

## Author's Accepted Manuscript

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PII: S2352-7285(16)30005-7  
DOI: <http://dx.doi.org/10.1016/j.deveng.2017.07.002>  
Reference: DEVENG18

To appear in: *Development Engineering*

Received date: 17 February 2016  
Revised date: 21 July 2017  
Accepted date: 26 July 2017

Cite this article as: Won Young Park and Amol A. Phadke, Adoption of energy-efficient televisions for expanded off-grid electricity service, *Development Engineering*, <http://dx.doi.org/10.1016/j.deveng.2017.07.002>

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## Adoption of energy-efficient televisions for expanded off-grid electricity service

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### Abstract

Even though they dominate the global television (TV) market, light-emitting diode backlit liquid crystal display (LED-LCD) TVs have received little attention for use with off-grid household-scale renewable energy systems, primarily because of high up-front costs. However, technological advances and price declines mean that these TVs can now provide the same level of electricity service as standard LED-LCD TVs offer but at lower total energy cost. Moreover, LED-LCD TVs are inherently direct-current (DC)-powered devices and therefore well suited for use with off-grid solar home systems. We estimate that DC-powered energy-efficient LED-LCD TVs can decrease the retail purchase price of solar home systems by about 25% by allowing use of 50% smaller photovoltaics and battery capacities than would be needed for the same energy system to power a standard LED-LCD TV. We recommend that policies such as awards, bulk procurement, incentives, and energy labels be considered to facilitate the adoption of these energy-efficient TVs in off-grid settings.

### Keywords

DC Television; TV Energy Efficiency; Electricity Access; Off-Grid Electricity Service; Cost-Benefit Analysis

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### Abbreviations

A                      ampere

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