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Office of the General Counsel
Department of Energy
1000 Independence Avenue, SW
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Memorandum for the Record
Ex Parte Communication
Department of Energy
Meeting of November 29, 2011, 2:00 – 3:30 p.m

TO: expartecommunications@hq.doe.gov (sent via email)

Re: Ex Parte, Docket No. EERE-2010-BT-DET-0040; RIN Number 1904-AC52

On November 29, 2011, William Check of the National Cable & Telecommunications Association ("NCTA"),[1] Paul Glist of the law firm of Davis Wright Tremaine LLP, and I met with Daniel Cohen, Betsy Kohl, and Celia Sher from the Department of Energy ("DOE" or "Department") Office of General Counsel, and John Cymbalsky and Jeremy Dommu from DOE's Office of Energy Efficiency and Renewable Energy to discuss the above-referenced pending rulemaking proceeding addressing whether set-top boxes should be deemed covered products potentially subject to mandatory energy efficiency standards. As described below, in our meeting we discussed (1) a recent cable industry energy conservation initiative that builds upon actions the industry has already taken to achieve energy efficiency in the set-top boxes we provide to our customers and (2) misstatements and misinformation reflected in the comments filed in this proceeding by some proponents of regulation of set-top boxes. We concluded by explaining – as we did in our initial Comments in this proceeding – that, given the record in this proceeding and under the Department's governing statute and regulations, the Department should conclude that it is neither necessary nor appropriate to determine that set-top boxes are "covered products" under the Energy Policy and Conservation Act ("EPCA").

[1] NCTA is the principal trade association for the U.S. cable industry, representing cable operators serving more than 90 percent of the nation's cable television households, more than 200 cable program networks, and suppliers of equipment and other products and services to the cable industry.

CABLE INDUSTRY ENERGY CONSERVATION INITIATIVE

On November 18, 2011, the U.S. cable industry announced a new initiative dedicated to improving the energy efficiency of cable-provided consumer set-top boxes and developing advanced cable-enabled services designed to promote innovative consumer energy conservation measures. A key element of the initiative is the "CableLabs® - Energy Lab," a new facility within the cable industry's research and development ("R&D") consortium that will concentrate exclusively on improving energy efficiency.[2] As detailed in Attachment A, the industry's energy initiative will promote the development, testing, and deployment of technologies that will enable cable customers to reduce and manage energy consumption in the home, including establishing new requirements for both cable video devices and network support systems. Among other things, new specifications developed through CableLabs® - Energy Lab will enable the manufacturing of devices with next-generation semiconductors to enable "deep sleep" mode when subscribers are not actively watching television, while preserving the customer experience when they turn on their equipment for viewing. After successful field testing of set-top boxes with next generation power management semiconductors, cable operators will begin promoting the deployment of these devices as part of their ongoing efforts to provide functional, reliable, and energy efficient services.

As part of the initiative, the six largest cable operators will begin deployment in September 2012 of new set-top boxes with "light sleep" capabilities. By year-end 2013, those same operators will ensure that 90% of all new set-top boxes they each purchase and place in service will meet or exceed ENERGY STAR 3.0 standards. The six largest operators provide service to over 85% of the cable customers in the United States. By committing to deployment of these energy-savings devices, equipment suppliers should be able to produce those devices in a volume which will bring down the costs of production, enabling smaller operators to acquire and deploy the same equipment to their customers. Several cable initiatives in the past have used this approach to bring new equipment and services to market.

According to press reports,[3] the cable industry energy initiative was favorably received, including by many who had suggested mandatory government regulation of set-top box energy consumption might be necessary to achieve significant energy efficiency gains. For example:

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[2] CableLabs, founded in 1988, is the cable industry's research and development consortium, which plays a role similar to that traditionally played by BellLabs for the telephone industry. CableLabs has over 40 cable operator members representing over 80 million customers, predominantly in North America (U.S. and Canada), but also internationally in Europe, Asia, and Central America. Its annual budget exceeds $60 million and it has over 160 employees including over 120 technical staff. CableLabs has a formal visiting engineer program involving subject matter experts from the supplier community (approximately 30 are in residence at this time). CableLabs is governed by a Board of Directors made up of the CEOs of cable operator members. Among other things, CableLabs developed common cable modem specifications enabling the size and price of such modems to quickly plummet as they were made available at retail outlets across the country. These activities, in turn, spurred the revolution in broadband access that the Nation has experienced in recent years. CableLabs also developed specifications enabling cable operators to provide facilities-based digital voice or VoIP ("Voice over Internet Protocol") telephone service and has worked cooperatively with the FBI and other law enforcement entities to develop specifications for lawful CALEA intercepts of VoIP and broadband Internet services.

[3] *See* Jonathan Make, *Major Cable Operators Target Energy Star 3.0 Devices*, Communications Daily (Nov. 21, 2011) (attached as Attachment B and reprinted with permission of Warren Communications News Inc.).

- Senator Dianne Feinstein, who in September requested that cable operators and other video providers develop more energy efficient devices, said she was "pleased" by the industry initiative, adding "I plan to monitor the progress of this initiative closely. Moving toward cable boxes with 'light-sleep' and 'deep-sleep' technology is an important victory for American consumers who stand to save substantially on their utility bills."

- The head of EPA's ENERGY STAR product development, Katharine Kaplan, called the cable industry initiative an "exciting commitment to deliver greater efficiency to the millions of Americans who rely on cable set-top boxes." She added that the initiative's focus on deployment of boxes that drop to a "true low power sleep mode when not in use offers particular promise for consumer and environmental savings." Ms. Kaplan concluded that "EPA's ENERGY STAR program will look forward to supporting this effort in the ENERGY STAR program's ongoing push for more energy efficient set top boxes of all types."

- The Natural Resources Defense Council, through its Senior Scientist Noah Horowitz, said it was "pleased to see that the cable industry is finally acknowledging that they have a problem and are beginning to take the right steps to try to address it."[4]

- The Northeast Energy Efficiency Partnership ("NEEP"), through David Lis, NEEP appliance standards project manager, said that the cable industry initiative "starts the industry down the road of reduced energy use in these products," and "it will be crucial for this effort to sustain itself over many years." "We are particularly glad to see the initiative's emphasis on low energy standby modes reducing cable boxes energy use when the units are delivering no service to the consumer."

As we discussed in our meeting, the cable industry is committed to – and achieving – increased energy efficiency in ways that can provide the wide variety of services and functionalities that customers expect from the many different and complex networks involved in rendering services. In light of this commitment and for other significant reasons, NCTA urges the Department to conclude that is neither necessary nor appropriate to classify set-top boxes as "covered products" to achieve the purposes and goals of the EPCA. We summarize below, as we did in the presentation we made to DOE staff (see Attachment C), the reasons why the Department should conclude this proceeding without making a determination that set-top boxes are "covered products."

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[4] In a subsequent blog post titled *Cable Industry Owns Up to Energy Problem and Commits to Fixing It*, NRDC wrote: "As you sit down to watch football games and the Macy's Day Parade, here's one more item to give thanks for this holiday weekend – the cable industry newly announced a commitment to cut the energy use of those set top boxes that allow us to watch cable TV." Noah Horowitz, *Cable Industry Owns Up to Energy Problem and Commits to Fixing It*, Switchboard, Natural Resources Defense Council Staff Blog (Nov. 21, 2011), *available at* http://switchboard.nrdc.org/blogs/nhorowitz/cable_industry_owns_up_to_ener.html.

MANY COMMENTS FROM PROPONENTS OF REGULATION ARE BASED ON MISINFORMATION AND MISTATEMENTS OF FACT

At our meeting with DOE staff we addressed several of the comments submitted in this proceeding and explained that they are based on misinformation and propose approaches that will fail to meet EPCA's central purposes.

Set-Top Boxes Exhibit Increasing Energy Efficiency. Many comments start from the incorrect assumption that cable set-top box energy consumption is worsening. Several call ENERGY STAR a failure and cite purported trivial percentages of ENERGY STAR set-top boxes used by consumers.[5] In fact, a huge percentage of set-top boxes deployed by cable operators are ENERGY STAR compliant. For example, as we explained, over ninety percent of set-top boxes purchased by the six largest cable operators are ENERGY STAR compliant, more than is expected of an ENERGY STAR partner. Moreover, some proponents of regulation contend that there is "stagnation" in the development of energy-efficient set-top boxes.[6] In fact, the energy consumption of set-top boxes has dropped by nearly half even as their functionality has increased, and cable operators have been utilizing innovative energy efficient technologies – such as going all digital, operating small set-top boxes such as Digital Transport Adaptors ("DTAs") at less than 4 Watts, and delivering services using network-based, cloud-based, and IP-based approaches – that revolutionize set-top boxes or eliminate them entirely.[7] The industry's most recent energy initiatives are designed to promote still more innovative energy efficient technologies.

Business Incentives Compel Increased Energy Efficiency. Many pro-regulation commenters incorrectly assert that supposed worsening energy performance is due to a lack of incentive by cable operators and their equipment suppliers to conserve energy.[8] As explained in NCTA's Comments, cable operators have strong incentives to pursue energy efficiencies in the equipment they provide to customers because they own and maintain tens of millions of devices in consumer homes in order to deliver services in a highly competitive marketplace.[9] If these devices fail, it results in customer dissatisfaction, and expensive customer service calls and truck rolls. Lower power consumption generally leads to less heat and lower operating temperatures, lower failure rates, fewer customer service calls, and increased device longevity. Integrating components onto more efficient "systems on a chip" also lowers costs and increases processing power for more competitive applications and services. Thus, market dynamics motivate cable

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[5] Northwest Energy Efficiency Partnership ("NEEP") Comments at 2 (claiming only 8 percent of *retail* set-top boxes are compliant, ignoring leased set-top boxes); Energy Northeast ("ENE") Comments at 2; Natural Resources Defense Council ("NRDC") Comments at 7.

[6] NEEP Comments at 3.

[7] *See* NCTA Comments at 3.

[8] The Northwest Energy Efficiency Alliance ("NEEA"), California Investor Owned Utilities ("CA IOUs"), ENE, Consumer Federation of America ("CFA"), and NEEP all presume that cable operators are uninterested in increasing the energy efficiency of set-top boxes on the theory that they are influenced by split market incentives and that set-top box manufacturers feel "little pressure" to be energy efficient. *See* NEEP Comments at 2; *See* NEEA Comments at 2; CA IOUs Comments at 3; ENE Comments at 1; CFA Comments at 7.

[9] *See* NCTA Comments at 4.

operators to increase energy efficiency in order to increase the reliability of their equipment and its performance in a highly competitive marketplace – with or without regulation.

Set-Top Boxes Are Not Standardized Commodities. Many pro-regulation commenters illustrate the supposed indifference by the cable industry to energy consumption by describing the range of energy consumption among devices they presume to be fungible commodities. For example, CFA argues that "the wide ranges of observed levels of consumption suggest that improvement is technically feasible."[10] What these commenters ignore is that different devices are designed for different networks, services, and functionalities. That is why there is a broad range of devices with different features and functionalities meeting specific customer demands, which result in different levels of energy consumption. These diverse and innovative devices cannot be shoe-horned into a one-size-fits-all regulatory bucket. Rather than demonstrating that all devices can or should be reduced to the lowest common denominator of energy consumption by regulatory fiat, it should be clear that the innovation reflected in the variety of set-top devices would be restricted by a regulatory prescription.[11]

Actual Deployments Cannot Be Ignored. Some commenters promoting regulation paint a dire portrait of energy consumption based on erroneous information about what types of devices are being deployed. For example, NRDC suggests that the DVR is the primary set-top box in most households and treats as "typical" a home with one DVR and one HD set-top box.[12] In fact, less than one-third of cable households have a DVR; and therefore the "typical" home does not have both an HD DVR and HD set-top box. Moreover, NRDC has ignored the widely-deployed digital transport adaptor used for the cable digital transition, using less than 4 watts of power.[13] Even in homes that might have a DVR and an HD set-top box, their combined energy consumption does not approach the energy use of a refrigerator as alleged by NRDC and others.[14]

False Analogies Are No Basis for Rules. Other commenters appear unaware that set-top boxes operate as integrated parts of two-way networks and receive a wide variety of programming schedules, diagnostics data, navigation information (such as changes in channel location), and software updates while the television set is off in order to operate efficiently on the cable network and meet consumer demand for an instant-on television experience. When powered down, set-top boxes lose critical capabilities.[15] Perhaps based on this lack of

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[10] CFA Comments at 5. NEEP and CA IOUs make similar claims. *See* NEEP Comments at 3; CA IOUs Comments at 3.

[11] *See* NCTA Comments at 7-9.

[12] *See* NRDC Comments at 3, Figure 1.

[13] *See* NCTA Comments at 17. For example, among household served by the largest cable operator, fewer than 25% have a DVR plus a HD set-top box, while 78% have one or more DTAs.

[14] *See* NRDC Comments at 2; Elizabeth Rosenthal, *Atop TV Sets, a Power Drain That Runs Nonstop,* N.Y. Times, June 25, 2011; NCTA Comments at 17-18.

[15] When tested recently at CableLabs, a set-top box that had been powered down was unable to provide instant-on functionality when power was restored. It took approximately one minute to tune video, with no guide data for navigation. It took approximately ten minutes for guide data to begin to appear, and two hours for complete guide data to populate. Software updates, which typically occur when the set-top box is not being used for viewing or recording, would extend this delay. When powered up after missing such an update, the set-top box

understanding of current cable network operations, these commenters offer false analogies for how cable set-top boxes may operate at low power. Some point to a BSkyB set-top box, but, unlike cable set-top boxes, the BSkyB device is engineered to operate on one-way satellite systems and is not compatible with the more advanced two-way U.S. cable systems.[16] Some point to standalone hibernating laptops,[17] when, unlike laptops, set-top boxes are continually receiving network signals to operate efficiently and provide an instant-on television experience. Others cite wireless handset sleep modes, but, unlike set-top boxes, these are designed for wireless telephone networks and do not work with cable networks.[18] We agree that solutions based on advanced chips are a good idea, but the only effective way to achieve energy efficiency is by recognizing how cable networks operate in practice and consumer expectations for viewing television services -- this is what the cable industry's new energy initiative is designed to do.

Proposed Definitions Are Over-Inclusive and Would Swallow All Networks. Several pro-regulation commenters compound their unrealistic proposals by defining set-top boxes so broadly that the proposed regulations could extend to almost every part of cable networks.[19] These commenters suggest that the rules should cover any equipment that receives audio, video, and packet transmission -- which includes everything from the satellite, fiber, and off-air pickup at the cable headend, plus all transport equipment in the trunk and distribution networks, before signals even reach home set-top boxes. These proponents also propose that any new regulation should cover not just residential equipment but also specialized equipment in commercial locations. Such a broad approach is not realistic and would undermine the development of practical, energy efficiency approaches focused on the residential set-top boxes which have been the focus of this proceeding. As NCTA explained in its comments, if the Department were to pursue a regulatory approach to "set-top boxes and network equipment," it would need to refine its proposed definitions to (1) exclude network and commercial equipment and focus on devices in the home; (2) recognize the significantly different functions of different devices and leave ample room for innovation in network termination equipment designed to serve multiple home devices; and (3) ensure technological neutrality.[20]

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first takes approximately 40 minutes to update software *before* tuning video or populating a guide. If powered down for an extended period, a set-top box can lose its entitlements to receive programming (*i.e.*, the box will not recognize that the customer is an authorized subscriber to the cable service), and the customer must contact the cable operator to send fresh entitlements to the set-top box.

[16] The Pace set-top box for BSkyB wakes the chip several times per second to check for broadcast commands from the satellite network. By contrast, U.S. cable networks use a two-way architecture with individual commands for a particular set-top box.

[17] *See* NRDC Comments at 7.

[18] *See* NEEA Comments at 3. When a wireless handset goes into battery-saving mode, it disables applications that require push notification to operate. If cable systems suspended downstream signaling, they would also be disabling programming schedule updates, diagnostics data, and navigation information (such as changes in channel location) on which systems and consumers depend. As mobile devices travel farther from the cellular network, battery-saving recommendations actually render the devices unable to make or receive calls. *See, e.g.*, http://www.apple.com/batteries/iphone.html.

[19] *See* NEEA Comments at 2; CA IOUs Comments at 2.

[20] *See* NCTA Comments at 21-24.

THE DEPARTMENT HAS NOT MET THE LEGAL STANDARD FOR EXTENDING APPLIANCE STANDARDS TO SET-TOP BOXES AND NETWORK EQUIPMENT

As NCTA detailed in its comments, the cable industry is committed to energy conservation. However, under the Department's own EPCA rulemaking requirements, it is not necessary or appropriate to pursue new government standards for set-top boxes and network equipment. Therefore, it would be unwarranted to determine that set-top boxes are "covered products."[21] In brief:

- "Set-top boxes and network equipment" are distinctly different devices that may not be artificially aggregated to sweep them under EPCA.[22]

- The Department's tentative conclusions and NRDC's analysis are not based on typical households.[23]

- Applying a consumer appliance standard to rapidly developing devices risks sacrificing the performance, reliability, and features that consumers demand and that the Department is charged with preserving – as even the sources relied upon by the Department have warned.[24]

- A consumer appliance standard is not justified under EPCA because it would not result in significant energy conservation relative to non-regulatory approaches. Today's market-driven, innovation-inducing environment is clearly superior to regulatory fiat in producing energy savings: cable operators have been deploying ENERGY STAR set-top boxes and utilizing energy efficient technologies that the 2007 source material underlying the Department's rulemaking could not have anticipated – going all digital, utilizing DTAs, and delivering services using network-based, cloud-based and IP approaches that revolutionize set-top boxes or eliminate them entirely. Next generation devices look even more promising. By contrast, by the time that testing protocols and standards could be adopted under a DOE regulatory approach, they will be out of date and may disable innovators from quickly offering tomorrow's applications.[25]

- The Administration has committed to regulatory reform to assure that regulations always consider costs and reduce burdens for American businesses and consumers, promote freedom of choice, and are driven by real science.[26] Today's market-driven approach has also produced growth in jobs, in energy-

[21] *See id.* at 14-21.

[22] *Id*. at 14-16.

[23] *Id*. at 16-18.

[24] *Id*. at 6-8, 9-10, 15-16.

[25] *Id.* at 19-21.

[26] Improving Regulation and Regulatory Review, Executive Order 13563, 76 Fed. Reg. 3821 (Jan. 21, 2011).

> saving telecommuting, in telemedicine, in broadband and Internet services, in choice and savings in voice services, in content and applications, and in new opportunities for future innovators – the kind of innovation funded by private capital that the Administration has been seeking to stimulate. Under these standards and the Department's own standards-setting criteria, the benefits of regulation do not exceed the burdens. The Department should not embark on the regulatory path of applying a consumer appliance standards-setting process to the wide array of set-top boxes and network equipment in use today and likely to be deployed in the future.[27]

CONCLUSION

In considering whether mandatory regulation of energy use in set-top boxes is warranted, the DOE should recognize that cable operators already have a strong interest in developing energy efficient set-top boxes and that the nature and variety of set-top boxes precludes a "one-size-fits-all" regulatory solution. For the reasons stated above and in NCTA's Comments, the Department should not take action at this time to classify "set-top boxes and network equipment" as covered products.

Respectfully submitted,

/s/ Neal M. Goldberg

Neal M. Goldberg

cc: Daniel Cohen
Betsy Kohl
Celia Sher
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Attachment A: Press Release, *U.S. Cable Industry Launches New Energy Efficiency Initiative* (November 21, 2011)

Attachment B: *Major Cable Operators Target Energy Star 3.0 Devices*, Communications Daily (November 21, 2011)

Attachment C: *Energy Efficiency in Cable Set-Top Boxes* (November 29, 2011)

[27] *See* NCTA Comments at 18-21.

ATTACHMENT A

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NEWS RELEASE

FOR IMMEDIATE RELEASE
November 18, 2011

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U.S. Cable Industry Launches New Energy Efficiency Initiative

CableLabs® - Energy Lab Facility Dedicated to Improving Energy Conservation

Washington, D.C. and Louisville, CO – The U.S. cable industry today announced a new initiative dedicated to improving the energy efficiency of consumer set-top boxes and other devices and developing advanced cable-enabled services designed to promote innovative consumer energy conservation measures. A key element of the initiative is the "CableLabs® - Energy Lab," a new facility within the cable industry's R&D consortium that will concentrate exclusively on improving energy efficiency, the National Cable & Telecommunications Association (NCTA) and CableLabs® announced today.

The energy initiative will promote the development, testing, and deployment of technologies that will enable cable subscribers to reduce and manage energy consumption in the home, including establishing new requirements for both cable video devices and network support systems. Among other things, these specifications will enable the manufacturing of devices that have "sleep" capabilities to reduce power consumption when subscribers are not actively watching television. After successful field testing of set-top boxes with next generation power management semiconductors, cable operators will begin promoting the deployment of these devices as part of their ongoing efforts to provide functional, reliable and energy efficient services.

The resulting increased energy efficiency for new model set-top boxes will improve on the strides in recent years by cable operators to utilize devices with dramatically lower energy consumption than previous generations of equipment. In addition, cable operators providing service to approximately 85 percent of U.S. cable customers have committed to ensure that by the end of 2013 at least 90 percent of all new set-top boxes they purchase and deploy will be ENERGY STAR 3.0 devices.

U.S. Senator Dianne Feinstein (D-CA) – who in a September letter to cable and other video providers challenged the industry to develop more energy efficient devices – applauded the initiative: "I am pleased the cable industry was responsive to my request that it work on deploying energy efficient cable boxes," said Feinstein. "I plan to monitor the progress of this

initiative closely. Moving toward cable boxes with 'light-sleep' and 'deep-sleep' technology is an important victory for American consumers who stand to save substantially on their utility bills."

"This important energy initiative will build upon the industry's exemplary record of improving the energy efficiency of successive generations of video devices and services without government intervention, and more importantly it will chart our energy conservation course for the future," said Michael Powell, NCTA President & CEO. "In the hyper-competitive video marketplace, delivering fully functional, reliable and energy efficient equipment is critical to our industry's success, and it's good for consumers. Offering energy efficient devices builds on the cable's industry's imperative to deliver innovation throughout our entire consumer offering."

The CableLabs® - Energy Lab will leverage the expertise and capabilities of CableLabs to build industry consensus on projects that will enhance current energy conservation efforts. The CableLabs® - Energy Lab will:

- Design and maintain a consistent and accurate energy tracking program for measuring and reporting energy consumption and efficiency improvements of new set-top boxes. Procedures for testing and advancing the energy efficiency of set-top boxes and energy conserving software will also be established.
- Serve as a testing and development facility for designers of energy efficient software and hardware.
- Create energy efficiency specifications for semiconductor and hardware suppliers and the network operations systems that support cable devices.
- Assist in developing applications and products that will help consumers manage their overall residential energy consumption.
- Showcase and demonstrate current and future energy savings products and power monitoring capabilities.

"CableLabs is pleased to play a central role in the cable industry's new energy conservation initiatives. The CableLabs – Energy Lab demonstrates how the cable industry recognizes its opportunity to reduce the energy consumption of devices that our customers use to access cable services, and takes full advantage of cable technology to enable consumers to manage energy consumption throughout the home." said Paul Liao, CableLabs President & CEO.

The CableLabs® - Energy Lab initiative will develop collaborative projects with universities and other innovators to promote and showcase the latest in energy management technologies that are enabled by high-speed cable networks, and it is expected to be fully functional by the first quarter of 2012.

Cable operators and other multichannel video providers purchase and maintain tens of millions of video devices that are used in consumer homes. Today's fully functional interactive set-top boxes are mini-computers that work as highly integrated components of complex networks. While consumer demand for interactive video services has fueled the need for increasingly sophisticated and more powerful devices, the cable industry has both improved the

energy efficiency of set-top boxes and launched new methods of delivering cable services using network-based, cloud-based, and IP-based approaches that revolutionize set-top boxes or eliminate them entirely.

Some of the cable industry's efforts to improve energy efficiency include:

- The vast majority of the set-top boxes purchased by cable operators are ENERGY STAR qualified, as evidenced by recent deployments of the two largest cable operators. In the first quarter of 2011, 95 percent of Comcast's deployments and 100 percent of Time Warner Cable's devices were ENERGY STAR devices.
- Utilization of ENERGY STAR 3.0-qualified high-definition DVRs that consume less than half of the energy but provide more processing power and home-networking capabilities than the 40+ Watt HD DVRs introduced ten years ago.
- In cable markets that have converted to all digital systems, operators are providing customers with small digital transport adapters (DTAs) that use less than four Watts.
- Introduction of new services that decrease the home's overall energy profile such as: digital-only tuners; home networking and whole-home DVR; network- and cloud-based delivery that allows the processing and storage power of the network to be shared across many consumers; and video services delivered via Internet Protocol (IP) directly to tablets and gaming stations without the need for a set-top box.

NCTA and CableLabs will also continue to collaborate with government, industry, and research organizations to develop approaches and share best practices which can lead to further energy improvements.

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ATTACHMENT B

COMMUNICATIONS DAILY

Monday, November 21, 2011 VOL. 31, NO. 224

Six Biggest Cable Operators

Major Cable Operators Target Energy Star 3.0 Devices; NCTA Hopes to Avoid Rules

Major cable operators plan to deploy more energy-efficient set-top boxes than those widely in use now. The U.S.'s six biggest cable operators plan to have at least 90 percent of all new set-tops they buy and deploy by the end of 2013 be Energy Star 3.0-compliant, NCTA executives said Friday. The association and CableLabs are setting up an energy lab to develop electricity-efficient set-tops and other gear used by consumers, and equipment used by cable companies' networks. A CEA executive said such efforts may reduce power usage and costs, the Environmental Protection Agency said it's a good move, and environmental groups backed it while saying more must be done by cable operators to use less power.

The plan's goal is to reduce the cost of semiconductors and other components, to bring down the price that the top cable operators must pay for devices meeting the U.S. standard, NCTA General Counsel Neal Goldberg said. Energy Star 3.0 took effect in September, he noted. The hope is that once costs come down because many more 3.0 set-tops are produced, other operators will be able to take advantage of the less expensive devices, he said. Bright House Networks, Cablevision, Charter Communications, Cox Communications, Comcast and Time Warner Cable, with a total of about 49 million video subscribers, have initially committed to the goal, NCTA executives said. AT&T and Verizon said they're among other multichannel video programming distributors also reducing energy usage.

The CableLabs Energy Lab facility and the cable industry's efforts toward deploying Energy Star 3.0 devices will be cited in conversations with energy regulators, Goldberg said. NCTA will keep trying to show that set-tops shouldn't be considered covered products under the standard, after the Department of Energy tentatively found they should be covered. "We’re certainly going to discuss doing the new initiative with DOE," Goldberg said. "We’re going to show them that based on this trajectory" of the 90 percent by 2013 plan, he continued, versus "the usual length of time for a rulemaking proceeding to go from start to finish," the association hopes to "be on the right track well before any rule could be implemented."

The procurement plan is limited to the biggest cable operators for now, "because you need to hope to get the scale that the top-six operators can give you to bring the cost of these components and boxes down," Goldberg said. "And then we would hope that all cable operators

that use boxes like this can" in turn get the benefits, he continued: "We hope that will be the natural consequence of this." The CableLabs Energy Lab may develop more than just set-tops that use less energy, Goldberg said: The goal is for the initiative to develop other products and services, including some of the infrastructure used by operators.

Chipmakers probably will help back the cable plan, and "will naturally respond" to it with products, said CEA Senior Vice President Brian Markwalter. Semiconductor companies are "always pursuing power and efficiency improvements in chips," as "it's always cheaper and more reliable to produce" those that consume less energy, he said. Better still are devices other than set-tops that can get subscription video and use less energy than the boxes, such as tablets, Markwalter said. "It would be better to have one set-top box" used per household "or simpler set-top box architecture, to do the simplest set-top box infrastructure you can," he said. "To the extent that cable is also trying to accommodate tablets and other streaming technology, those things are already efficient." Of the CableLabs Energy Lab, "it's great that they are turning it into a specific project, which means it will get some horsepower behind it," he said.

The EPA called the NCTA initiative an "exciting commitment to deliver greater efficiency to the millions of Americans who rely on cable set-top boxes." The initiative's focus on deployment of boxes that drops to a "true low power sleep mode when not in use offers particular promise for consumer and environmental savings," Katharine Kaplan, EPA lead for Energy Star product development, said in a written statement. "EPA's ENERGY STAR program will look forward to supporting this effort in the ENERGY STAR program's ongoing push for more energy efficient set top boxes of all types." Sen. Dianne Feinstein, D-Calif., who in September wrote MVPDs asking them to develop more energy efficient devices, is "pleased," she said in a statement provided by NCTA. "I plan to monitor the progress of this initiative closely. Moving toward cable boxes with ‘light-sleep’ and ‘deep-sleep’ technology is an important victory for American consumers who stand to save substantially on their utility bills."

CableLabs Energy Lab will be fully up and running by Q1, and already the "vast majority" of set-tops bought by operators are qualified under earlier versions of Energy Star, NCTA and CableLabs said. It targets "utilization of ENERGY STAR 3.0-qualified high-definition DVRs that consume less than half of the energy but provide more processing power and home-networking capabilities than the 40+ Watt HD DVRs introduced ten years ago," the groups said. "In cable markets that have converted to all digital systems, operators are providing customers with small digital transport adapters (DTAs) that use less than four Watts." New services are being introduced to decrease the home’s "overall energy profile such as: digital-only tuners; home networking and whole-home DVR; network- and cloud-based delivery that allows the processing and storage power of the network to be shared across many consumers; and video services delivered via Internet Protocol (IP) directly to tablets and gaming stations without the need for a set-top," they said (http://xrl.us/bmiysi).

Verizon is among MVPDs "working towards alternative methods for delivering video that will reduce the number of traditional set-top boxes" a typical household needs, "if not eliminate them altogether," a spokesman said. "Our work is already paying off." The telco-TV company was the first "significant video provider to offer whole-home DVR service," he said. Such DVRs allow a set-top to access what's been recorded on a DVR elsewhere in a home, which "reduces the need for subscribers to employ multiple DVRs" that have "relatively higher energy usage" levels, the spokesman said. He said the telco introduced last year "green" set-tops using 30 percent less energy than traditional ones (http://xrl.us/bmiysr).

"Energy efficiency is of special importance to AT&T," a spokeswoman said. "Unlike most other video service providers, currently our full line of set-top boxes is Energy Star qualified," which has been the case since the telco began selling its U-verse pay-TV service, she added. EchoStar, which makes most of sister company Dish Network's set-top equipment, is a member of Energy Star and CableLabs, a spokesman for the DBS company said. DirecTV and the American Cable Association had no comment.

The Natural Resources Defense Council is "pleased to see that the cable industry is finally acknowledging that they have a problem and are beginning to take the right steps to try to address it," said Senior Scientist Noah Horowitz. "Antiquated designs" mean existing cable and satellite set-tops consume a "whopping" $2 billion per year and six power plants worth of electricity when not in use, he said. "Hitting the off button on many of the boxes merely dims the clock and the device continues to consume near full levels of power 24/7." The industry needs to adopt some of the "smarts" already in place in smartphones and tablets which use "a trickle of power when in standby mode and boot back up instantly," Horowitz said. The cable industry must "pick up the pace and accelerate their efforts," he said. "You can bet the industry would be all over this if they had to pay for all the wasted electricity their installed boxes cause instead of the consumer." Some current DVRs use more electricity over the course of a year than the big-screen TVs they're connected to, Horowitz said.

The NCTA initiative "starts the industry down the road of reduced energy use in these products," and "it will be crucial for this effort to sustain itself over many years," said the Northeast Energy Efficiency Partnership. "For far too long, efficiency has taken a back seat in the development of more functional cable boxes, with consumers paying an untold price," said David Lis, NEEP appliance standards project manager. "We are particularly glad to see the initiative's emphasis on low energy standby modes reducing cable boxes energy use when the units are delivering no service to the consumer." If the industry wants to demonstrate "real leadership" in the area of energy efficiency, he said the NEEP encourages the six cable operators "to aim for a significant market penetration of Energy Star 4.0 units." Those standards are projected to be effective in July 2013. — ***Jonathan Make, Dinesh Kumar***

ATTACHMENT C

Energy Efficiency in Cable Set-Top Boxes

November 29, 2011

Agenda

- Recent Model Energy Efficiency
- Business Incentives for Energy Efficiency
- Functionalities at Risk with Power Reduction
- Industry Initiative
  - CableLabs® - Energy Lab
  - Light Sleep Mode
  - Deep Sleep Mode
  - Procurement Commitments
- Other Energy Saving Developments
- Impact of Market on Regulatory Approaches

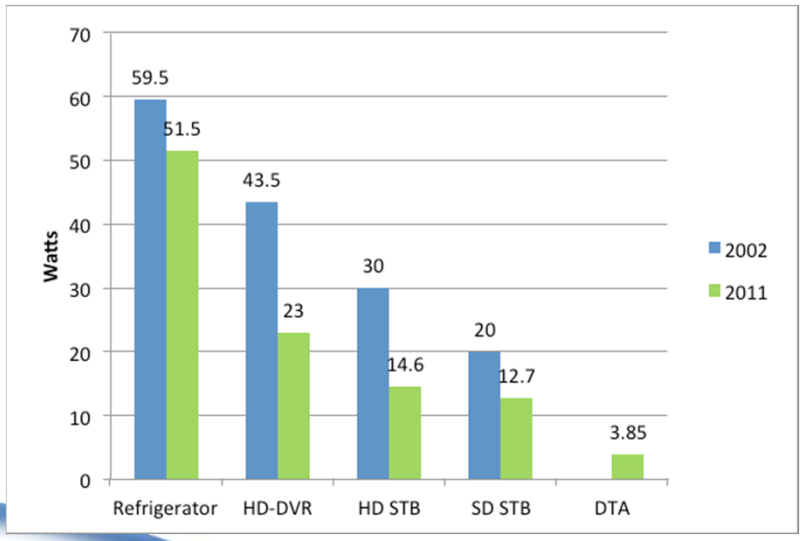
Glossary

- DVR = Digital Video Recorder
- STB = Set-top Box
- HD = High Definition video
- SD = Standard Definition video
- IP = Internet Protocol
- VoIP = Voice over IP
- MTA = Media Terminal Adaptor (aka VoIP terminal)
- VoD = Video-on-Demand

Recent Model Energy Efficiency

- Majority of set-tops purchased by cable operators today are ENERGY STAR Version 2.1 or Version 3
  - Cable Industry: > 90% of new set-top purchases ENERGY STAR compliant. Examples:
  - Comcast: 95% of Q1 2011 in-home equipment deliveries ENERGY STAR compliant
  - Low-wattage Digital Transport Adaptors (DTAs) use less than 4W
  - Time Warner Cable: 100% of 2011 set-top purchases and deployments ENERGY STAR compliant
- Significant reduction in set-top energy consumption over time (shown on next two slides)

Historic Energy Reductions In Cable STBs



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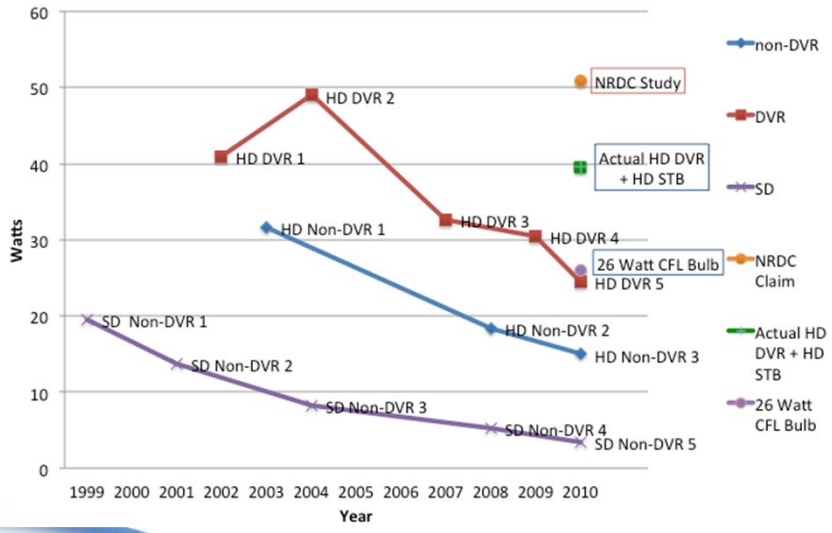
Power Consumption by Year of New Models



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Business Incentives

- Rapid change and innovation – including HDTV, DVRs, multiple tuners, interactive program guides, increased storage capacity, "switched digital" channels, increased processing power and memory.
- Tens of millions of these devices in consumer homes.
- Energy efficiency can increase reliability, reduce service calls, improve performance and device longevity in competitive environment demanding reliability.
- Integration in "systems on a chip" (SoCs) reduces component count, lowers failure rates and costs, increases performance with generational chip changes.

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Diversity of Cable Devices & Functionality

Device	Description
	HD DVR STB provides linear TV (both SD & HD), DVR, VoD, and optionally may be the server for multi-room DVR
	HD STB provides linear TV (both SD & HD), VoD, and optionally may be the client for multi-room DVR
	DTA STB provides linear TV (SD & HD) only
	Small network devices: • Cable Modem provides High Speed Data (HSD) service • Media Terminal Adaptor provides digital phone service and optionally HSD • Gateway provides HSD, home networking, and digital phone service

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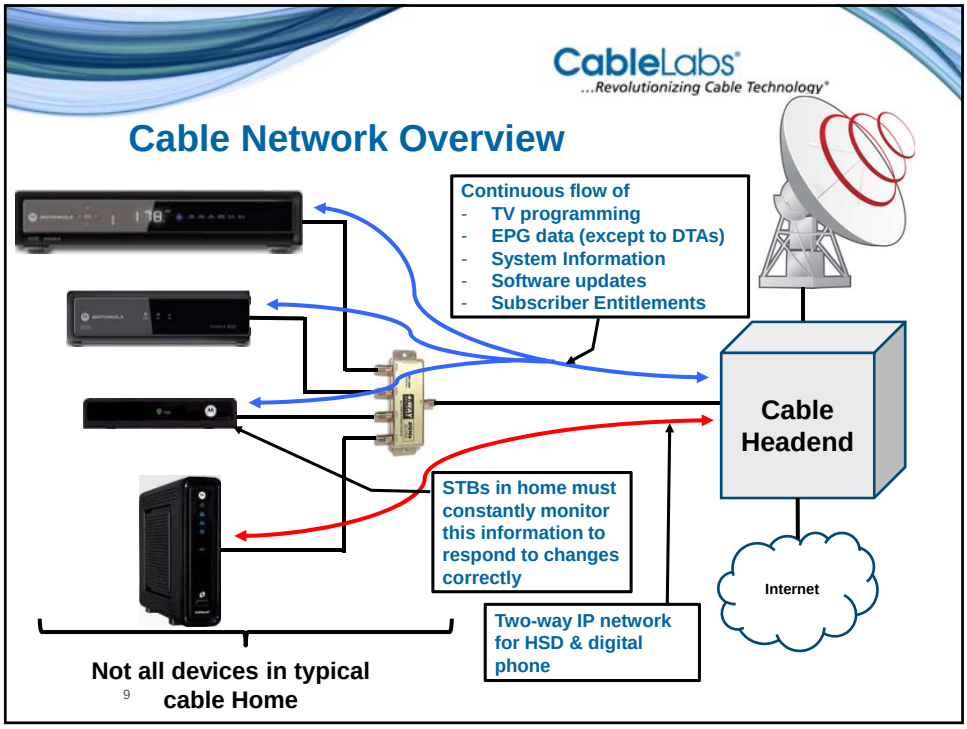

Current Functionality of STBs

- Updates in background to assure "instant on"
  - Electronic Program Guide is kept in set-top
    - Navigation information (such as changes in channel location)
    - Populating program guides with the latest programming schedules and descriptions
  - Software updates
  - Conditional access and entitlement state
  - Receiving and sending other data for diagnostics; loss of network connectivity can indicate network failure to the cable operator
- Power loss interrupts all network functions

Cable Industry Energy Initiative

- CableLabs® - Energy Lab
- "Light sleep" capabilities for new set-top boxes would preserve functionality
  - e.g., spinning down disk
- "Deep Sleep" requires generational change in silicon
  - Would turn off portions of set-top box, but retain network connectivity
- Six largest cable operators will buy at least 90% ESv3 set-tops by Q4 2013
  - Serve ~ 85 % of U.S. cable customers

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CableLabs® - Energy Lab

- Energy tracking program for set-top boxes
  - Opening relations with Lawrence Berkeley National Laboratory, CalPlug
- Testing and development facility for designers of energy efficient software and hardware
- Create next gen semiconductor energy efficiency specifications for cable devices
  - Will need cooperation of chip, guide, software, hardware, conditional access & security parties for this change
- Assist in developing applications and products for consumers to manage overall residential energy
- Showcase energy savings products and power monitoring

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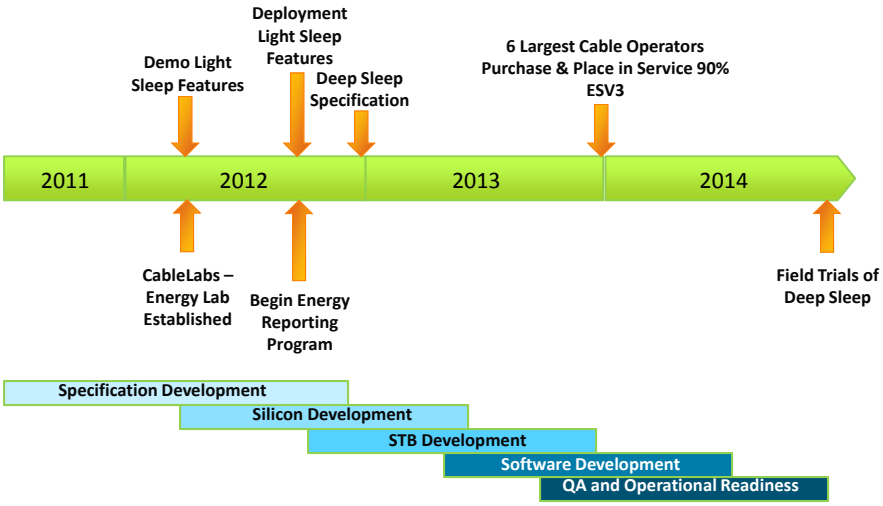
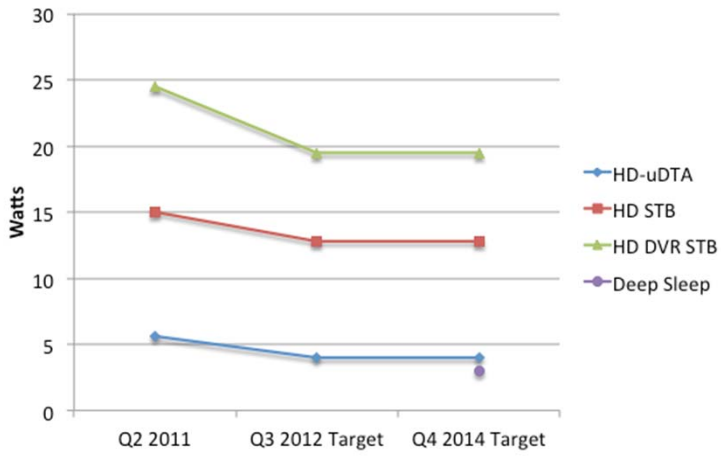
CableLabs ...Revolutionizing Cable Technology

Overall Timeline



CableLabs ...Revolutionizing Cable Technology

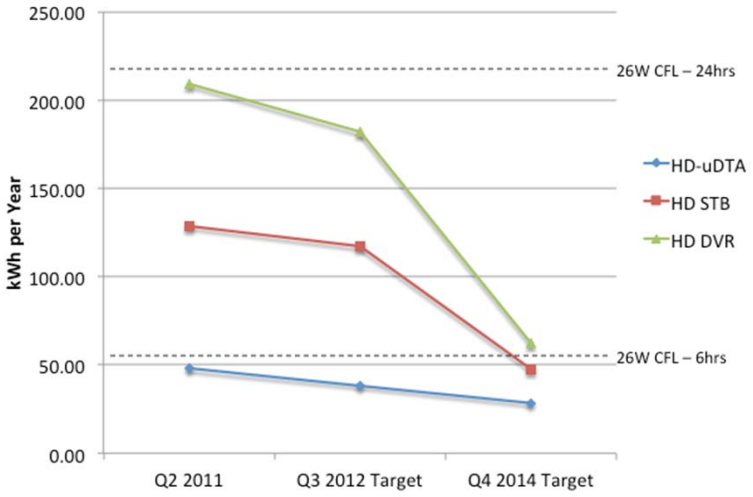
Projected Power Saving Modes



CableLabs
...Revolutionizing Cable Technology

Projected Energy Consumption

Assumes 6hrs per day viewing



Procurement Commitments

- Six largest cable operators committed that by Q4 2013 at least 90 percent of all new set-top boxes they purchase and deploy will be ESv3
  - Serve ~ 85 % of U.S. cable customers
  - Comcast, Time Warner Cable, Cox, Charter, Cablevision, Bright House

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Response to Initiative

- **Sen Feinstein**: “Moving toward cable boxes with ‘light-sleep’ and ‘deep-sleep’ technology is an important victory for American consumers who stand to save substantially on their utility bills.”
- **EPA’s** Katharine Kaplan called the initiative an "exciting commitment to deliver greater efficiency to the millions of Americans who rely on cable set-top boxes.”
- The **Natural Resources Defense Council** is "pleased to see that the cable industry is finally acknowledging that they have a problem and are beginning to take the right steps to try to address it.”
- **Northeast Energy Efficiency Partnership** says the initiative "starts the industry down the road of reduced energy use in these products.”

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Other Energy Saving Developments

- All-digital systems mean more efficient digital tuners and DTAs
- Increasing use of home networking approaches such as MoCA
- Delivery via IP directly to tablets, gaming stations, and “smart” digital televisions (without set-top box)
- Set-top functionality and applications moving into the network and cloud

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Impact of Market on Regulatory Approaches

- Many comments ignore device and network differences, underrate current model energy efficiency, overstate “typical” home configuration
- Market delivering efficiencies and technological innovation more effectively than regulation
- Regulated consumer appliance standard risks sacrificing innovations in performance, reliability, and features that consumers demand