Energy System Impacts of Climate Change: Background Slides

for
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Independent Statistics and Analysis

Despite a continued shift of the U.S. population to warmer areas, much more energy is used to heat buildings than to cool them through 2035

Projected Space Conditioning Energy Use in Buildings, Quadrillion Btu

Residential	2010	2015	2025	2035
Space Heating	**4.33**	**4.27**	**4.18**	**4.10**
Purchased Electricity	0.29	0.28	0.30	0.31
Natural Gas	3.29	3.27	3.28	3.27
Distillate Fuel Oil	0.50	0.48	0.39	0.33
Liquefied Petroleum Gases	0.26	0.23	0.21	0.19
Space Cooling	**1.11**	**0.82**	**0.90**	**0.99**
Purchased Electricity	1.11	0.82	0.90	0.99
Natural Gas	0.00	0.00	0.00	0.00
Ventilation	0.14	0.15	0.18	0.19
Commercial				
Space Heating	**1.93**	**2.01**	**2.04**	**2.04**
Purchased Electricity	0.18	0.17	0.17	0.18
Natural Gas	1.61	1.70	1.75	1.76
Distillate Fuel Oil	0.14	0.13	0.11	0.10
Space Cooling	**0.62**	**0.56**	**0.60**	**0.65**
Purchased Electricity	0.58	0.53	0.56	0.61
Natural Gas	0.04	0.04	0.04	0.04
Ventilation	0.51	0.55	0.64	0.71

Source: EIA AEO2011 Reference case

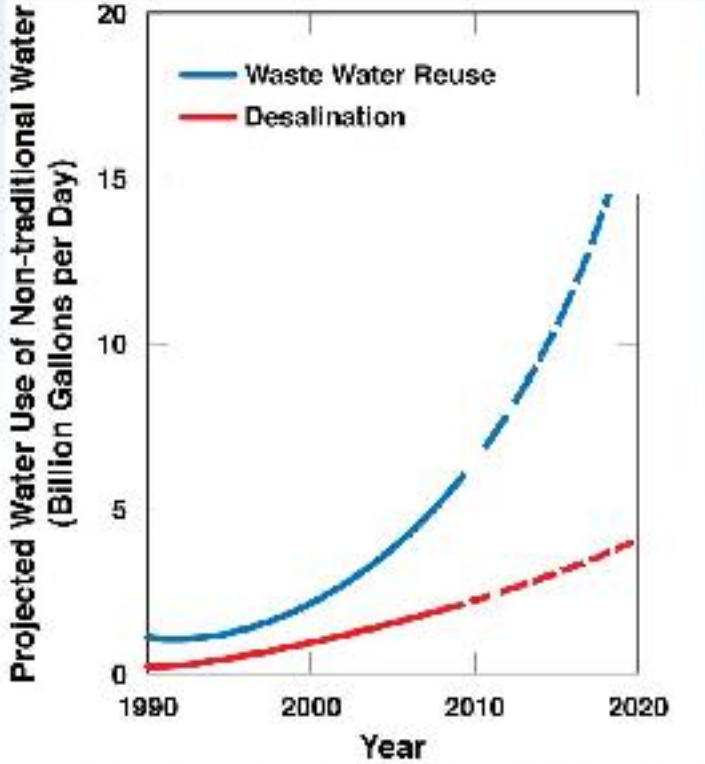
Despite a continued shift of the U.S. population away from cold areas, projected energy expenditures to heat buildings exceed cooling expenditures by a wide margin through 2035

Space Conditioning Energy Expenditures in Buildings, Billions of Year 2009 Dollars

Residential	2010	2015	2025	2035
Space Heating	**63.47**	**59.90**	**65.74**	**69.86**
Purchased Electricity	9.66	9.09	9.43	9.83
Natural Gas	36.65	33.74	39.08	44.21
Distillate Fuel Oil	10.33	10.14	10.12	9.03
Liquefied Petroleum Gases	6.82	6.93	7.11	6.80
Space Cooling	**37.42**	**26.31**	**28.09**	**31.46**
Purchased Electricity	37.42	26.31	28.09	31.46
Natural Gas	0.00	0.00	0.00	0.00
Ventilation	4.66	4.93	5.65	6.17
Commercial				
Space Heating	**22.12**	**21.75**	**24.56**	**26.94**
Purchased Electricity	5.00	4.58	4.59	4.82
Natural Gas	14.59	14.64	17.26	19.52
Distillate Fuel Oil	2.53	2.54	2.70	2.60
Space Cooling	**16.94**	**14.51**	**15.37**	**16.97**
Purchased Electricity	16.54	14.20	15.02	16.58
Natural Gas	0.40	0.31	0.35	0.39
Ventilation	14.55	14.95	17.05	19.30

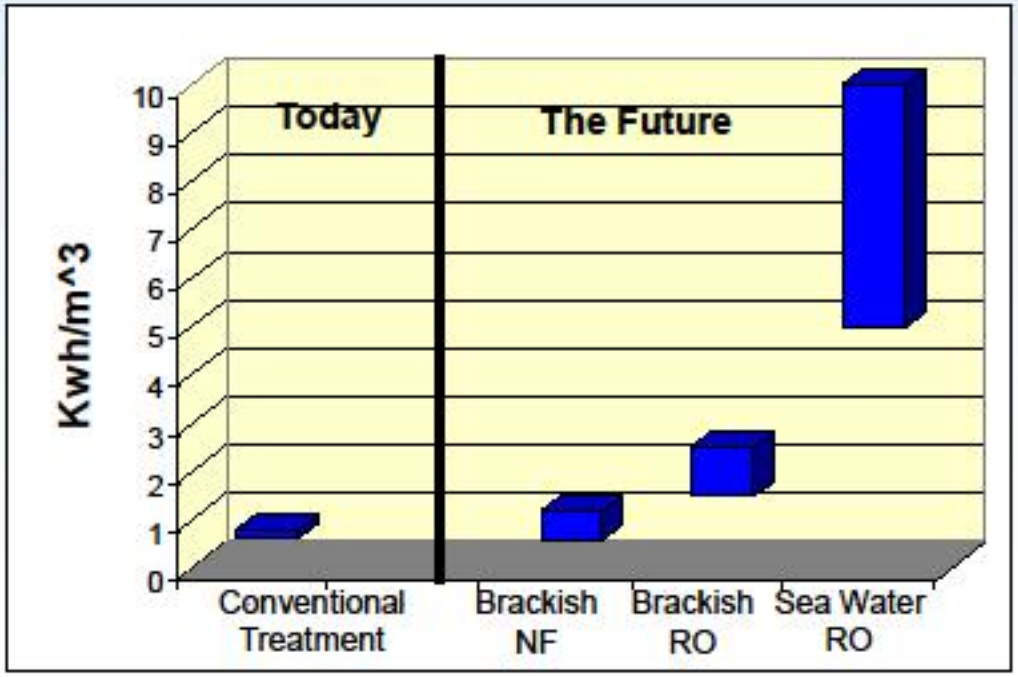
Source: EIA AEO2011 Reference case

Growing Use of Non-traditional Water Resources



(Modified from Water Reuse 2007, EPA 2004, Mickley 2003)

Power Requirements For Treating



(Einfeld 2007)

- Desal growing at 10% per year, waste water reuse at 15% per year
- Reuse not accounted for in USGS assessments
- Non-traditional water use is energy intensive

Source: Mike Hightower, Sandia National Laboratory

For more information

U.S. Energy Information Administration home page	www.eia.gov
Short-Term Energy Outlook	www.eia.gov/emeu/steo/pub/contents.html
Annual Energy Outlook	www.eia.gov/oiaf/aeo/index.html
International Energy Outlook	www.eia.gov/oiaf/ieo/index.html
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