



Demand Response in Europe Today

**Stromback,
Smart Energy Demand Coalition**

**Citizens' Energy Forum
December 17th, 2013**

The Smart Energy Demand Coalition (SEDC) is an European Industry Association is approximately 45 members



www.sedc-coalition.eu

SEDC's **focus** is to promote **Demand Side Programs** such as, demand response, energy usage feedback and information, smart home, in-home and in-building automation, ... related to making demand a smart, interactive part of the energy value chain.

Executive Members

ALSTOM

ENERNOC

geo Green Energy Options

JOULE ASSETS

Capgemini Consulting

SILVERSPRING NETWORKS

EDF

Enel

Honeywell

Landis+Gyr+

REstore
Schneider Electric

CYBERGRID

ceced

entelios moving energy

Johnson Controls

NATION-E
WHERE POWER GETS SMART

SIEMENS

Vaasa ETT
Bringing Best Practice Together

Associate Members

CINTERION
a Gemalto company

electric Ireland

Enspirion
POWERED BY ENERGIA

OPower

NYS SmartGrid Consortium

DRSG
DEMAND RESPONSE and SMART GRID Coalition

UK Demand Response Association

Wroclaw University of Technology

Digi

electricity north west

EBMIG
EUROPEAN BUSINESS MOVING GROUP

PÖYRY
e-on

Sustainability first

ITE
INTEGRATED TECHNOLOGIES FOR ENERGY

United Technologies Research Center

vodafone

DONG energy

ELEKTRO LJUBLJANA

KISTERS
Pioneering Technologies.

seam GROUP

ESNA

THE CLIMATE GROUP

PLMA
Demand Response Leadership Since 1990

VATTENFALL

ZigBee Alliance

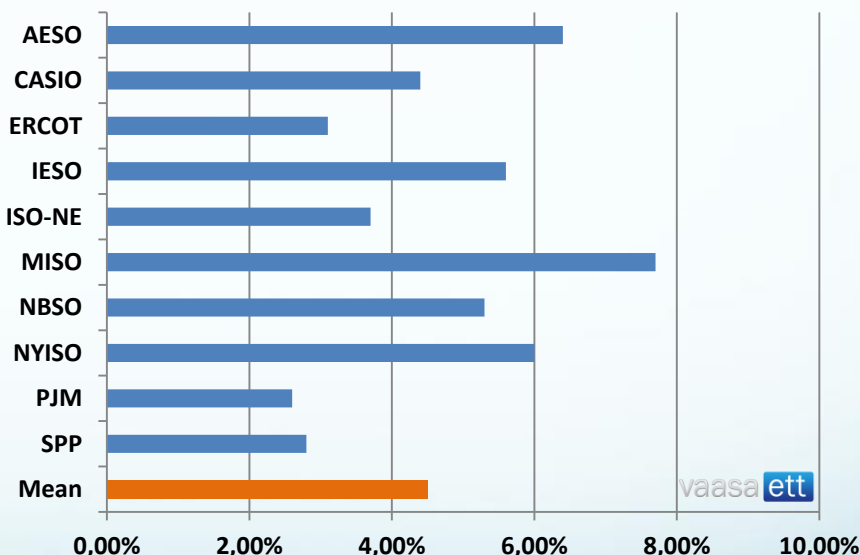
“In order to change the future you must challenge the present”

Demand Response – *The People Power Resource*

Why Care? USA - As of 2012, over 2* billion Euros earned by the local economy annually through Demand Response

7 years after market opening 29 GW under Demand Response programs

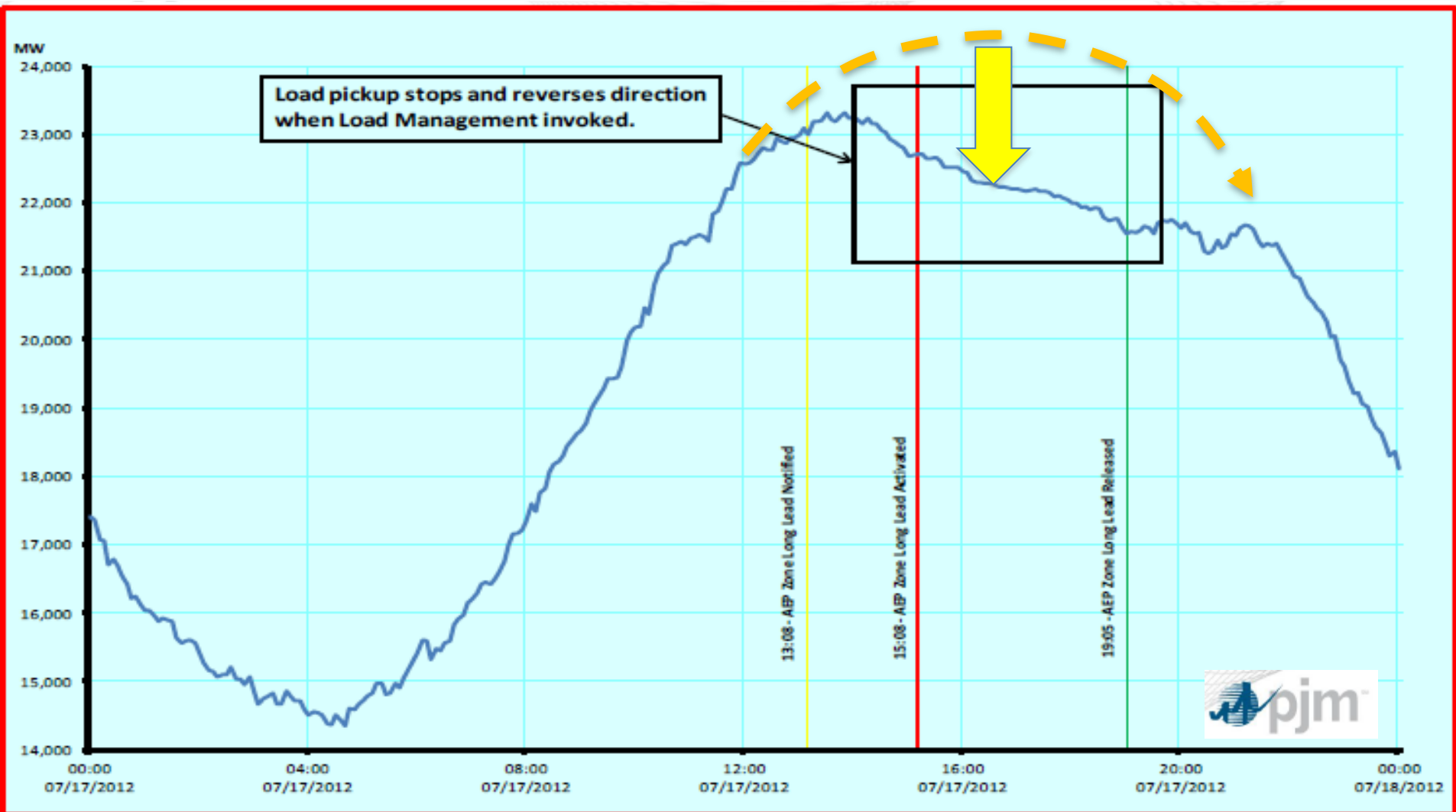
- USA Multi Billion \$ Business Direct Revenue + avoided investments in generation
- Demand Response “took off” in 2005 with Demand Side access to capacity markets
- Average estimate peak clipping 8-11% US (FERC)
- Average estimate possible peak clipping 6-13% Europe (SEDC)
- Developed & developing nations looking at DR for peak clipping purposes: Canada, Australia, South-Korea, Singapore, Japan, India, Brazil, China etc.



A total of 66 GW were under some form of control, making up 9% of total US national capacity

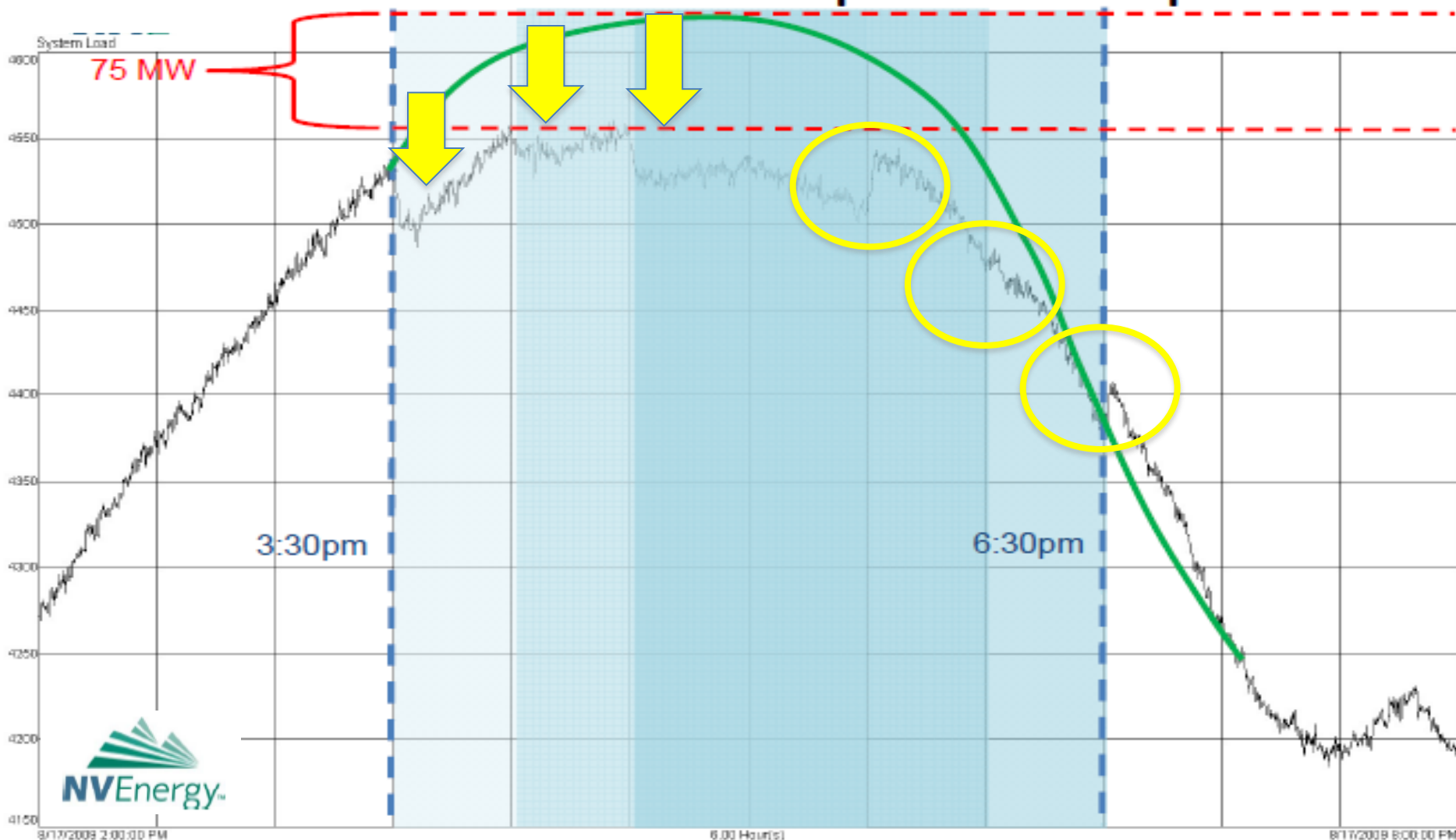
DR and Emergency Capacity

Peak Day 7/17/2012: Another 1500MW helps avoid problems



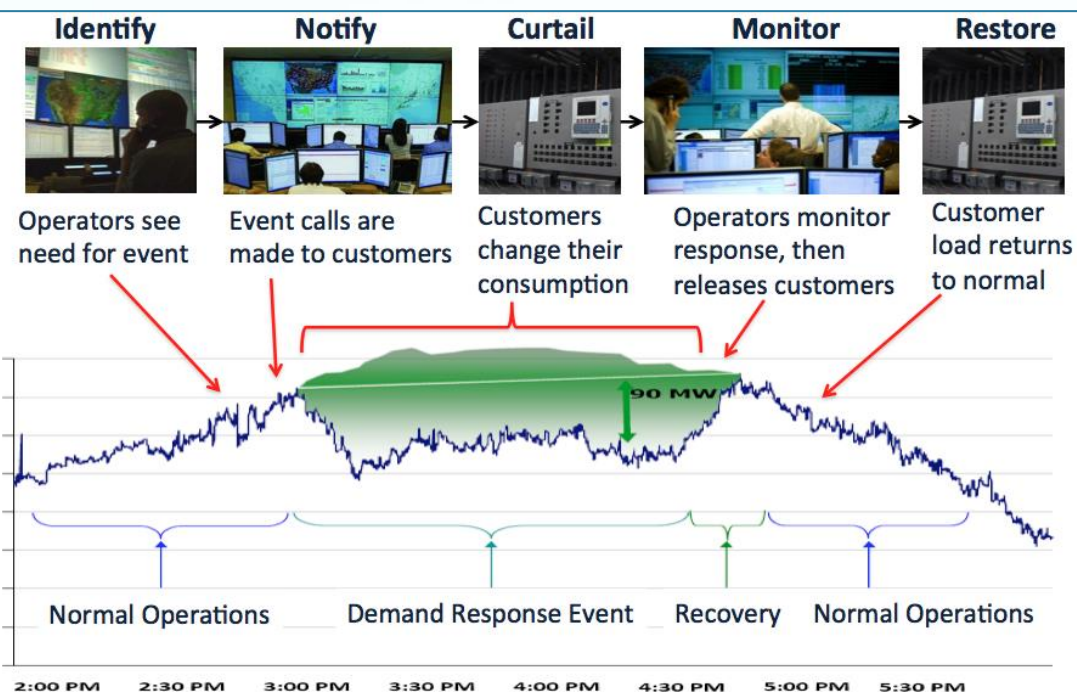
Demand Response Economic Energy Dispatch

8/17/2009: Via phased DR, 75MW of expensive generation avoided



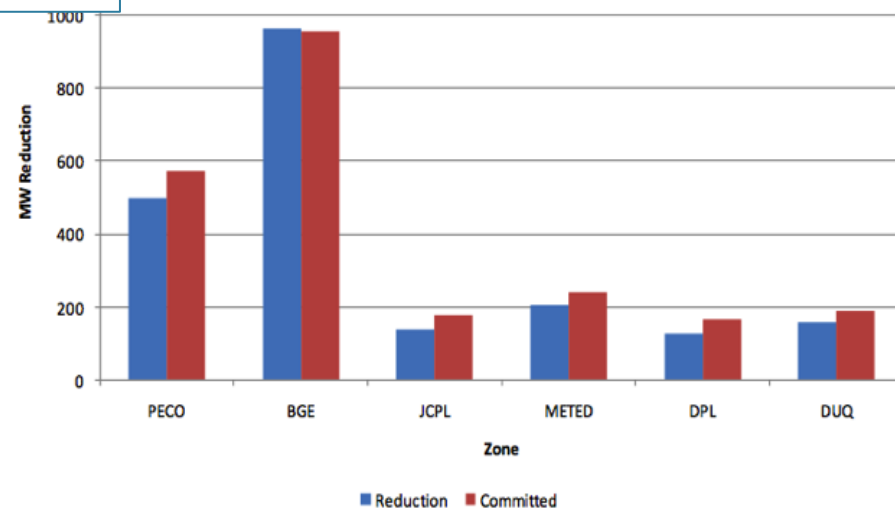
Aggregation **KEY** for successful DR

Aggregator can be third party, utility, or retail supplier



Aggregated Demand Response: a reliable source of flexible capacity

**Reduction MW vs Committed MW
July 22, 2011**



The aggregator collects multiple customers with multiple loads
 electric heating, freezers, refrigeration, fans, lighting, pumps, grinders, smelters, ...

Energy Efficiency Directive:

Art 15.8 Member States shall ensure that national energy regulatory authorities **encourage demand side resources**, such as demand response, to participate alongside supply in wholesale and retail markets.

Member States shall ensure that transmission system operators and distribution system operators, in meeting requirements for balancing and ancillary services, **treat demand response providers, including aggregators, in a non-discriminatory manner, on the basis of their technical capabilities.**

.... where their national regulatory systems so require, transmission system operators and distribution system operators in close cooperation with demand service providers and consumers, **to define technical modalities for participation in these markets on the basis of the technical requirements of these markets and the capabilities of demand response.** Such specifications shall include the participation of aggregators.

Realization: ACER Framework Guidelines and the ENTSO-E Network Codes

4 Steps to successful Demand Response

Step 1- Equal Access = Involve the Consumer

Access: Small industrial, commercial and residential consumers have no means of accessing the wholesale, balancing, reserves and other system services markets.

Engagement: Consumers require a clearly defined offer, which is both simple to use and contains clear benefits.

Provider: They require a party with expertise in **providing this offer** such as an independent aggregator or a retailer.

Competition law should be respected and aggregators should have clear access to consumers and to markets

Step 2 – Technical requirements = Create viable products

Products to buy and sell: In order for consumers to participate in Demand Response programs, there must be products/programs with participation rules **that fit their capabilities** and which will deliver a real service to the markets.

Product Design: It is critical that when product descriptions are created, the specifications of a range of resources are taken into account, including demand side resources.

Critical Issue for Smart Grids and Demand Response

Consumers in most European countries do not legally own the value of their own flexibility.

It is the Retailers/BRPs who own the results of people's flexibility or their behavioral choices. This is a direct threat to any program which looks to make consumers an active part of the energy markets:

- Demand Response,
- Electric Vehicles,
- Smart Home...

Historical Reasoning:

1. In the past, consumption flexibility has not been a commodity which could be sold by a consumer.
2. However – the Retailer/BRP was and is responsible for maintaining the grid balance
3. Therefore it was logical to grant Retailers BRP (balance responsible parties) ownership of the results of flexibility – they were not a sold commodity but part of the BRPs responsibilities

4 Steps to successful Demand Response

Step 3 – Measurement and verification requirements

Safety and reliability: In the United States today, 29 GW of load is registered in some form of Demand Response. This is safe and reliable due to well defined and appropriate measurement and verification protocols.

These protocols are essential to ensure reliability.

Step 4 – Ensure fair payment and investment stability

As of today, the European energy markets are designed to pay for energy (kWh) not capacity or flexibility (kW). The full value of flexible resources is not reflected in market prices.

Reward Flexibility: It is essential to create market structures which reward and maximize flexibility and capacity resources in a manner which provides investment stability.

Full and fair payment: Markets should be open and transparent - all resources, including demand side resources, should be paid the full value of services provided

Commercially available
Partial opening
Preliminary development
Closed

2013					
	Aggregation	Programs	Verification	Finance/Risk	Overall
Austria	0	1	1	3	5
Belgium	3	5	1	5	14
Denmark	1	0	3	1	5

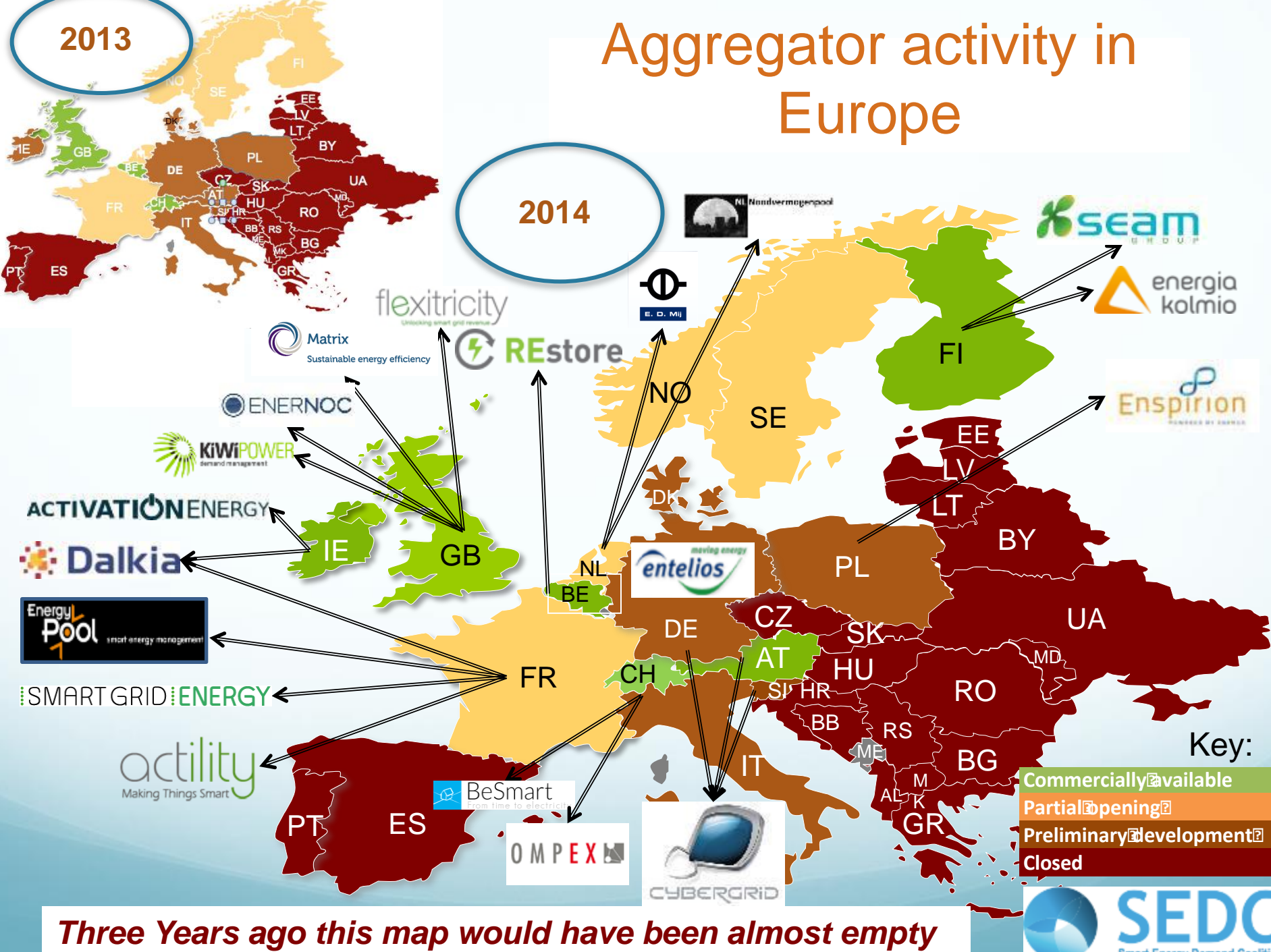
2014					
	Aggregation	Programs	Verification	Finance/risk	Overall
Austria	3	3	3	5	14
Belgium	5	5	3	5	18
Denmark	1	0	3	1	5
Finland	5	3	3	3	14
France	5	5	3	5	18
GB	5	3	3	3	14
Germany	1	3	0	1	5
Ireland	3	3	5	5	16
Italy	1	1	0	3	5
Netherlands	1	1	3	1	6
Norway	1	3	3	5	12
Poland	1	3	3	0	7
Spain	0	1	0	1	2
Sweden	1	3	5	3	12
Switzerland	5	3	5	3	16
Overall	38	40	42	44	164
Max. Score	75	75	75	75	300

3	1	3	3	10
1	3	3	5	12
5	3	3	3	14
1	3	0	1	5
1	3	1	3	8
1	1	0	3	5
1	3	3	1	8
1	3	1	5	10
1	3	1	0	5
0	1	0	1	2
1	3	3	3	10
5	3	5	5	18
25	36	28	42	131
75	75	75	75	300

2013

Aggregator activity in Europe

2014



Three Years ago this map would have been almost empty



SEDCC
Smart Energy Demand Coalition

Jessica Stromback

Executive Director

Smart Energy Demand Coalition

<http://sedc-coalition.eu/>

Rue Du President 1, 1050 Brussels

Office +32 (0) 2 511 76 11

Mobile +358 449066821

jessica.stromback@smartenergydemand.com