Group Activity

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#energyefficientworld

Group Activity - Scenario

In 2016, the government of your country signed the Paris Agreement, and in 2018, ratified the Kigali Amendment to the Montreal Protocol on phasing down HFCs worldwide. The President has decided to develop a new agency….

You and your group are the newly employed staff members of the **Department of Energy Efficiency** (DEE).

You have been tasked by the President to develop an energy efficiency programme for the country. The President is receiving some negative feedback about his decisions, some opponents are suggesting that the programme will cost too much, and questioning how it will benefit the country.

The President wants to see your plan for the country.

Instructions

- You will be assigned to a group that will represent the Department of Energy Efficiency (DEE) in “your country”.
- You will need to develop and present an energy efficiency plan
- You will be provided with a list of specific questions that you should consider when developing your energy efficiency plan.
- You will be given some time each day to work on these plans, and apply the knowledge you have learnt throughout the day.
- Each group will be required to present their plan back to the President and Committee on the last day of the course (Wednesday).
- Presentations should be no more than 10 minutes in length. Followed by 3 minutes Q&A from the President and the committee!

Planning and Selecting - Day 1

- Identify the policy interventions that you will implement for your energy efficiency programme
  - Priorities what you think will be the most effective interventions and why

- Examine the data provided on a select number of products.
  - Decide on what products should be regulated under your programme and why? Is there any product that shouldn't be regulated? Is there any product where you feel like you don't have enough information to decide?
  - Priorities the products you wish to regulate and pick two to be the focus of this plan

Products to consider

- Electric toilet seats
- Air Conditioners
- Blenders
- Refrigerators
- Lighting Products
  - Incandescent Lamps
  - Compact Fluorescent Lamps (CFLs)
  - Linear Fluorescent Lamps (LF)
  - Light Emitting Diodes (LEDS)








Data

- We will provide the groups with a range of different data sources to make their decision

- See the separate print outs for information that has been collected for your country… next few slides

Data - Government census data and households surveys

Census data				Official Projections	
	2000	2010		2020	2030
Households (million)	33.3	39.3		44.2	50.0
Population (million)	100	110		115	115
People/household	3	2.8		2.6	2.3

Government survey (every 5 years)						Academic projection
	2000	2005	2010	2015		2030
Refrigerator-Freezer	75%	80%	85%	90%		110%
Television	75%	85%	95%	105%		135%
CFL lamps	100%	400%	500%	550%		150%
linear Flourescent lamps	100%	100%	80%	50%		50%
Incandescent	800%	500%	420%	350%		0%
LED lamps	0%	0%	0%	50%		800%
Blender	10%	10%	10%	10%		10%
AC unit	1%	2%	4%	5%		25%
Electric toilet	0%	0%	0.1%	0.1%		0.1%

Data – metering campaign

Metered data annual consumption (kWh/appliance/year)	
End-use	**2015 metering campaign**
Refrigerator-Freezer	625
Television	150
CFL lamps	6
linear Flourescent lamps	30
Incandescent	38
LED lamps	
Blender	2
AC unit	1,000
Electric toilet	25

Data – Typical power and use values to estimate energy

	Declared energy (kWh/yr)	Power On-mode (W)	Power Standby mode (W)	Use-On (hours/yr)	Use-Standby (hours/yr)	Estimated energy (kWh/yr)
Refrigerator-Freezer	600					600
Television		80	2	2000	4000	168
CFL lamps		12		500		6
linear Fluorescent lamps		40		750		30
Incandescent		75		500		38
LED lamps		6		500		3
Blender		50		50		3
AC unit		2,000	2	500	2000	1,004
Electric toilet		50	2	100	8660	22

Data – Annual volume of sales, historic and future estimate

Estimated sales volume (million)	2000	2005	2010	2015	2030
Refrigerator-Freezer	1.67	1.94	2.23	2.54	3.67
Television	2.50	3.09	3.73	4.44	6.75
CFL lamps	2.78	12.10	16.37	19.37	6.25
linear Fluorescents lamps	3.13	3.40	2.95	1.98	2.34
Incandescent	133.33	90.77	82.50	73.96	-
LED lamps	-	-	-	1.06	20.00
Blender	0.67	0.73	0.79	0.85	1.00
AC unit	0.03	0.07	0.16	0.21	1.25
Electric toilet	-	-	0.00	0.00	0.00

Data – typical lifetime of appliances and equipment

Lifespan	Years			
Refrigerator-Freezer	15			
Television	10		**Lifetime (hrs)**	**Use/yr**
CFL lamps	12		6,000	500
linear Fluorescent lamps	11		8,000	750
Incandescent	2		1,000	500
LED lamps	20		10,000	500
Blender	5			
AC unit	10			
Electric toilet	20			

Implementation and Engagement – Day 2

- If you have decided to set MEPS levels, how will you go about this? What factors should you consider?
- What stakeholder might you need to consider and why?
- List the different ways you plan to engage with your stakeholders
- What kind of digital resources could you use?

Data – registration database for refrigerators

ID#	Brand	Model	Feature 1	Feature 2	kWh/yr	Label
1	FancyFridges	X600	y	y	320	A
2	FancyFridges	X500	y	n	400	B
3	NationalAppliances	2019Bxyz	n	y	410	B
4	FancyFridges	X200	y	n	500	C
5	CoolFridge	Goldxyz	n	n	590	D
6	NationalAppliances	2018Dabc	n	n	600	D
7	NationalAppliances	2018Dxyz	y	y	610	D
8	NationalAppliances	2018Exyz	n	n	700	E
9	CoolFridge	PlatXyz	y	y	800	F

Data – market research for refrigerators

#	Brand	Model	Size (litres)	Feature 1	kWh/yr	Label	Cost ($)	Sales
1	FancyFridges	X600		y	320	A	1,500	1,000
2	FancyFridges	X500		y	400	B	800	5,000
3	NationalAppliances	2019Bxyz		n	410	B	520	50,000
4	FancyFridges	X200		y	500	C	750	100,000
5	CoolFridge	Goldxyz		n	590	D	475	220,000
6	NationalAppliances	2018Dabc		n	600	D	500	175,000
7	NationalAppliances	2018Dxyz		y	610	D	500	200,000
8	NationalAppliances	2018Exyz		n	700	E	450	250,000
9	CoolFridge	PlatXyz		y	800	F	500	150,000
	SUM Known							1,150,000
	TOTAL MARKET							2,500,000

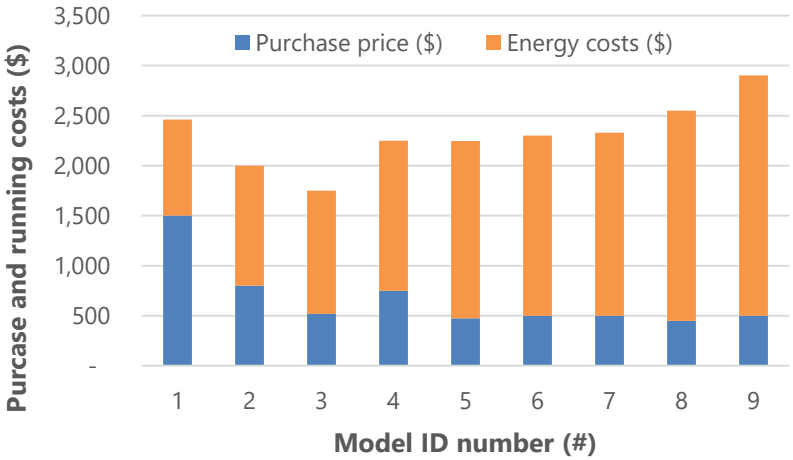
Considerations for MEPS – Life cycle costs

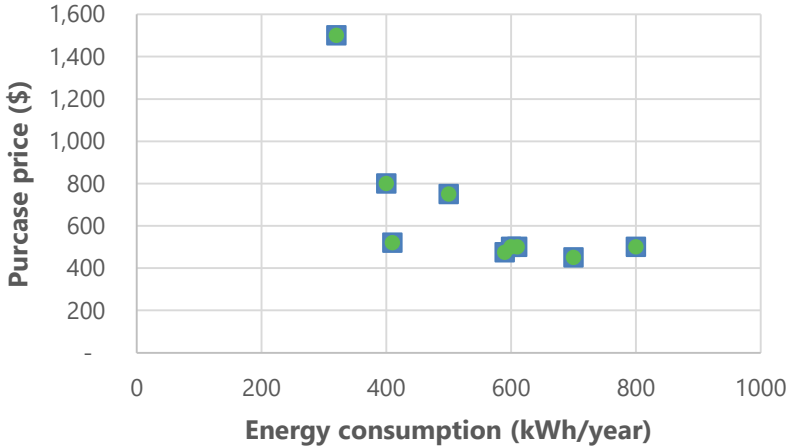
#	Brand	Model	kWh/yr	Label	Purchase price ($)	Sales	Energy costs ($)	LCC ($)
1	FancyFridges	X600	320	A	1,500	1,000	960	2,460
2	FancyFridges	X500	400	B	800	5,000	1,200	2,000
3	NationalAppliances	2019Bxyz	410	B	520	50,000	1,230	1,750
4	FancyFridges	X200	500	C	750	100,000	1,500	2,250
5	CoolFridge	Goldxyz	590	D	475	220,000	1,770	2,245
6	NationalAppliances	2018Dabc	600	D	500	175,000	1,800	2,300
7	NationalAppliances	2018Dxyz	610	D	500	200,000	1,830	2,330
8	NationalAppliances	2018Exyz	700	E	450	250,000	2,100	2,550
9	CoolFridge	PlatXyz	800	F	500	150,000	2,400	2,900

Energy price	0.2	$/kWh
Lifetime	15	Years

Life cycle costs = Purchase price + Running costs

MEPS considerations – market prices - life cycle costs



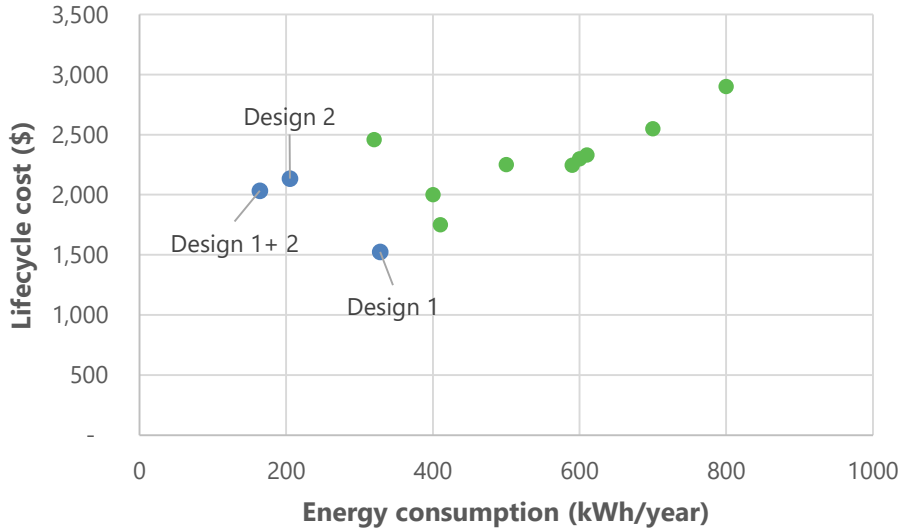


Life cycle costs = Purchase price + Running costs

MEPS considerations – engineering design options

	Model	% efficiency	kWh/yr	Marginal $	Price $	Energy $	LCC $
Basecase	2018Dxyz		410		520	1,830	2,330
Design 1	Compressor	20%	328	20	540	984	1,524
Design 2	VIP	50%	205	1,000	1,520	615	2,135
Design 1+2	Comp + VIP	60%	164	1,020	1,540	492	2,032

Minimising life cycle cost to the consumer



Labels and Tracking Progress - Day 3

- Design an energy label and list why you have chosen specific features
- How will track your programme?

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