

Rough Estimate of Annual Energy Efficiency Spending that is Influenced by Policy

(these figures are highly approximate and should be viewed as the midpoint of a range rather than a point estimate)

	Billion \$	Notes
<i>Standards & codes</i>		
Appliance standards	1.7	\$19b from Appliance Standards Awareness Project (J. Mauer, personal communication) (but then adjusted to 2016\$) * 9% for lower actual costs (Nadel and deLaski 2013). 501k new SF homes sold (Census) * \$2511 avg cost to meet 2012 IECC relative to 2006 IECC per
Residential SF codes	1.0	PNNL (but then adjusted to 2016\$); reduce by 25% since implementers often find ways to reduce costs.
Residential MF codes	0.3	301 new MF units (Freddie Mac) * \$123 avg cost (but then adjusted to 2016\$; same source and 25% reduction as row above)
Commercial codes	7.6	1.8b new SF from AEO17 * (\$3.33+2.11)/sf from PNNL (but then adjusted to 2016\$); reduce by 25% since often implementers find ways to reduce costs. \$869 per vehicle (but then adjusted to 2016\$) * 9.6 million vehicles * 50%. Vehicle costs from EPA and NHTSA. Vehicle sales from EIA AEO2017. Costs reduced by 50% since agency estimates may overstate actual technology costs (see, Lutsey et al. 2017) and also because manufacturers are taking advantage of credit provisions to a greater extent than anticipated.
Light duty fuel economy	8.6	
Heavy duty fuel economy	0.7	Average costs for each vehicle class from NHTSA & EPA final rule (but then adjusted to 2016\$ * 50% explained in row above); sales by vehicle class from EPA and NHTSA.
Subtotal	20	
<i>Other with policy contribution</i>		
Utility programs	7.8	ACEEE State Scorecard (but then adjusted to 2016\$).
Customer match	11.0	141% of row above per Molina 2014, p. 23
ESPCs in government	2.3	From Stuart et al. 2016 for 2014. Includes federal, state, schools, public housing and half of universities. Reduce by 36% to allow for overlap with utility programs per Carvallo et al. 2014.
Energy Star	4.8	\$7 billion for 2014 (but then adjusted to 2016\$); derived from Energy Star 2014 Annual Report. Reduce by 33% to allow for overlap with utility programs (ACEEE guesstimate).
Subtotal	26	
Total	46	

Notes:

- * Figures are for 2016 unless otherwise noted (in these cases, 2016 spending was not available).
- * Figures adjusted to 2016\$ using GDP implicit price deflator from Federal Reserve Bank (<https://fred.stlouisfed.org/series/USAGDPDEFSAISMEI>).
- * For codes, included two code cycles; many states have not yet adopted 2012/2013 codes but cost data on 2006/2007 codes not available.

Sources:

Nadel & deLaski 2013	http://aceee.org/research-report/e13d
Census for new homes sold	https://www.census.gov/construction/nrs/historical_data/index.html
PNNL for residential code costs	https://www.energycodes.gov/sites/default/files/documents/NationalResidentialCostEffectiveness.pdf
Freddie Mac for new MF	http://www.freddiemac.com/multifamily/pdf/freddieMac_mf_outlook_2016.pdf
EIA AEO for new comm's sf	https://www.eia.gov/outlooks/aeo/
Hart et al. 2015	https://www.energycodes.gov/sites/default/files/documents/Cost-effectiveness_of_ASHRAE_Standard_90-1-2013
EPA & NHTSA for LDV costs	https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EZ11.PDF?Dockey=P100EZ11.PDF
EIA AEO for LDV sales	https://www.eia.gov/outlooks/aeo/data/browser/#/?id=48-AEO2017&cases=ref2017&sourcekey=0
Luusey et al. 2017	http://www.theicct.org/US-2030-technology-cost-assessment
NHTSA & EPA for HDV costs	https://www.nhtsa.gov/staticfiles/rulemaking/pdf/cape/2011-20740.pdf
EPA & NHTSA for HDV sales	https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EG9C.PDF?Dockey=P100EG9C.PDF
ACEEE State Scorecard	http://aceee.org/research-report/u1606
Molina 2014	http://aceee.org/research-report/u1402
Energy Star Annual Report	https://www.energystar.gov/sites/default/files/asset/document/ENERGYSTAR_2014AnnualReport_508_0.pdf
Stuart et al. 2016	https://emp.lbl.gov/sites/all/files/esco_recent_market_trends_30sep2016.pdf
Carvallo et al. 2014	https://eetd.lbl.gov/sites/all/files/lbnl-6877e.pdf