



**Title of Proposed Initiative:** Pay-TV set-top box golden carrot program

**Investment Areas** (Check one or more) – *For definitions, see First Triennial Investment Plan, page 12:*

- X Applied Research and Development
- X Technology Demonstration and Deployment
- X Market Facilitation

**Electricity System Value Chain (Check only one):** See CPUC Decision 12-05-037, Ordering Paragraph 12.a. [http://docs.cpuc.ca.gov/PublishedDocs/WORD\\_PDF/FINAL\\_DECISION/167664.PDF](http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF).

- Grid operations/market design
- Generation
- Transmission
- Distribution
- X Demand-side management



#### Issues and Barriers:

Today's pay-TV distribution systems were designed decades ago without a clear focus on energy efficiency resulting in poor set-top box power scaling relative to mobile devices like smart phones. In order to achieve meaningful energy savings through low power (<1 watt) sleep modes, industry would have to either a) redesign key interface specifications and components at both set-top box and headend levels to enable deep sleep with quick resume or b) develop the ability to schedule deep sleep so that long wake times do not adversely impact the user. To date, no U.S. service providers have offered a <1 watt sleep mode primarily because of the significant investment involved in path a) and the customer satisfaction risk involved in path b). The program would leave open other means for compliance including a shift to network-DVR or DRM-based approaches.

#### Initiative Description and Purpose:

Fund a golden carrot program by establishing a pool of money that would be distributed, first-come-first-serve, to the service providers who demonstrate actual in-home energy savings through a <1W sleep mode. The funds would be allocated at a rate of \$X/kWh of demonstrated, in-home energy savings until depleted.

#### Stakeholders:

Service providers have indicated openness to path b) by proposing to give credit for deep sleep in the test method for the recently-announced set-top box [Energy Conservation Agreement](#)<sup>1</sup>.

#### Background and the State-of-the-Art:

- CalPlug is developing artificial intelligence algorithms that would minimize user impact associated with path b), scheduled deep sleep.
- Sky Deutschland has demonstrated set-top box scheduled deep sleep in Germany.
- Over the top (OTT) set-top boxes have <1 watt sleep functions with quick wake.

<sup>1</sup> <https://www.ncta.com/sites/prod/files/VOLUNTARY-AGREEMENT-ENERGY-EFFICIENCY-OF-SET-TOP-BOXES.pdf>

**Justification:**

Pay-TV set-top boxes in California consumed about 4 TWh of electricity in 2012. The energy savings potential of deploying deep sleep technology to all set-top boxes in California is about 1 TWh. Once the barriers to deploying deep sleep are removed through this California program, there would be fewer barriers to national and international deployment.

**Ratepayer Benefits** (Check one or more):

- Promote greater reliability
- Potential energy and cost savings
- Increased safety
- Societal benefits
- Environmental benefits – reduced GHG emissions from power plants.
- GHG emissions mitigation/adaptation in the electricity sector at the lowest possible cost
- Low emission vehicles/transportation
- Waste reduction
- Economic development

Describe specific benefits (qualitative and quantitative) of the proposed initiative

**Public Utilities Code Sections 740.1 and 8360:**

Please describe how this technology or strategy addresses the principles articulated in California Public Utilities Code Sections 740.1 and 8360. The California Public Utilities Code is available online at [www.leginfo.ca.gov/cgi-bin/calawquery?codesection=puc](http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=puc).