

The Transition to a Renewable Energy Economy

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Photovoltaics and other renewables now provide two-thirds of all new energy constructions globally NY Times (10/16/2017).

In 2016, photovoltaics became the cheapest means of generation of electricity marking that the transition to a renewable energy

Countries

- 2050: Nearly 50 countries, vow to use 100% renewable energy by 2050. *The Independent Online*. 18/11/2016.
- 2017: March: wind and solar account for 10% of U.S. electric generation. *Sierra*. October, 2017
- 2017: Renewables supply more than 50% of the U.K.'s electric power. *Sierra*. October, 2017
- 2017, 98% of Costa Rica's electrical energy to come from renewable sources. mashable.com. 1/1/2017.
- 2017: India cancels plans for coal powered stations due to low solar prices. *The Independent Online*. 23/5/2017.
- 2017: Renewable energy production 15% US; 24% worldwide. NYTimes 10/16/2017
- 2030: India to end fossil fuel only cars *Vox* 9/13/17.
- 2030: The Netherlands and Norway); Scotland to end fossil fuel only cars. *Vox* 9/13/17.
- 2032: Scotland to end fossil fuel only cars 2032 *Vox* 9/13/17
- 2040: France and Britain to end fossil fuel only cars 2040 (*Vox* 9/13/17) to lower public health costs (£2.7bn in lost productivity in one recent year). *Guardian* 7/25/2017.
- 2050: Denmark to go fossil fuel free. *The Ecologist*, 5/3/2016.

States

- 2016: Wind power provided Iowa produced 36.6% of its electrical power. <https://www.eia.gov/state/?sid=IA>
- 2030: State of California legislature plans to achieve 50% renewables. <https://www.gov.ca.gov/news.php?id=19153>
- 2050: The State of Maryland plans to be CO₂ "emissions-free (nonnuclear). <https://ieer.org/projects/renewable-maryland/>

Cities

- 2013: Greensburg, Kansas (785) 100% renewable. *Business Insider* 8/12/2016. (BI)
- 2014: Burlington, Vermont (42,282) 100% renewable achieved (BI)
- 2015: Aspen, Colorado (6,658) 100% renewable achieved. (BI)
- 2017: Traverse City to power municipal operations via 100 percent renewable energy by 2020. *Groundwork* 2/17/2017.
- 2016: Georgetown, Texas (54,898) 100% renewable. (BI)
- 2017: Lansing Board of Water and Light to stop burning coal at its Erickson Generating Station. (LSJ 9/3/17)
- 2020: Traverse City's municipal operations aim for a 100 percent renewable. *Traverse City Business News* Feb/2017.
- 2020: Grand Rapids, MI (192,000) 100% renewable. (BI)
- 2020: East Hampton, NY (21,500) 100% renewable. (BI)

economy ([Lazard](#) 12/15/16).

And as the demand for fossil fuels begins to fade, so will their mining and transportation, including the use of our aging and dangerous pipelines.

- 2020: Lansing Board of Water and Light to add 106 megawatts of wind and solar energy generation. *LSJ* 9/3/17
- 2022: San Jose, CA (960,000) 100% renewable. (BI)
- 2030: San Francisco, CA (864,000) 100% renewable. (BI)
- 2031: Rochester, MN (100,000) 100% renewable. (BI)
- 2035: San Diego, CA (1.37 million) 100% renewable (BI)
- 2050 Traverse City to make the entire city carbon neutral. *Traverse City Business News* February 2017.

Corporations

- 2014, Total and Shell halted their tar-sands projects due to lack of profitability. <https://www.nrdc.org/onearth/tar-sands-bubble>
- 2017: Google's data centers supplied completely by electricity from renewable sources. [Mashable](#) 12/6/2016.
- 2017: Enbridge has invested \$5.5 billion in renewables since 2002. <http://www.enbridge.com/about-us/our-work/renewable-energy>
- 2017: Boeing S. Carolina powered by 100% renewable energy. Boeing Quick Facts ([Boeing.com](#)).
- 2035: Total to increase its renewable energy to 20 % of its operations in 2035. (3% 2015) [Takepart](#), 5/26/2016.

Museums

- 2017: The Kentucky coal museum switching to photovoltaics to reduce electricity costs. [USA Today](#) 5/ /8/2017.

Oil Demand to Peak in the 2020s

- Grantham University estimates that demand for coal and oil to peak by 2020. [Carbon Tracker](#) 1/2/2017.
- 2020: Royal Dutch Shell suggests oil to peak as early as the late-2020s *Financial Times* 3/15/2017.
- Statoil predicts oil peak between mid-2020s and the late-2030s *Financial Times* 3/15/2017.

Renewable Technology

- 2016: Lithium-Ion battery cost drops 73% from 2010. NYTimes 10/16/2017
- 2017: Wind and solar are our cheapest electricity generation sources. Wind costs have fallen 66 percent since 2009, from \$140/MWh to \$47/MWh. [General Tech Media](#) (1/26/2017)
- 2023: Cost of wind turbine 15% less than 2017; utility sized drop 25% from 2017 NYTimes 10/16/2017

Unrenewable Technology

- 2017: Tar sands oil produces 14% more CO₂ than conventional crude oil, (*Scientific American* 1/23/2013.) so that any expansion of production will jeopardize Canada's commitment to the Paris Energy Agreement. [The Tyee](#). (1/19/2017)