



# ENERGY STAR Partner Meeting

## CE Panel: "Sleek, Streaming and Smart"

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# Set-Top Box Energy Efficiency



Big Picture. Small Footprint.

DIRECTV's energy efficient receivers save customers money while protecting the environment. For the second straight year, we stand alone among TV providers recognized by ENERGY STAR®

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## ENERGY STAR

- Service Provider Partner since 2009
- Set-top Box Manufacturer Partner since 2009
- 2010, 2011 & 2012 Awards for Excellence in Energy Efficient Product Design



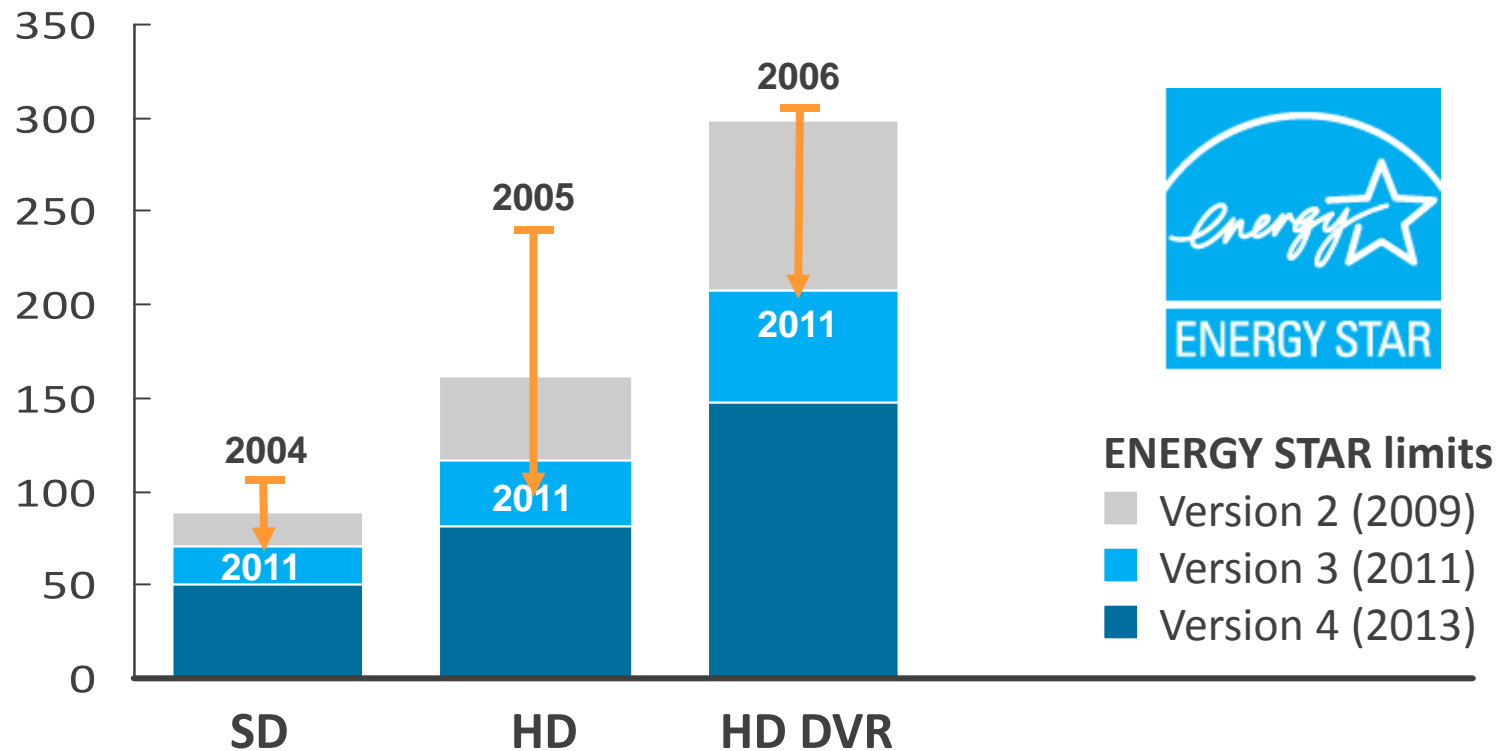
***DIRECTV joined the ENERGY STAR Set-Top Box program upon its inception, and has delivered more than 40 million ENERGY STAR qualified receivers to customers.***

# Energy Consumption Trend



**Typical Energy Consumption (TEC)**  
kWH/year

Change in energy consumption  
from 1<sup>st</sup> generation to current

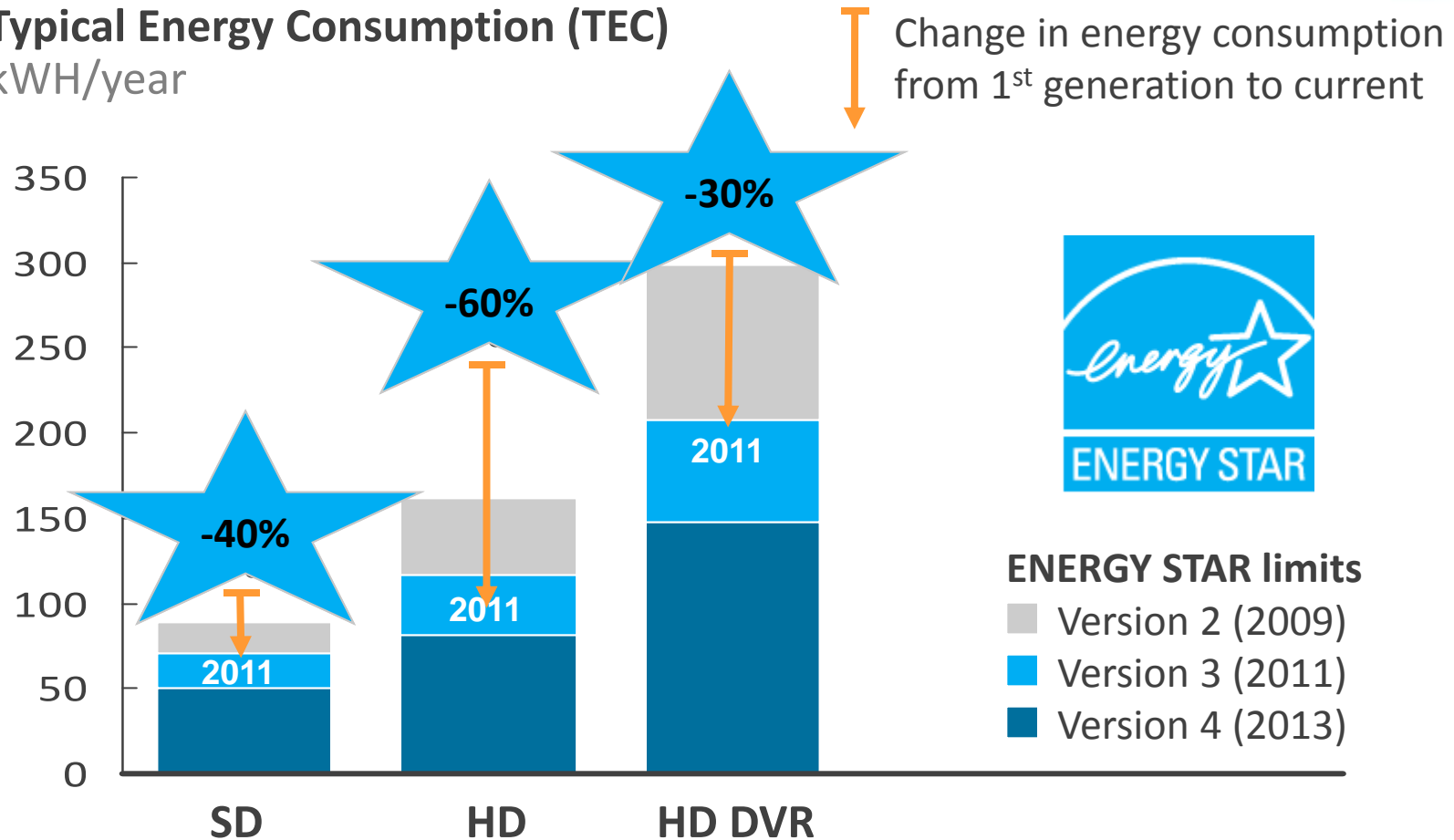


**Current DIRECTV models have substantially better energy consumption than 1<sup>st</sup> generation DIRECTV models, while adding more functionality and processing power**

# Energy Consumption Trend



Typical Energy Consumption (TEC)  
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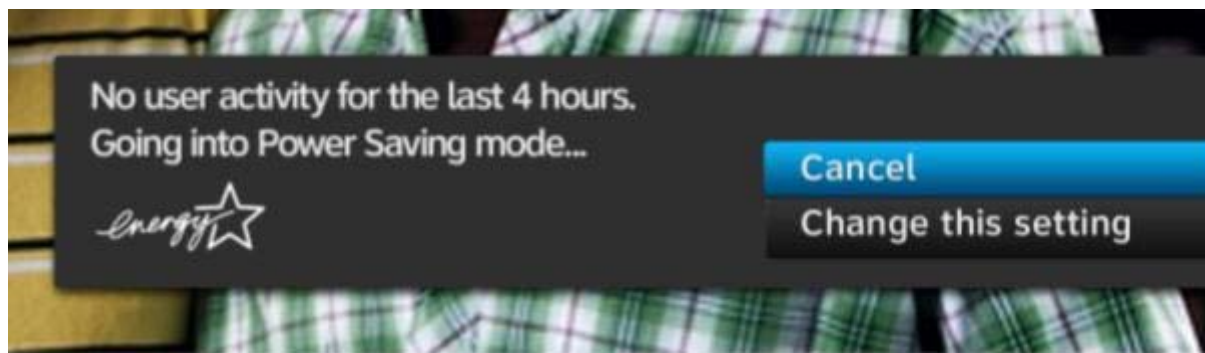
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# “Power Saving” STB Setting (2012)



- Rolled out to more than 20 million active HD STBs & HD DVRs
  - Enabled by default per ENERGY STAR 3.0 guidelines

- STB switches to standby after 4 hours with no user interaction



- New menu location for managing energy efficiency
  - To disable auto-power-down when needed
  - Future energy savings controls could be implemented here e.g. a home power monitoring application



# “Power Saving” STB Setting (2012), cont.



- New menu location for managing energy efficiency



# Streaming vs. Service



- New “over-the-top” providers offering premium content streamed and downloaded via Internet
  - Netflix, iTunes, Hulu, etc.
- Traditional providers doing this as well...but with more and better premium content! 😊
  - DIRECTV, Comcast, Verizon, etc.
  - Enhances value of pay service, making it available on more devices and in more locations
  - aka “TV Everywhere”, “Authentication”
- Availability of increasingly smart and connected consumer electronics driving this trend
  - PCs, game consoles, tablets, smartphones, smart TVs, etc.

# Energy Efficiency Impacts of Smart CE devices



## ● Positive impacts

- Tablets, smartphones, laptops and internet dongles (e.g. Roku) are more energy efficient than traditional set-tops
- New server-client “whole home” architectures allow energy efficient thin-clients & clients embedded in TVs
  - Enabled by new industry standards (e.g. RVU Alliance) and increasingly reliable digital home networks

## ● Negative impacts

- PCs and game consoles are much less energy efficient than traditional set-top boxes
- Availability of programming on additional displays is tending to increase viewing due to increased convenience



# DIRECTV "Genie" Multi-room Architecture



[www.rvualliance.org](http://www.rvualliance.org)

DIRECTV C31



RVU Client TEC 47 kWh/yr

# Whole-Home HD-DVR Energy Trend at DIRECTV



## 2012: New “Multiroom HD-DVR System” install

	On Mode			Light Sleep			Deep Sleep			Total Energy Consumption
	Watts	Hours	kWh/Yr	Watts	Hours	kWh/Yr	Watts	Hours	kWh/Yr	kWh/Yr
Room 1: Multiroom HD-DVR	24	7	61	23	17	142	0	0	0	203
Room 2: HD STB	13	7	33	11	17	68	0	0	0	101
Room 3: HD STB	13	7	33	11	17	68	0	0	0	101
Total			127			278			0	405

### All ENERGY STAR Version 3 qualified

## ~2014 projection: New “RVU HD-DVR Architecture” install

	On Mode			Light Sleep			Deep Sleep			Total Energy Consumption
	Watts	Hours	kWh/Yr	Watts	Hours	kWh/Yr	Watts	Hours	kWh/Yr	kWh/Yr
Room 1: HD-DVR Server	29	7	74	27	17	167	0	0	0	241
Room 2: HD Thin client	6	7	15	5	17	31	0	0	0	46
Room 3: HD Thin Client	6	7	15	5	17	31	0	0	0	46
Total			104			229			0	333

### HD-DVR & two HD Thin Clients connected via MoCA digital home network

### Server does not meet ENERGY STAR Version 3 limits

### Power consumption compared to 2012: -18%

## ~2016 projection: New “RVU HD-DVR Architecture” install

	On Mode			Light Sleep			Deep Sleep			Total Energy Consumption
	Watts	Hours	kWh/Yr	Watts	Hours	kWh/Yr	Watts	Hours	kWh/Yr	kWh/Yr
Room 1: HD-DVR Server	27	7	68	25	17	155	0	0	0	223
Room 2: HD Thin client	6	7	15	5	13	23	1	4	1	39
Room 3: TV client	0	0	0	0	0	0	0	0	0	0
Total			83			178			1	262

### No set-top box needed whenever RVU TV client is available

### Power consumption compared to 2012: -35%

# STB Energy Reduction: Summary



- Past STB energy reductions driven by increased silicon integration and more efficient components
  - EPA: “ENERGY STAR qualified set-top boxes are on average 45 percent more efficient than conventional models”
- Newest reductions resulting from new “whole home” architectures
  - Additional 18 percent improvement vs. today
- In near future, many STBs will be replaced due to industry standard interfaces to Smart CE devices
  - 35 percent improvement vs. today



Samsung RVU Capable TV  
(32" model UN32D6000)

Don't just watch TV. **DIRECTV.**

