Energy Conversion Device	Energy Conversion	Typical Efficiency, %
Electric heater	Electricity/Thermal	100
Hair drier	Electricity/Thermal	100
Electric generator	Mechanical/Electricity	95
Electric motor (large)	Electricity/Mechanical	90
Battery (dry cell)	Chemical/Electricity	90
Steam boiler (power plant)	Chemical/Thermal	85
Home gas furnace	Chemical/Thermal	85
Home oil furnace	Chemical/Thermal	85
Electric motor (small)	Electricity/Mechanical	65
Home coal furnace	Chemical/Thermal	55
Steam turbine	Thermal/Mechanical	45
Gas turbine (aircraft)	Chemical/Mechanical	35
Gas turbine (industrial)	Chemical/Mechanical	30
Automobile engine	Chemical/Mechanical	25
Fluorescent lamp	Electricity/Light	20
Silicon solar cell	Solar/Electricity	15
Steam locomotive	Chemical/Mechanical	10
Incandescent lamp	Electricity/Light	5



Transformity - the energy of one type required to make a unit of energy of another type.

Remember that an incandescent light “bulb” converts only **2%** of the energy in coal provided to a power plant to generate a useful energy output.

At the **power plant**, some **60 %** of the energy is lost as **waste heat**. Another **10 %** is lost in **electricity lines** and **transformers** before the electricity even reaches your home. Typical **incandescent lamps** are around 2% efficient and **domestic CFLs** are currently 7%-8% efficient in usage (*life cycle comparisons are necessarily more complex*).



Website –

http://www.greenpeace.org/international/campaigns/climate-change/take_action/your-energy#

<http://upload.wikimedia.org/wikipedia/commons/4/4e/USEnFlow02-quads.gif>

<http://www.greenhouse.gov.au/yourhome/technical/fs45.htm>

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