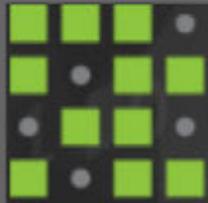




NREL/PR-6A20-62800

NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.



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# THE GREEN GRID FORUM

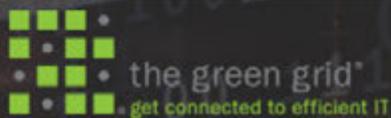
## 2014

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



*Leading clean  
energy innovation*

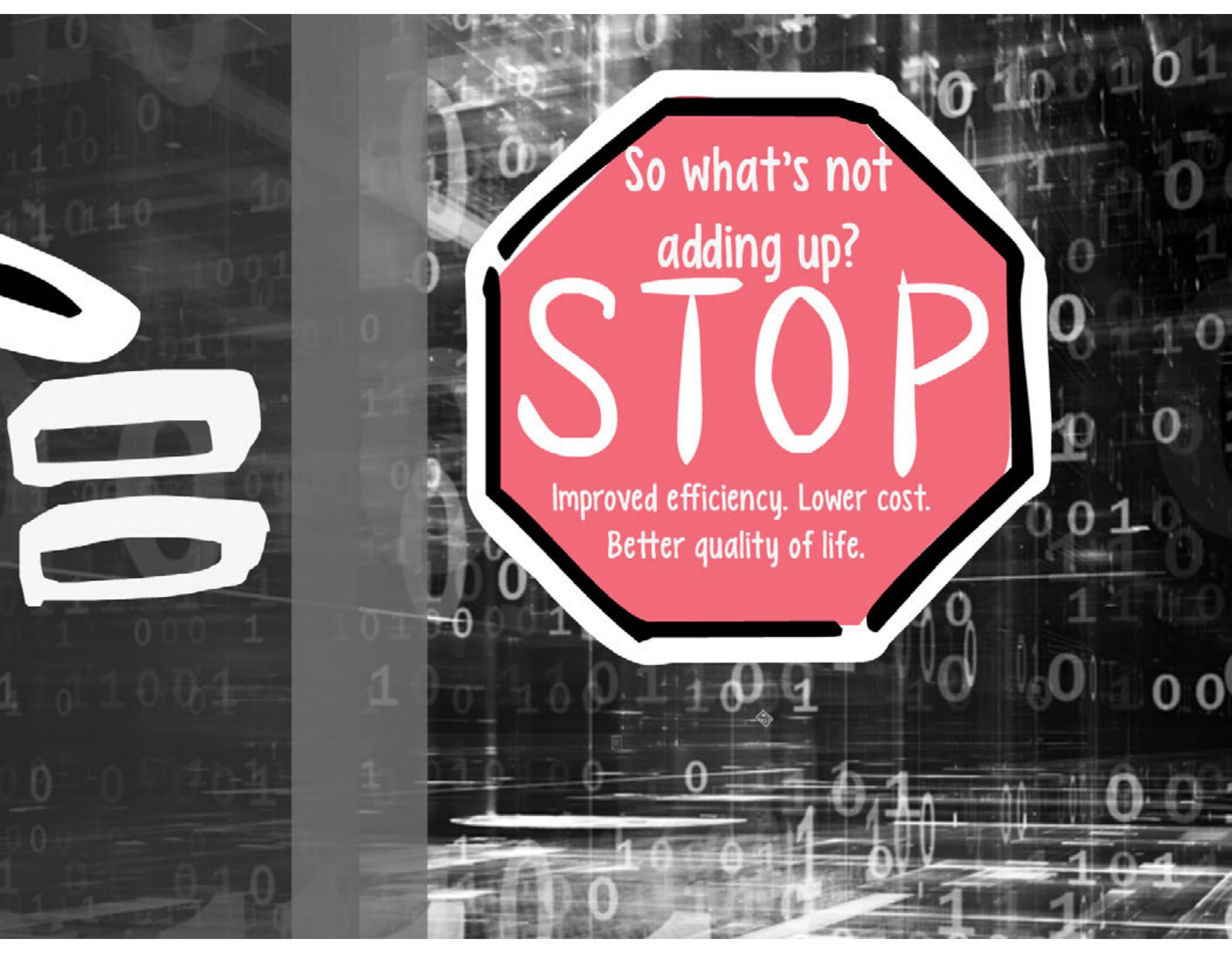
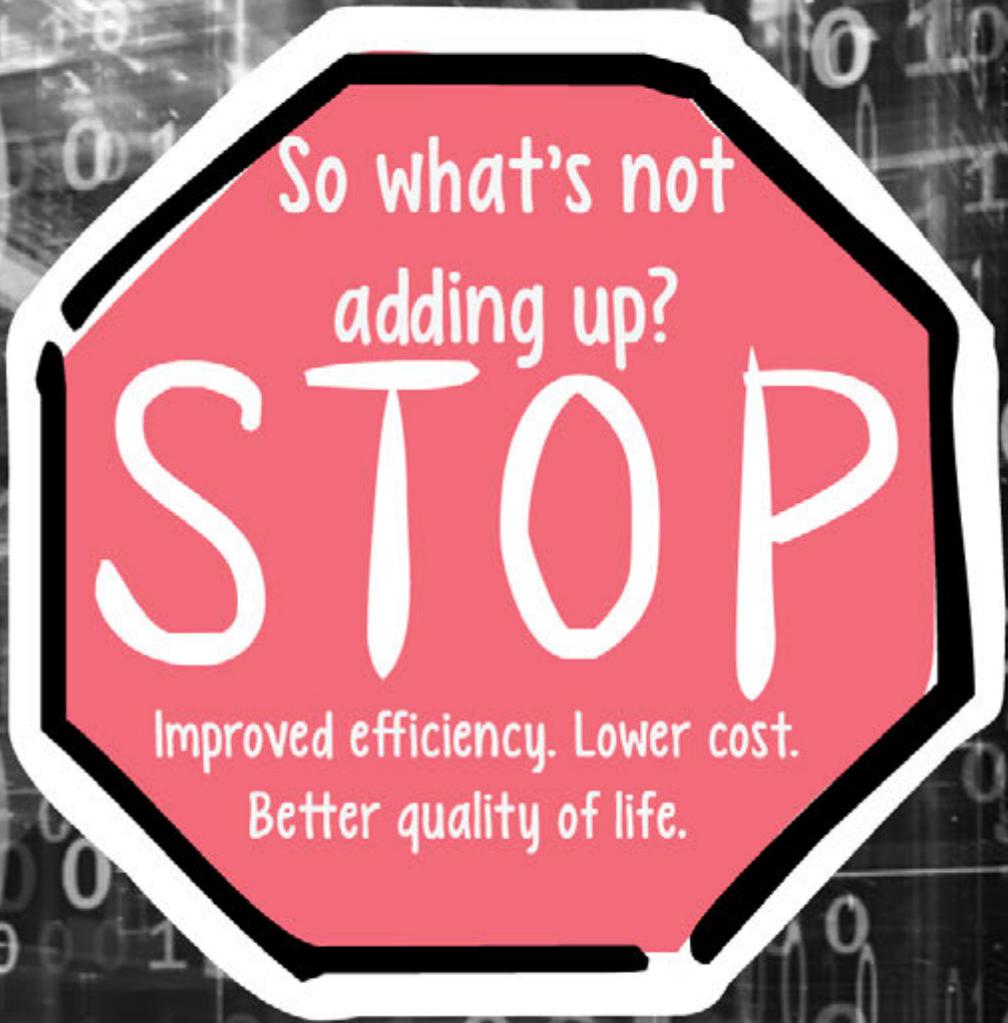
U.S. DEPARTMENT OF  
**ENERGY**



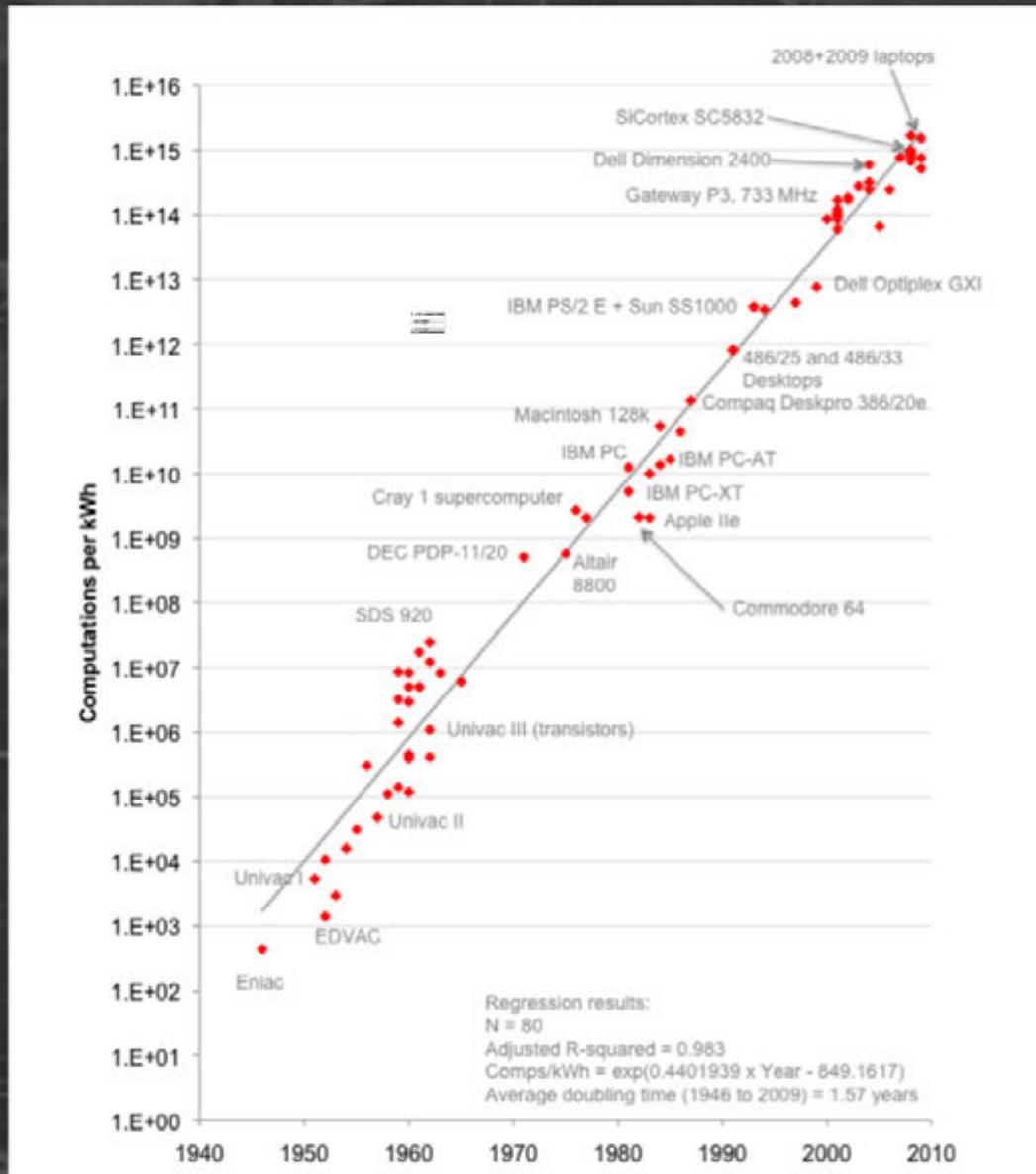
# INFORMATION. COMMUNICATION. TECHNOLOGY. ICT's Energy System Formula



0000

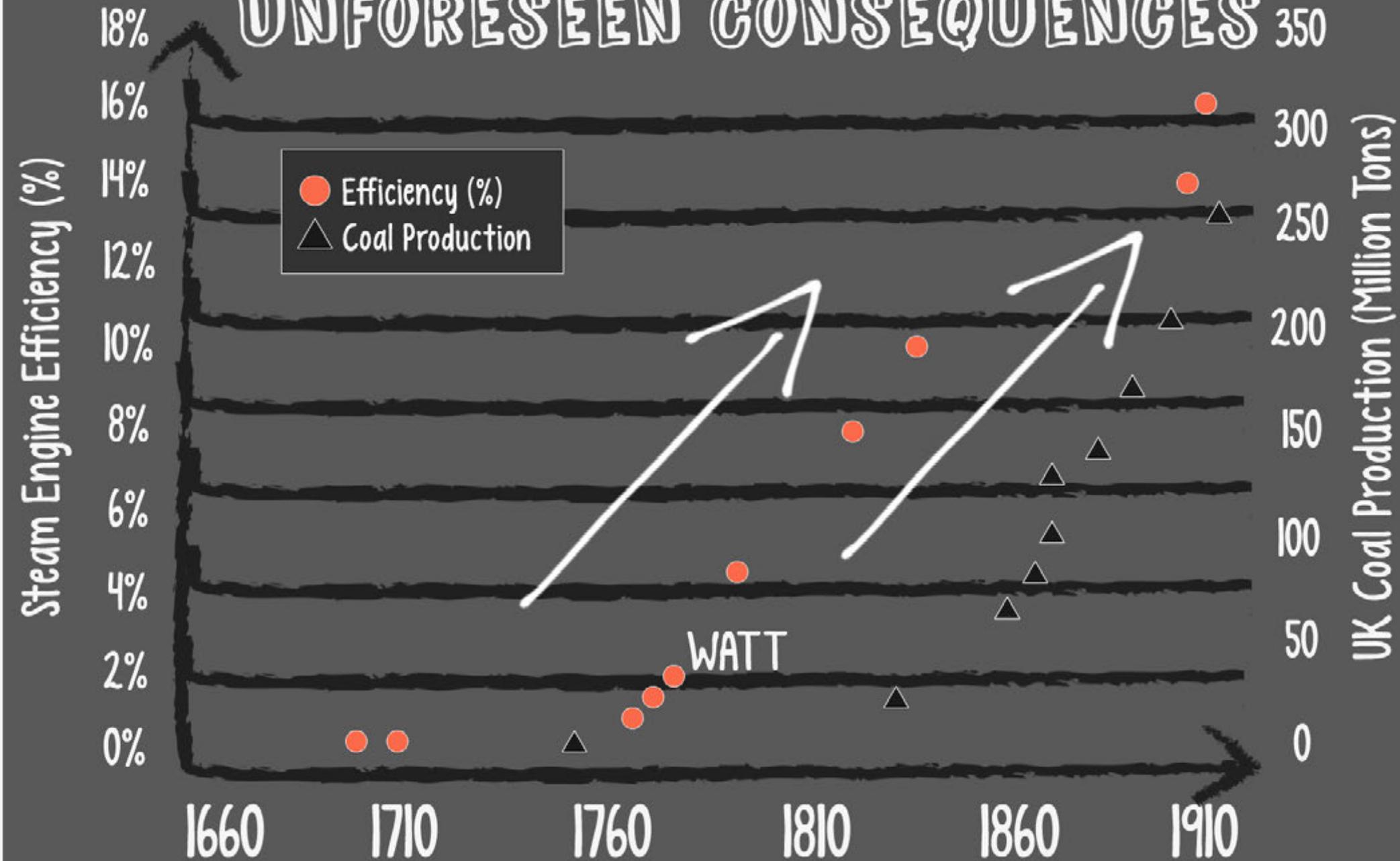


# Computing Efficiency Trends



Koomey, J. (2010). "Assessing trends in the electrical efficiency of computation over time."  
Accessed August 2014: <https://www.llnl.gov/news/aroundthelab/2010/Nov/attach/koomeyoncomputingtrends-v5.pdf>.

# UNFORESEEN CONSEQUENCES



In a perfect world...

What's OUR role in a cleaner energy future?

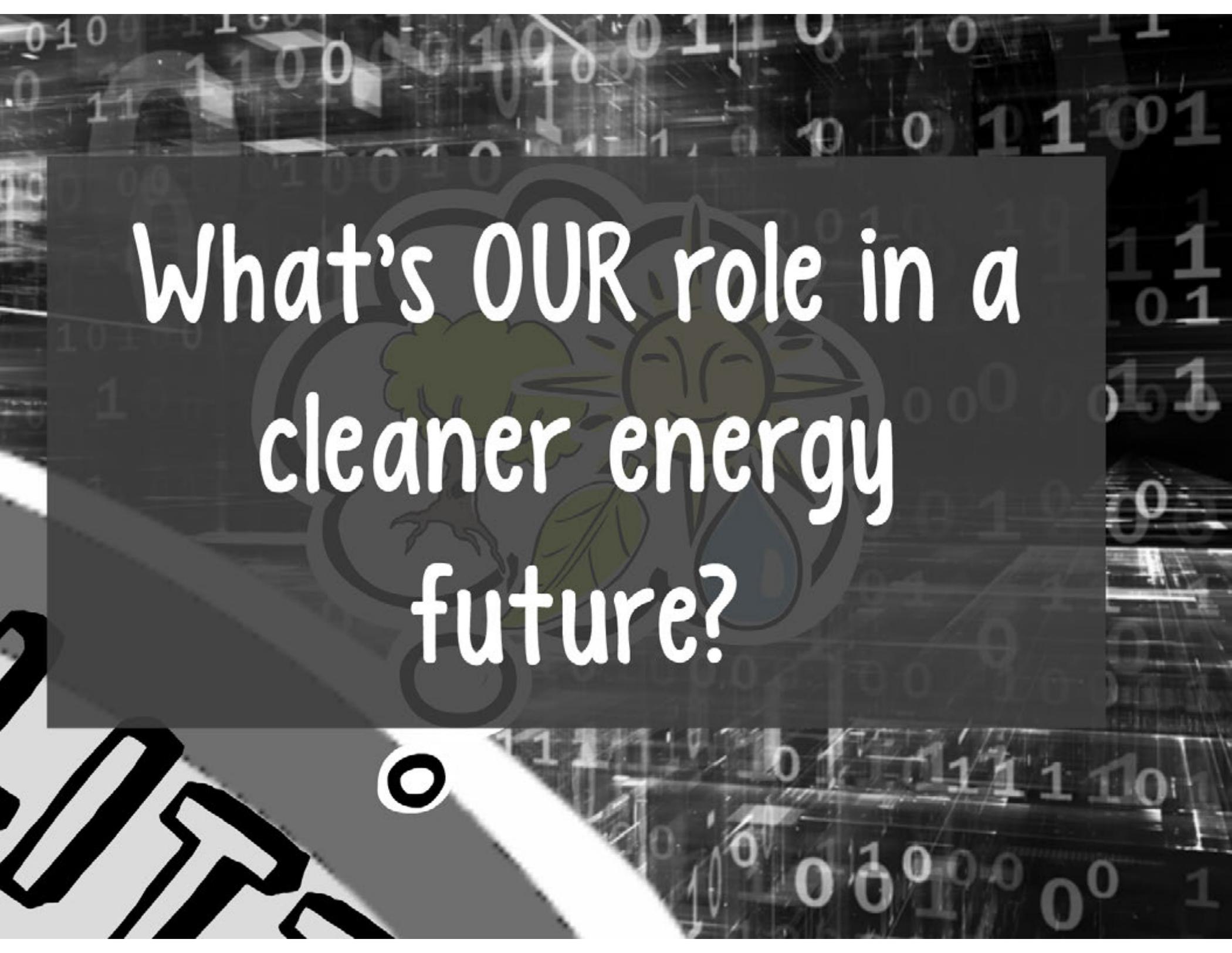
**ADDITIONAL**

Short-term contracts

PROFITABLE

LITTLE TO NO PREMIUM

RELIABLE PERMANENT LOCAL



What's OUR role in a  
cleaner energy  
future?



# THE PLAYBOOK

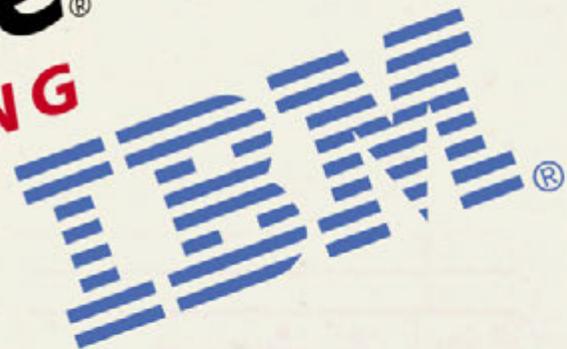
An NREL Guide to Individualizing ICT Energy Strategy

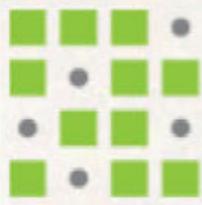
# What are our motivations?





# A CORPORATE CULTURE OF SUSTAINABILITY





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# PROVIDING A RENEWABLE ENERGY TESTBED



# Microsoft



# MASTERING DATA CENTER

## OPERATIONS



facebook®

ebay™



the green grid®

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**COST COMPETITIVE ON-SITE**

**RENEWABLE ENERGY**



**verizon**wireless

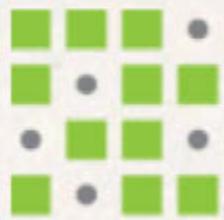


**CREATIVE GREEN POWER**

**ACQUISITION**



**Google**



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# PARTNERING WITH UTILITIES



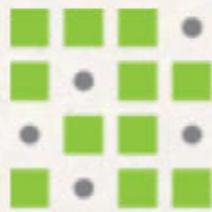
WORLD  
RESOURCES  
INSTITUTE



# INNOVATION AT COLOCATION FACILITIES

Industry Spotlight

salesforce



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ICT RENEWABLE ENERGY

ENABLERS

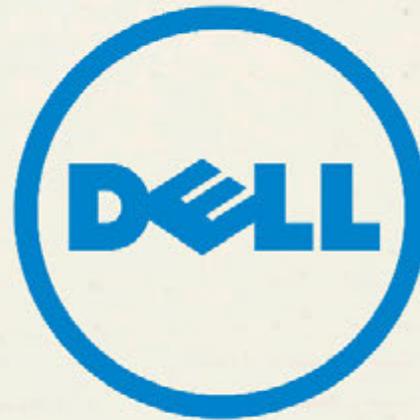


Schneider  
Electric



# DEVICE USE AND PRODUCT EFFICIENCY

Industry Spotlight





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# INTEGRATING RENEWABLES IN SUPPLY CHAIN



**CISCO**™



# TRANSFORMING THE INDUSTRY THROUGH SECONDARY IMPACT

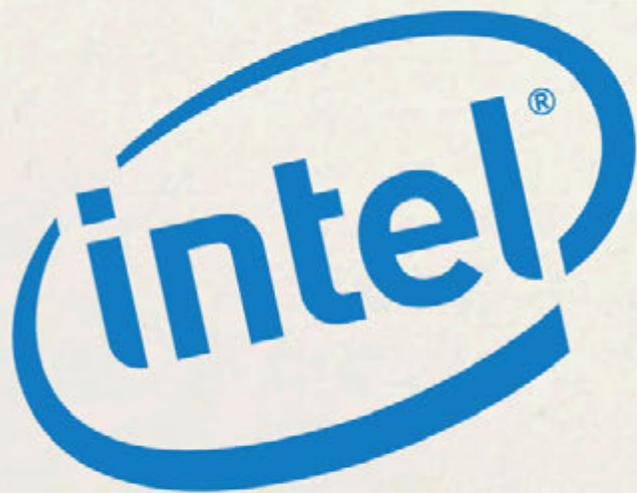
Industry Spotlight



**AUTO DESK**



# BENEFITS OF ALL-STAR ENERGY TRANSPARENCY



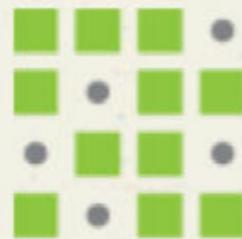


NATIONAL RENEWABLE ENERGY LABORATORY

# LEADERS IN KNOWLEDGE SHARING

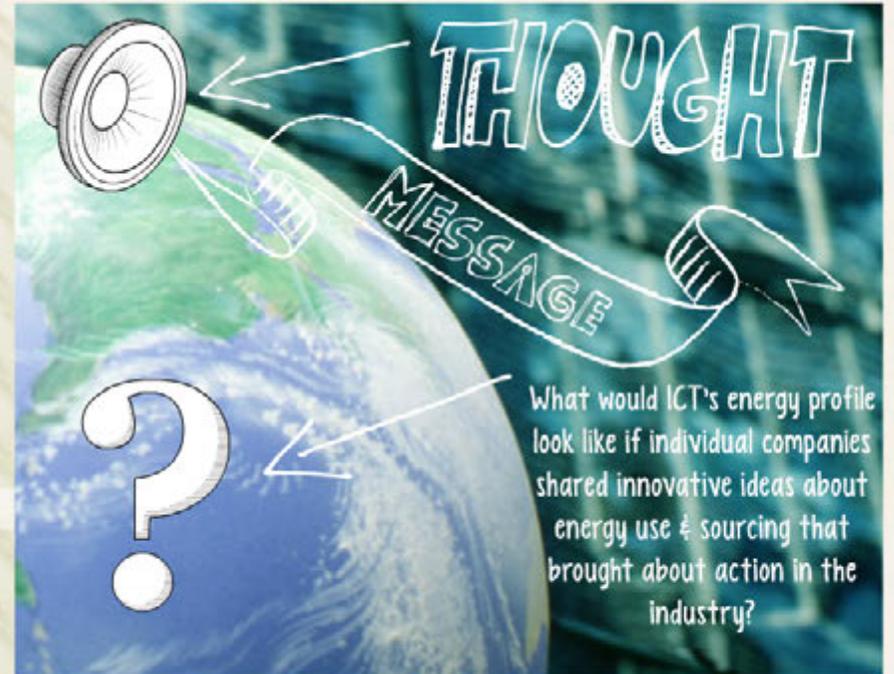
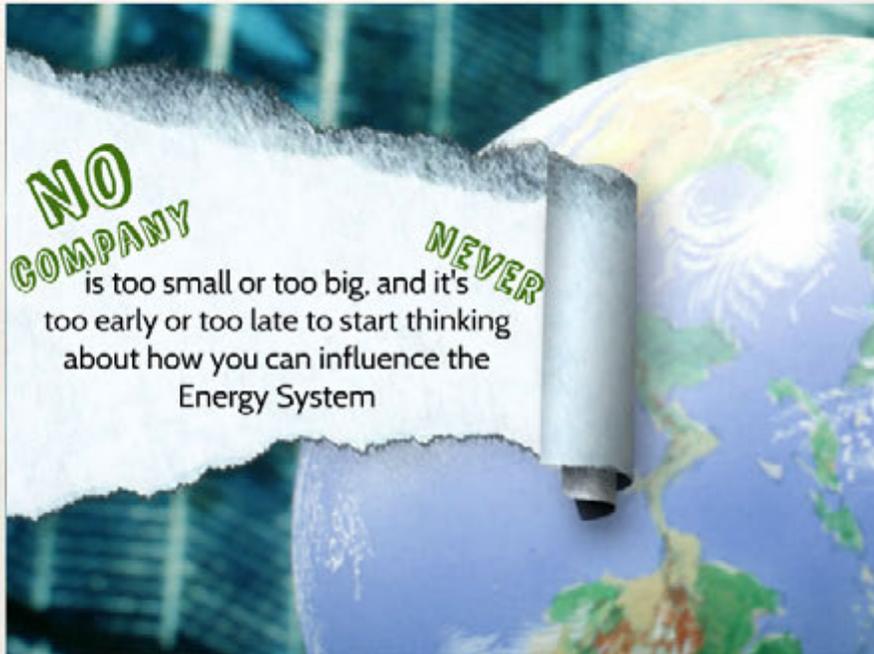


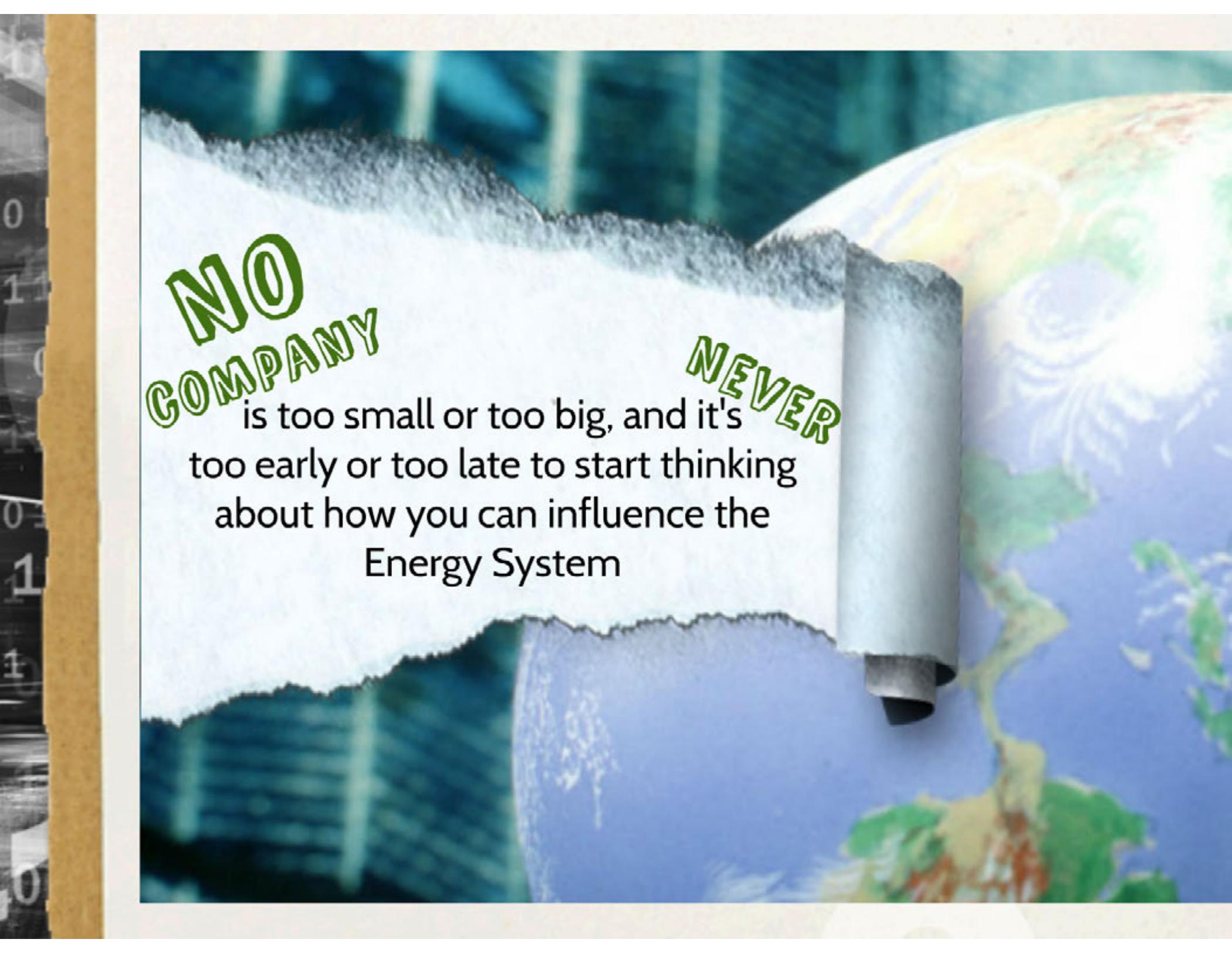
BSR<sup>®</sup>



the green grid<sup>®</sup>

get connected to efficient IT

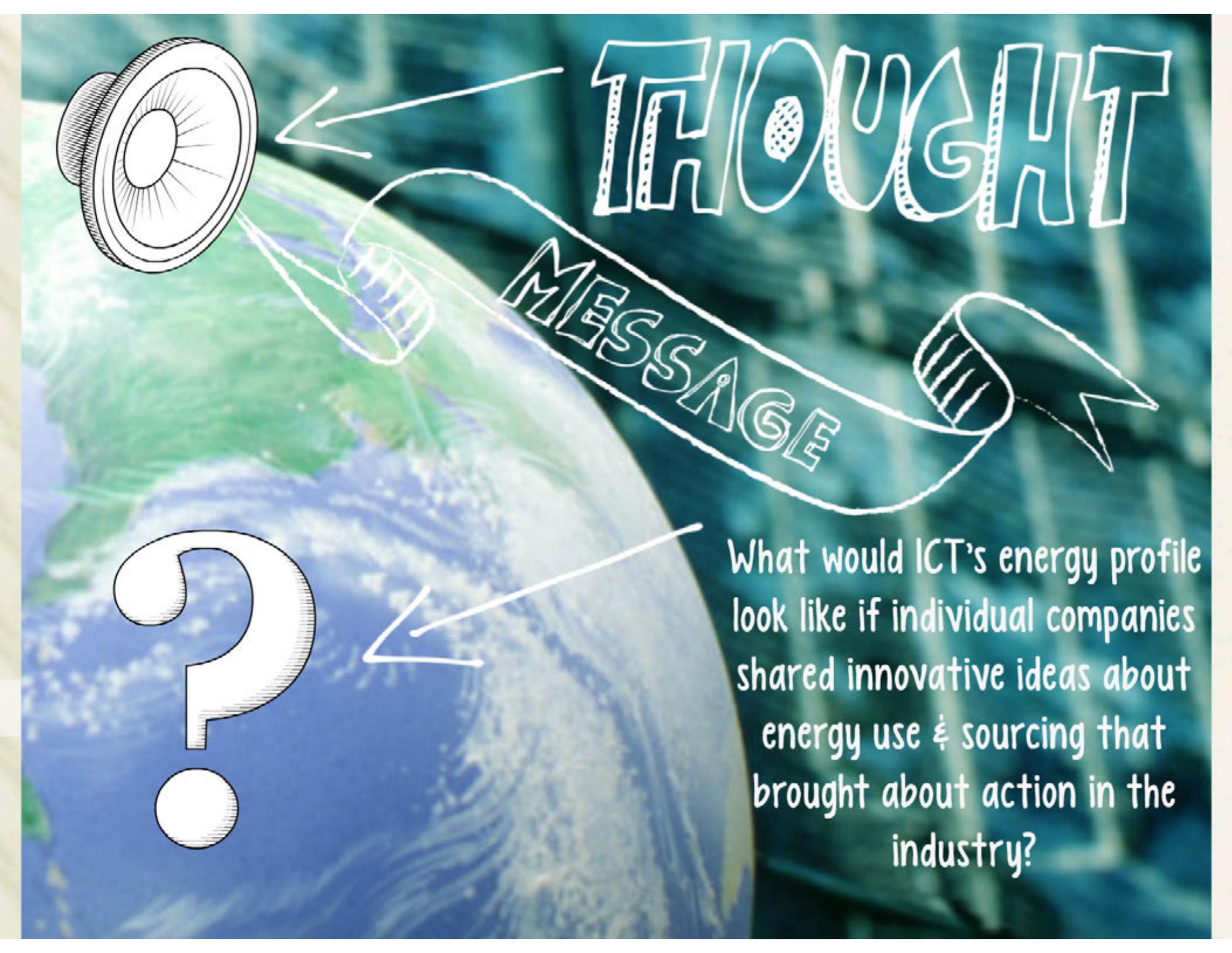


A torn piece of white paper is the central focus, with jagged edges. The paper is set against a background that includes a portion of a globe showing continents and oceans, and a ruler with numbers on the left side. The text on the paper is in a bold, green, sans-serif font.

**NO  
COMPANY**

is too small or too big, and it's  
too early or too late to start thinking  
about how you can influence the  
Energy System

**NEVER**



# THOUGHT

MESSAGE

What would ICT's energy profile look like if individual companies shared innovative ideas about energy use & sourcing that brought about action in the industry?

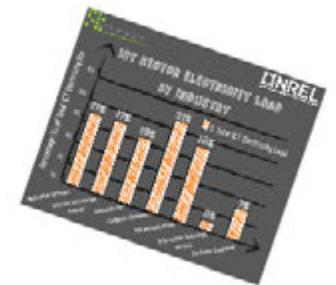
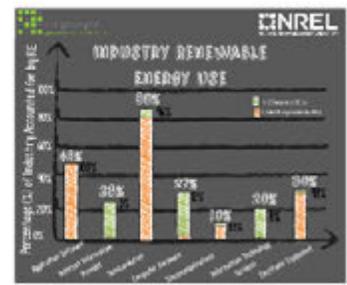
# RENEWABLE ENERGY IMPACT

## ICT SCREENSHOTS

DATA FROM 70 KEY ICT COMPANIES:

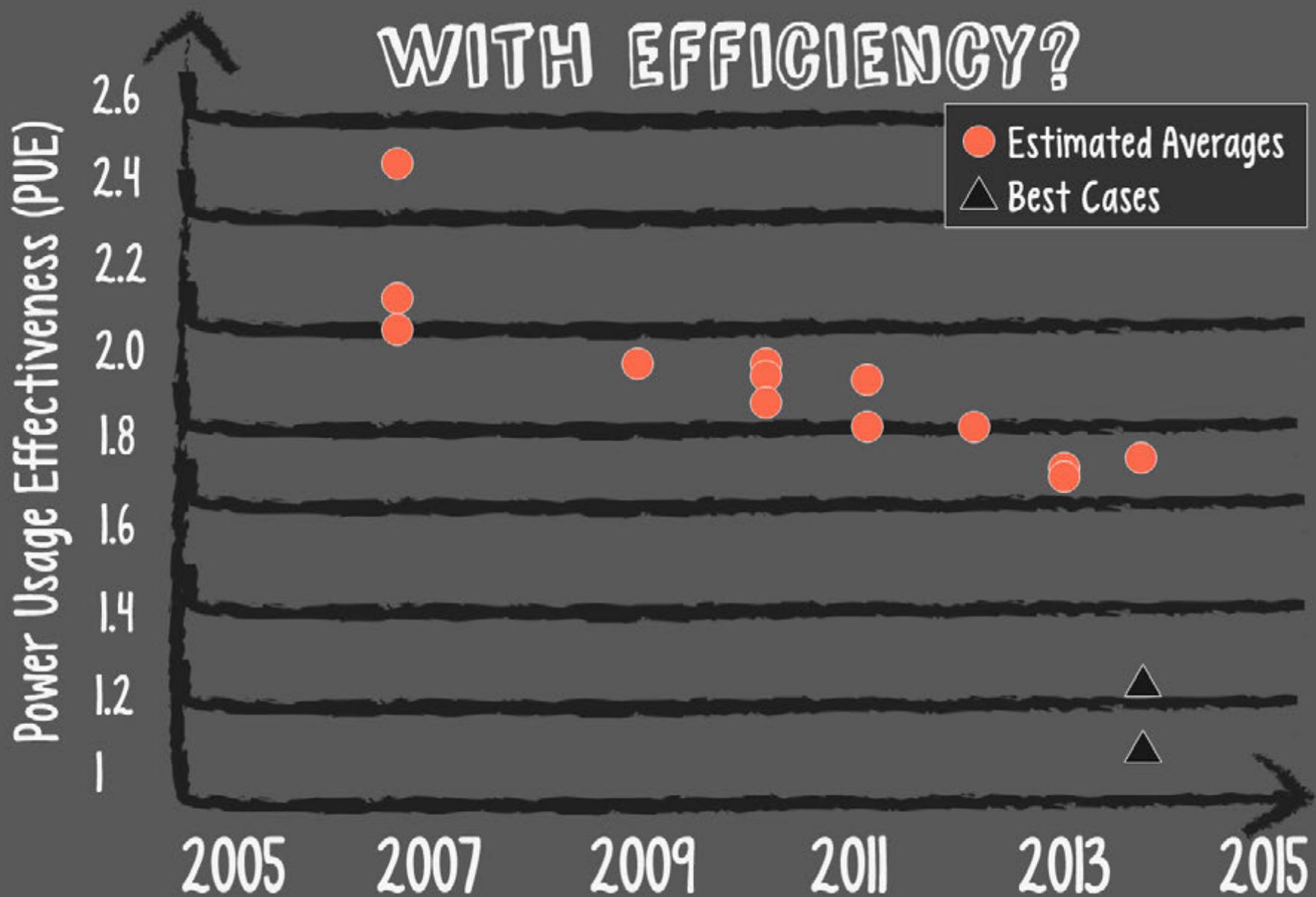


\$1.6 Trillion in revenue (8% of US GDP)  
 23.4 TWh (1% of industry / commercial electricity use)  
 8.3 TWh of renewable energy (36% renewable)



The ICT sector in 2012 was at least 17% of the U.S. voluntary green power market.

# PUE: HOW FAR HAVE WE COME WITH EFFICIENCY?

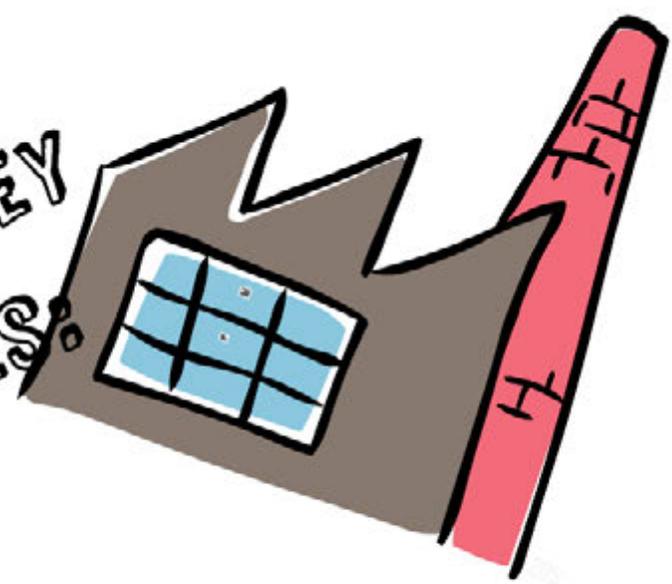


# HOW FAR HAVE WE COME WITH RENEWABLES?



# ICT SCREENS

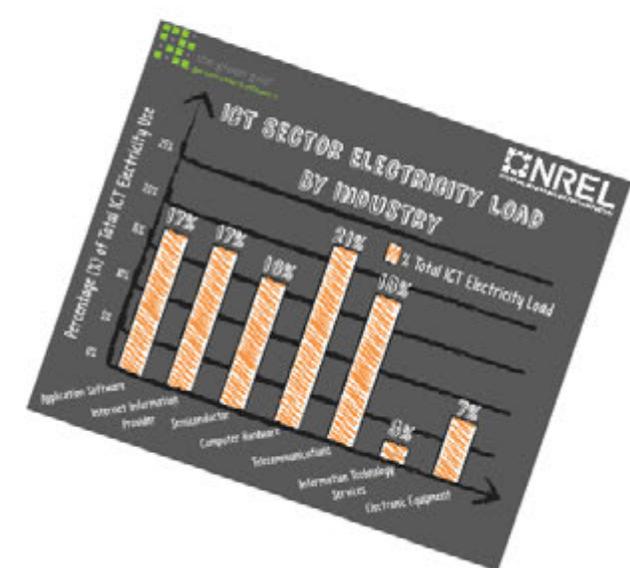
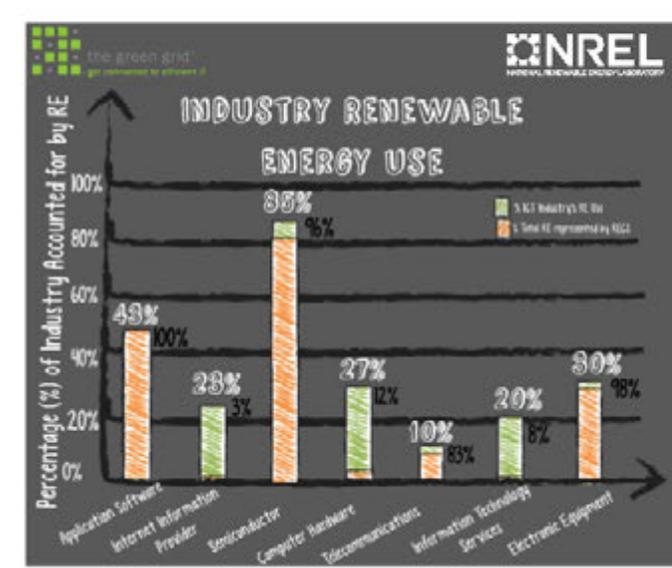
## DATA FROM 70 KEY ICT COMPANIES:



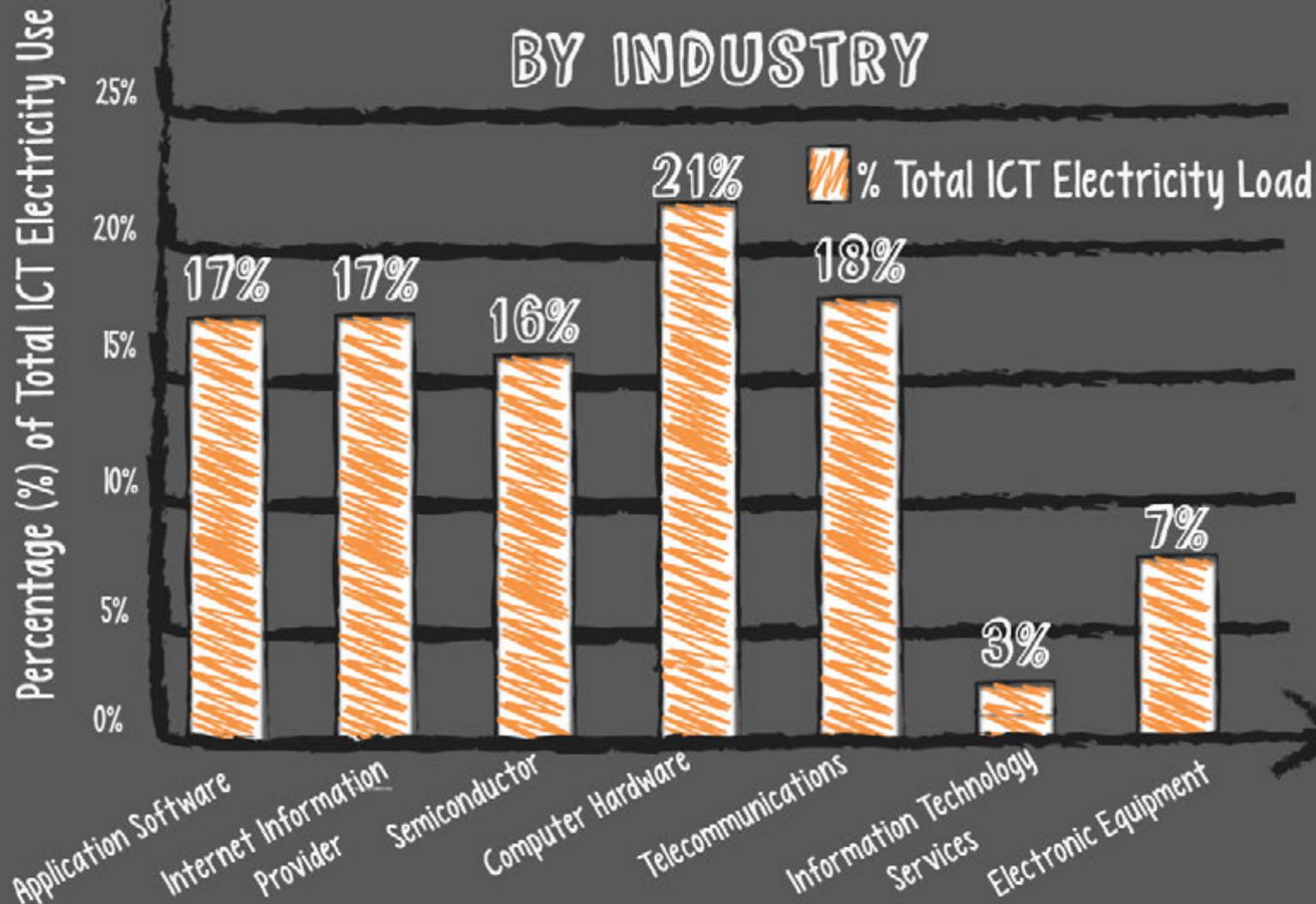
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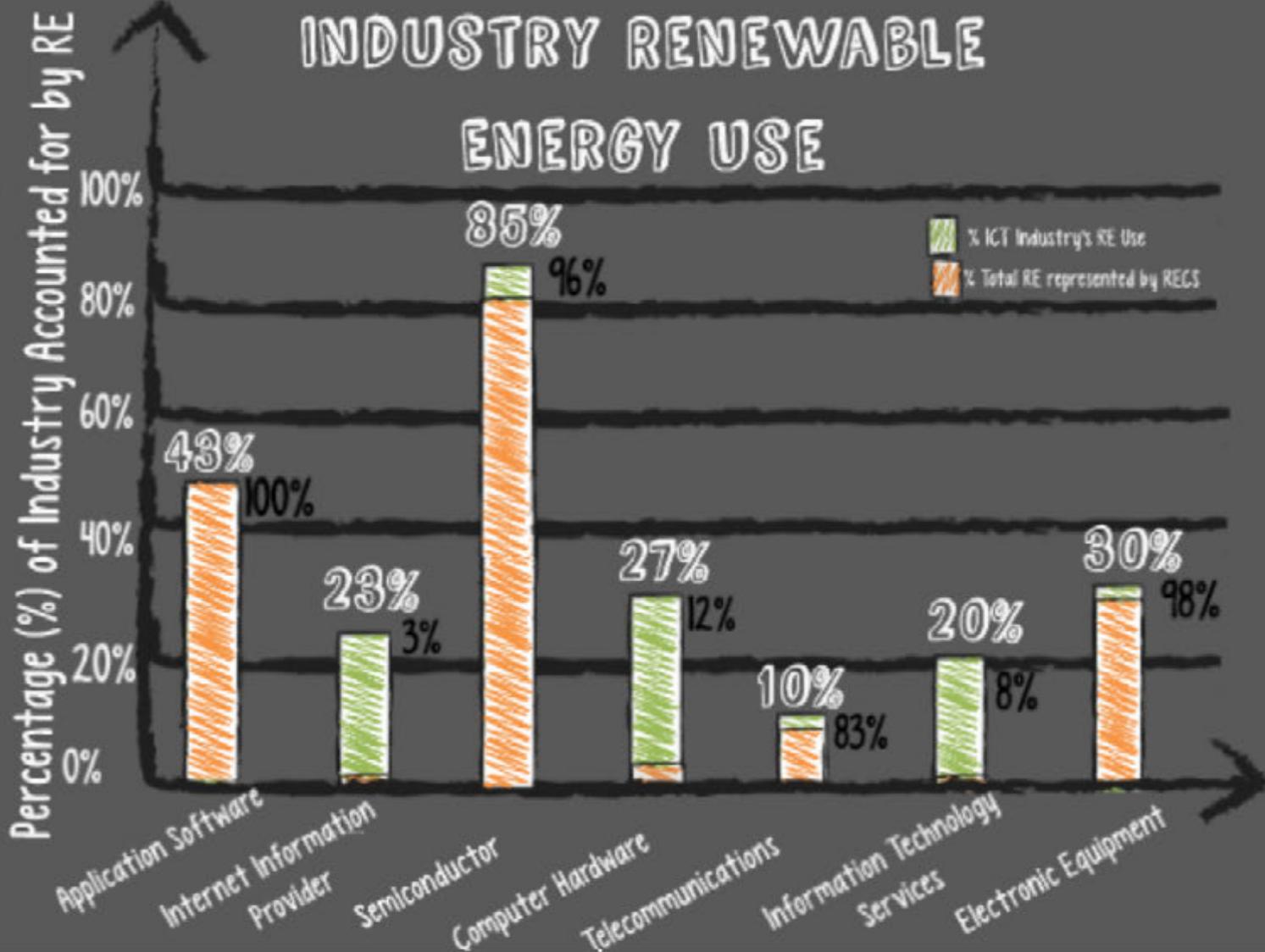
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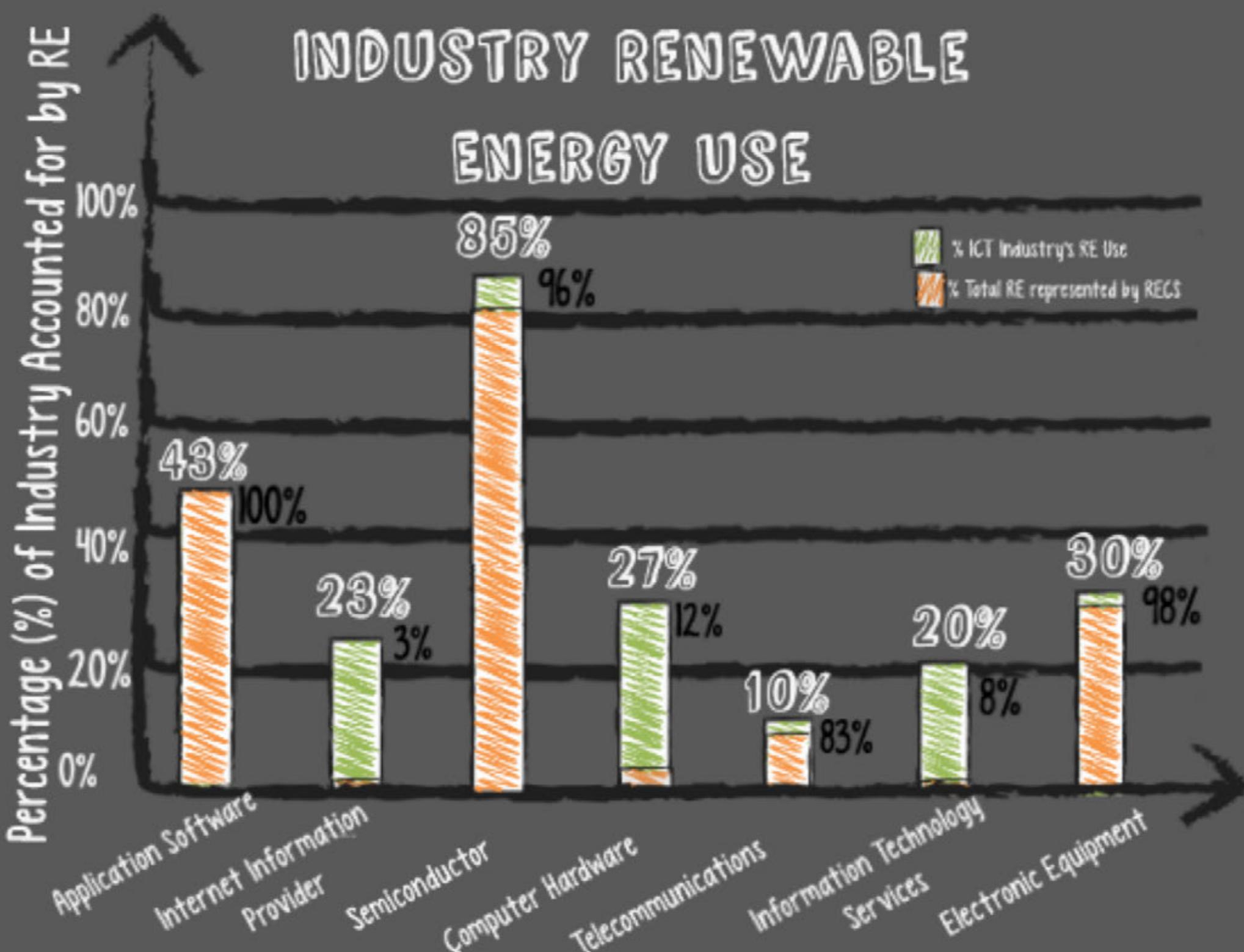
# ICT SECTOR ELECTRICITY LOAD BY INDUSTRY

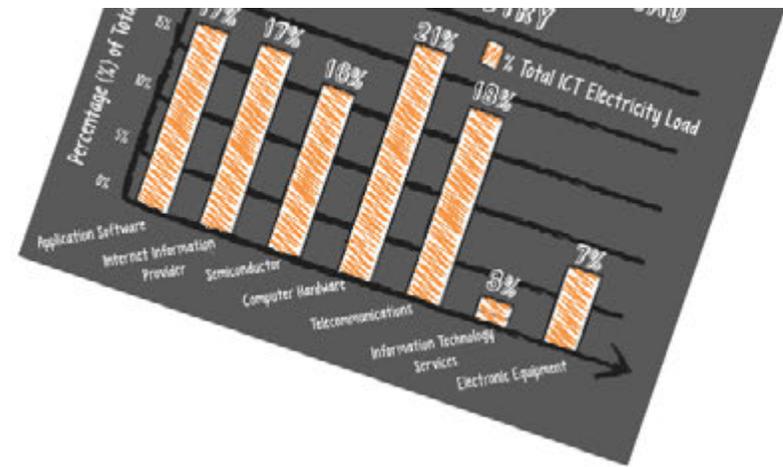
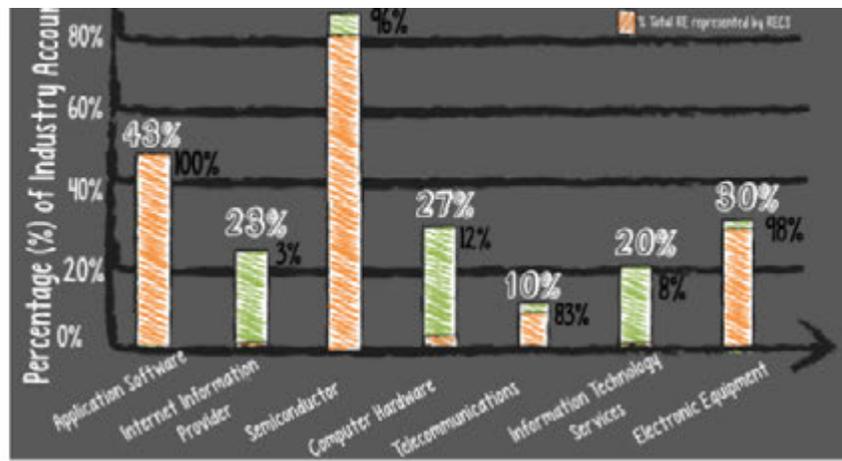




Percentage (%) of T...  
0%  
Application Soft...  
Int...

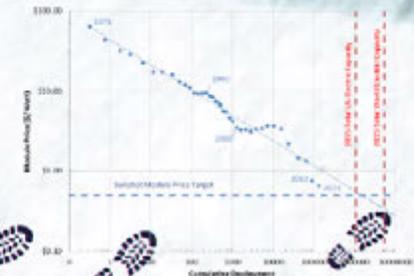
# INDUSTRY RENEWABLE ENERGY USE



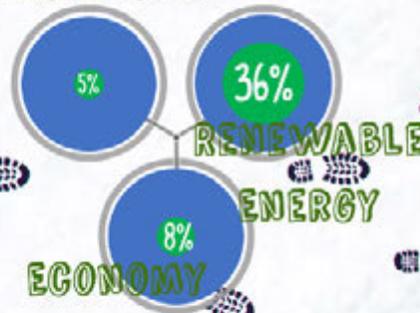


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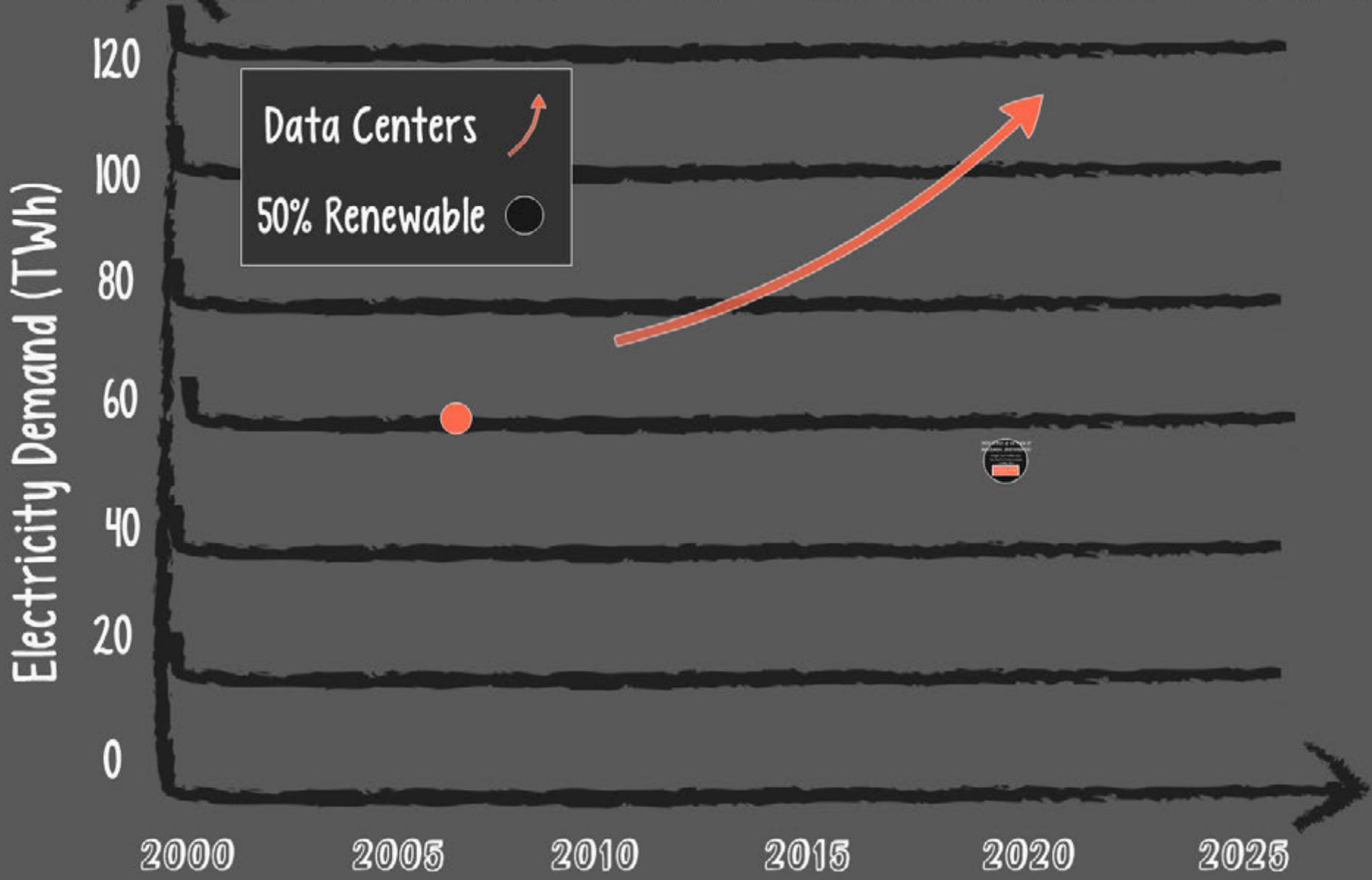
# ICT'S ENERGY FUTURE



ELECTRICITY



# WHAT ARE WE CAPABLE OF?

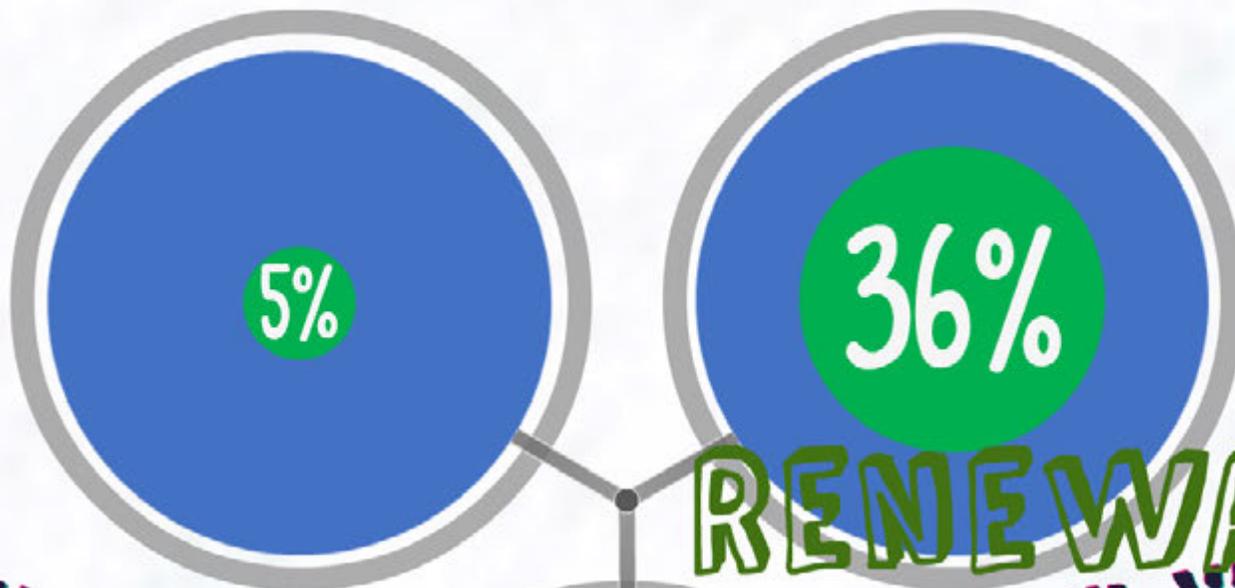


# HOW MUCH IS 54 TWH OF ADDITIONAL RENEWABLES?

Enough to Power 4.7 Million Homes  
More than 10% of today's renewables  
(including hydro)

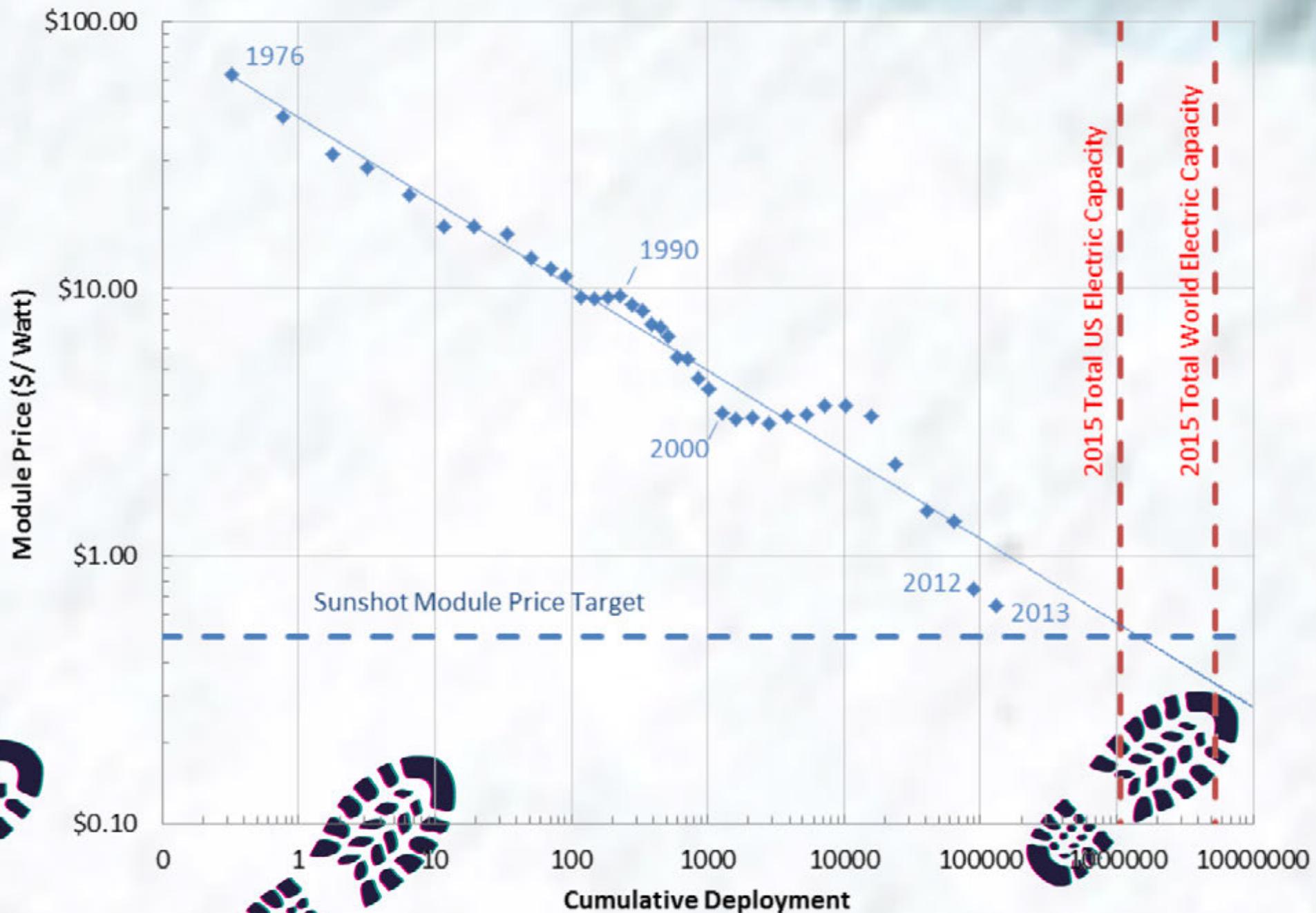
The Energy Information Administration  
projects 101 TWh additional renewable  
electricity added between 2014 and 2020

# ELECTRICITY



RENEWABLE  
ENERGY

ECONOMY



**THANK YOU!**  
Stop by NREL and  
BSR tables at  
lunch to join the  
conversation.

