

8 September 2009

The Industry Voluntary Agreement

To Further Improve the Energy
Consumption of Complex Set Top
Boxes



Digital
Interoperability
Forum

09:30 – 10:00	Registrations	
10:00 – 10:05	Welcome	Paul Mitchell - GM Policy & Standards, Microsoft
10:05 – 10:15	Introduction	Caroline Wunnerlich - MD, Fleishman-Hillard
10.15 – 10.40	Context and Policy Background	Sheila Cassells - Chair, DIF
10.40 – 11.30	Participation, Representativeness and Structure	Michael Bryan-Brown - Vice-Chair, DIF
11.30 – 12.15	Added Value and Objectives	Ken McCann - DIF
12.15 – 12.30	Conclusions	Caroline Wunnerlich - MD, Fleishman-Hillard, with contributions from Jacek Truscynski - DG TREN
		Final remarks by Paul Mitchell, GM Policy & Standards, Microsoft

Welcome

Paul Mitchell
GM Policy & Standards, Microsoft

Caroline Wunnerlich
MD, Fleishman-Hillard

- What's a Complex STB (CSTB)?
 - A CSTB is a standalone device equipped to allow conditional access that is capable of
 - receiving, decoding and processing data from digital broadcasting streams and related services, and
 - providing output audio and video signals

Context and Policy Background

Sheila Cassells
Chair, DIF

■ The Bigger Picture

- Global climate change agenda (Kyoto commitments)
- EU Energy Efficiency Action Plan 2007 – aims to reduce consumption by 20% by 2020 through
 - Sustainable/competitive energy industry
 - Influencing user behaviour
 - Revised/extended labelling
 - Minimum energy performance standards for Energy-using Products (EuP) - identified 14 priority products

- The Ecodesign Directive (2005/32/EC) sets the framework for EuP
 - Defines principles, conditions and criteria
 - Covers production, distribution, use and end-of-life management
 - Focuses on design stage
- The ecodesign requirements specific to each product group can be set either by
 - “Implementing Measures” (Regulation) or
 - Self-regulation (including Voluntary Agreements)
 - Offered as unilateral commitments by the industry

Context and Policy Background

- Many companies are already engaged in and committed to reducing energy consumption
 - Considerable progress made on own initiative
- Digital TV services, systems, equipment and components are designed so as to minimise energy consumption
 - Within the constraints of the operational specification

Context and Policy Background

- Action Plan identified 14 initial product categories that have been or will be subject to study
- EUP Programme concentrated initially on 6 (including CE products) then added
 - Simple STBs (STBs without Conditional Access)
 - (Lot 18) Complex STBs (STBs with Conditional Access)

- Legislation for Simple STBs has already been completed (107/2009)
 - It will be effective from January 2010
- Complex STBs will have their own form of regulatory implementation (if adopted)
 - Preparatory Study for this product stream was completed in December 2008, under Lot 18

- The Ecodesign Directive (2005/32/EC) states that
 - “Priority should be given to alternative courses of action [to regulation] such as self-regulation by the industry where such action is likely **to deliver the policy objectives faster or in less costly manner than mandatory requirements**. Legislative measures may be needed where market forces fail to evolve in the right direction or at an acceptable speed.”

- Consistent with ‘better governance’ approach

- Mandatory regulation has the risk of being too inflexible, slow to adapt
 - Risks stifling innovation for Complex STBs
- Most Complex STBs are specified by the service provider and made available with subscriptions
 - Simple STB market is horizontal - therefore self-regulation is less likely to succeed
- Hence, organisations and companies involved with CSTBs got together to promote the development of an industry-led voluntary agreement as the alternative to an Implementing Measure

- The Industry Voluntary Agreement aims to contribute to the EU Action Plan on Energy Efficiency and the Ecodesign Directive by reducing the potential environmental impact of CSTBs
- Ecodesign requirements and energy consumption allowances should be set bearing in mind the intended use of the CSTB
 - They should not have a negative impact on functionality

Context and Policy Background

- The Voluntary Agreement seeks to define practical values for power consumption
 - Values that can be met by the great majority of market (>80%)
- It goes beyond a “business as usual” scenario
 - Provides for rapid and cost-effective implementation
 - Allows for flexible and appropriate adaptation to technological options and market sensitivities

■ Mapping to the objectives of Annex VIII of Ecodesign Directive

Indicative Criteria (Annex VIII, Ecodesign Directive)	Voluntary Agreement
1. Openness of participation	Has been and is open to all operators within and outside the European Community, both in the preparatory and the implementation phases
2. Added Value	Delivers more and earlier than “business as usual” in the improvement of the overall environmental performance of CSTB
3. Representativeness	Even at an early stage, it represents the majority of the CSTB market
4. Quantified and staged objectives	It proposes clear objectives, interim targets and monitoring of the compliance with objectives
5. Involvement with civil society	Has been and is being publicised, and expected to be made available in EC and Member States websites if accepted
6. Monitoring and reporting	Contains clear monitoring system with identified responsibilities for industry and independent inspector. The EC is invited to monitor the compliance and achievement of objectives.
7. Cost-effectiveness of administering a self-regulatory initiative	Monitoring of the objectives and compliance of the VA shall not lead to a disproportionate administrative and financial complexity
8. Sustainability	It complies and responds to the policy objectives of the Ecodesign Directive
9. Incentive compatibility	TBD (post-CF meeting)

The Industry Voluntary Agreement

Companies Supporting It Cover the Whole Value-Chain

Set Top Box	Chipset	Service Providers	Middleware	Conditional Access
           	   	               	 	   

Participation, Representativeness and Structure

Michael Bryan-Brown
Vice-Chair, DIF

Participation, Representativeness and Structure

- Participation and process followed
- Representativeness
- Structure
- Effective Date
- Revision time-scales

- The development of the Voluntary Agreement for CSTBs was open to all interested parties
 - It followed a transparent process and timetable agreed by all active participants
- Meetings and/or conference calls were typically held bi-monthly throughout 2008 and 2009
 - Considerable e-mail and electronic discussions between meetings
- The approach was based on consensus

- The representatives of a large majority of the CSTB industry have been kept informed and were invited to sign this agreement
 - Service Providers
 - Equipment Manufacturers
 - Software Providers
 - Conditional Access Providers
 - Component Manufacturers

- The Industry Voluntary Agreement reflector included the following companies and organisations

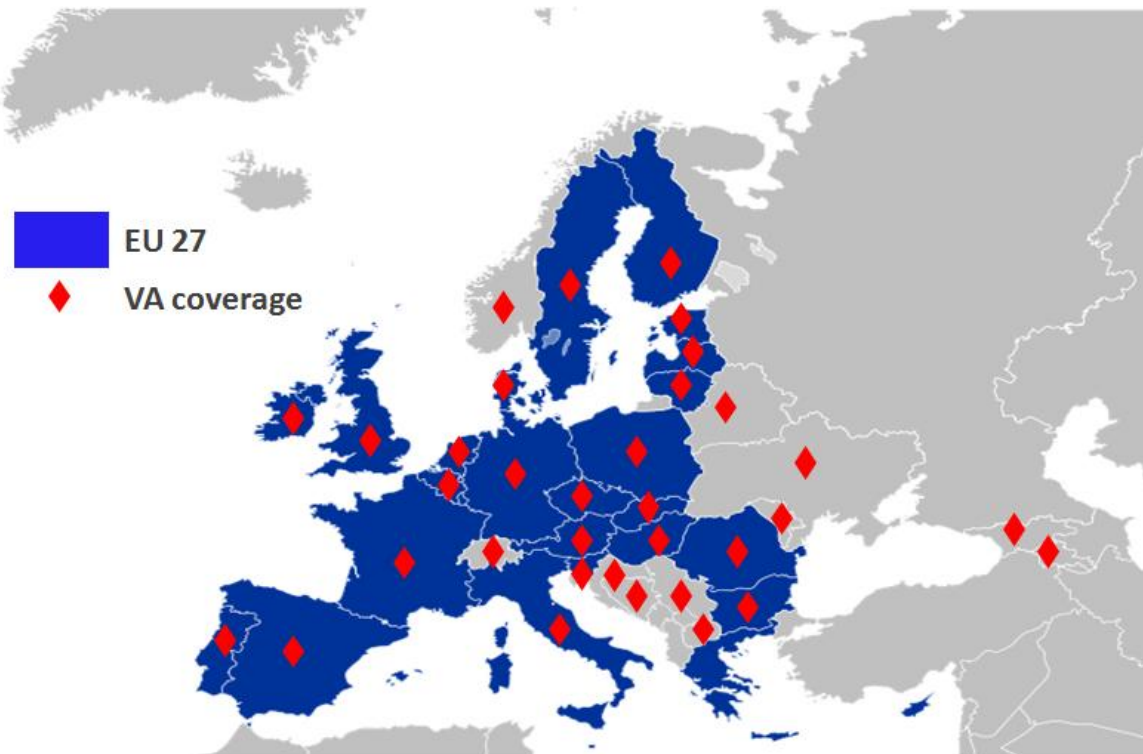
ADB	European Commission	Pace	Tatung	SenterNovem
Austar	Echostar	Sagem	Telecom Italia	Deutsche Telekom
Broadcom	Foxtel	Samsung	Telenet	NDS
BSkyB	Intel	Sogecable	Thomson	Swisscom
BT	Liberty Global	Sky Deutschland (ex-Premiere)	UK MTP (DEFRA)	Viasat
Canal Plus	Microsoft	Sky Italia	UPC	ZetaCast
Cisco	Motorola	ST	Virgin Media	

- The companies currently with confirmed indicative support for the Voluntary Agreement are



- This already represents more than 70% of Complex STBs placed in the European market
- All aspects of the CSTB ecosystem are included

- Area covered by the (indicative) signatories



- Voluntary Agreement basic structure
 - Commitments (section 4)
 - Governance and Organisation (section 6)
 - Reporting and Monitoring (section 5)
 - Compliance (section 5)

■ Commitments

- To reduce the energy consumption of CSTBs to the minimum necessary to meet their operational specification
 - Whilst not limiting Service Providers' ongoing ability to improve functionality and service enhancements
- Not to exceed the maximum energy consumption allowances
 - Each signatory shall ensure compliance of >90% of its CSTBs
- Encourage consumers to adopt energy efficient practices in connection with the use of CSTBs
- Ensure that procurement specifications for CSTBs are compliant with the Voluntary Agreement

■ Governance and Organisation

□ Steering Committee

- Represented by one person from each signatory as well as the EC
- Meetings will be held at regular intervals
- Decision taken by the Steering Committee will be consensus driven

□ Steering Committee Chair

- Elected by the Steering Committee representatives
- Responsible for convening the Steering Committee and for running the meetings

□ Independent Inspector

- An independent 3rd party designated by the Steering Committee
- Responsible for collecting and processing information supplied by the signatories

■ Reporting and Monitoring

- Each signatory shall provide information for the relevant Reporting Period to the Independent Inspector
 - The information will detail the energy consumption of each type of CSTBs it manufactures, supplies, distributes or uses within the EU
- Working together with the European Commission, Member States and other interested parties, the signatories will:
 - Evaluate the effectiveness of the Voluntary Agreement in meeting its objectives
 - Evaluate current and future developments that may influence energy consumption
 - Review the Voluntary Agreement and its energy consumption allowances
 - Set future allowances to further increase energy savings

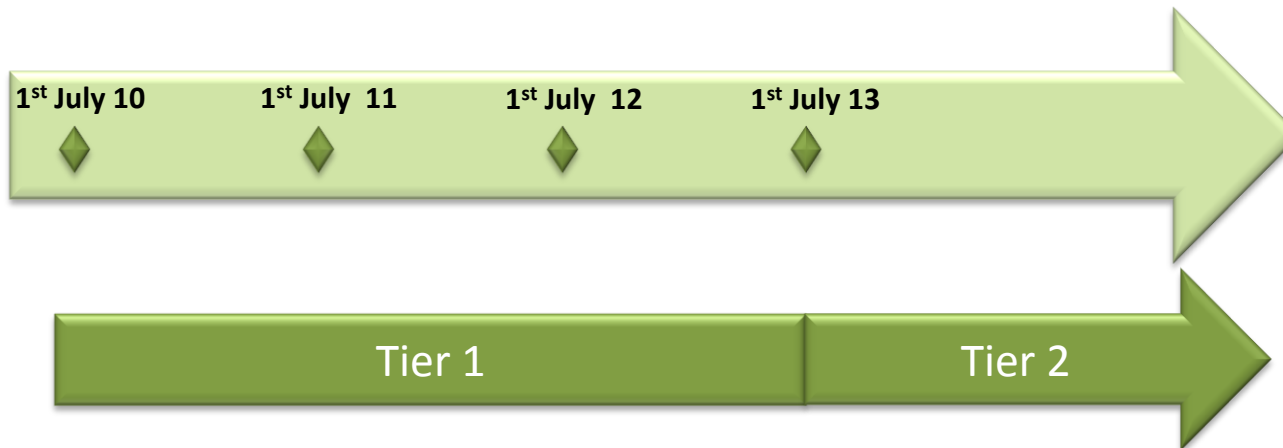
■ Compliance

- Compliance shall be assessed by the Independent Inspector
 - At the end of each Reporting Period
 - On the basis of the information provided by each Signatory
- A Defaulting Signatory would forfeit its Signatory status
 - Via a mechanism to be developed and agreed by the Signatories and other stakeholders
 - The resultant negative publicity would act as a deterrent

■ Effective Date

- If adopted, the agreement will come into force on the 1st July 2010
- Will be applicable to CSTBs placed on the Internal Market for the first time on or after this date

- Proposed overall time-scales
 - Agreement is revised annually
 - New “tier” of allowances every 3 years



- Energy savings could begin to be implemented earlier than any proposed regulation

■ Revision Timescales

- The Voluntary Agreement should be dynamic, with revisions carried out in a timely manner

July 2011	Maintenance revision published
July 2012	Maintenance revision published
July 2013	Tier 2 comes into Force
July 2014	Maintenance revision published
July 2015	Maintenance revision published
July 2016	Tier 3 comes into Force

■ Revision Timescales

- The proposed annual schedule is as follows

Jan/Feb	Call for contributions
Mar/April	Consideration of contributions
May	Issue the revised VA for comments
June	Resolution of comments
July	Final revision and final version on VA issued

■ Summary

- The development of the Voluntary Agreement followed a transparent process open to all stakeholders
- The Voluntary Agreement signatories represent the majority of the Complex STB market in Europe
- The structure of the Voluntary Agreement contains a clear monitoring system with identified responsibilities
- The proposed implementation of the Voluntary Agreement would be faster than the alternative approach of a mandated regulation
- It proposes a dynamic process with revisions carried out in a timely manner

Set Top Box	Chipset	Service Providers	Middleware	Conditional Access
           	   	               	 	   

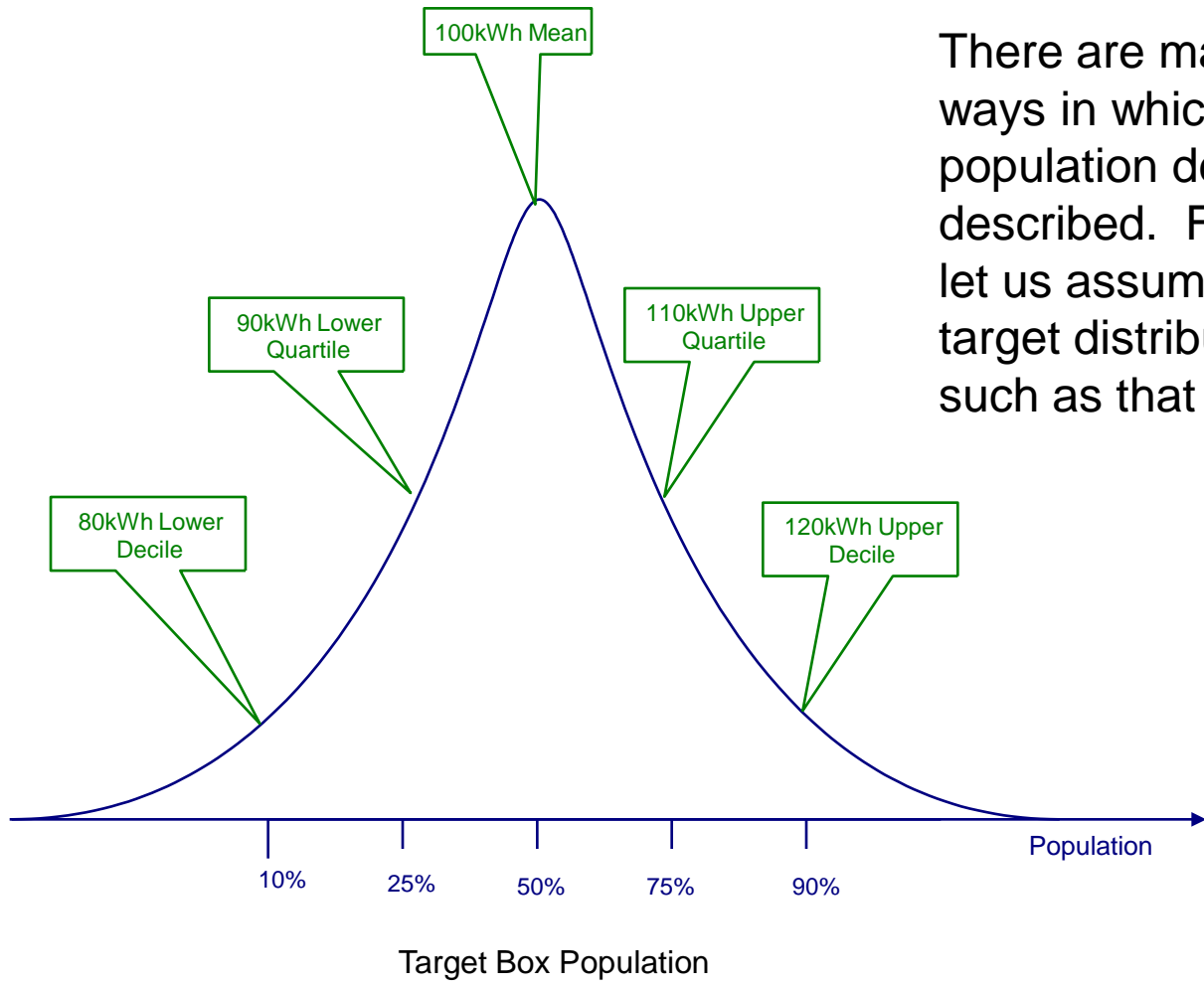
Added Value and Objectives

Ken McCann
Member, DIF

Added Value and Objectives

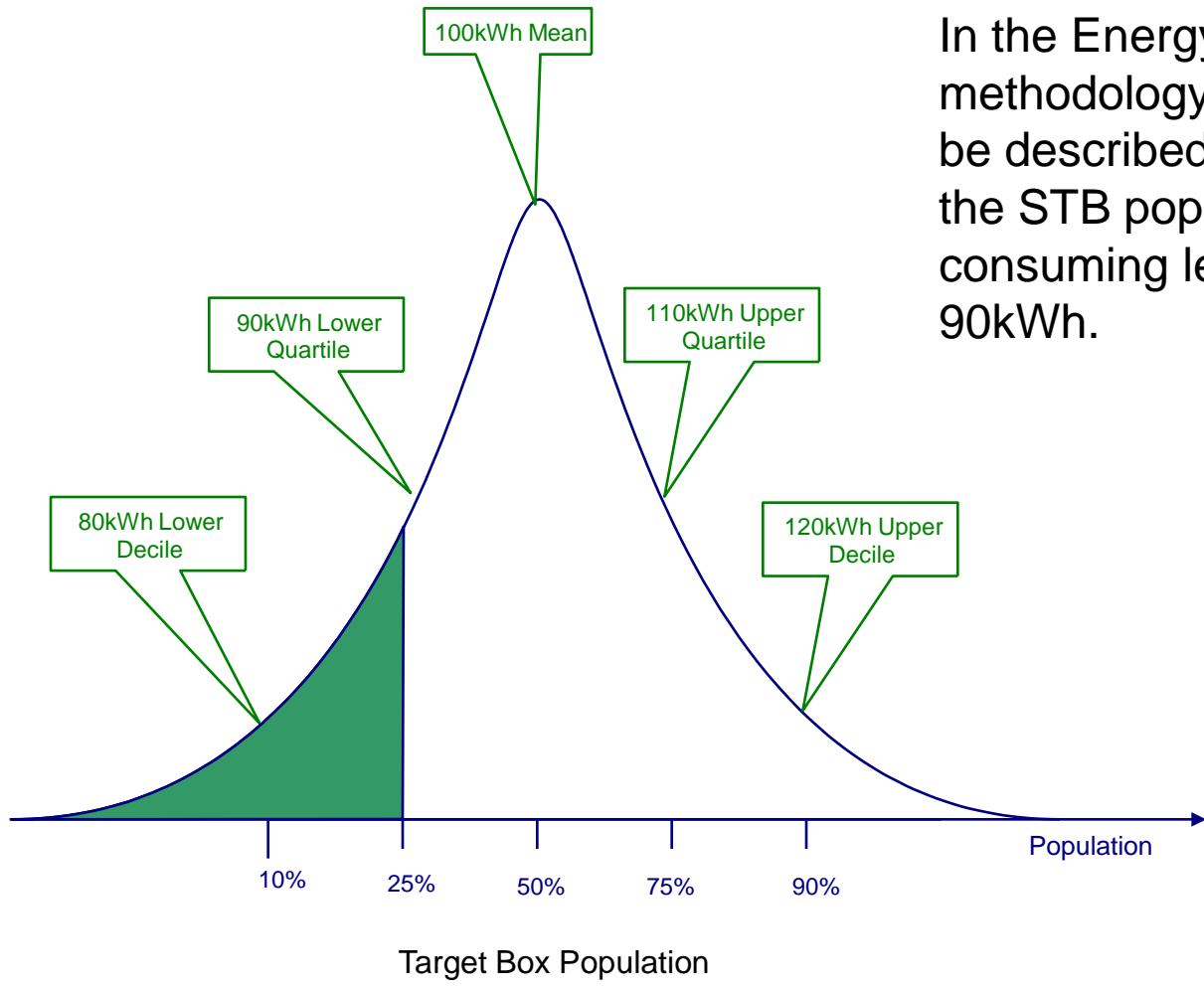
- Target Population
- Total Energy Consumption Principle
- Use of Return Path as Indicator
- Base Functionality and Additional Functionalities
- The Numbers

Added Value and Objectives



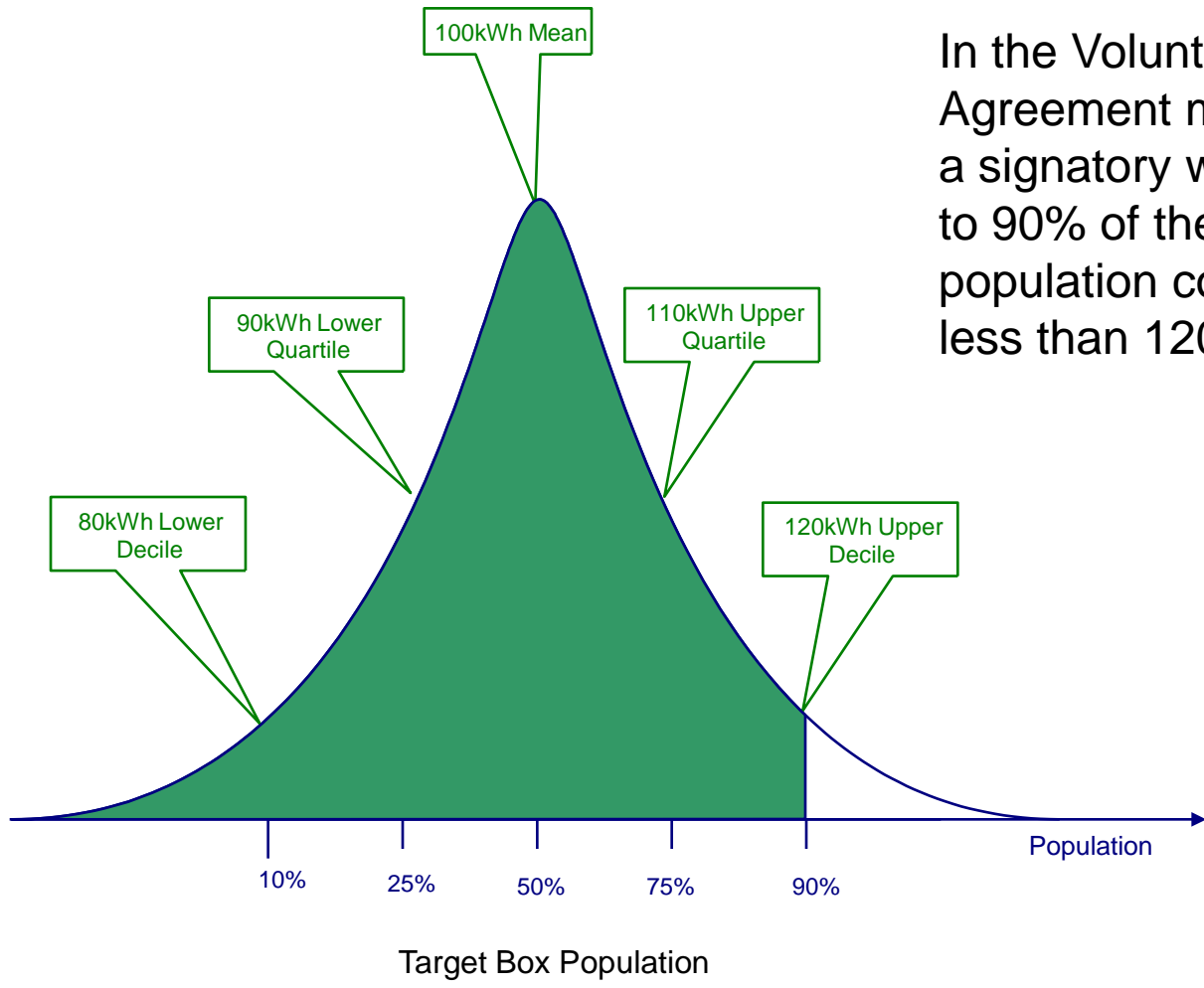
There are many different ways in which a target population density can be described. For example, let us assume that the target distribution curve is such as that shown here.

Added Value and Objectives



In the EnergyStar methodology, this would be described as 25% of the STB population consuming less than 90kWh.

Added Value and Objectives



In the Voluntary Agreement methodology, a signatory would commit to 90% of their new STB population consuming less than 120kWh.

Added Value and Objectives

- By targeting 90% of a signatory's CSTB deployment, we leave significantly fewer boxes unmanaged, outside of the Voluntary Agreement
 - Ensures that a large majority of CSTBs are covered
 - Consistent with the Ecodesign Directive

Added Value and Objectives

■ Operational Modes

□ On

- Operational mode in which the CSTB is at least actively performing its base functionality
- In practice there are likely to be many different forms of On mode

□ Standby

- Operational mode in which the CSTB has less energy consumption, capability, and responsiveness than in the “On” mode
- The Voluntary Agreement is deliberately not prescriptive over whether Standby is “passive”, “active” or somewhere in between
- The architecture of many CSTBs assumes that the device spends the majority of its time in a mode whereby certain critical features continue to function

Added Value and Objectives

- Total Energy Consumption (TEC)
 - The Voluntary Agreement energy allowance calculations are based on the TEC principle
 - A single value representing the total annual energy usage of the device in kWh
 - Aligns allowances directly with the goal of improving energy consumption
 - Maintains flexibility in the technical details of how the goal is achieved
 - The methodology used is based on the US Environmental Protection Agency Energy Star method
 - Modified to fit typical European usage patterns
 - The energy consumed in the On and Standby modes is multiplied by the number of hours a defined typical device spends in On and Standby
 - The Voluntary Agreement defines the average CSTB daily usage as:
 - 9 hours “on”
 - 15 hours “standby”

Added Value and Objectives

- Automatic Power-Down (APD)
 - Capability to automatically switch from “on” to “standby” after a period without user input
 - Encouraged for Tier 1
 - Credit is given for anticipated energy savings for CSTBs with APD
 - 4.5 hours “on”
 - 4.5 hours “standby from APD”
 - 15 hours “standby”
 - Mandated for Tier 2
- The CSTB may exit APD standby in order to
 - Download content and scheduling information
 - Scan for system information or other maintenance activity

Added Value and Objectives

- Unanticipated additional functionality
 - To avoid stifling innovation, any unanticipated additional functionality which consumes significant energy but which is not listed in the Voluntary Agreement shall be deactivated during the measurement process
 - This is not a compulsory requirement, if such deactivation is either inappropriate or unnecessary
- Software Downloads
 - Unless they provide additional functionality which is not listed in the Voluntary Agreement, Software Downloads to CSTB's shall not increase the power consumption requirements above the initial TEC allowance

Added Value and Objectives

- The total allowance for a given STB is the sum of the base functionality allowance and any applicable additional allowances
- The Voluntary Agreement largely follows the structure of the Lot 18 Preparatory Study
 - A top-down approach where only major areas of functionality are specified, not the engineering details
 - The alternative bottom-up approach risks being overly prescriptive and more complex to administer
 - adding up a large number of small allowances for external physical interfaces and for internal computational resource
- A special role is played by the Return Path Allowance in enabling the top-down approach

Added Value and Objectives

■ Return Path Allowance

- The return path allowance in the Voluntary Agreement follows the basic definition of the Lot 18 Preparatory Study
 - Return path is used as an “indicator” of a premium type of STB, regardless of the specific technology interface used in the return path
 - Analogous to using Conditional Access to differentiate between Simple and Complex STB
- The Preparatory Study explained the reasoning in Annex B
 - *“The value is set on a higher level (i.e. +10W) as it is not only the modems as such, which is taken into account here, but also STBs with return path which are a premium segment with additional features (not only the 5W of the modem itself is relevant, the modem/return path rather represents an “indicator” [of] a certain type of complex STB)”*

Added Value and Objectives

- Energy Allowances - Base Functionalities
 - **Cable STB:** A STB whose principal function is to receive television signals from Cable
 - **Satellite STB:** A STB whose principal function is to receive television signals from satellite
 - **IP STB:** A STB whose principal function is to receive television signals encapsulated in Internet Protocol (IP) packets
 - **Terrestrial STB:** A STB whose principal function is to receive television signals terrestrial transmissions
 - **Thin-Client/Remote:** A STB that is designed to interface between a STB with Multi-Decode functionality and a TV (or other display), but which has no ability to receive television signals directly

Added Value and Objectives

- Energy Allowances – Additional Allowances
 - **Advanced Video Processing:** ability to decode an advanced video compression format such as MPEG-4 AVC/H.264
 - **High Definition:** ability to decode high definition (HDTV) resolution pictures
 - **Additional Tuners:** to provide a alternative sources of TV content, e.g. to enable watching one channel whilst recording another
 - **Digital Video Recorder:** a device that stores TV content on a hard disk or other digital storage media
 - **Return Path:** Used as indicator of a premium segment of the CSTB market with other additional features
 - **Multi-Decode and Display:** Devices which allow multiple streams of content to be distributed through a home, either directly to displays or via Thin-Client devices

Energy Allowances – Comparison with Lot 18 Study

Base Functionality	Annual Energy Allowance (kWh/year) Tier 1 - VA	Annual Energy Allowance (kWh/year) Tier 1 – Lot 18 Prep Study
Cable	45	40
Satellite	45	40
IP	40	40
Terrestrial	40	40
Thin-Client/Remote	40	-
Additional Functionality		
Advanced Video Processing	20	-
High Definition	20	40
Additional Tuners	20	20.4
Digital Video Recorder	20	18.5
Return Path	60	78
Multi-Decode and Display	38	-

Added Value and Objectives

- Example of Calculating Total Energy Consumption Allowance
 - Dual Tuner cable STB with Return Path, Advanced Video Processing, High Definition, and DVR
 - Base Allowance for Cable CSTB 45kWh
 - Advanced Video Processing 20kWh
 - High Definition 20kWh
 - Additional Tuner 20kWh
 - DVR 20kWh
 - Return Path 60kWh
 - **Total Allowance 185kWh**

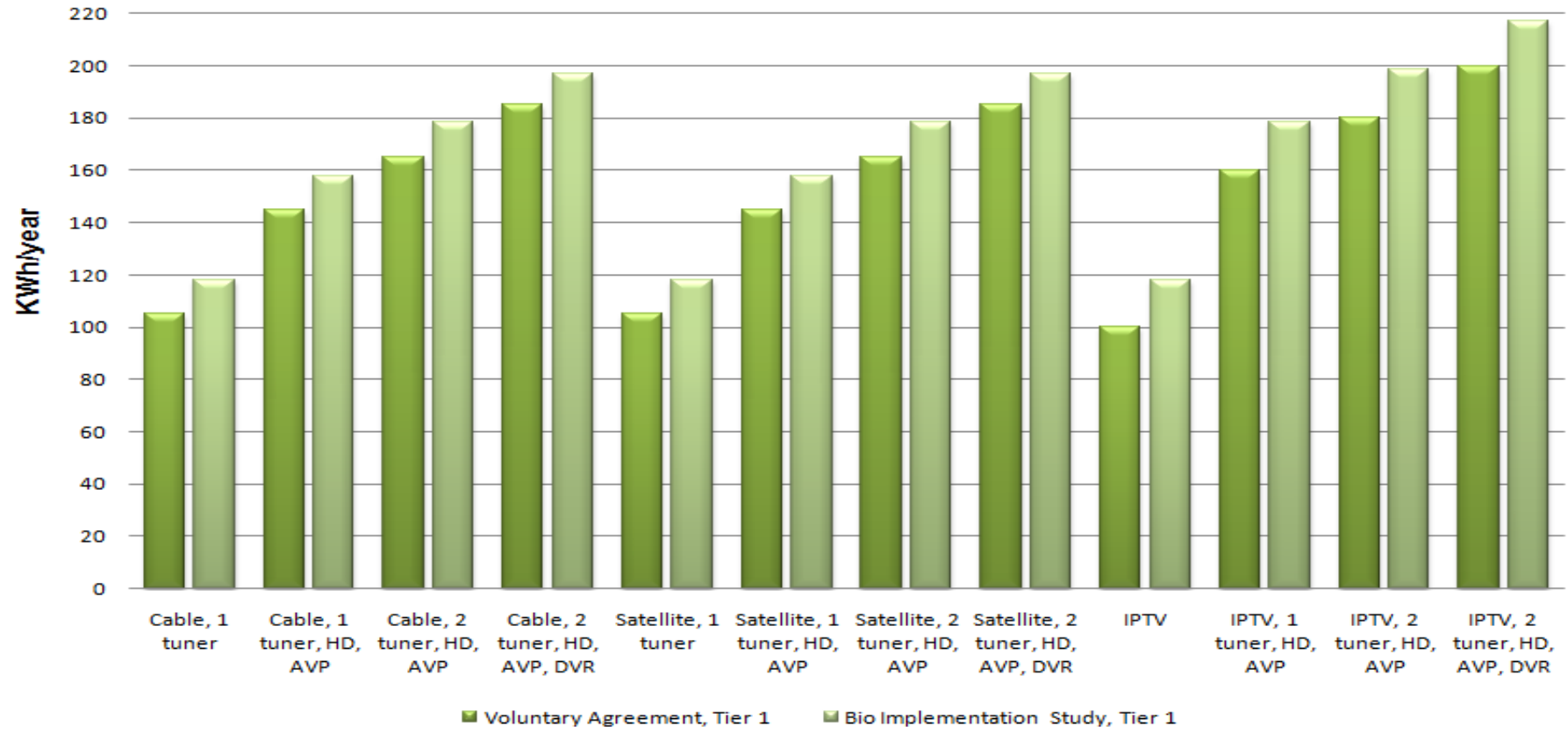
Added Value and Objectives

- Example of measuring a specific CSTB
 - Dual Tuner cable STB with Return Path, Advanced Video Processing, High Definition, and DVR
 - Power Consumption when “on” 47.6W
 - Power Consumption in “standby” 3.2W
 - No Auto Power Down
 - The total annual energy consumption is calculated to be:
 - $0.365 \times (9 \times 47.6 + 15 \times 3.2) = 173.9 \text{ kWh}$

Added Value and Objectives

- Energy allowances – Total energy consumption of typical products

Total Energy Consumption Comparison – VA - Lot 18 Prep Study



Added Value and Objectives

■ Summary

- Each signatory is obliged to ensure that 90% of its CSTBs comply with the specified allowances
- A Total Energy Consumption (TEC) approach is used to align allowances directly with the goal of improving energy consumption
- Allowances are calculated using the same functionality-based approach as the Lot 18 Preparatory Study
- Total energy consumption allowances for typical products under the Voluntary Agreement Tier 1 are lower than the Tier 1 values suggested in the Lot 18 Preparatory Study



Caroline Wunnerlich, with participation of

- Jacek Truscynski (DG TREN)

Conclusions

- The Industry Voluntary Agreement on CSTB
 - Reconciles the need for further reductions in energy consumption with flexibility to innovate and high quality customer experience
 - Commits global players to work together to help solve a global problem
 - Binds all parts of the complex STB delivery chain
 - Delivers energy efficiency improvements faster

Final remarks by

- Paul Mitchell (GM Policy & Standards, Microsoft)

