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Problem

The Brayton Point Power Station in Somerset, Massachusetts will close in 2017, which will contribute to an energy shortage in the New England region.

Background

- Twenty-eight coal & oil power plants are closing
- 1,535 megawatt loss from Brayton
- 155 megawatts remains unaccounted for in New England
- What are the alternative energy technologies that can prevent this power loss?

Solutions

Natural Gas

- Change of infrastructure
- Winter energy shortages
- Environmental degradation
- Price fluctuations/ fuel costs

Solar

- 15 megawatts (90 acres)
- Decreasing costs too slow

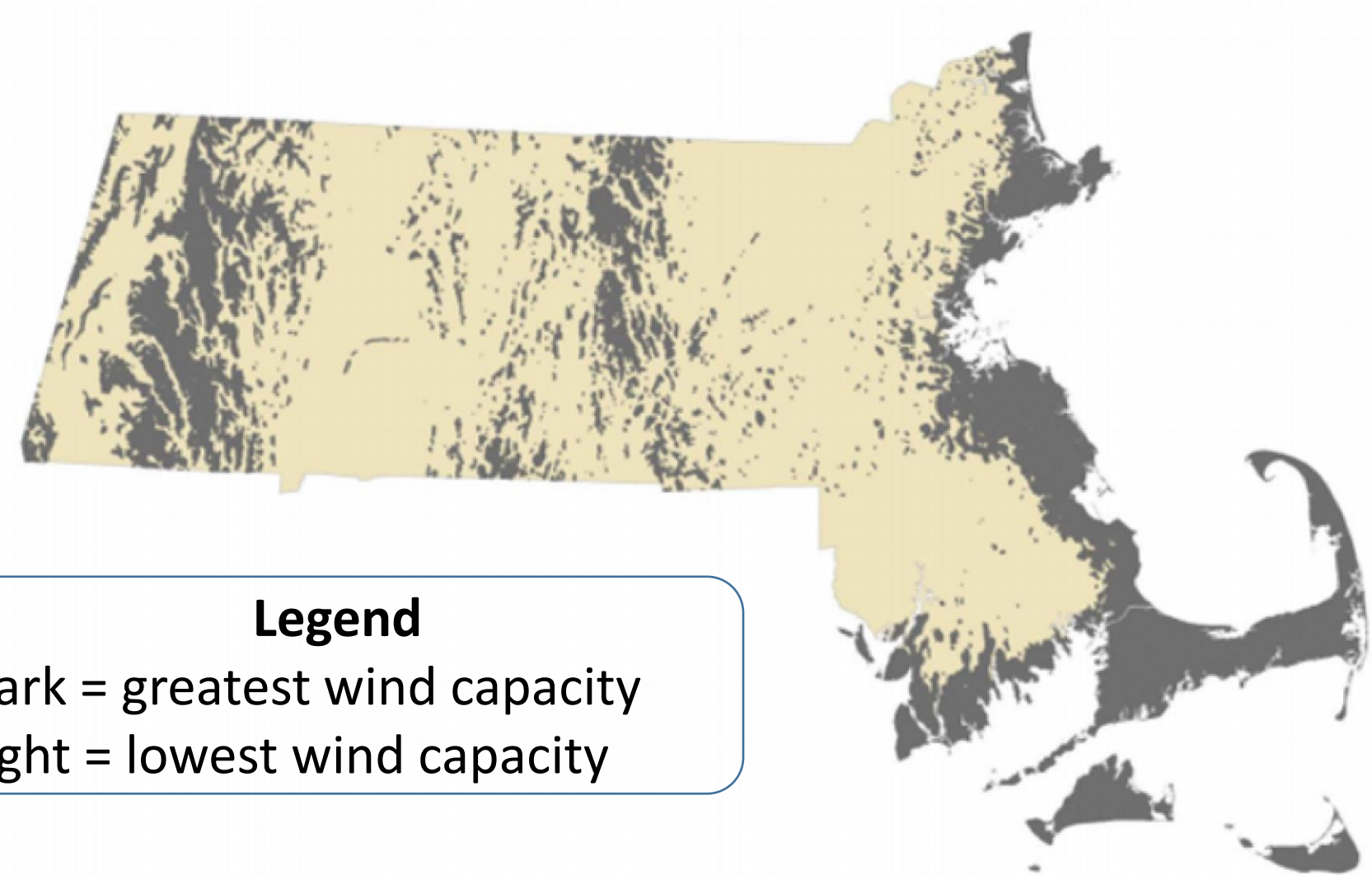
Hydro

- Lobbyists
- Fish
- Supply from Canada

Wind

- Emission free fuel source
- On shore vs Off shore
- Potential for 215,000 megawatts (on shore and off shore)

WIND ENERGY POTENTIAL
 WIND SPEED > 6 /s @ 70m

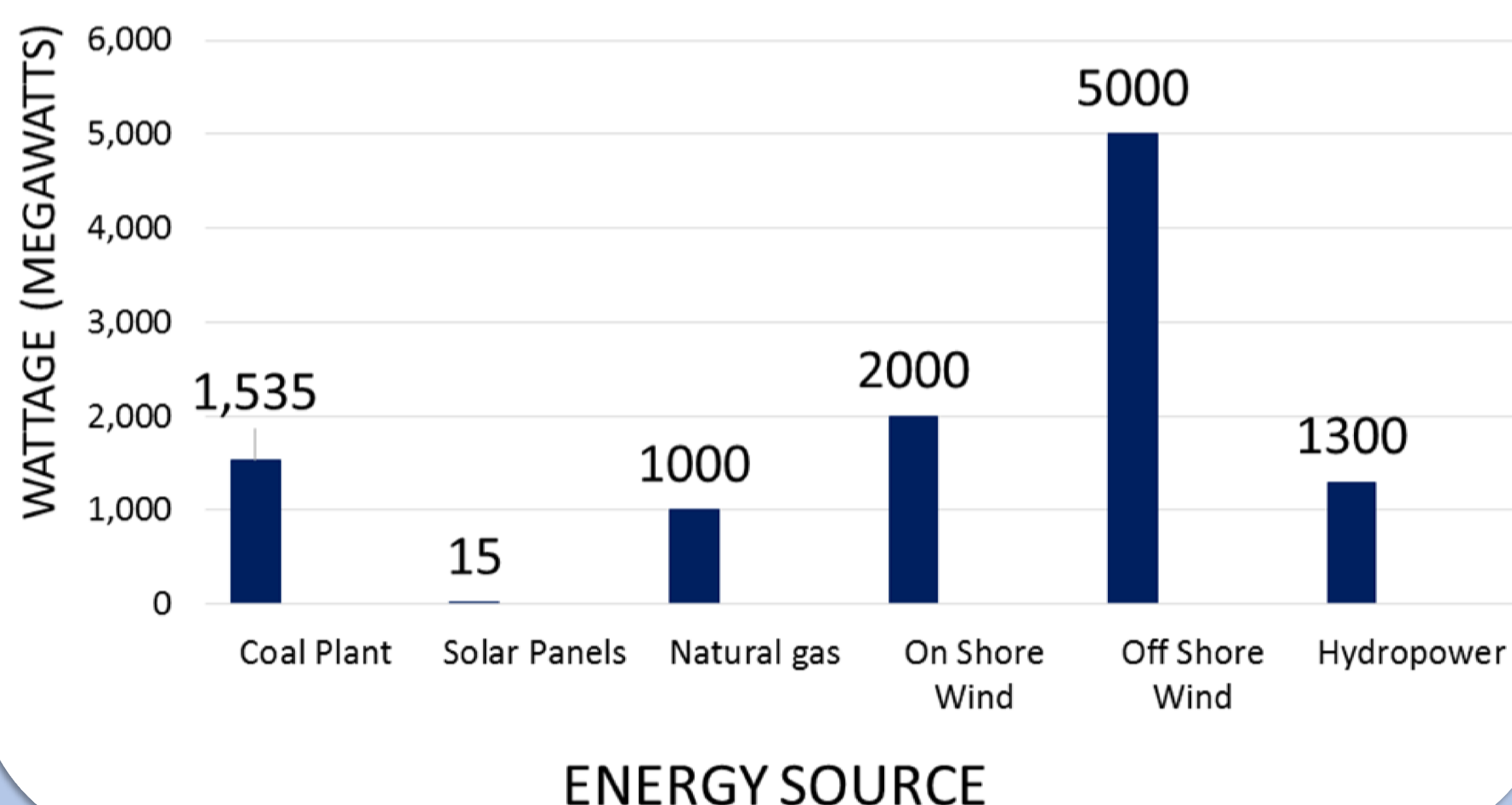


(Wind Energy Potential, 2012)

Discussion

- Deepwater One Project connects at Brayton Point (2017)
- Substation at Brayton Point- easy transmission connection
- Produce 900-1200 megawatts annually
- No fuel costs
- Power Purchase Agreements from companies i.e. Google
- Wind is intermittent, can supply 24% of New England's power

Average Annual Power Supply in New England (2013)



(S. Rourke, personal communication, March 25, 2014)

Conclusion

- Deep offshore wind is the most viable option (Deepwater One)
- Continue emphasis on renewables until implementation

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References

1. Allworth, E. (2014, January 27). *Owner reaffirms 2017 closing of brayton point plant*. Retrieved from <http://www.bostonlobe.com/business/2014/01/27/must-run-coal-plant-shut-down/07N318fVwVEd8gM8M/story.html>
 2. Brykels, Andy, Lusardi, Meg, Capone, Lisa, Studds, Tyler. (2012). *Community Energy Strategies (PowerPoint slides)*. Retrieved from http://images.masscec.com/programdocs/CESP_Webinar_111612.pdf
 3. Deepwater Wind. (2014). *Deepwater one: Overview*. Retrieved from <http://www.deepwater.com/>
 4. Google. (2013, September 17). *Google's green pass: What, how, and why*. Retrieved from http://static.googleusercontent.com/external_content/untrusted_dlcp/www.google.com/en/us/green/pdfs/renewable-energy.pdf
 5. Hinkle, C., & Priddy, R. (2010, December 3). *New England Wind Integration Study*. GE ENERGY. Retrieved April 16, 2014, from http://www.wpi.edu/~hinkle_newengland_wind_integration_study.pdf
 6. Mitchell-Larson, M. (2006, July 30). *Middelgrunden Wind Turbine Cooperative*. Flickr.com. <http://www.flickr.com/photos/39532791/>
 7. Shaham, Z. (n.d.). *Oil Subsidies & Natural Gas Subsidies — Subsidies For The Big Boys (Not For Society)*. www.cleantechnica.com. Retrieved on April 18, 2014, from <http://cleantechnica.com/2013/02/07/oil-subsidies-natural-gas-subsidies/>
 8. Rourke, S. *Commonwealth of Massachusetts, Energy and Environmental Affairs*. (2013).
 9. *no new england update: massachusetts plant revitalization task force*. Retrieved from website: <http://www.mass.gov/eea/energy-utilities-clean-tech/salem-harbor/ma-plant-revitalization-task-force-meeting-12-19-2013.pdf>
 10. Tillemann, L. (2013, September 17). *Revolution Now: The Future Arrives for Four Clean Energy Technologies*. energy.gov. Retrieved April 20, 2014, from <http://energy.gov/sites/prod/files/2013/09/12/20130917-revolution-now.pdf>