

Emerging Technology: Testing and Transforming

ACEEE Market Transformation Conference

4/21/15

Washington D.C.

Jennifer Williamson

Bonneville Power Administration (Contractor)



Agenda

- The Role of Emerging Technologies in MT
- BPA Emerging Technologies Strategy
 - Heat Pump Water Heaters
 - LEDs

BPA and the Federal Columbia River Power System

- BPA markets electric power to 140+ customers, mostly public utilities
- Wholesale – no direct access to retail customer utility metering
- BPA acquires cost-effective energy conservation



Energy Efficiency Emerging Technology Research

R&D

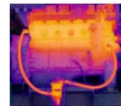
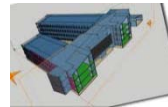
Commercially Available Products

Concept

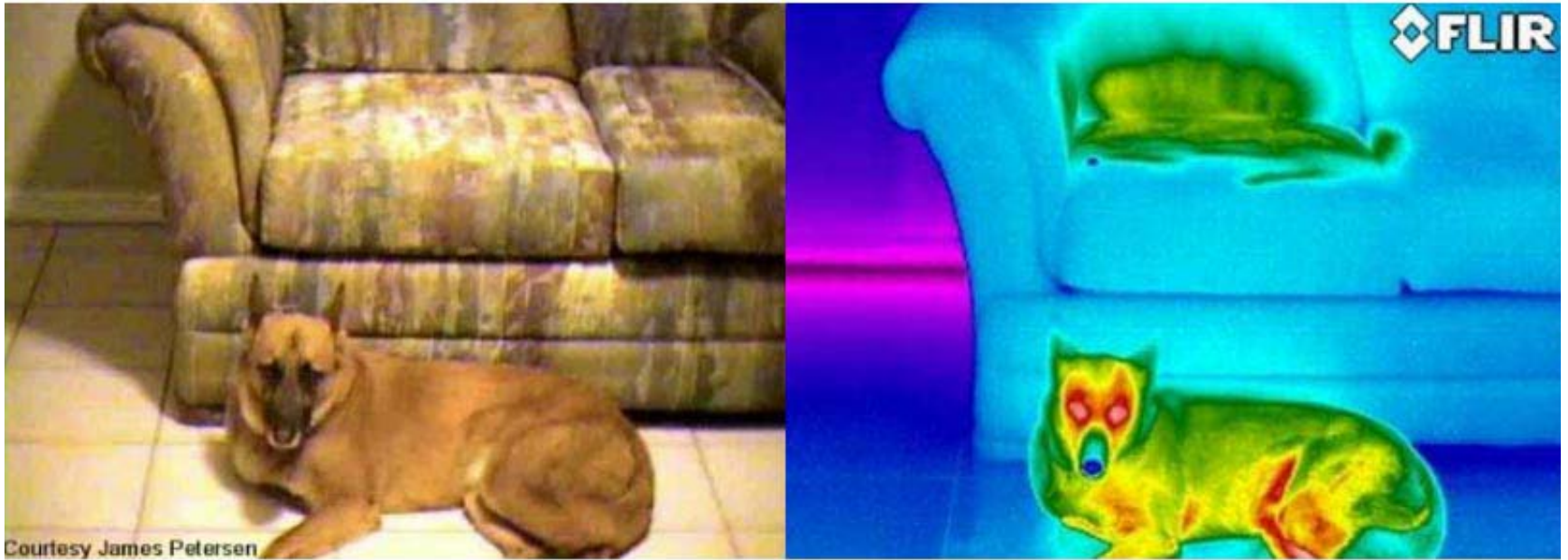
Lab/ Field testing

Pilot and Programs

Potential Savings

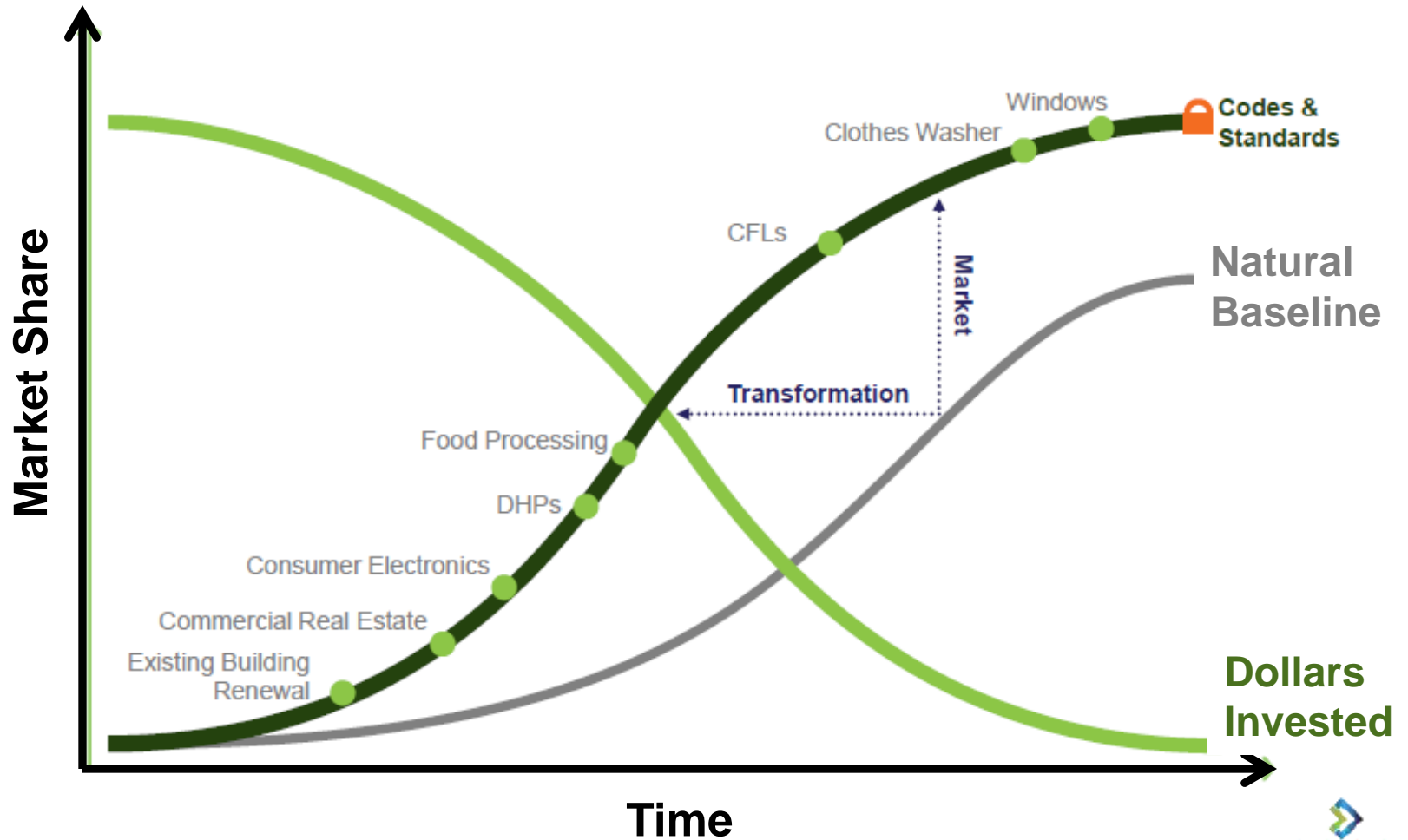


ET - Assessing

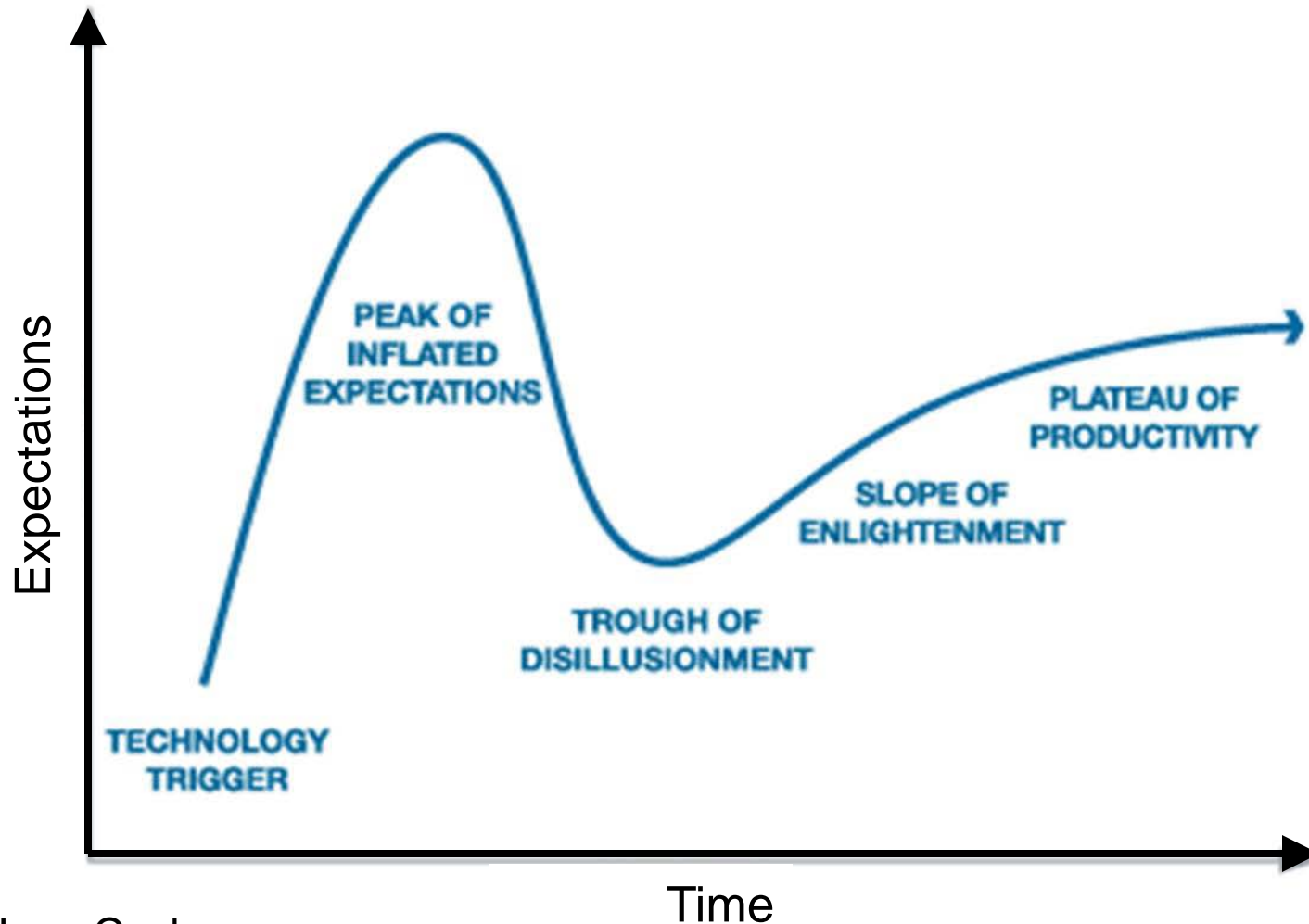


Busted!!
No, really I never go on the couch

ET and MT Impact -- Earlier and More



ET – Scanning for the Right Technologies at the Right Time



Household Electronics



300
Watts

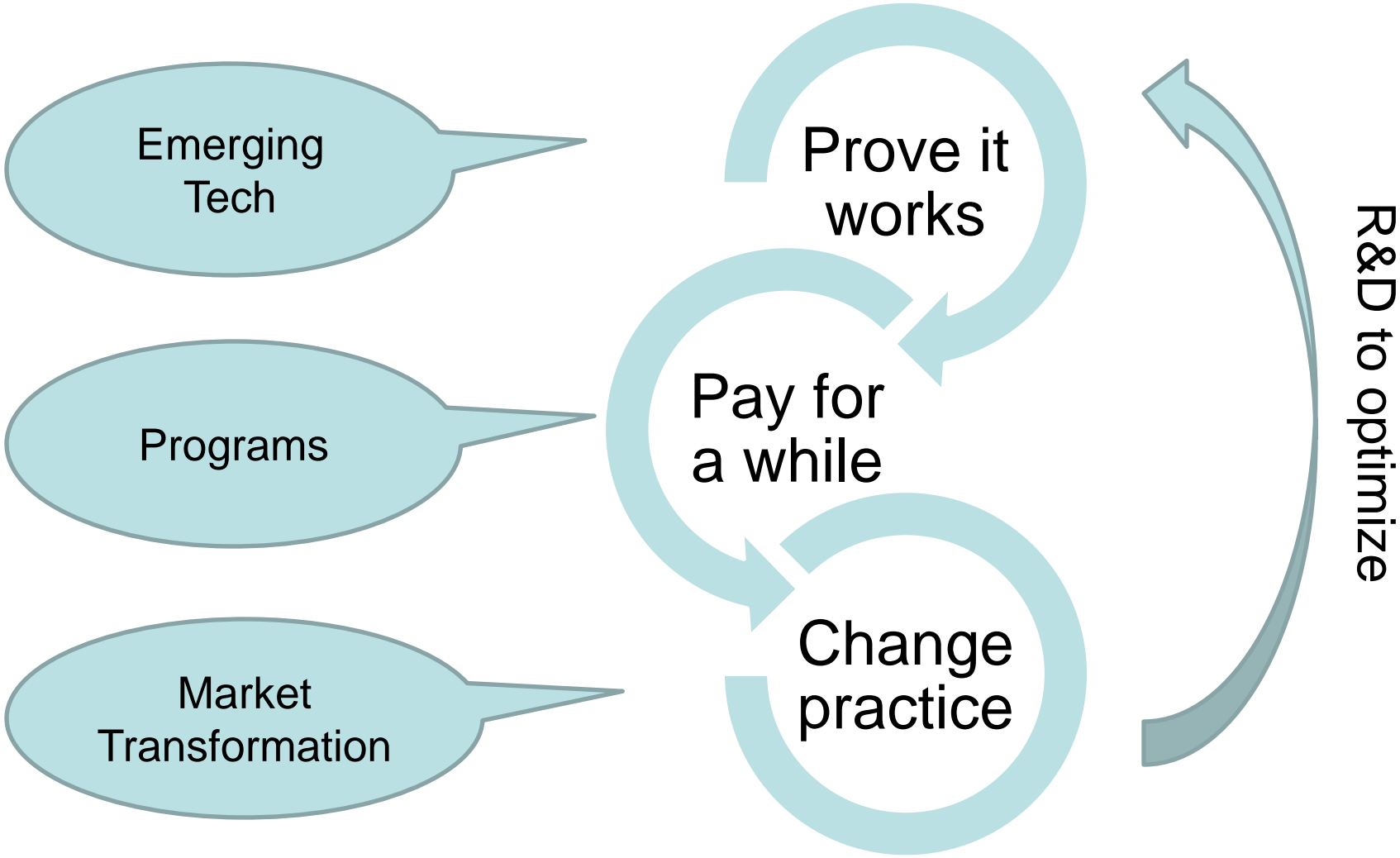


30



3

ET Collaboration for Large Scale Impact



ET Examples



Split system

- 84 gallon tank
- Manufactured in Australia

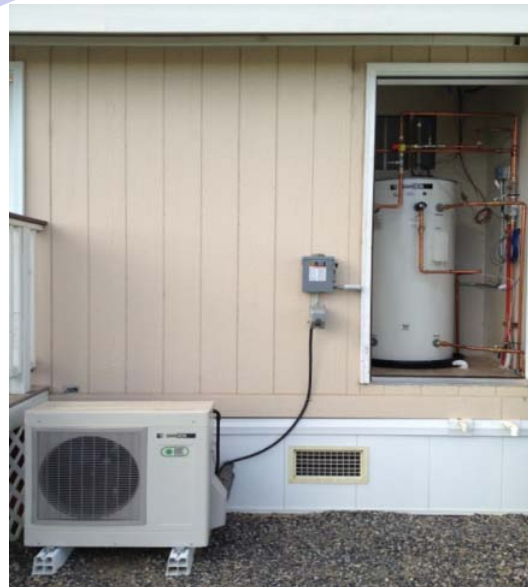
LED's in the Oregon Coast Aquarium



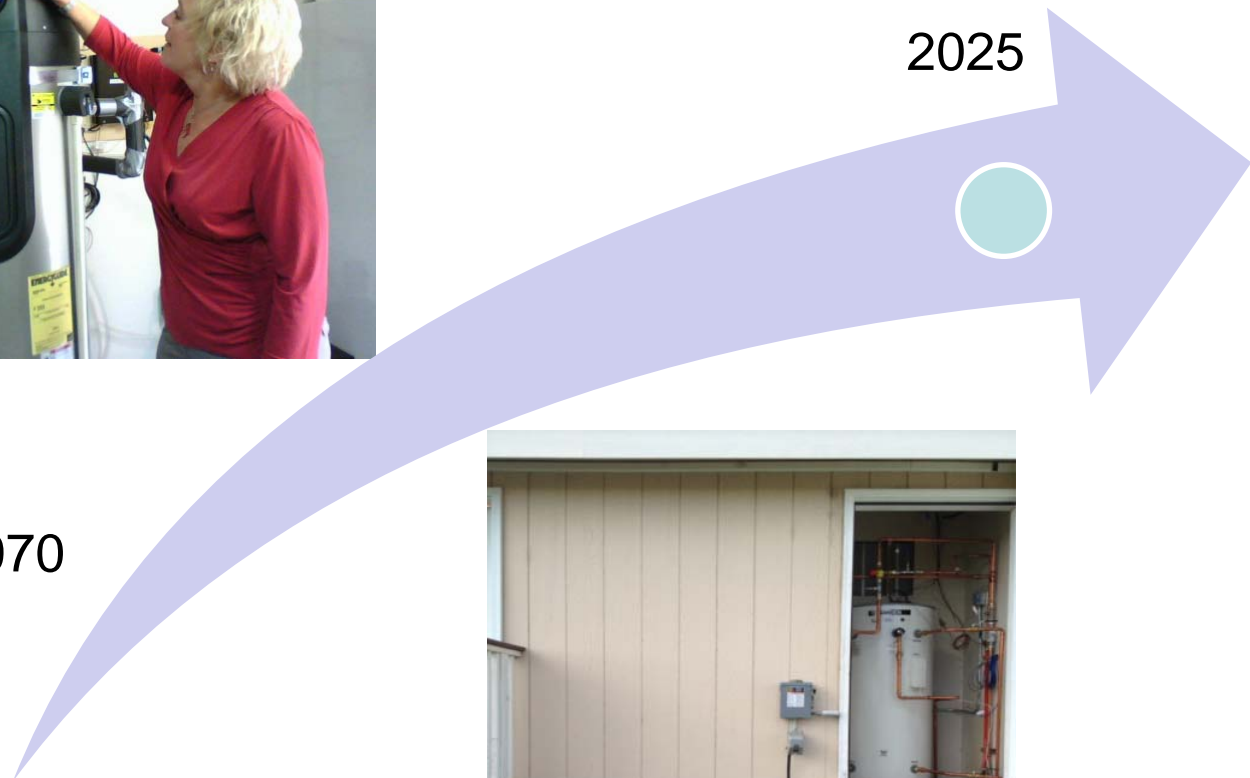
Heat Pump Water Heaters



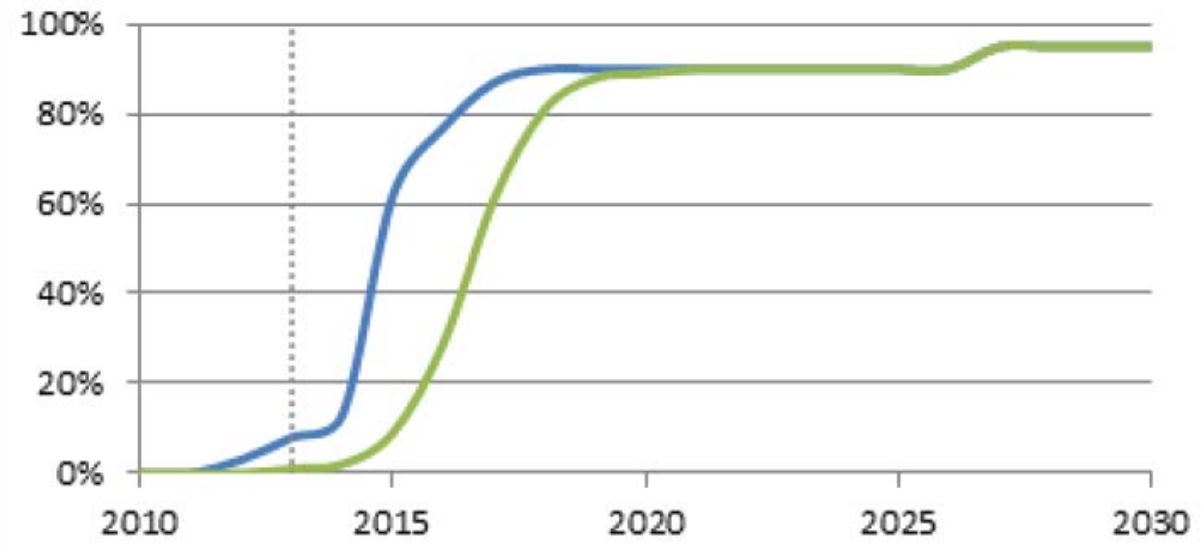
1970



2025

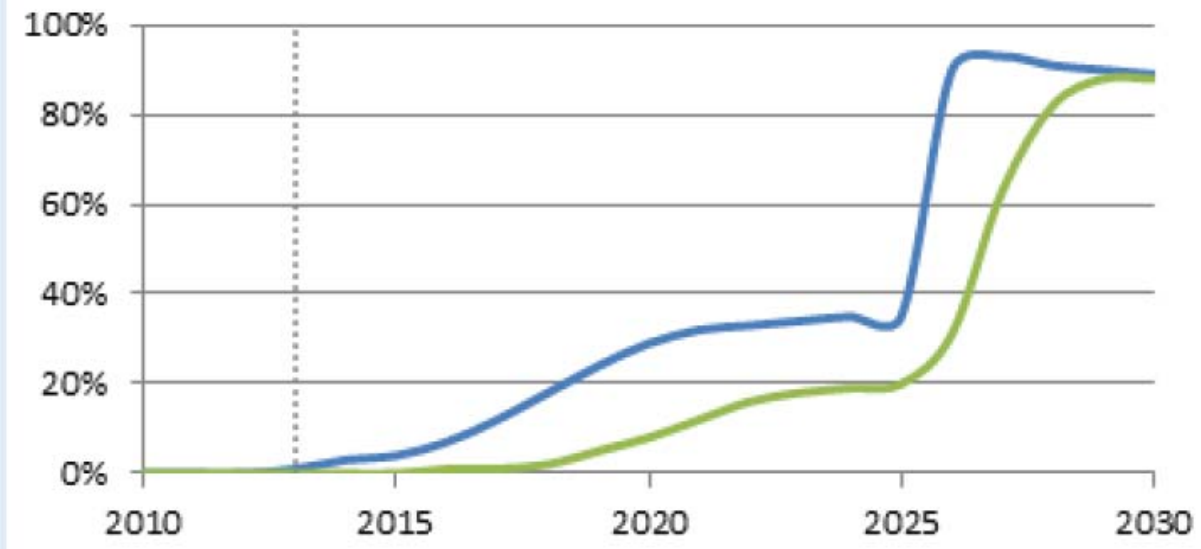


HEAT PUMP WATER HEATERS (LARGE TANKS)

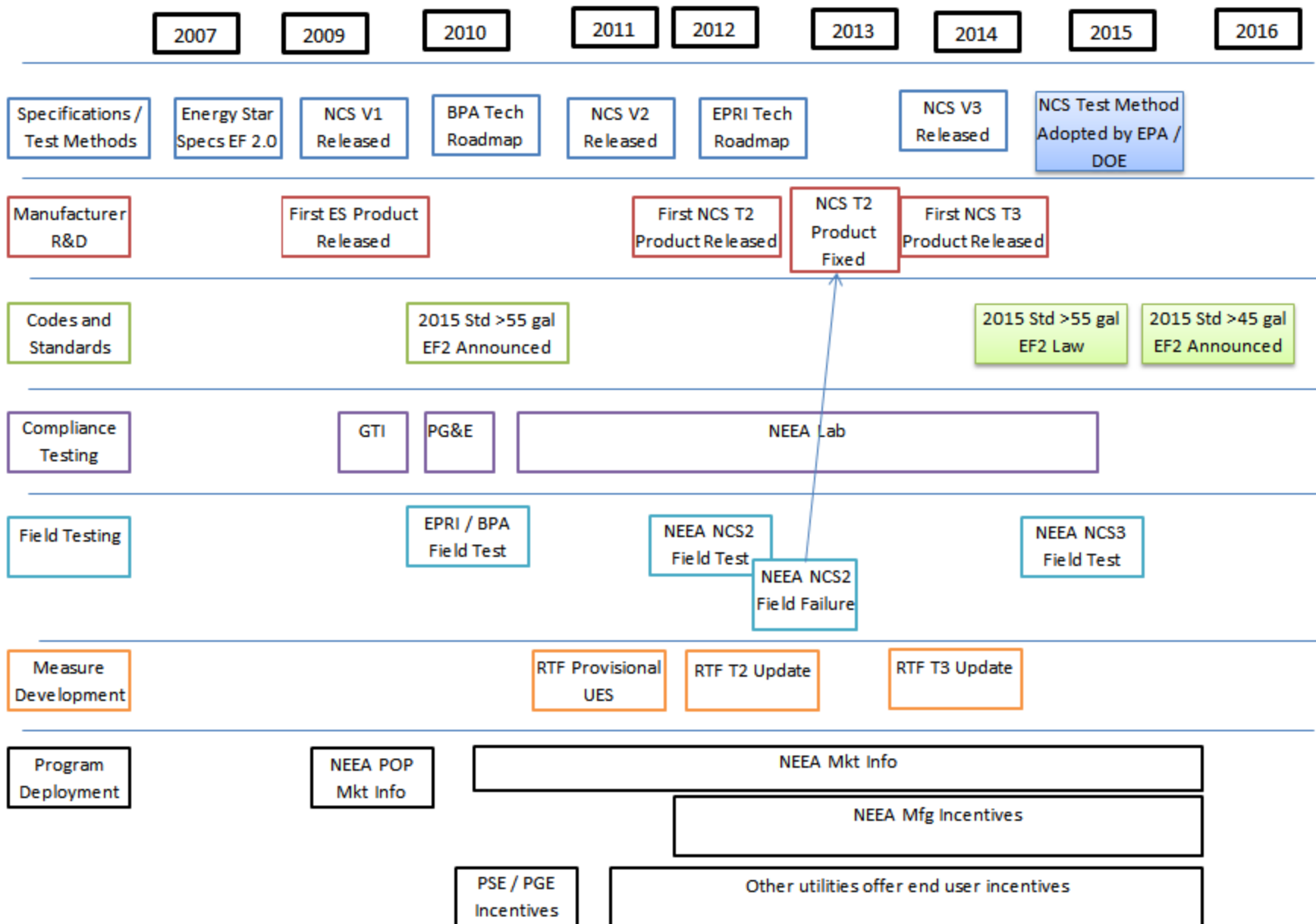


- Market Adoption
- Baseline Market Adoption
- Current Year

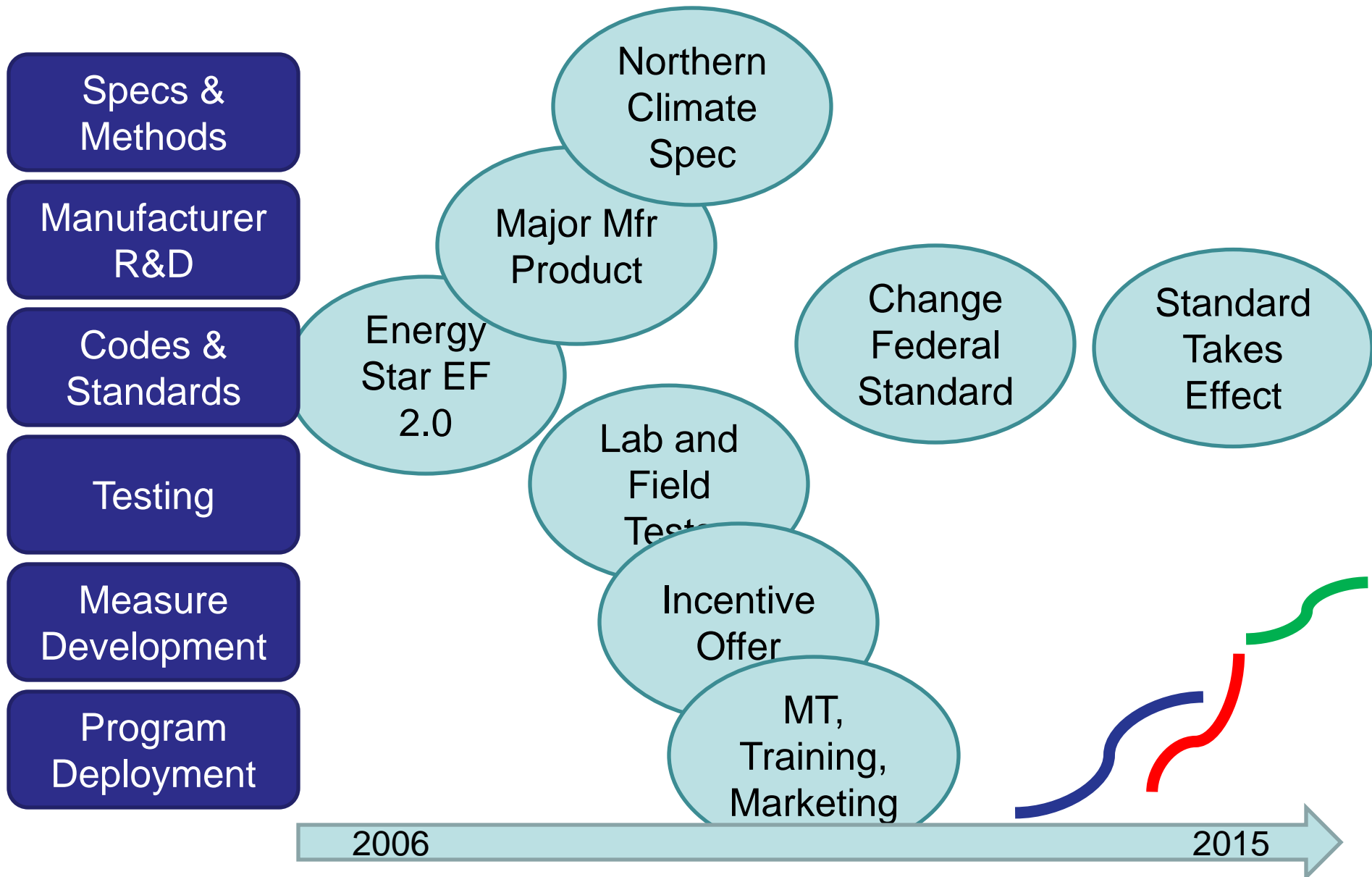
HEAT PUMP WATER HEATERS (SMALL TANKS)



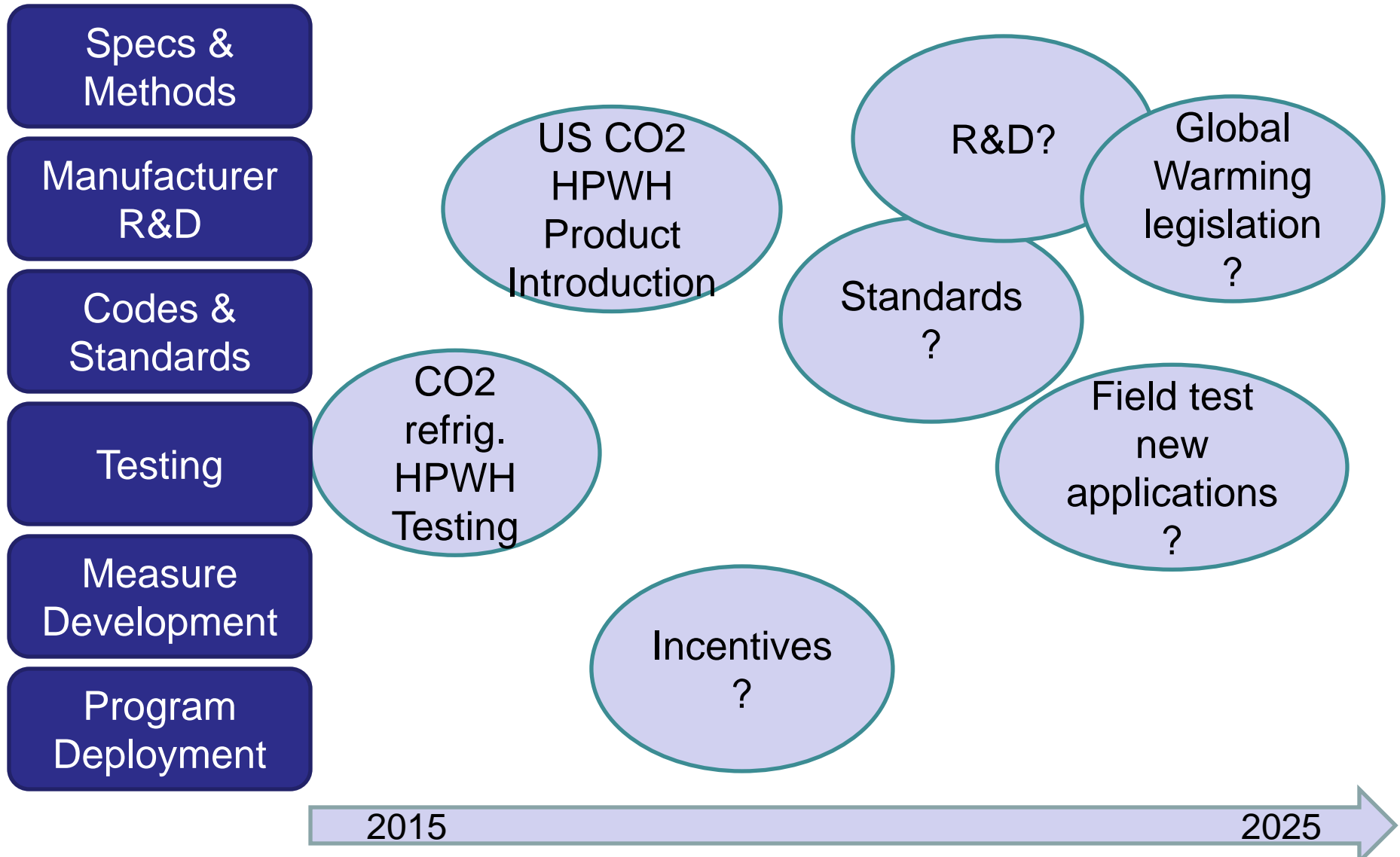
DRAFT RETROSPECTIVE OF HPWH Long Term Strategy In NW – Joint effort of Mark Rehley (NEEA) and Jennifer Williamson (BPA)



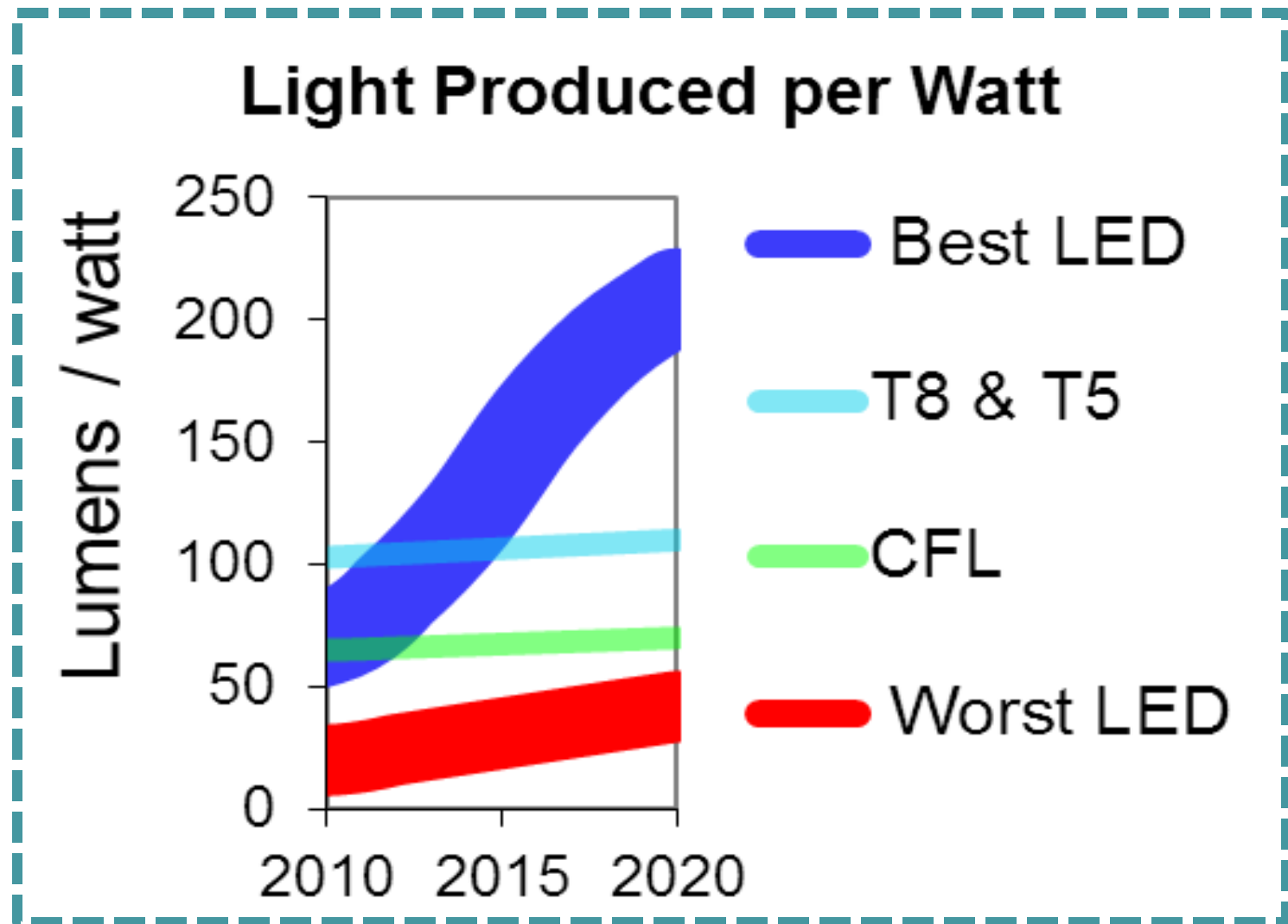
ET Long Term Strategy – To Date



ET Long Term Strategy - Future



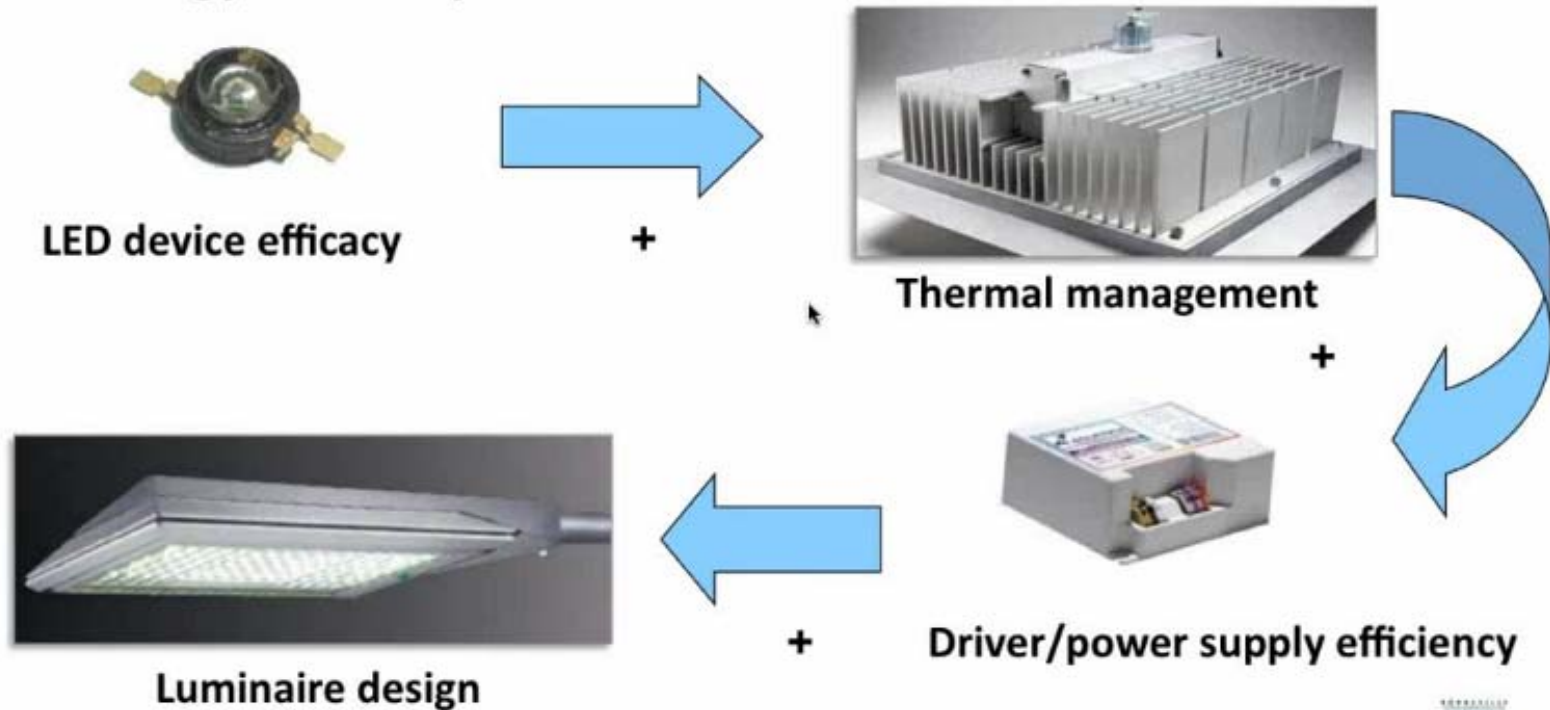
LEDs



LED – Components

LED Luminaire Efficacy

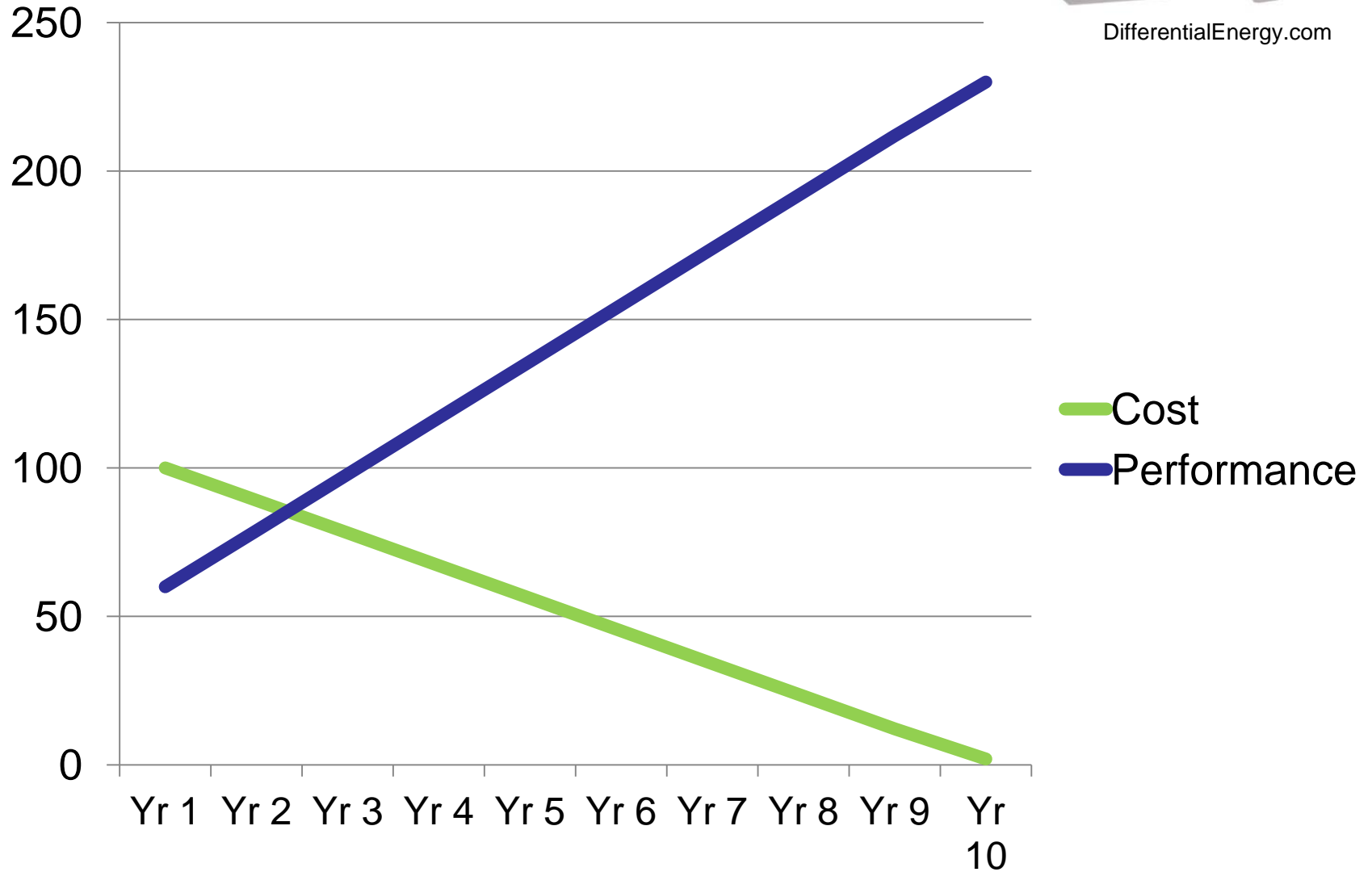
LED energy efficiency is a function of:



LEDs

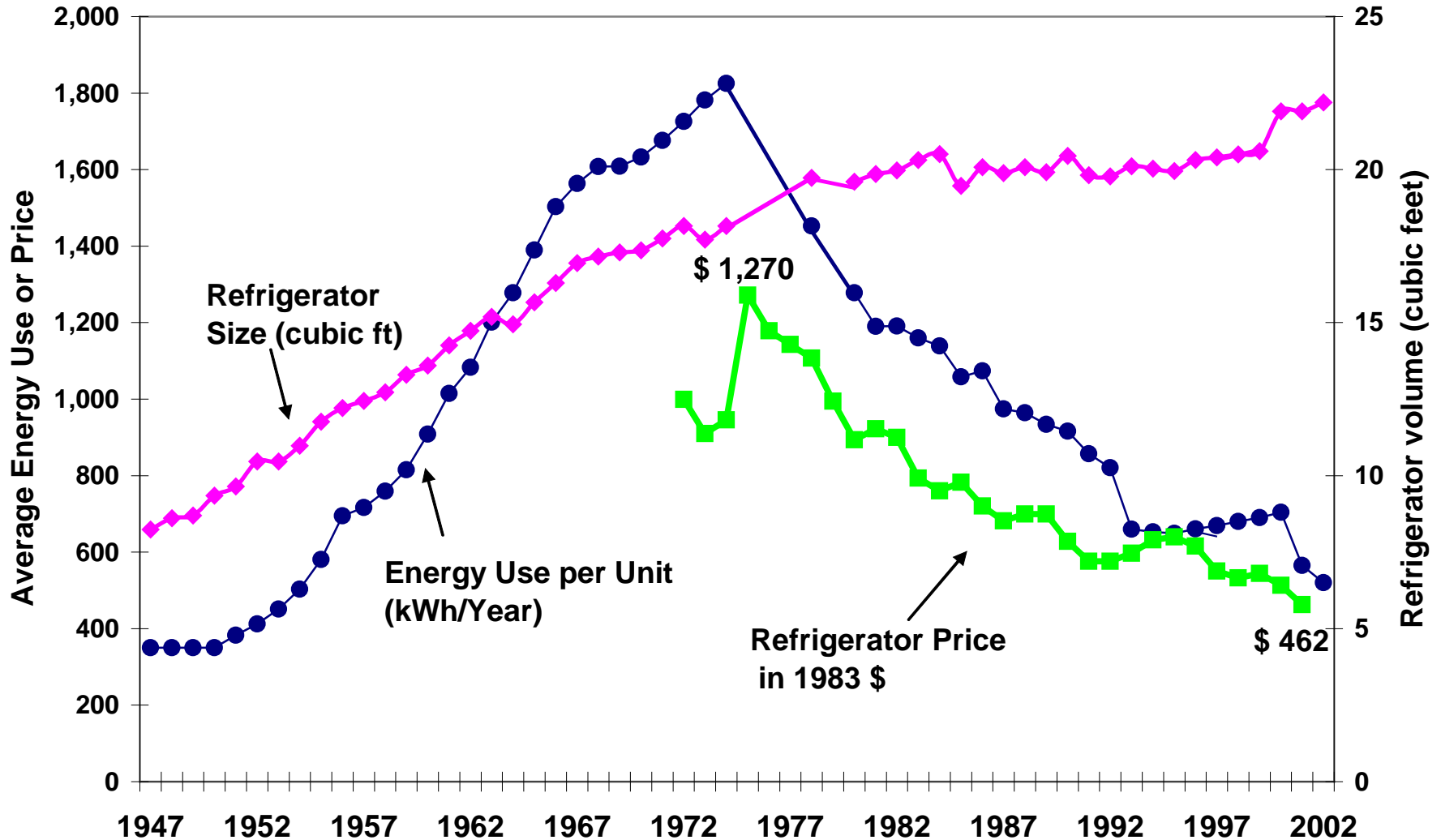


DifferentialEnergy.com



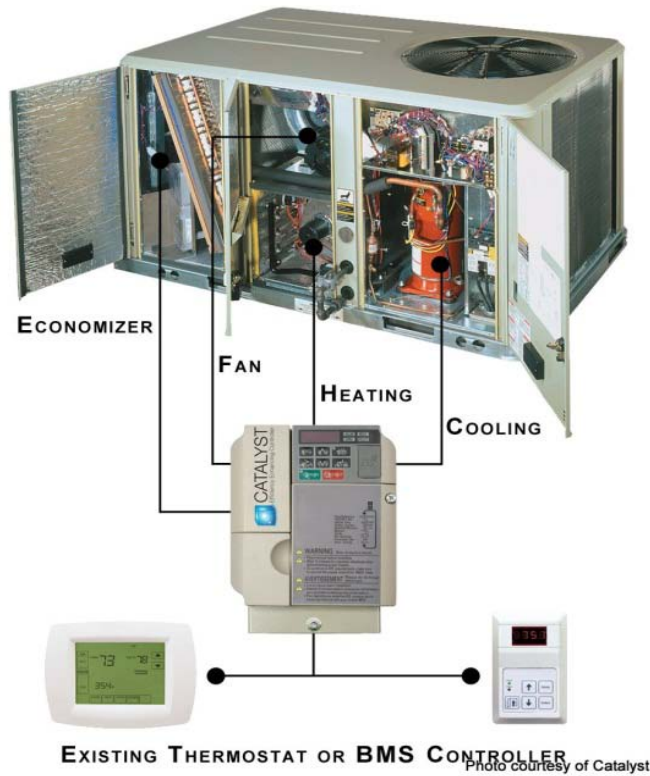
Scanning and Watching Trends

New United States Refrigerator Use v. Time and Retail Prices



Smart Connected Devices

Advanced RTU Controller



Digital Lighting Controls



Photo courtesy of Digital Lumens



Photo Courtesy of Energy Hub

Smart Thermostats



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Resources

Other Websites

- BPA online resource of ET info www.e3tnw.org
- Conduit www.conduitnw.org
- BPA Research Reports http://www.bpa.gov/energy/n/emerging_technology/index.cfm
- Consortium for Energy Efficiency www.Cee1.org
- FEMP http://www1.eere.energy.gov/femp/technologies/new_technologies.html
- EPRI epri.com
- E Source <http://www.esource.com/>
- NW National lab <http://www.pnnl.gov/>
- Center for Built Environment <http://cbe.berkeley.edu/index.htm>
- American Council <http://www.aceee.org/topics/emerging-technologies-and-practices>
- European council <http://www.eceee.org/>
- LED journal <http://www.ledsmagazine.com/features/9/2/9>
- DOE LED work www.ssl.energy.gov