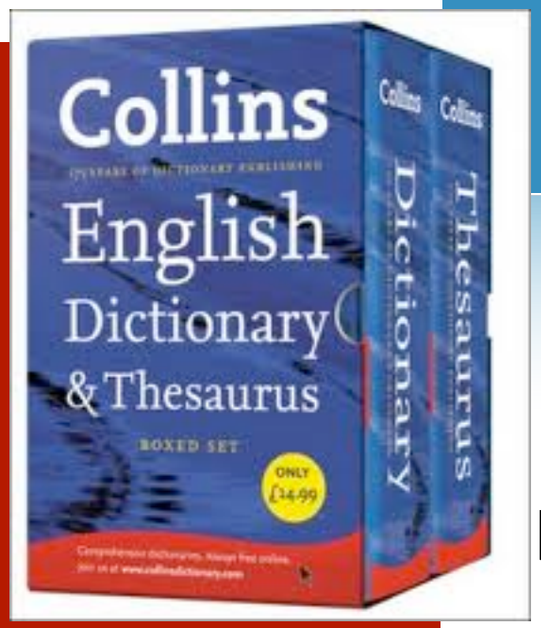
DEFINITIONS: BEHAVIOUR AND ENERGY



BEHAVIOUR: 1. manner of behaving or conducting oneself. 2. behaving with careful good manners. 3 (psychol) a. the aggregate of all the responses made by an organism in any situation. b. a specific response of a certain organism to a specific stimulus or group of stimuli.

ENERGY: 1. Intensity or vitality of action or expression. 2. Capacity or tendency for intense activity; vigour 3. Vigorous or intense action or exertion; exertion. 4. (Physics) a. the capacity of a body or system to do work. b. a measure of this capacity, expressed as the work that it does in changing to some specified reference state. It is measured in joules.

DEFINITIONS: BEHAVIOUR AND ENERGY

BEHAVIOUR: the range of actions and mannerisms made by organisms, systems, or artificial entities in conjunction with their environment, which includes the other systems or organisms around as well as the physical environment. It is the **response of the system or organism to various stimuli or inputs**, whether internal or external, conscious or subconscious, overt or covert, and voluntary or involuntary.

ENERGY: In physics, energy is an indirectly observed quantity that is often understood as the ability of a physical system to do work on other physical systems.

DEFINITIONS: BEHAVIOUR

Tim Chatterton: the action, reaction, or functioning of an organism or system, under normal or specified circumstances

DEFINITIONS: ENERGY BEHAVIOUR

Just based on these definitions, energy behaviour could simply be defined as the composite of these definitions, for example as: **the action, reaction or functioning of people in relation to services provided by energy.**

But for the purposes of this Task, 'energy behaviour' needs to be defined in a way that is going to make sense, and be of use to, a wide range of practitioners (policy analysts, researchers, firms, social entrepreneurs), in particular to those practitioners who are involved in many very different types of actions to try to change the way people use energy for personal and collective services. Importantly, the definition needs to encompass the various ways *that practitioners themselves refer to energy behaviour*, to make sense to them, and to assist them in appreciating the totality of what they are attempting to influence.

DEFINITIONS: ENERGY BEHAVIOUR

BEhavE Energy Efficiency & Behaviour Helsinki 2012

Across all of the activities discussed at the 2012 BEhavE conference, practitioners were using energy behaviour change to refer to one or several of the following:

1. Uptake or disposing of energy-related technologies or materials

2. New or different ways of using energy-consuming devices

3. Changing individuals' mental processes relating to energy use, including knowledge, attitudes, values, intentions, expectations, norms, usually with the end-goal of achieving change in 1 or 2 above.

DEFINITIONS: ENERGY BEHAVIOUR

BEhavE Energy Efficiency & Behaviour Helsinki 2012

Practitioners spoke of many **influences** that they believed were responsible for each of these aspects of behaviour, including **wider societal norms, advertising, energy prices, government policies, incentives, advisory services** etc.

Practitioners also discussed the numerous **means** they were using to try and achieve behaviour change, such as **feedback devices, training installers, social marketing, subsidies** etc. The ultimate purpose of these methods was to try and change one or several of the three elements above.

The **purpose** of these behaviour change interventions was also very varied, including improving **warmth and wellbeing, reducing energy use, flattening electricity use peaks, using energy more efficiently, and reducing carbon emissions**. Some interventions were intended to directly benefit the householder or user, while others were to benefit business operations, while others again were to achieve government targets.

DEFINITIONS: ENERGY BEHAVIOUR

In defining energy behaviour for this Task, it is important not to confuse **influences on behaviour**, **means of behaviour change**, or the **purpose of behaviour change**, with **what it is that is being changed**.

DEFINITIONS: ENERGY BEHAVIOUR

Three examples where confusion relates to terminology:

Efficiency behaviour vs conservation behaviour: These terms are referring to two of the many **purposes** of behaviour change, not energy behaviour itself

Investment behaviour vs curtailment behaviour: The first term is referring to **acquisition** of energy-related technologies (a behaviour), the second to **using less** energy (a possible purpose of behaviour change).

Routine behaviour vs intentional behaviour: This dichotomy appears to be differentiating between the apparent degree of conscious **decisionmaking** relating to a particular behaviour. This is one way (of many) to categorise types of behaviour but does not define behaviour. Furthermore, degree of intentionality is more likely to be a continuum than a dichotomy (and indeed a person's specific behaviours may alter over time along the continuum from intentional to routine).

DEFINITIONS: ENERGY BEHAVIOUR

Energy behaviour refers to all **human actions** that affect the way that **fuels** (electricity, gas, petroleum, coal, etc) are used to achieve **desired services**, including the **acquisition** or disposal of energy-related technologies and materials, the ways in which these are **used**, and the **mental processes** that relate to these actions.

DEFINITIONS: BEHAVIOUR CHANGE

Energy behaviour refers to all **human actions** that affect the way that **fuels** (electricity, gas, petroleum, coal, etc) are used to achieve **desired services**, including the **acquisition** or disposal of energy-related technologies and materials, the ways in which these are **used**, and the **mental processes** that relate to these actions.

Behaviour change in the context of this Task thus refers to **any changes in said human actions** which were directly or indirectly influenced by a variety of **interventions** (eg legislation, regulation, incentives, subsidies, information campaigns, peer pressure etc) aimed at fulfilling specific behaviour change **outcomes**.

These outcomes can include any changes in energy efficiency, total energy consumption, energy technology uptake or demand management but should be identified and specified by the intermediary designing the intervention for the purpose of outcome evaluation.

DEFINITIONS: DSM

BusinessDictionary.com
Over 25,000 Definitions. Clear. Concise. Comprehensive.

Encouraging end users to be thrifty in the consumption or use of a good or service, usually a utility.

dictionary of sustainable management
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Also known as energy demand management, DSM is used in the **electric utility** industry as a technique to reduce peak demand under periods where the systems are constrained. This peak demand management does not necessarily decrease total energy consumption but does **reduce the need for future investments** in networks and/or power plants by increasing efficiency.

DEFINITIONS: DSM

Energy demand management, also known as **demand side management** (**DSM**), is the modification of consumer demand for energy through various methods such as financial incentives and education. Usually, the goal of demand side management is to encourage the consumer to use less energy during peak hours, or to move the time of energy use to off-peak times such as nighttime and weekends.[1] Peak demand management does not necessarily decrease total energy consumption, but could be expected to **reduce the need for investments** in networks and/or power plants.

DEFINITIONS: DSM

Demand Side Management (DSM)[1] refers to all changes that originate from the **demand side of the market** in order to achieve large scale energy efficiency improvements by **deployment of improved technologies**. Depending on market organisation in each country such changes involve different actors. In many cases the **utilities** play an active role.

DEFINITIONS: DSM

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- *“The planning and implementation of those (**utility**) activities designed to influence the customer use of **electricity / energy** in ways that will produce desired changes in the (**utility´s**) load shape - i.e. changes in the pattern and magnitude of a (**utility´s**) load.”*

DEFINITIONS: DSM

- *"The planning and implementation of those (**utility**) activities designed to influence the customer use of **electricity / energy** in ways that will produce desired changes in the (**utility´s**) load shape - i.e. changes in the pattern and magnitude of a (**utility´s**) load."*
- DSM encompasses the entire range of management functions (**planning, evaluation, implementation and monitoring**)

DEFINITIONS: DSM

Independent Statistics & Analysis
U.S. Energy Information Administration

Demand-side management (DSM) programs consist of the planning, implementing, and monitoring activities of **electric utilities** that are designed to encourage consumers to **modify their level and pattern of electricity usage**.

In the past, the primary objective of most DSM programs was to provide cost-effective energy and capacity resources to help defer the need for new sources of power, including generating facilities, power purchases, and transmission and distribution capacity additions. However, due to changes occurring within the industry, electric utilities are also using DSM to **enhance customer service**. DSM refers **only** to energy and load-shape modifying activities undertaken in response to **utility-administered programs**. It does not refer to energy and load-shape changes arising from the normal operation of the marketplace or from government-mandated energy-efficiency standards.

DEFINITIONS: DSM

European Environment Agency

Implementation of **policies or measures** which serve to control or influence the demand.

Terminology source: http://glossary.eea.europa.eu

DSM

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Actions that influence the quantity, patterns of use or the primary source of energy consumed by end users

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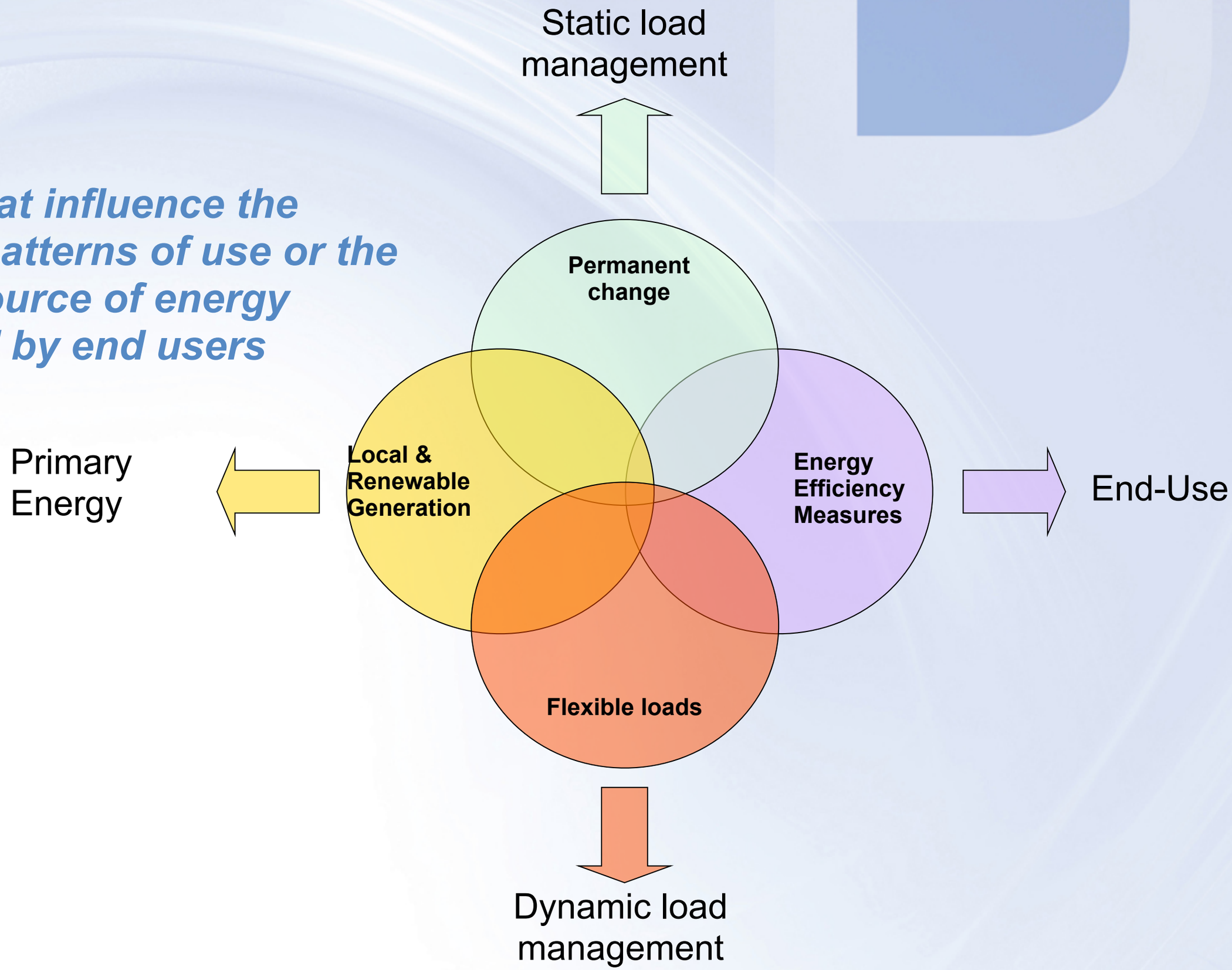

DSM

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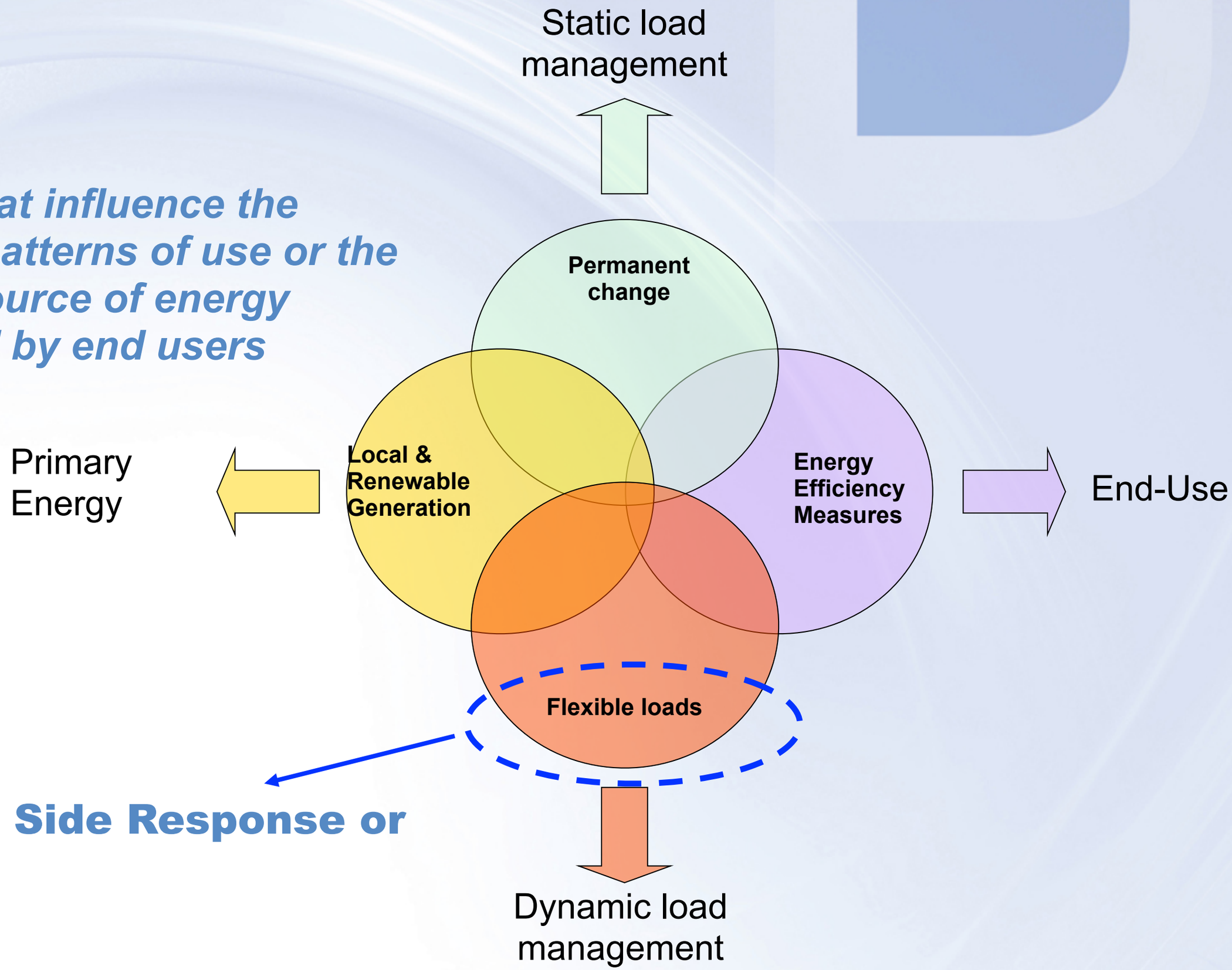

Demand Side Response or DSR

DEFINITIONS: DSM

iea dsm espoo (fingrid)

ways of differentiating DSM:

DSM speed of activation

source of load

type of control (maret-based, agreement-based, emergency control)

by impact of response

factors affecting need for Demand response:

e gen mix in future

variation of load in future (eg EVs)

predicability of load

cost of DR

availability of (rotating) reserve power

other solutions and their cost (eg energy storages)

DEFINITIONS: DSM

"programmes, and initiatives employed to alter the quantity and patterns of energy consumption, and therefore necessary production, by focusing on end-user energy demand reduction".

DEFINITIONS: DSM

Definitions: Demand Side Management (DSM)

Working definition in Task XXIV so far: DSM refers to all changes that originate from the demand (energy user) side:
- reducing the demand for energy (conservation)
- shifting demand from peak periods to off-peak periods (load-management).

Goal: to achieve large-scale energy efficiency improvements and overall consumption reduction.

Suggestion for a different definition:
DSM refers to policies, mechanisms and techniques designed to influence energy behaviour. The intention of the influence may include
- **conservation** (reduction in energy use),
- **efficiency** (more efficient use of energy) and
- **load management** (shifting patterns of energy use).

DEFINITIONS: DSM

Further suggestions and comments:

- Should we distinguish explicitly between different fuels at the load level (e.g. DSM targeting electricity usage is very different from DSM targeting transport fuels).

- Is load shifting mainly an electricity issue and about time-of-use? Or could it also apply to transport, eg when heavy freight traffic is using the highways at night?

- What about location load shifting (e.g. taking the shower at work instead of at home) and problems this poses if do not measuring this too? (rebound)

- What about energy fuel shifting?

- The issue is not so much how to define DSM, but how to define consumers/producers – in light of prosumers who may conserve energy through shifting use based on the availability of self-generated energy (similarities here with EV to shift load over time)

DEFINITIONS: DSM

Further suggestions and comments:

- Demand Side *Management* does not imply reduction or conservation per se. *Management* refers to **change**, which can also be an increase in the use of energy to improve health (e.g. the case in New Zealand). So a reduction need not always be the aim of DSM. The aim is rather to provide **ways to maintain or improve the environmental and social quality of the services**.

- General DSM definition of IEA *does* imply an **overall reduction** (or does it? Aim is to achieve overall energy efficiency improvements).

- Definitions may also distinguish between **shorter and longer term** (whereby long-term aim is overall reduction, while leaving room for short-term increases in use of energy if that is necessary from a health perspective)

DEFINITIONS: DSM

Our suggestion:

DEMAND SIDE MANAGEMENT in this Task refers to:

Interventions (top-down and bottom-up policies, programmes and actions) developed and performed by **intermediaries** (government agencies, utilities, DSM implementers) that seek to influence the ways end users consume energy at home, at their workplace or whilst travelling. The changes sought by intermediaries may include the **quantity** of energy consumed for a given service, **patterns of energy consumption** or the **supply management and type of energy** consumed.

The intended outcomes of demand side management will differ with the aspirations of intermediaries but include **energy efficiency, energy conservation, sufficiency, reduced greenhouse gas emissions** or **(peak) load management.** In the short-term, it may not always lead to a total reduction in energy consumption (although this is the medium to long-term goal), but to the most efficient and **environmentally friendly** use of energy to derive the services that underpin **societal and economic wellbeing** (eg comfort, mobility, entertainment, cleanliness, production etc).