

Brave New Energy World: We are in the Midst of A Major Energy TransformationMaybe.

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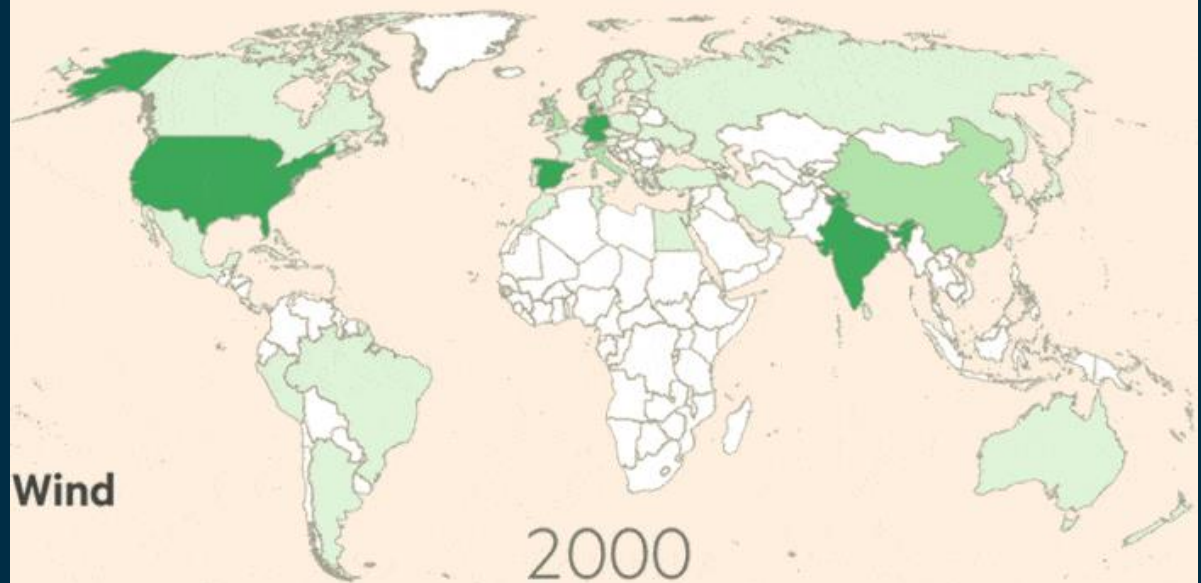
“One believes things because one has been conditioned to believe them.”

— Aldous Huxley, *Brave New World*

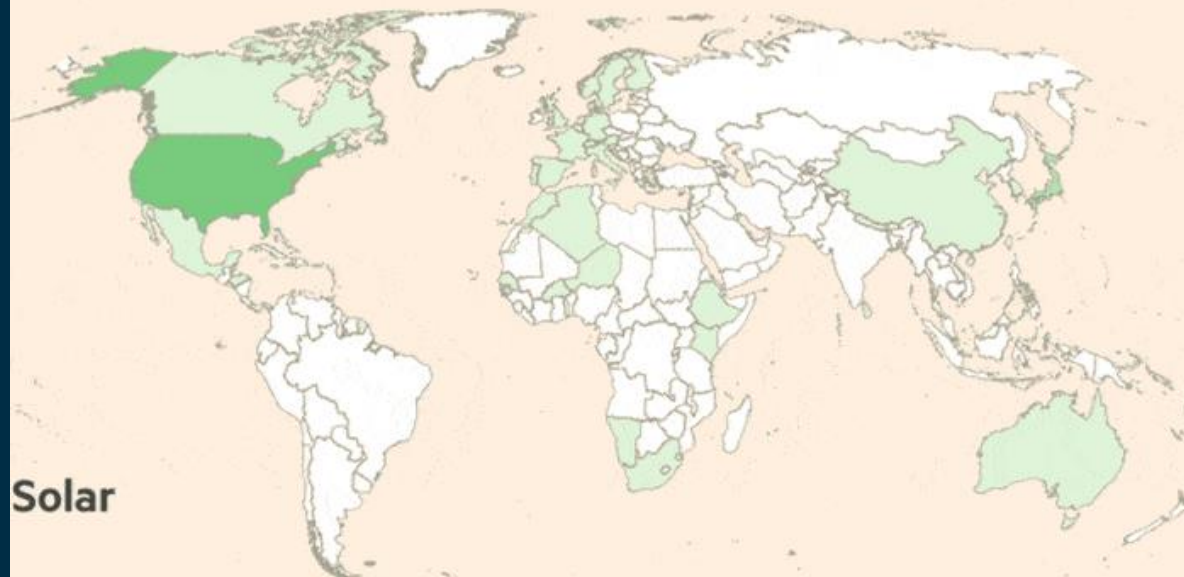
The Bold Clean Energy Transformation...

in Pictures

How wind and solar power have spread around the world



Megawatts of capacity



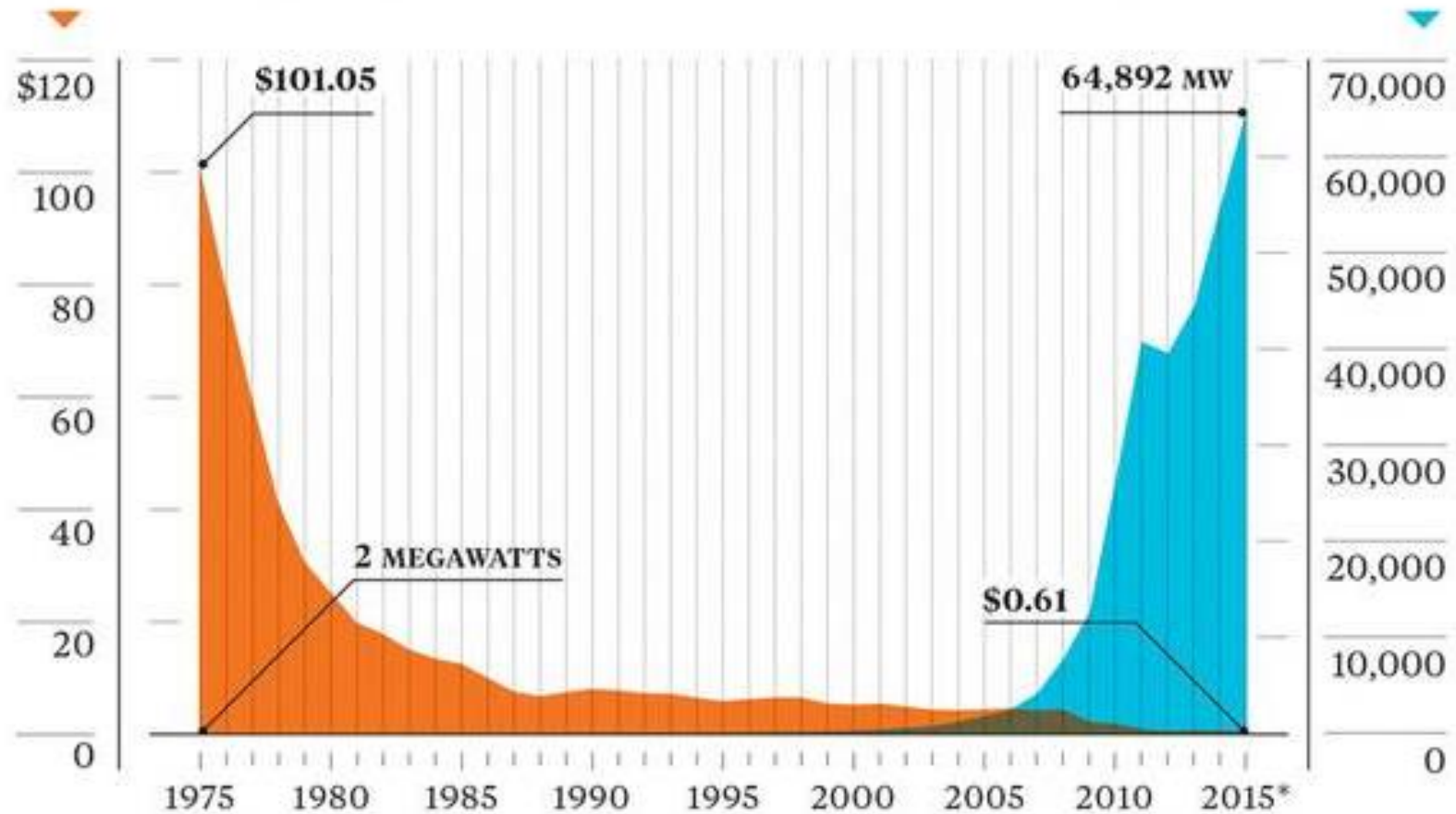
Source: International Renewable Energy Agency

<https://www.ft.com/content/44ed7e90-3960-11e7-ac89-b01cc67ddec?mhq5j=e1>

Solar

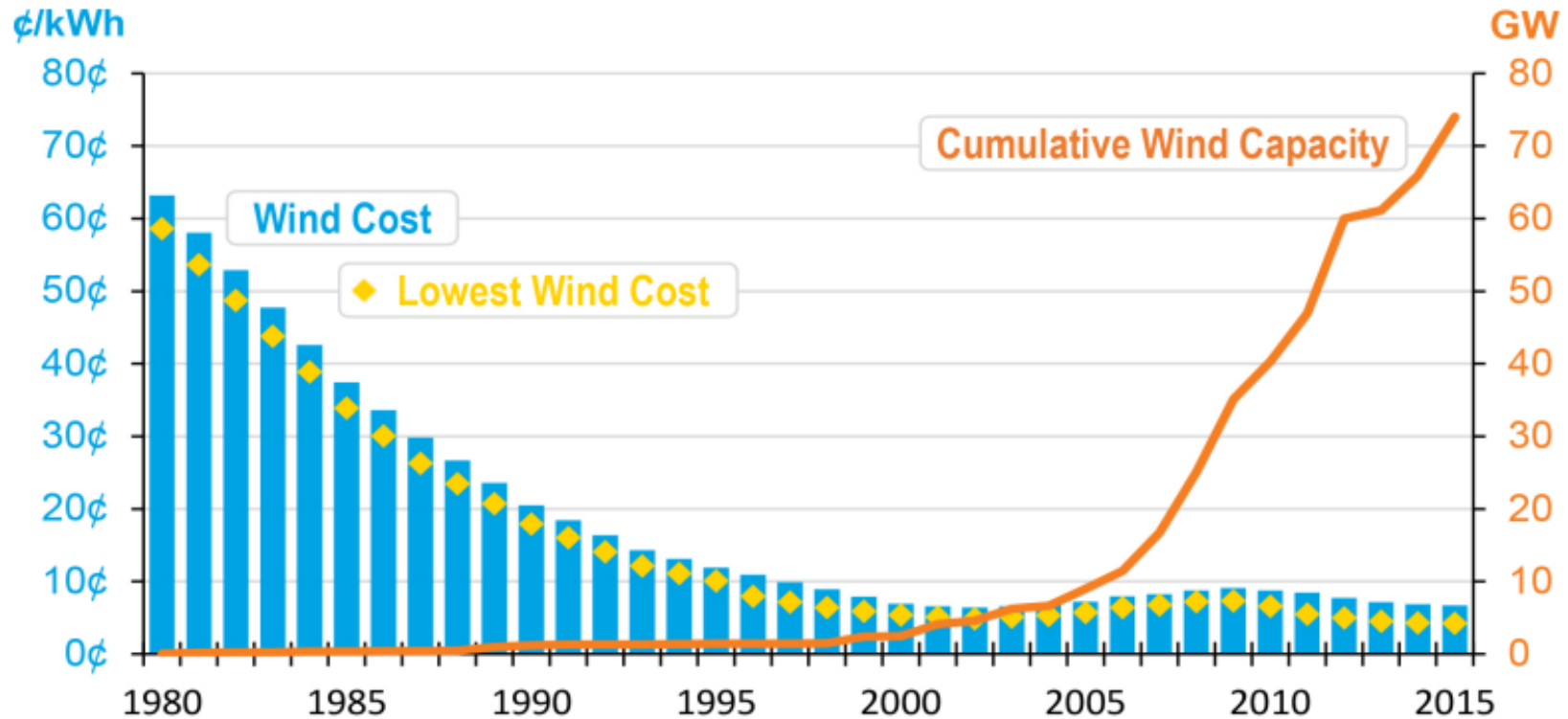
Price of a solar panel per watt

Global solar panel installations



Credit: DOE 2016

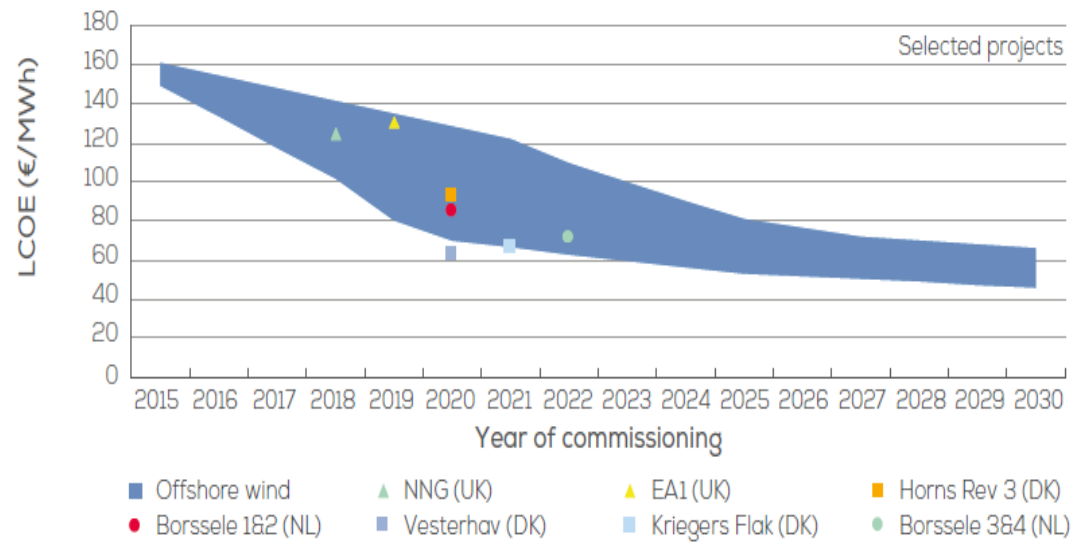
Onshore Wind



<http://energyinnovation.org/2016/12/06/four-reasons-30-wind-solar-technically-no-big-deal/>

Offshore Wind

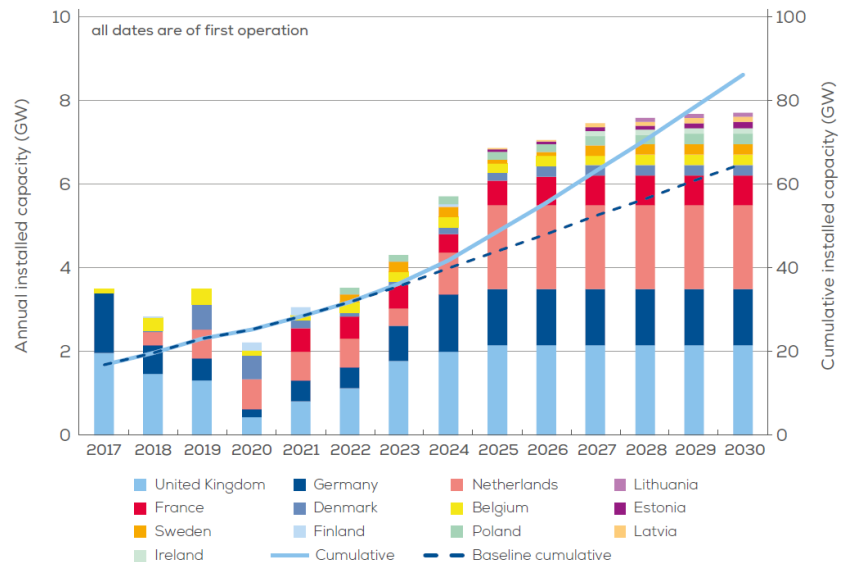
Offshore wind LCOE range and trajectory from 2015 to 2030, including estimated LCOE



Unleashing Europe's offshore wind potential: A new resource assessment, June 2017
© BVG Associates 2017

Source: BVG Associates for WindEurope

Installed capacity in the upside scenario to the end of 2030 for the EU member states in all sea basins



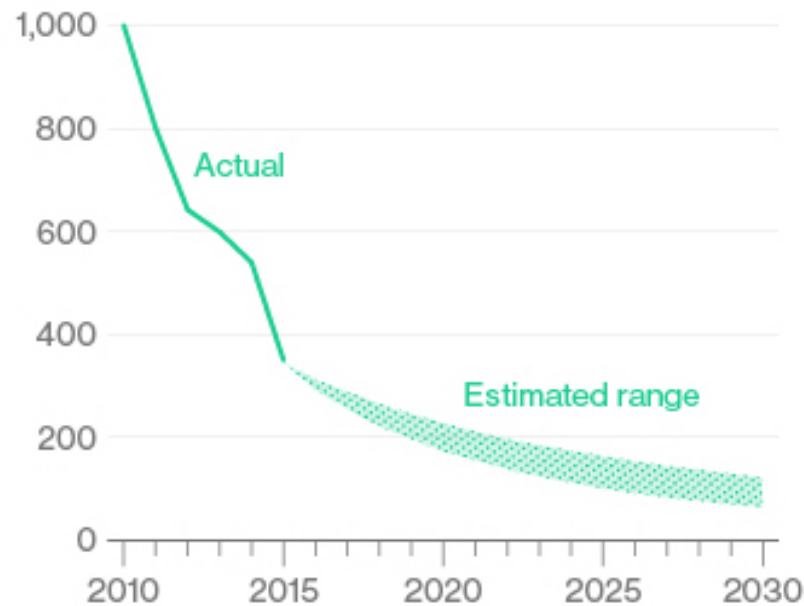
Source: BVG Associates for WindEurope



EV Battery

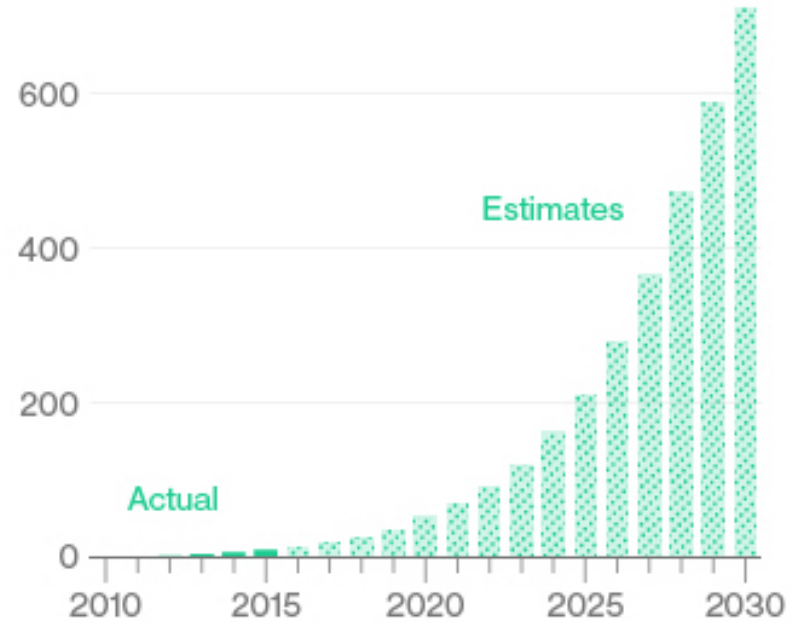
Cost for lithium-ion battery packs

\$1,200 per kilowatt hour



Yearly demand for EV battery power

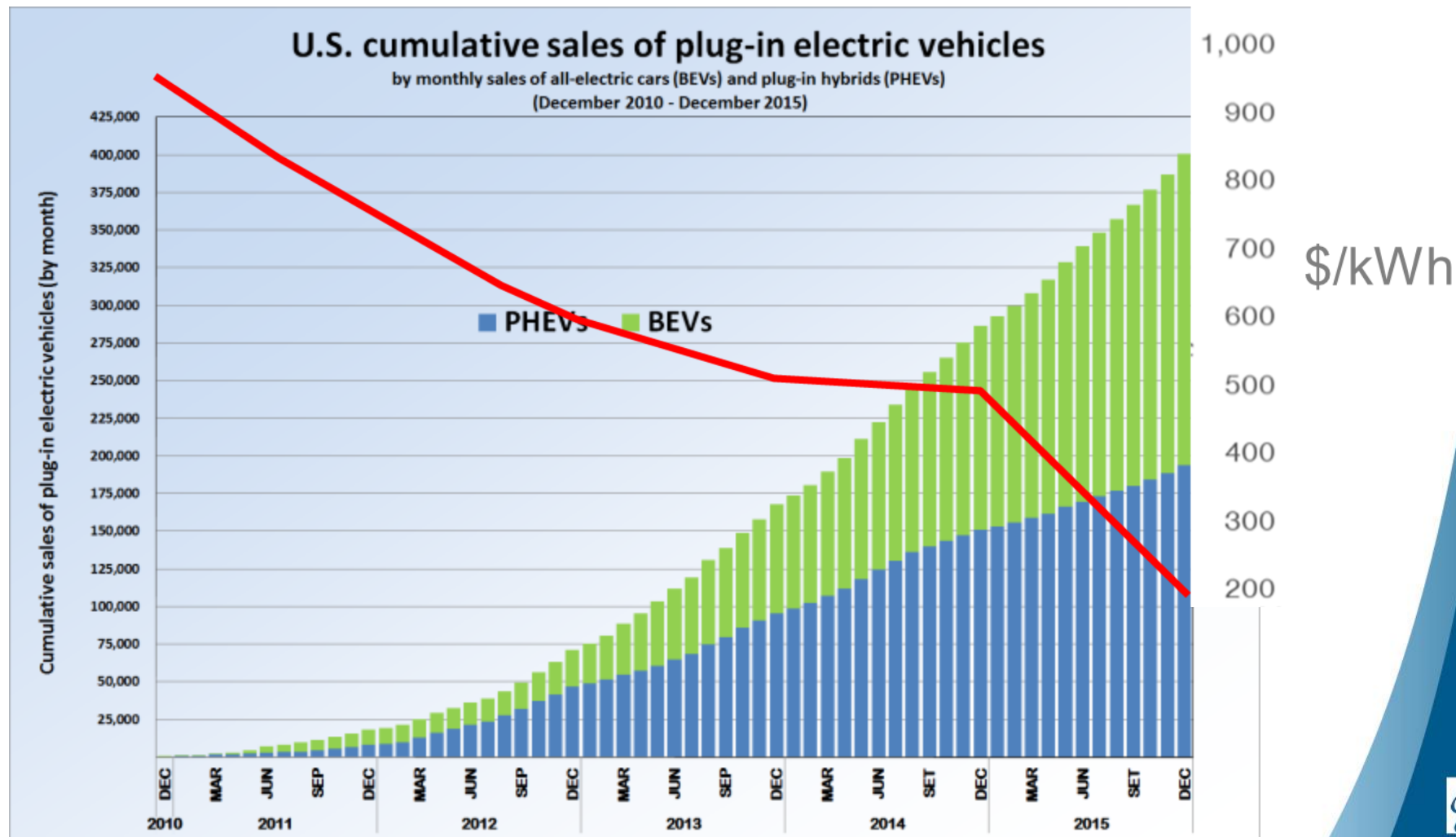
800 gigawatt hours



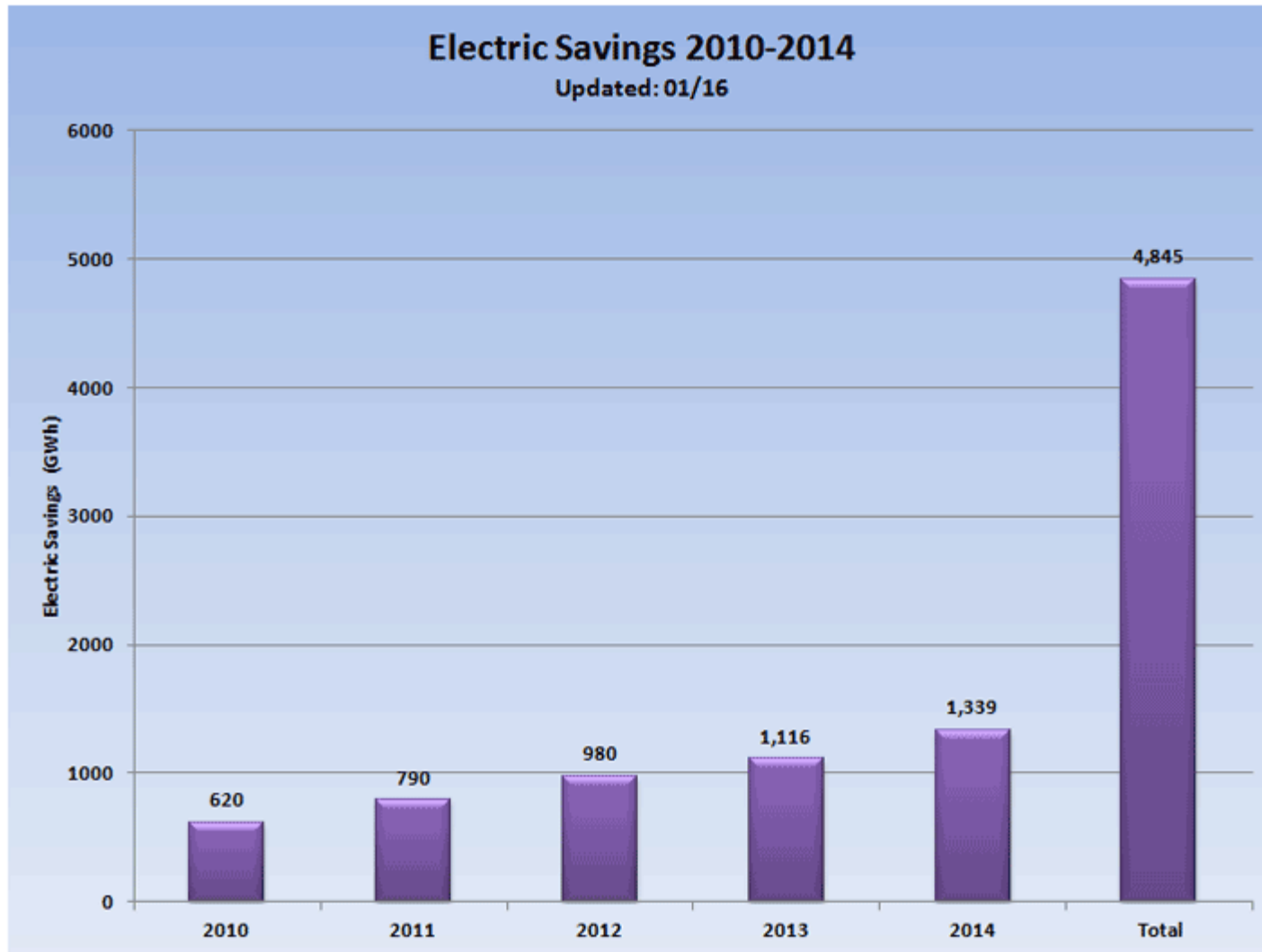
Source: Data compiled by Bloomberg New Energy Finance

Bloomberg 

EV Sales

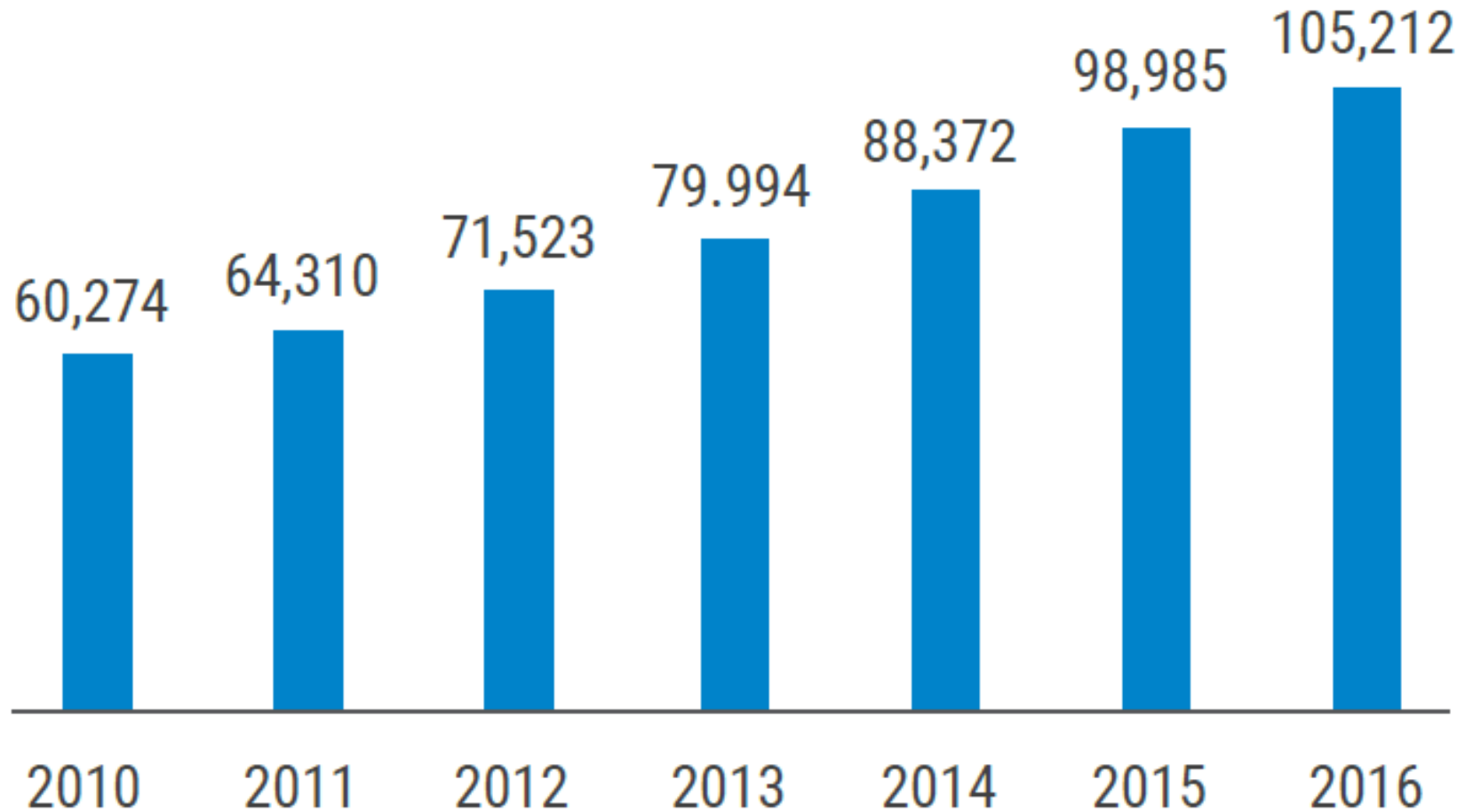


Energy Efficiency in MA





Clean Energy Jobs in MA



http://files.masscec.com/2016%20MassCEC_IndustryReport_Full_Web.pdf

But is our Transformation
Bold Enough?



Menu The Boston Globe Metro Register Now BCBS Island Run powered by Boston.com

Mass. joins other states to fulfill US pledges on carbon

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Governor Charlie Baker.

Environment, Mayor Marty Walsh

Marty Walsh Speaks Out on Trump's Paris Climate Deal Decision

"As a coastal city, we know what's at stake."

By Spencer Buell | Boston Daily | May 31, 2017, 11:21 a.m.

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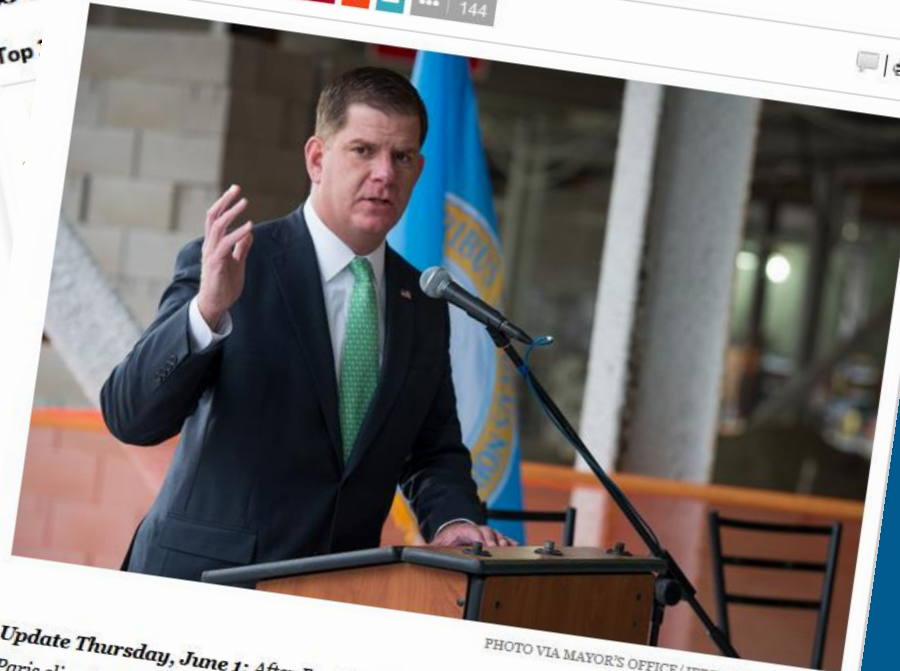
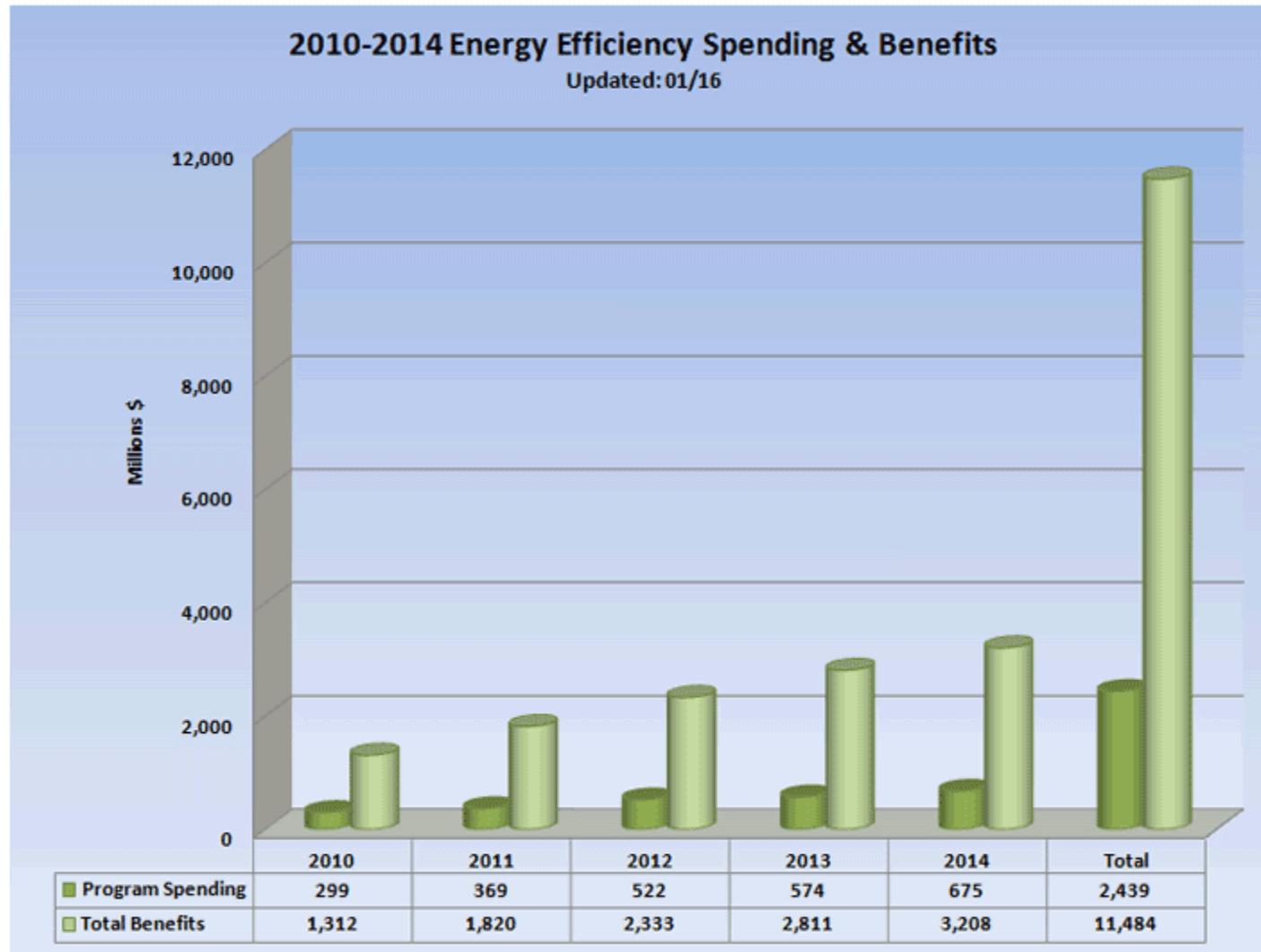


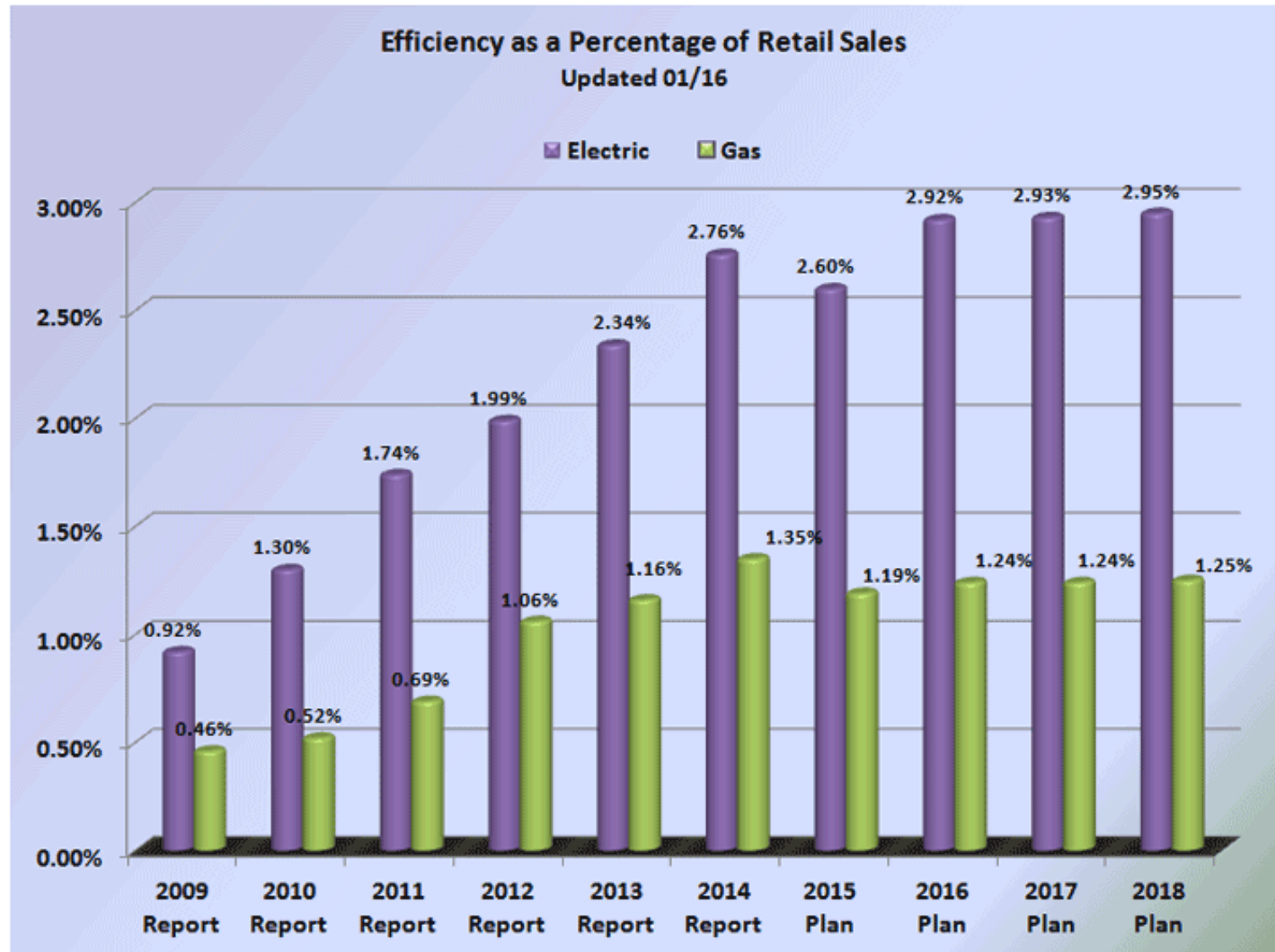
PHOTO VIA MAYOR'S OFFICE/JEREMIAH ROBINSON

Update Thursday, June 1: After President Trump announced Thursday he would pull out of the Paris climate accord, Walsh blasted the move as "irresponsible," adding, "I will continue to work with U.S. Mayors and cities around the world to uphold the tenets of the Paris climate agreement."

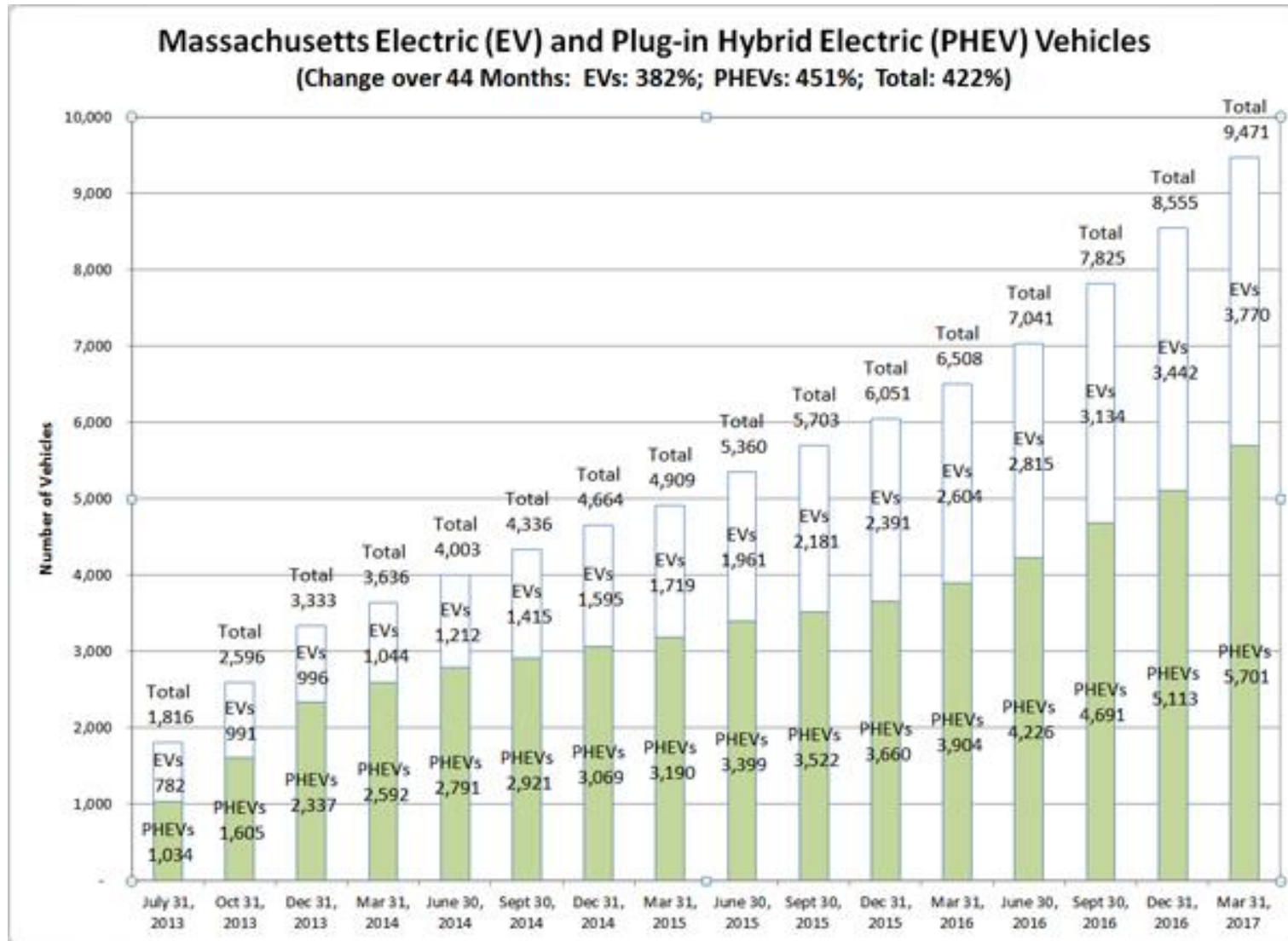
Energy Efficiency in MA



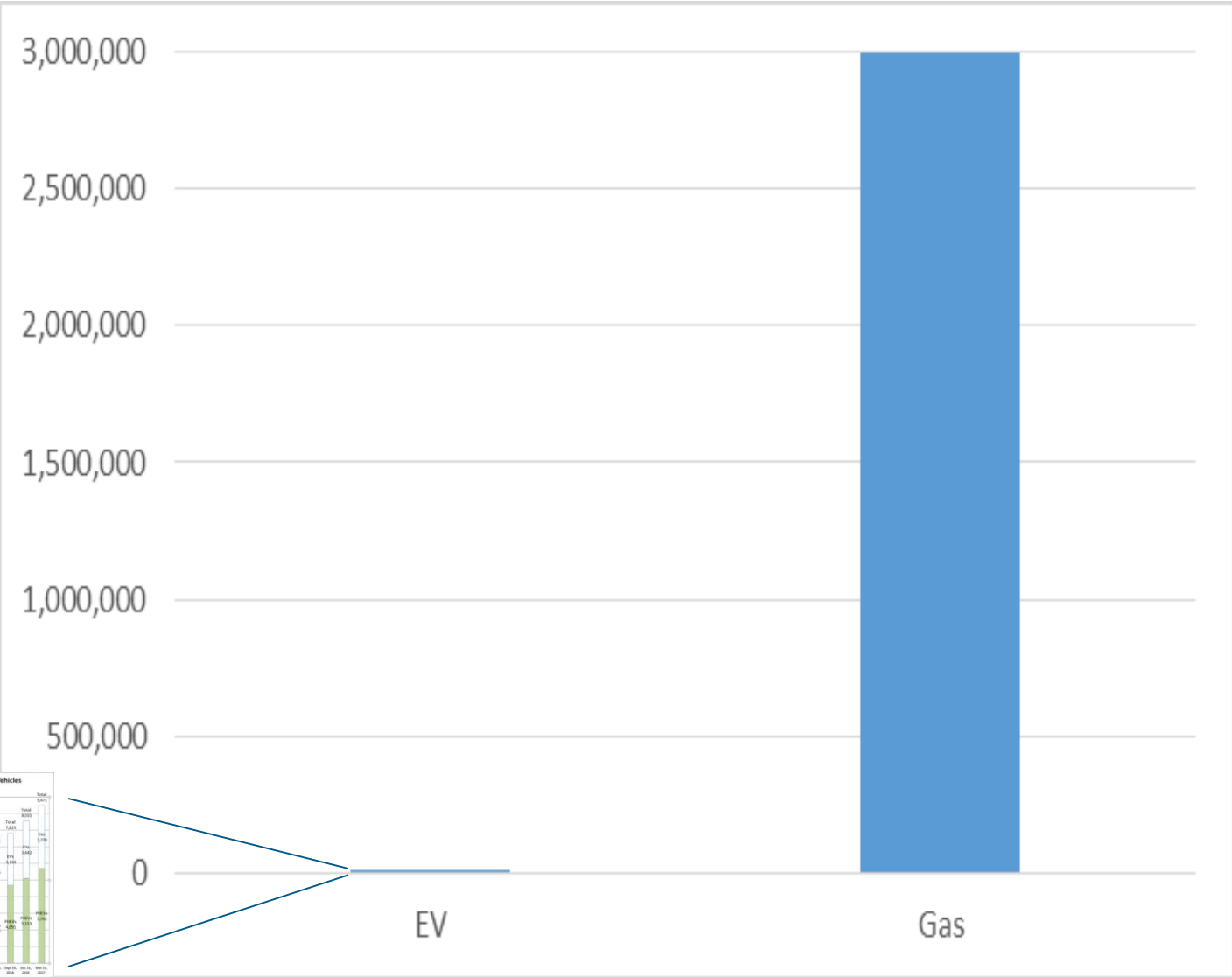
Energy Efficiency in MA



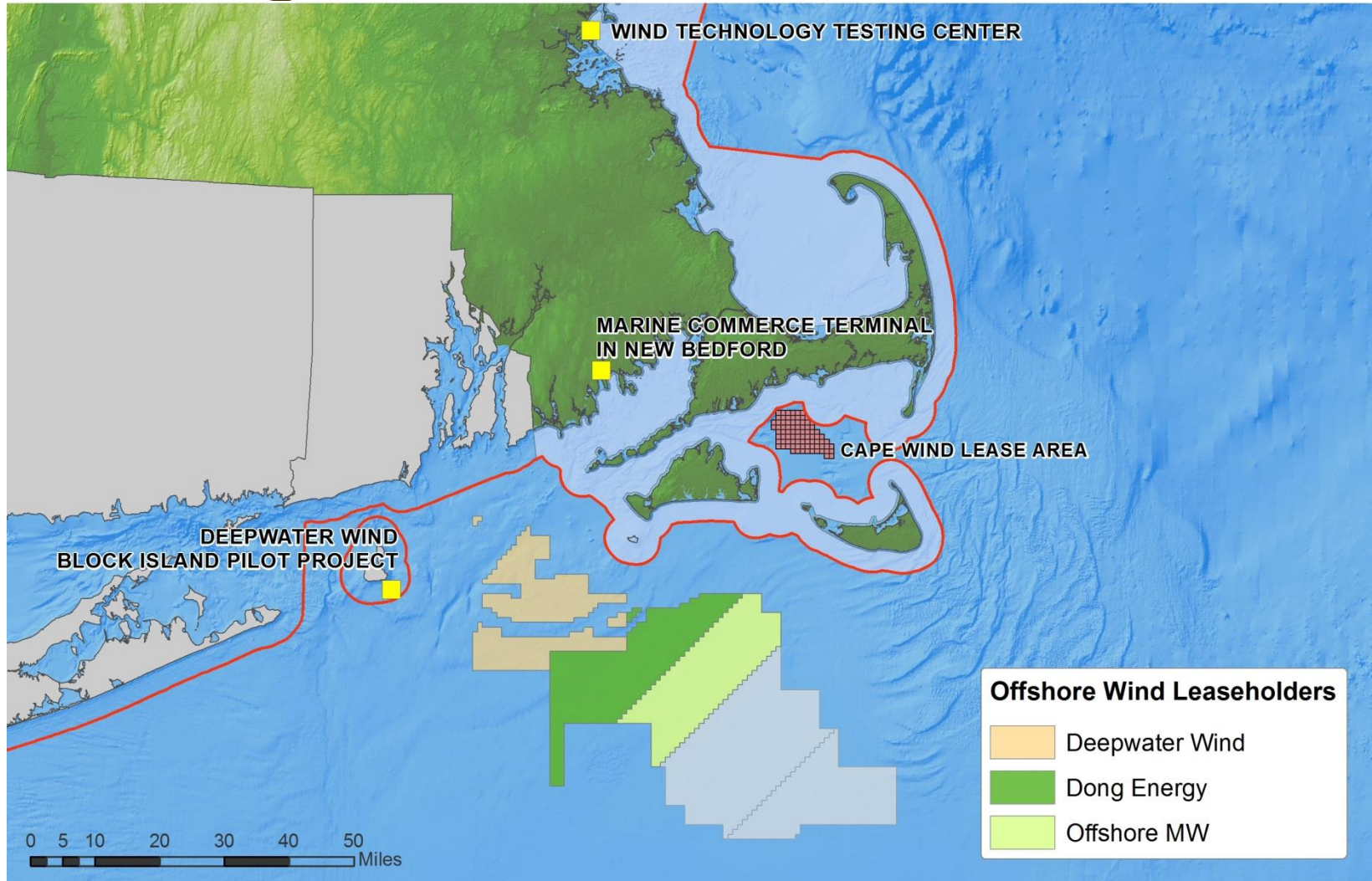
EV Sales



EV Sales



New England Offshore Wind Leases





Wind Speed (m/s)



> 10.00

9.75 - 10.00

9.50 - 9.75

9.25 - 9.50

Without Rapid Transformation...

- High probability of not reaching GWSA (or Paris) goals
- Increased environmental impact (local air pollution/climate change)
- Foregone economic opportunities
 - in cost savings
 - in clean energy sector growth
- Continued energy dependence

Barriers to rapid transformation...

“...one has been conditioned....”

- Imperfect markets
 - prices that don't include all costs
 - barriers to entry/ “stickiness”
- Suboptimal regulatory landscape
- Culture of risk aversion
- Complexities across levels
- Political risks

A Call for Boldness Commensurate with the Problem and the Opportunities

- Price carbon
- Comprehensive policies and planning with broad participation
- Radical transformation of the utility business model
 - electricity and gas
 - distributed and multi-purpose services
 - rate recovery for where the market fails...create the platform on which competition can flourish
- Create equity in benefits
- Incentivize experimentation
- Regionalize

Thank you!

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Top Massachusetts Towns By Rebate

Concord, MA (01742) 60 EV rebate applications
Lexington, MA (02420) 50 EV rebate applications
Sudbury, MA (01776) 44 EV rebate applications
Arlington, MA (02474) 44 EV rebate applications
Weston, MA (02493) 42 EV rebate applications
Boston, MA (02115) 36 EV rebate applications
Needham, MA (02492) 29 EV rebate applications

